State of Florida

STATE EXPENDITURE PLAN

Submitted Pursuant to
the Spill Impact Component
of the RESTORE Act

33 U.S.C. § 1321(t)(3)

Prepared by the Gulf Consortium
for the State of Florida

Prepared by the Gulf Consortium for the State of Florida

With assistance from Environmental Science Associates, Langton Consulting, Brown and Caldwell, and Research Planning, Inc.

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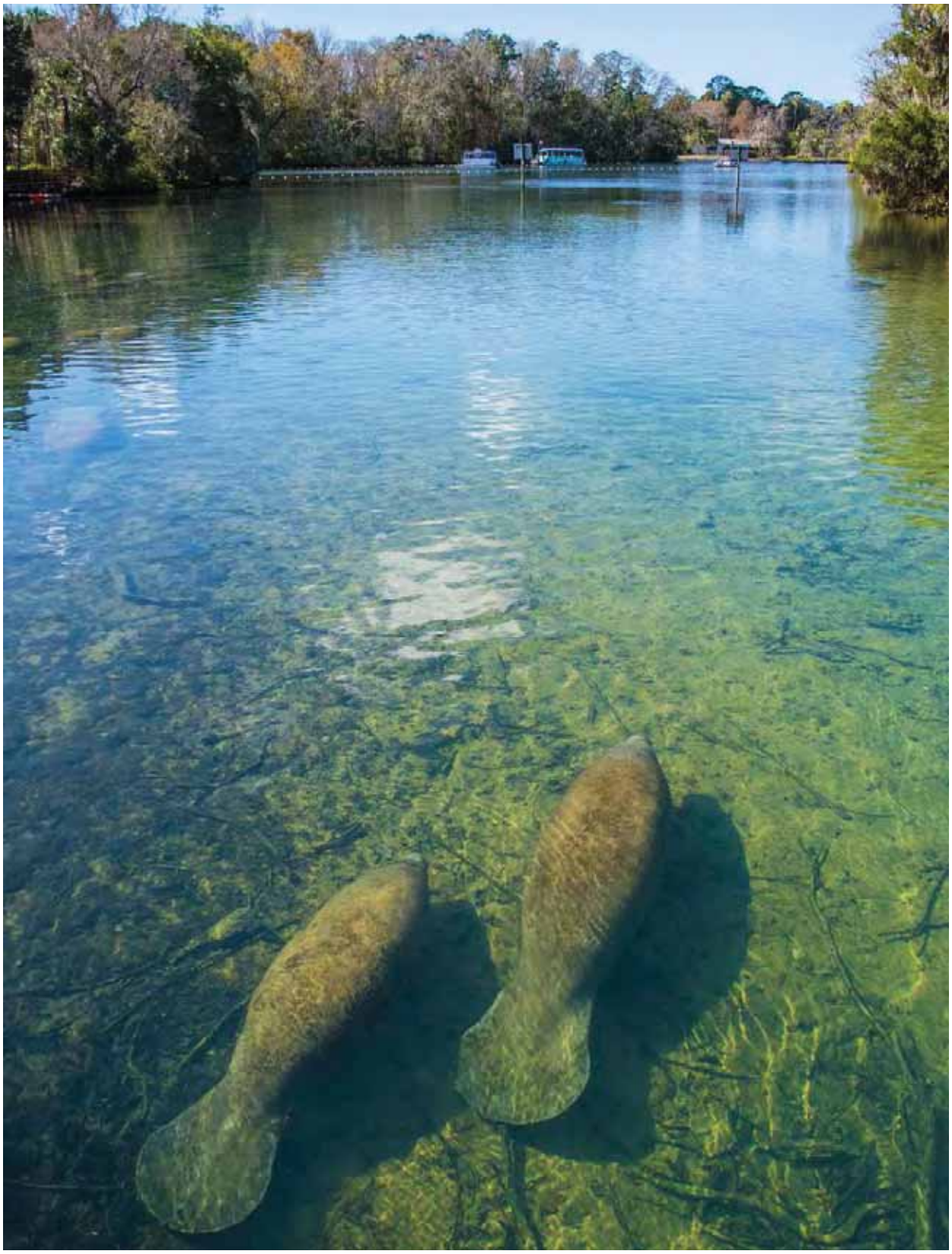
June 27, 2018



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Acknowledgements

Gulf Consortium Leadership

The development of this State Expenditure Plan (SEP) for the State of Florida was led by the Gulf Consortium Board of Directors, which includes representatives from each of the 23 Florida Gulf Coast counties, as well as six Governor appointees. Particular recognition is given to Grover Robinson, Escambia County Commissioner and Chairman of the Gulf Consortium. Chairman Robinson represented the Florida Gulf Coast counties during the drafting of the RESTORE Act, and promoted the creation of the Gulf Consortium. He served as the first and only Chairman of the Gulf Consortium during the preparation of the SEP, a tenure of over five years. The establishment and achievements of the Gulf Consortium would not have been possible without the vision, perseverance, and leadership of Chairman Robinson. Mr. Robinson was also assisted during his tenure by the Gulf Consortium Executive Committee which has consisted of the following Directors:

- Warren Yeager – Gulf County
- Chris Constance – Charlotte County
- Sara Comander – Walton County
- Susan Latvala – Pinellas County
- George Neugent – Monroe County
- Jack Mariano – Pasco County
- John Meeks – Levy County.

Gulf Consortium Staff

During the development of the SEP the Gulf Consortium was supported by staff from both the Florida Association of Counties as well as contractors. Key staff included the following:

FLORIDA ASSOCIATION OF COUNTIES

- Virginia Delegal – Interim Manager
- Cragin Mosteller
- Emily Anderson

NABORS, GIBLIN & NICKERSON

- Sarah Bleakley – General Counsel
- Lynn Hoshihara – General Counsel
- Evan Rosenthal

THE BALMORAL GROUP

- Craig Diamond – Manager
- Valerie Seidel
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- Dan Dourte
- Amanda Jorjorian

SEP Consultant Team

Environmental Science Associates (ESA) served as the prime consultant in the preparation of this SEP document. ESA was assisted by the sub-consultants: Langton Consulting; Brown and Caldwell; Research Planning, Inc.(RPI); Wildwood Consulting; and Royal Engineering. Key contributing staff from the SEP consultant team included the following:

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RESEARCH PLANNING, INC.

- Pam Latham, Ph.D.
- Scott Zengel, Ph.D.

WILDWOOD CONSULTING

- Tiffany Busby

ROYAL ENGINEERING

- Kirk Rhinehart.

Stakeholders

A number of organizations and individuals were actively involved in, and critical to, the development of this SEP. Key non-government organizations included The Nature Conservancy and the National Wildlife Federation. While the names of contributing individual stakeholders are too numerous to list here, special recognition is given to the RESTORE Act coordinators from the Gulf Consortium member counties, as well as staff from the Florida Department of Environmental Protection and the Florida Fish and Wildlife Conservation Commission.

Glossary of Acronyms

AFB	Air Force base
BBSAP	Big Bend State Aquatic Preserve
BMAP	Basin Management Action Plan
BMP	best management practice
BOCC	Board of County Commissioners
BSAIP	Bob Sikes Airport Industrial Park
CARL	Conservation and Recreation Land
CBEP	Choctawhatchee Bay Estuary Program
CCCWIP	Collier County Comprehensive Watershed Improvement Program
CCMP	Comprehensive Conservation and Management Plan
CCUD	Charlotte County Utilities Department
CDBG	Community Development Block Grant
CFBC	Cross Florida Barge Canal
CHEC	Charlotte Harbor Environmental Center, Inc.
CHNEP	Charlotte Harbor National Estuary Program
CIP	Capital Improvements Program
CKOA	Cedar Key Oysterman Association
CMMP	Canal Management Master Plan
CRAAC	Community Redevelopment Area Advisory Committee
CWSRF	Clean Water State Revolving Fund
cy	cubic yards
DLPZ	Deerpoint Lake Protection Zone
DMMA	dredged material management area
DOI	Department of the Interior
DWH	Deepwater Horizon
ECUA	Emerald Coast Utilities Authority
EDC	Economic Development Council
EES	Sea Grant Marine Extension Programs
ELAPP	Environmental Lands Acquisition and Protection Program
EOC	emergency operations center
EPA	Environmental Protection Agency
EWD	Englewood Water District
FAC	Florida Administrative Code
FAD	fish aggregating devices
FAU	Florida Atlantic University
FDACS	Florida Department of Agricultural and Consumer Services
FDEP	Florida Department of Environmental Protection
FDOH	Florida Department of Health

FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FKNMS	Florida Keys National Marine Sanctuary
FKRAD	Florida Keys Reasonable Assurance Document
FWC	Florida Fish and Wildlife Conservation Commission
GEBF	Gulf Environmental Benefit Fund
GEMS	Gulf of Mexico Ecological Management
GGC	Golden Gate Canal
GIS	geographic information system
gpd	gallon(s) per day
GPS	Global Positioning System
GSI	Gulf Shellfish Institute, Inc.
HBTS	Holley by the Sea
HNWS	Holley Navarre Water System
I&I	inflow and infiltration
I-10	Interstate 10
IFAS	Institute of Food and Agricultural Sciences
L	liter(s)
lb	pound(s)
LMI	low- and moderate-income - RIGHT?
LPS	low-pressure sewer
LSSP	Lansing Smith Steam Plant
LSWMP	Lake Seminole Watershed Management Plan
mg	milligram(s)
mgd	million gallons per day
mgd	million gallons per day
MHP	mobile home park
MSBU	Municipal Service Benefit Unit
NACWA	North American Wetlands Conservation Act
NBWWTF	Navarre Beach Wastewater Treatment Facility
NECTR	North East Caloosahatchee Tributaries Restoration
NERR	National Estuarine Research Reserve
NFWF	National Fish and Wildlife Foundation
NGO	non-government organization
NOAA	National Oceanic and Atmospheric Adminis-tration
NPSM	Nonpoint Source Management Program
NRDA	Natural Resource Damage Assessment
NWFWMD	Northwest Florida Water Management District
OCWS	Okaloosa County Water & Sewer

OFW	Outstanding Florida Water
OSTDS	on-site sewage treatment and disposal system
PAH	polycyclic aromatic hydrocarbons
PBS&J	PBS&J International, Inc.
PCB	polychlorinated biphenyls
PCMRS	Pasco County Master Reuse System
PCP	pentachlorophenol
PCUSB	Pasco County Utilities Services Branch
PDARP	Programmatic Damage Assessment and Restoration Plan
PSSF	Picayune Strand State Forest
RAP	Reasonable Assurance Plan
RCPP	Regional Conservation Partnership Program
RESTORE Act	Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of theGulf Coast States Act of 2012
RIB	rapid-rate infiltration basin
RIVER	Regional Initiative Valuing Environmental Resources
RTK	real-time kinematic
RV	recreational vehicle
SBEP	Sarasota Bay Estuary Program
SEARCH	Special Evaluation Assistance for Rural Communities and Households
SEP	State Expenditure Plan
SERCAP	Southeast Rural Community Assistance Project, Inc.
SFWMD	Southwest Florida Water Management District
SR-59	State Route 59
SRL	severe repetitive loss
SRWMD	Suwannee River Water Management District
SSO	Sanitary sewer overflow
SSO	sanitary sewer overflow
SSRU	South Santa Rosa Utility
SWFRERP	Southwest Regional Ecosystem Restoration Plan
SWFWMD	Southwest Florida Water Management District
SWIM	Surface Water Improvement and Management
TBD	to be determined
TBEP	Tampa Bay Estuary Program
TIG	Trustee Implementation Group
TMDL	total maximum daily load
TN	Total Nitrogen

U.S. 331	U.S. Highway 331
USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WBID	Water Body identification number
WIFIA	Water Infrastructure Finance and Innovation Act
WMD	Water Management District
WQPP	Water Quality Protection Program
WRF	Water Reclamation Facility
WRF	Wastewater Reclamation Facility
WTP	water treatment plant
WWS	Weeki Wachee Spring
WWTF	wastewater treatment facility
WWTP	Wastewater Treatment Plant
yr	year(s)
δ15N	stable isotopes of nitrogen

Executive Summary

Introduction

This document constitutes the State Expenditure Plan (SEP) for the State of Florida, prepared by the Gulf Consortium (Consortium) pursuant to a Memorandum of Understanding (MOU) with the Governor of Florida, Rick Scott. The Florida SEP meets the minimum provisions set forth in the MOU, as well as the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012 (RESTORE Act), 33 United States Code (U.S.C.) Section 1321(t)(3)(B), which lists the requirements that each SEP must meet for the disbursement of Oil Spill Impact Allocation Funds, in accordance with the formula developed under Section 1321(t)(3)(A). As summarized in Section 5.2 of the SEP Guidelines provided by the Gulf Coast Ecosystem Restoration Council (Council), these requirements include:

1. Meets one or more of the eligible activities under Section 1321(t)(1)(B)(i) and/or (ii) and administrative costs limitations under Section 1321 (t)(1)(B)(iii)
2. Contributes to the overall economic and ecological recovery of the Gulf Coast
3. Takes into consideration the Comprehensive Plan and is consistent with the goals and objectives of the Comprehensive Plan.
4. Does not use more than 25 percent of the funds disbursed for Eligible Activities 6 and 7 in Section 4.1.1, unless the infrastructure limitation exception is met.

RESTORE Act Compliance

In accordance with Section 5.2.2 of the SEP Guidelines provided by the Council, the Gulf Consortium hereby certifies the following:

- All projects, programs, and activities included in the Florida SEP are eligible activities as defined by the RESTORE Act.
- All projects, programs, and activities included in the Florida SEP contribute to the overall economic and/or ecological recovery of the Gulf Coast.
- The FL SEP takes into consideration the Comprehensive Plan and is consistent with the goals and objectives of the Comprehensive Plan.
- Issues crossing Gulf State boundaries have been evaluated to ensure that a comprehensive, collaborative ecological and economic recovery is furthered by the Florida SEP.
- All projects, programs, and activities included in the SEP are based on and/or informed by the Best Available Science as defined in the RESTORE Act.

In preparing this Florida SEP, the Consortium conducted a thorough process of project/program development, definition, evaluation, and refinement, resulting in the projects, programs, and activities proposed herein. Early in the SEP development process the Consortium voted to distribute Florida's Spill Impact Component equally amongst the 23 member counties, and to implement a "county-driven" approach whereby each of the counties would self-determine their priority projects. It was the role of the consultant team to screen proposed projects, and then to conduct detailed project evaluation and refinement as necessary to ensure that the criteria listed above were met. It should, however, be noted that the projects, programs, and activities described in Section V of this SEP have not undergone a full review of the Best Available Science as defined in the RESTORE Act. Based on guidance provided by the Council, this level of review will be conducted as part of the project grant process.

Public Participation

This SEP fully conforms with, and exceeds, the public participation requirements outlined in 31 CFR Section 34.503(g). In accordance with these requirements, the Gulf Consortium made the Draft Florida SEP available for public review and comment for longer than the required minimum 45 days—from January 12, 2018, through March 2, 2018. This public review process was conducted in a manner designed to obtain broad-based participation from citizens, businesses, tribes, and non-profit organizations in accordance with 31 CFR Sections 34.503(b)(4) and 34.503(g). Specifically, public comments on the Draft Florida SEP were solicited through the following:

- Facilitation of two advertised public webinars open to a wide variety of stakeholder and citizen groups
- Facilitation of two advertised public meetings, one in Bay County and one in Hillsborough County
- Development and maintenance of an online website and portal for the submittal and documentation of public comments received, as well as responses to those comments
- Implementation of a coordinated state agency review process involving:
  - Florida Department of Environmental Protection
  - Florida Fish and Wildlife Conservation Commission
  - Department of Economic Opportunity
  - Florida Department of Transportation
  - Department of Agriculture and Consumer Services
  - Florida Water Management Districts with applicable jurisdiction.

Comments received on the Draft SEP during the public and coordinated State agency review processes, and responses to those comments, were thoroughly catalogued and compiled in a standalone document. The projects, programs, and activities described in this Florida SEP were formally adopted by the Gulf Consortium on May 17, 2018 after full consideration of public input in accordance with 31 CFR Section 34.802(c).

In addition to the formal public comment period on the Draft Florida SEP, it should be noted that the entire Florida SEP development process was transparent and open to the public. Throughout this process, the Gulf Consortium held a total of 41 Board of Directors meetings and 29 Executive Committee meetings. Each of these meetings were publicly noticed pursuant to the requirements of Florida Statutes, and at each meeting a public comment agenda item was included. Meeting minutes were recorded and posted on the Gulf Consortium website, along with all meeting materials, presentations, interim deliverables, etc. If the proposed projects,programs, and activities described herein need to be modified or new projects, programs, and activities become elevated in priority, this SEP may be updated and/or amended over time. The Consortium is committed to providing the same level of public involvement and review for any and all future SEP amendments.

Implementing Authority and Financial Integrity

The Consortium is the legal entity in Florida responsible for implementation of the Florida SEP, and will be the direct recipient of grant funds disbursed by the Council to the State of Florida pursuant to the Spill Impact Component of the RESTORE Act. The Consortium is authorized to perform these functions pursuant to the authority vested in it by the RESTORE Act, the MOU between the Consortium and the Governor of Florida, and the Interlocal Agreement creating the Consortium. The Consortium considered various options for implementation of the Florida SEP and ultimately sought guidance from the Council. In a letter dated October 6, 2017, the Council concluded that the Consortium is an eligible recipient of Spill Impact Component funds to implement the Florida SEP. On November 15, 2017, the Gulf Consortium Board of Directors voted to accept responsibility for the implementation of the projects, programs and activities contained in the Florida SEP, and to develop the necessary administrative infrastructure to do so.

The Consortium understands that before the Council will approve an award to the Consortium, the Consortium must have an adequate control infrastructure in place to provide reasonable assurance that the Consortium can manage the award. The Consortium will be required to provide sufficient documentation, including an updated Organizational Self-Assessment, so that the Council can make this determination.

As the implementing entity for the Florida SEP, the Consortium understands its fiduciary responsibilities under the RESTORE Act and other applicable federal laws and regulations, including but not limited to 2 CFR Part 200, and is committed to maintaining the highest level of fiscal accountability, record keeping, and transparency. Additionally, in implementing the Florida SEP, the Consortium shall comply with all applicable provisions of Florida law governing financial integrity, reporting requirements, record keeping, and procurement.

The Consortium will implement a system of financial controls that will enable the Consortium and any sub-recipients to accomplish fiduciary responsibilities. These controls will reduce the risk of asset loss, ensure that RESTORE Act project documentation is complete and accurate, ensure that financial reports are reliable, and ensure compliance with state and federal laws and regulations. The financial control system will include both preventative controls (designed to discourage errors or fraud) and detective controls (designed to identify an error or fraud after it has occurred).

The Consortium also has controls in place to prevent conflicts of interest in the development and implementation of the Florida SEP. The Consortium members, directors, alternates, Governor appointees, and consultants adhere to rigorous requirements regarding conflict of interest. The Consortium, its officers, employees, and consultants are governed by the State Code of Ethics for Public Officers and Employees, Part III, Chapter 112, Florida Statutes. The Code of Ethics provides standards of conduct, including but not limited to solicitation or acceptance of gifts, doing business with one's agency, unauthorized compensation, misuse of public position, conflicting employment or contractual relationships, and disclosure of certain information. Additionally, the MOU between the State of Florida and the Consortium requires the Consortium to "adhere to all legal requirements, including, but not limited to, those relating to open meetings, public records, contracting, audits and accountability."

The Consortium, its officer, employees, consultants, sub-recipients, and any contractor who performs work on a project, program, or activity described in the Florida SEP shall also comply with all applicable provisions of the U.S. Department of Treasury's RESTORE Act regulations, 31 CFR Part 34, Treasury's RESTORE Act Financial Assistance Standard Terms and Conditions and Program-Specific Terms and Conditions, the RESTORE Council's Financial Assistance Standard Terms and Conditions, and any applicable project-, program-, or activity-specific Special Award Conditions from Treasury or the RESTORE Council, 2 CFR Part 200, and Part III Chapter 112 of Florida Statutes.

Consistency with the Comprehensive Plan

As part of its Comprehensive Plan, the Council has developed goals, objectives, and guiding principles to guide the selection of projects, programs, and activities to be funded under the Council Funded Component and the Spill Impact Component of the RESTORE Act. This SEP is fully consistent with, and furthers, the Council's Comprehensive Plan.

Goals and objectives constitute the framework of all competent resource management plans, and the adoption of goals and objectives are an important first step in the plan development process. While the Florida SEP must be consistent with the Council's goals and objectives, there is considerable flexibility to accommodate Florida-specific priorities. Therefore, the development of Florida-specific goals and objectives that represent the consensus of the Gulf Consortium was an important first step to serve as the framework for the development of the SEP.

The Consortium convened a Goal Setting Workshop on August 26, 2015, early in the Florida SEP development process, and there was broad-based support from the Consortium for adopting the Council's goals and objectives verbatim. The Consortium agreed that all of the Council's goals and objectives were all applicable to Florida and appropriate for the Florida SEP. In addition, the Consortium wanted to maintain the maximum degree of flexibility in determining appropriate projects, programs, and activities to be included in the Florida SEP, rather than focusing on one or a few priority eligible activities, goals, and/or objectives. In reviewing the Council's goals and objectives, the Consortium noted that there was not a Council objective that specifically related to Goal 4 – Restore and Revitalize the Gulf Economy. Therefore, the Consortium voted to adopt an eighth objective specifically addressing the relationship between environmental quality of the Gulf Coast and the Florida economy:

- *Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects, and Promote Projects that Enhance the Synergy between the Environmental Quality of Florida's Gulf Coast and the Florida Economy.*

In their deliberations, the Consortium affirmed the importance of clean coastal waters and beaches, thriving marine and estuarine habitats, and healthy fish and shellfish populations to the overall economy of Florida. More than any other Gulf State, Florida's economy is dependent on tourism and coastal recreational opportunities, and it was important to the Consortium that this dependency be recognized in a separate objective.

In the county-driven approach to project development, the Counties were free to propose projects that covered the full breadth of the RESTORE Act, including a diverse range of both environmental and economic projects. Each County was free to address their own needs and priorities, without being restricted to any particular focus dictated by the Consortium.

Projects, Programs, and Activities

As shown in the **Project Summary Table** provided Section V, a total of 69 projects and programs are being proposed by the Gulf Consortium. The total estimated cost of all proposed projects and programs is $628,575,530, while the total Spill Impact Component request is $291,180,000. However, the total committed funding proposed by the 23 Consortium member counties is $439,310,635, leaving an overall budget deficit of $189,264,895. It is anticipated that this budget deficit will be at least partially closed through leveraged funding over the 15-year payout period. Other funding sources committed by the member counties include portions of their Direct Component, other grants and co-funding, and other county funding (e.g., general revenues; utility fees). Although these committed funding sources cannot be considered as "secured" funding in most cases, there is a reasonable likelihood that funding sources indicated in the project and program budget information will be available if and when it is needed. By inclusion in the Florida SEP, each Consortium member county is pledging their commitment to dedicate the necessary resources to undertake their respective projects and programs. For those projects and programs for which significant budget shortfalls cannot be closed through leveraging, implementation will need to be appropriately scaled down to match the available funding level.

The Florida SEP proposes diverse range of project/program types that balances both the environment and the economy. A common theme that the Consortium has promoted is that Florida's economy is inextricably linked to the environmental quality of its coastal zone. The majority of Florida's economic activity occurs in its coastal counties, where residents, tourists, and commercial fisherman seek out white sand beaches, clear waters, natural wetland habitats, and rich living marine resources. For these reasons, Consortium member counties, in developing their proposed projects, often did not make clear distinctions between environmental and economic projects.

Accordingly, the proposed SEP projects and programs represent a good balance between both environmental and economic projects. When classified in terms of RESTORE Act eligible activity, about 51 percent of the proposed projects/programs address environmental restoration and protection, while about 49 percent address various economic and infrastructure activities. The proposed projects/programs include a broad assortment of varied project types, addressing six of the seven Council objectives, as well as an eighth objective defined by the Consortium for economic activities. The balance and diversity of project/program types addresses state, regional and local priorities, and will yield multiple benefits to the stakeholders of the Florida Gulf Coast.

Compliance with 25 Percent Infrastructure Limitation

In accordance with Section 4.2.2 of the Council's SEP Guidelines, the State of Florida hereby certifies that the proposed projects, programs, and activities described in Section V of this SEP comply with the 25 percent infrastructure limitation. For SEP purposes, the term "infrastructure" has the same meaning as provided in 31 Code of Federal Regulations (CFR) Section 34.2. The 25 percent infrastructure limitation is defined in the RESTORE Act, 33 U.S.C. Section 1321(t)(3)(B)(ii). This provision states that not more than 25 percent of the allocated Spill Impact Component funds may be used by a State for infrastructure projects for RESTORE Act Eligible Activities 6 and 7, which include:

- Eligible Activity 6: Infrastructure projects benefiting the economy or ecological resources, including port infrastructure
- Eligible Activity 7: Coastal flood protection and related infrastructure.

The Act does allow an exception to the 25 percent infrastructure limitation. A state may propose a SEP that uses more than 25 percent of its funds for infrastructure planning, if the SEP certifies that:

- Ecosystem restoration needs will be addressed by projects in the proposed State Expenditure Plan; and
- Additional investment in infrastructure is required to mitigate the impacts of the Deepwater Horizon Oil Spill to the ecosystem or economy.

Of the 69 proposed projects and programs, a total 11 projects/programs have been determined to be infrastructure pursuant to the definition provided in 31 CFR Section 34.2. The total Spill Impact Component request for these 11 projects is $37,690,000 which is approximately 13 percent of Florida's total Spill Impact Component request of $291,180,000. Therefore, the Florida SEP is well within compliance with the RESTORE Act 25 percent infrastructure limitation, and the exception is not applicable.

It should be noted that a fairly large proportion of Florida's allocated Spill Impact Component funds are proposed for use on projects that involve the conversion of septic tanks to central sewer facilities to remediate legacy coastal water quality impairments. The Council has provided guidance through consultation that if the primary objective of such projects is to improve degraded water quality, such projects would not be categorized under Eligible Activity 6 as set forth in the Act, and would not be subject to the 25 percent infrastructure limitation. However, septic to sewer conversions to improve existing degraded water quality conditions can be distinguished from the extension of central sewer facilities into undeveloped areas. If the primary objective of the latter project type is to encourage economic activity, then such a project type would be categorized under Eligible Activity 6, and would be subject to the 25 percent infrastructure limitation.

Implementation

The 15-year payout period of the BP civil settlement with the federal government and the five Gulf Coast States presents significant challenges to developing a comprehensive implementation strategy to sequence the large number of projects/programs proposed in the Florida SEP. In addition to being numerous, the projects/programs included in the SEP vary substantially with regard to their degree of readiness for implementation. The Gulf Consortium considered several different approaches to "sequencing" SEP projects/programs over the 15-year payout period, and adopted a collaborative process whereby project funds are phased across a series of 4-year work programs, beginning in 2018 and ending in 2033.

The **Sequencing Summary Table** provided in Section VI is to be used by Consortium as an internal guidance document to assist with the coordination of project grant applications, and the equitable distribution of Spill Impact Component funds amongst the member counties over the 15-year payout period. This table shows the estimated start and end dates for each of the 69 proposed SEP projects and programs, as well as the estimated dollar allocations for each project by year and by 4-year work program. There is much greater clarity in the first 4-year work program than those that follow, thus it is likely that the Consortium will need to amend this sequencing schedule periodically to accommodate future changes in project priorities. In addition, as leveraged funding sources become available, the funding allocations for each project could change substantially.

SECTION I

State Certification of RESTORE Act Compliance

A. Designated State Agency – The Gulf Consortium

The Gulf Consortium (Consortium) is a separate and distinct legal entity created pursuant to Section 163.01, Florida Statutes. The Consortium is also the designated state entity responsible for the development of the Florida State Expenditure Plan (SEP), as recognized in the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012 (RESTORE Act) and subsequent rulemaking.

www.gulfconsortium.org

The Consortium is a public entity created in October 2012 through an Interlocal Agreement between Florida's 23 Gulf Coast counties to meet the requirements of the RESTORE Act. The Florida Gulf Coast extends from Escambia County in the western panhandle bordering the state of Alabama, to Monroe County, including the Everglades and the Florida Keys on the southern tip of Florida.

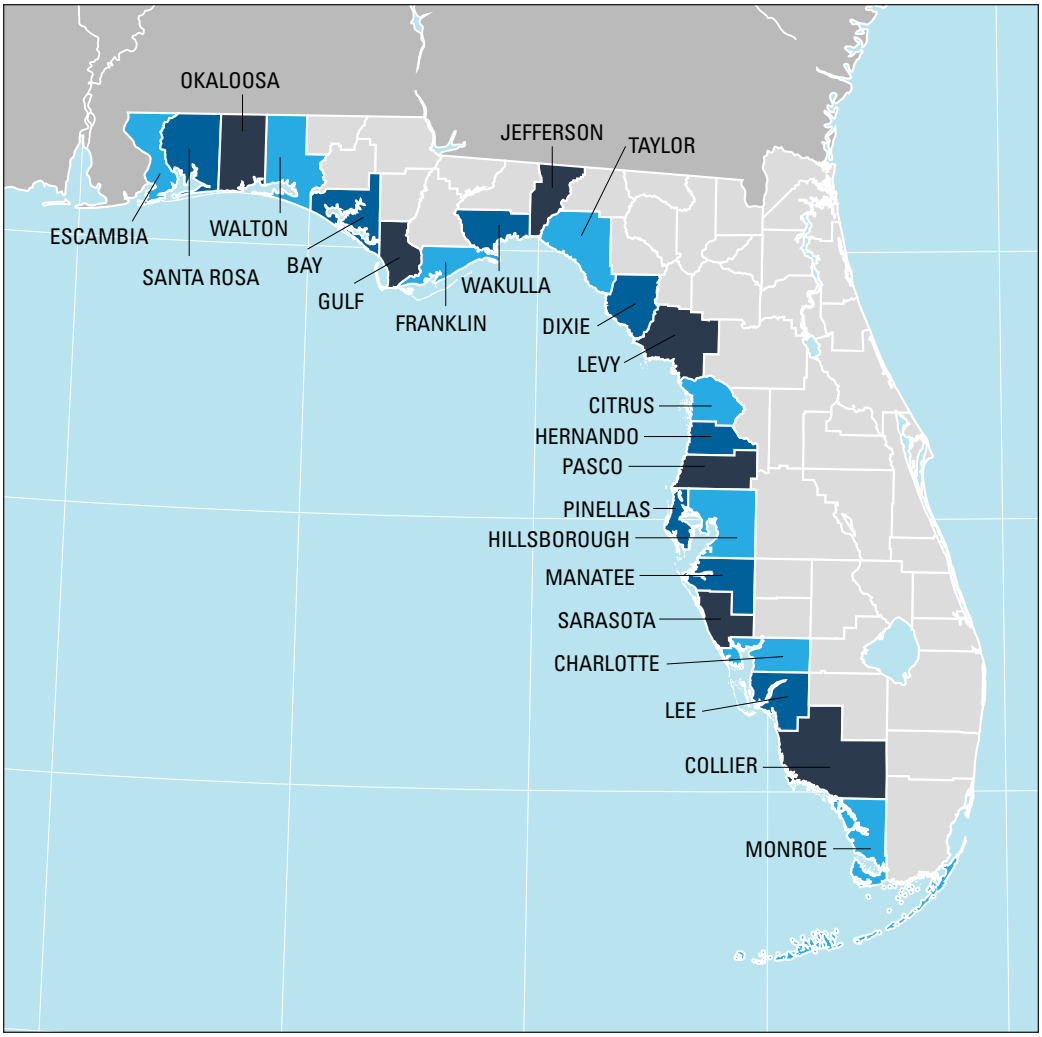
The Consortium's Board of Directors consists of one representative from each of the 23 county governments and six persons appointed by the Governor, for a total of 29 Board members. Since its inception, the Consortium has met more or less every other month and has held numerous Executive Committee meetings to stand up the organization, conduct business, and guide the development and implementation of the SEP.

Pursuant to the RESTORE Act, Governor Rick Scott is Florida's member on the Gulf Coast Ecosystem Restoration Council (Council). To formalize the role of the Consortium, the Governor and the Consortium entered into a Memorandum of Understanding (MOU) on June 12, 2013, to establish the Consortium's responsibilities in the development of the SEP, and in coordinating with the Governor's office.

The MOU recognizes that the RESTORE Act directs the Consortium to develop the SEP. Furthermore, the MOU provides for the coordinated review and input by the Florida Department of Environmental Protection, the Water Management Districts, other applicable state agencies, and the Governor during the development of the SEP. In addition, the MOU requires the Consortium to conduct its activities with full transparency and adhere to all legal requirements, including but not limited to those relating to open meetings, public records, contracting, audits, and accountability. Finally, the MOU requires the Consortium to meet the following minimum requirements in selecting and prioritizing projects, programs, and other activities for inclusion in the SEP:

- A review for consistency with the applicable laws and rules
- Prioritization based on criteria established by the Consortium
- Consideration of public comments
- Approval by an affirmative vote of at least a majority of the Consortium Directors present at a duly noticed public meeting of the Consortium.

Upon final review and approval by the Consortium, the Governor is responsible for the review and approval of the Florida SEP, and for the formal transmittal of the document to the Council.



The Florida Gulf Coast extends from Escambia County in the western panhandle bordering the State of Alabama, to Monroe County, including the Everglades and the Florida Keys on the southern tip of Florida.

B. State Certification

In addition to the above minimum requirements set forth in the MOU, the RESTORE Act, 33 United States Code (U.S.C.) Section 1321(t)(3)(B), lists the requirements that each SEP must meet for the disbursement of Oil Spill Impact Allocation Funds, in accordance with the formula developed under Section 1321(t)(3)(A). As summarized in Section 5.2 of the Council's SEP Guidelines, these requirements include:

1. Meets one or more of the eligible activities under Section 1321(t)(1)(B)(i) and/or (ii) and administrative costs limitations under Section 1321 (t)(1)(B)(iii).

2. Contributes to the overall economic and ecological recovery of the Gulf Coast.

3. Takes into consideration the Comprehensive Plan and is consistent with the goals and objectives of the Comprehensive Plan.

4. Does not use more than 25 percent of the funds disbursed for Eligible Activities 6 and 7 in Section 4.1.1, unless the infrastructure limitation exception is met.

In accordance with Section 5.2.2 of the Council's SEP Guidelines, the Gulf Consortium hereby certifies the following:

- All projects, programs, and activities included in the Florida SEP are eligible activities as defined by the RESTORE Act.
- All projects, programs, and activities included in the Florida SEP contribute to the overall economic and/or ecological recovery of the Gulf Coast.
- The FL SEP takes into consideration the Comprehensive Plan and is consistent with the goals and objectives of the Comprehensive Plan.
- Issues crossing Gulf State boundaries have been evaluated to ensure that a comprehensive, collaborative ecological and economic recovery is furthered by the Florida SEP.
- All projects, programs, and activities included in the SEP are based on and/or informed by the Best Available Science as defined in the RESTORE Act.

In preparing this Florida SEP, the Consortium conducted a thorough process of project nomination, definition, evaluation, and refinement, resulting in the projects, programs, and activities proposed herein. Early in the SEP development process the Consortium voted to distribute Florida's Spill Impact Component equally amongst the 23 member counties, and to implement a "county-driven" approach whereby each of the counties would self-determine their priority projects. It was the role of the SEP consultant to screen proposed projects, and then to conduct detailed project evaluation and refinement as necessary to ensure that the criteria listed above were met. It should, however, be noted that the projects, programs, and activities described in Section V of this SEP have not undergone a full review of the Best Available Science as defined in the RESTORE Act. Based on guidance provided by the Council, this level of review will be conducted as part of the project grant process.

C. Compliance with the 25 Percent Infrastructure Limitation

In accordance with Section 4.2.2 of the Council's SEP Guidelines, the State of Florida hereby certifies that the proposed projects, programs, and activities described in Section V of this SEP comply with the 25 percent infrastructure limitation. For SEP purposes, the term "infrastructure" has the same meaning as provided in 31 Code of Federal Regulations (CFR) Section 34.2. The 25 percent infrastructure limitation is defined in the RESTORE Act, 33 U.S.C. Section 1321(t)(3)(B)(ii). This provision states that not more than 25 percent of the allocated Spill Impact Component funds may be used by a State for infrastructure projects for RESTORE Act Eligible Activities 6 and 7, which include:

- Eligible Activity 6: Infrastructure projects benefiting the economy or ecological resources, including port infrastructure
- Eligible Activity 7: Coastal flood protection and related infrastructure

The Act does allow an exception to the 25 percent infrastructure limitation. A state may propose a SEP that uses more than 25 percent of its funds for infrastructure planning, if the SEP certifies that:

- Ecosystem restoration needs will be addressed by projects in the proposed State Expenditure Plan; and
- Additional investment in infrastructure is required to mitigate the impacts of the Deepwater Horizon Oil Spill to the ecosystem or economy.

Of the 69 proposed projects and programs, a total 11 projects/programs have been determined to be infrastructure pursuant to the definition provided in 31 CFR Section 34.2. The total Spill Impact Component request for these 11 projects is $37,690,00 which is approximately 13 percent of Florida's total Spill Impact Component request of $291,180,000. Therefore, the Florida SEP is well within compliance with the RESTORE Act 25 percent infrastructure limitation, and the exception is not applicable.

It should be noted that a fairly large proportion of Florida's allocated Spill Impact Component funds are proposed for use on projects that involve the conversion of septic tanks to central sewer facilities to remediate legacy coastal water quality impairments. The Council has provided guidance through consultation that if the primary objective of such projects is to improve degraded water quality, such projects would not be categorized under Eligible Activity 6 as set forth in the Act, and would not be subject to the 25 percent infrastructure limitation. However, septic to sewer conversions to improve existing degraded water quality conditions can be distinguished from the extension of central sewer facilities into undeveloped areas. If the primary objective of the latter project type is to encourage economic activity, then such a project type would be categorized under Eligible Activity 6, and would be subject to the 25 percent infrastructure limitation.

SECTION II

Public Participation Statement

A. Public Participation Statement

This Florida State Expenditure Plan (SEP) fully conforms with, and exceeds, the public participation requirements outlined in 31 Code of Federal Regulations (CFR) Section 34.503(g). In accordance with these requirements, the Gulf Consortium made the Draft Florida SEP available for public review and comment for greater than the required minimum 45 days—from January 12, 2018, through March 2, 2018. This public review process was conducted in a manner designed to obtain broad-based participation from citizens, businesses, tribes, and non-profit organizations in accordance with 31 CFR Sections 34.503(b)(4) and 34.503(g). The projects, programs, and activities described in this Florida SEP were formally adopted by the Gulf Consortium on May 17, 2018 after full consideration of public input in accordance with 31 CFR Section 34.802(c).

B. Public Involvement

The SEP consultant developed and implemented a Stakeholder Outreach and Public Involvement program to facilitate stakeholder review and to solicit public comments. This program was tailored to meet the specific requirements of the Consortium and the Memorandum of Understanding between the Consortium and the State of Florida. This program was conducted in a manner designed to obtain broad-based participation. Public comments on the Draft Florida SEP were solicited through the following activities.

- Facilitation of two advertised in-person public meetings, one in Bay County and one in Hillsborough County:
  - **Public Meeting - Bay County**
    - Date/Time: January 22, 2018, 6:30-8:30pm CT
    - Location: Commission Chambers 840 West 11th Street, Panama City, FL 32401

— **Public Meeting - Hillsborough County**
  - Date/Time: January 23, 2018, 6:30-8:30pm ET
  - Location: Conference Rooms A&B Hillsborough County Center 601 East Kennedy Blvd, Tampa, FL 33602.

- Facilitation of two advertised public web-based meetings open to a wide variety of stakeholder and citizen groups:
  — **Public Webinar**
    - Date/Time: February 1, 2018, 11:30am-1:30 pm ET
    - Login: https://register.gotowebinar.com/register/8994065976187824131
      United States: +1 (415) 655-0052 Access Code: 340-546-329

  — **Public Webinar**
    - Date/Time: February 15, 2018, 2:00-3:30pm ET
    - Login: https://register.gotowebinar.com/register/2801758325553429507
      United States: +1 (631) 992-3221 Access Code: 156-211-997.

- Development and maintenance of an online website and portal for the submittal and documentation of public comments received, as well as responses to those comments.

- Implementation of a coordinated State Clearinghouse agency review process involving:
  — Florida Department of Environmental Protection
  — Florida Fish and Wildlife Conservation Commission
  — Department of Economic Opportunity
  — Florida Department of Transportation
  — Department of Agriculture and Consumer Services
  — Florida Water Management Districts with applicable jurisdiction.

Comments received during the public and coordinated State agency review processes, and responses to those comments, were thoroughly documented and catalogued. In addition to the public involvement program summarized above, it should be noted that the entire Florida SEP development process was transparent and open to the public at every step of the way. Throughout this process, the Gulf Consortium held a total of 41 full Board of Directors meetings, and 29 Executive Committee meetings. Each of these meetings were publicly noticed pursuant to the requirements of Florida Statutes, and at each meeting a public comment agenda item was included. Meeting minutes were recorded and posted on the Gulf Consortium website, along with all meeting materials, presentations, interim deliverables, etc.

Finally, it should be noted that some counties held their own public meetings to receive public comments on, and adopt, their priority projects. Public comments received through independent county meetings were assumed to have been integrated by staff into their respective county project descriptions, and were not tabulated as part of the stakeholder outreach and public involvement process described above.

COUNTY PUBLIC INVOLVEMENT ACTIVITIES

Although RESTORE Act funds are divided among the five Gulf Coast states, Florida is unique in that the Gulf Coast Counties are the lead entities for two of the five RESTORE Act components—the Direct Component and the Spill Impact Component. For Direct Component funds, each of the 23 Counties is responsible for developing their own Multi-Year Implementation Plan (MYIP), based on processes and projects developed locally, and through coordination with the Department of Treasury. For Spill Impact Component funds, the 23 counties and the gubernatorial appointees have worked together as the Gulf Consortium to develop the Florida SEP.

Some counties followed similar processes, but each county was somewhat unique in their approach. For example, 20 of the 23 member counties formed local RESTORE Act advisory committees to recommend projects to their respective county commissions. Others secured planning grants and relied on staff and/or consultants to identify needs and candidate projects, while still others used a combination of these approaches. As a result, there was little consistency and each county had to learn to navigate the various RESTORE Act processes independently.

To reduce redundancy and streamline efficiency so that more RESTORE Act funds could be spent on projects rather than learning to navigate new administrative processes, in April 2016, the National Wildlife Federation hosted a workshop of Florida's Gulf Coast counties so they could share information and experiences related to implementing the RESTORE Act. The counties in attendance found the exchange productive and useful. As a result, the county RESTORE Act Coordinator (RAC) group was established, and RAC meetings have continued to be held several times a year, in conjunction with Gulf Consortium meetings (to maximize attendance since many county representatives also attend Consortium meetings).

The RAC meetings differ from the Gulf Consortium meetings in that they involve lead county staff who are responsible for writing planning grants, preparing MYIPs, writing implementation grants, managing projects, and monitoring programs. In addition, the primary focus of the RAC meetings is on Direct Component (Pot 1) funds, whereas the Consortium focuses exclusively on Spill Impact Component funds. However, in recent months, more Counties have been pursuing synergies and leveraging opportunities across the two county-directed DWH funding streams, as well as considering comparable and compatible projects with neighboring counties.

Although county RAC meetings are not publically noticed, they are open to the public and have been regularly attended by diverse participants, including U.S. Treasury staff, FDEP and FWC, NGOs and other environmental organizations, RESTORE Council staff, representatives of the Florida Governor's office, consultants, and members of the public. This parallel process has added significantly to the overall transparency and public participation in the development of the Florida SEP.

SECTION III

Financial Integrity

A. Implementing Authority

The Gulf Consortium (Consortium) is the legal entity in Florida responsible for implementation of the Florida State Expenditure Plan (SEP) and will be the direct recipient of grant funds disbursed by the Gulf Coast Ecosystem Restoration Council (Council) to the State of Florida pursuant to the Spill Impact Component of the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012 (RESTORE Act). The Consortium is authorized to perform these functions pursuant to the authority vested in it by the RESTORE Act, the Interlocal Agreement creating the Consortium, and the Memorandum of Understanding between the Consortium and the Governor of Florida dated June 12, 2013. The Consortium's authority to implement the Florida SEP was also confirmed by the Council in a letter dated October 6, 2017. On November 15, 2017, the Consortium Board of Directors voted to accept responsibility for the implementation of the Florida SEP and to develop the necessary administrative infrastructure to do so.

B. Financial Integrity

As the implementing entity for the Florida SEP, the Consortium understands its fiduciary responsibilities under the RESTORE Act and other applicable federal laws and regulations, including but not limited to 2 Code of Federal Regulations (CFR) Part 200, and is committed to maintaining the highest level of fiscal accountability, record keeping, and transparency. Additionally, in implementing the Florida SEP, the Consortium shall comply with all applicable provisions of Florida law governing financial integrity, reporting requirements, record keeping, and procurement.

Beyond the basic accounting, fiscal, and procurement activities in place for the development of the Florida SEP, the Consortium proposes to adopt and implement all necessary financial controls and administrative protocols to carry out the successful implementation of the SEP, once approved. The Consortium's approach to oversight of implementation is described in full in its "Stand-Up" State Expenditure Plan (Stand-Up SEP) approved by the Council on March 26, 2018. The Stand-Up SEP deals only with the administrative infrastructure of the Consortium, and is an entirely separate document than this Florida SEP.

The Consortium's proposed financial system is to be developed around the basic principles of sound financial management. These principles are the internationally accepted accounting and financial management practices recognized worldwide by leading public and private sector organizations. The basic principles of sound financial management include, among other things, principles of transparency, internal checks and balances, and independent external financial auditing. These principles are summarized below.

- **Transparency:** The Consortium is committed to sustaining transparency with the public, the Council, and other constituents for reporting on SEP-related projects, programs, and activities. The Consortium will put in place administrative positions that will allow frequent, detailed, and complete grant reports and financial statements for the Consortium's stakeholders.

- **Internal checks and balances:** To maintain effective internal controls, the Consortium will properly create internal checks and balances among the entities performing contract administration and financial duties for SEP-related projects, programs, and activities. The Consortium anticipates carefully assigning the authorities and roles of staff to create a robust duty segregation hierarchy. Furthermore, the Consortium will retain a fiscal agent to manage any grant funds received from Council and institute firewalls between approval of disbursements and access to funding.

- **Independent external financial auditing:** The Consortium is subject to annual audits conducted by independent auditors who evaluate not only the presentation of financial statements but also the effectiveness of internal controls based upon widely held government standards, including but not limited to 2 CFR Part 200 and the Single Audit Act of 1996.

FINANCIAL CONTROLS

The Consortium will implement a system of financial controls that will enable the Consortium and any sub-recipients to accomplish fiduciary responsibilities. These controls will reduce the risk of asset loss, ensure that RESTORE Act project documentation is complete and accurate, ensure that financial reports are reliable, and ensure compliance with state and federal laws and regulations. The financial control system will include both preventative controls (designed to discourage errors or fraud) and detective controls (designed to identify an error or fraud after it has occurred).

Consistent with the RESTORE Act and the Florida SEP, sub-recipients must operate and use resources with minimal potential for waste, fraud, and mismanagement. The Consortium's financial control system will provide assurance that significant weaknesses that could affect the Consortium's ability to meet its objectives would be prevented or detected in a timely manner. The Consortium's internal control system will be modeled after the Committee of Sponsoring Organizations of the Treadway Commission internal control framework and the following five inter-related components. Annually, the Consortium will certify it has performed an internal control risk assessment, identified weaknesses, and described a corrective action plan, if applicable. The various elements of the proposed financial control system are summarized below.

- **Control environment:** Within the Consortium, responsibility for implementing internal controls begins with the chairman of the Board of Directors and extends to all contractors in staffing capacity. The Consortium's manager has the primary leadership role.

- **Control activities:** The Consortium's internal control activities will include written policies, procedures, techniques, and mechanisms that help ensure that the Board's directives are carried out in compliance with the RESTORE Act criteria and applicable federal and state laws and regulations. Control activities help identify, prevent, or reduce the risks that can impede accomplishment of the Consortium's objectives. Control activities occur under the auspices of the Consortium's manager, at all levels and in all functions; control activities include things such as approvals, authorizations, verifications, reconciliations, documentation, separation of duties, and safeguarding of assets.

- **Risk assessment:** As part of establishing proper controls and procedures, an organizational self-assessment is performed annually to identify, analyze, and manage risks relevant to achieving the Consortium's goals and objectives for RESTORE Act projects. This assessment identifies internal and external events or circumstances that could adversely affect the Consortium's ability to carry out its fiduciary responsibilities. Identified risks according to potential impact on the RESTORE Act projects and the likelihood of occurrence will be considered. The Florida SEP will be considered in performing the risk assessment, incorporating the goals and objectives for the RESTORE Act activities while assessing the control environment, the overall financial management process, the role of the accounting system, and other financial management activities. For each transaction cycle identified in the risk assessment, the flow of information through the process and the internal control activities taken will be documented and analyzed. Documentation will include organizational charts, standard operation procedures, manuals, flowcharts, decision tables, questionnaires, and/or review checklists. Identification of component systems comprising the complete accounting system will be included in the risk assessment process. Transaction cycles will be identified and considered along with inherent risks. These will be continuously reviewed and strategies will be updated as needed to manage the risks.

- **Communication and Information:** The Consortium's financial system will provide adequate processes and procedures to ensure that each contractor or sub-recipient has relevant, valid, reliable, and timely communications related to internal and external events to effectively run and control its operations. Communication is vital to effective project management, and the Consortium's financial information system will have mechanisms in place to properly capture and communicate RESTORE Act project financial data at the level appropriate for sound financial management. Policy manuals, accounting and financial reporting manuals, internal memoranda, verbal directives, and management actions are a few of the means of communicating to all stakeholders in implementation.

- **Monitoring:** Monitoring of the internal control system will be performed to assess whether controls are effective and operating as intended. Monitoring will be built into normal, recurring operations; will be performed on a real-time basis, reacting dynamically to changing conditions; and will be ingrained in all contractors and sub-recipients. Ongoing monitoring occurs through routine managerial activities such as supervision, reconciliations, checklists, comparisons, performance evaluations, and status reports. Monitoring may also occur through separate internal evaluations (e.g., internal audits/reviews) or from external evaluations (e.g., independent audits, comparison to industry standards, surveys). Any deficiencies found during monitoring will be reported to the Consortium Board of Directors. The Consortium will require prompt evaluation of any findings and recommendations. Formal procedures will be documented for responding to findings and recommendations; those that generate action items will be outlined for timely response and resolution. Responsible parties will be required to complete action items to correct or otherwise resolve the deficiencies within an established timeframe. The monitoring process also will include analysis of whether exceptions are reported and resolved quickly.

ACCOUNTABILITY

While each Consortium staff member, contractor, or sub-recipient has personal internal control responsibility, the Consortium manager is charged with the responsibility for, and internal control over, financial reporting of RESTORE Act funds. Contractors and sub-recipients will support the Consortium's internal control philosophy, promote compliance, and maintain control within their areas of responsibility. The Consortium manager will have key oversight and policy enforcement roles over fiscal matters. Other Consortium contractors or sub-recipients will hold lead responsibility for compliance with nonfinancial aspects of laws, directives, policies, procedures, and codes of ethics.

The Consortium has designated its manager as the RESTORE Act project manager for those projects within the Florida SEP. The Consortium manager is thus responsible for coordinating the overall effort of evaluating, improving, and reporting on internal controls over RESTORE Act project management for work funded via the Spill Impact Component. A risk assessment of project internal control systems will be performed annually. If the risk assessment indicates a high level of risk associated with the financial control system, internal controls will be evaluated. Any serious deficiencies will be reported to the Board. The Consortium may also employ other financial integrity mechanisms if necessary or for specific RESTORE Act project types. Modifications will be based on updated risk assessments for the RESTORE Act financial control system.

C. Conflict of Interest

The Consortium has controls in place to prevent conflicts of interest in the development and implementation of the State Expenditure Plan. The Consortium members, directors, alternates, Governor appointees and consultants adhere to rigorous conflict of interest requirements. The Consortium, its officers, employees and consultants are governed by the State Code of Ethics for Public Officers and Employees, Part III, Chapter 112, Florida Statutes. The Code provides standards of conduct, including but not limited to, solicitation or acceptance of gifts, doing business with one's agency, unauthorized compensation, misuse of public position, conflicting employment or contractual relationship, and disclosure of certain information. Additionally, the Memorandum of Understanding between the

State of Florida and the Consortium requires the Consortium to "adhere to all legal requirements including, but not limited to, those relating to open meetings, public records, contracting, audits and accountability."

The Consortium, its officer, employees, consultants, subrecipients and any contractor who performs work on a project, program or activity described in the State Expenditure Plan shall also comply with all applicable provisions of the U.S. Department of Treasury's RESTORE Act regulations, 31 CFR Part 34, Treasury's RESTORE Act Financial Assistance Standard Terms and Conditions and Program-Specific Terms and Conditions, the RESTORE Council's Financial Assistance Standard Terms and Conditions, and any applicable project, program or activity-specific Special Award Conditions from Treasury or the RESTORE Council, 2 CFR Part 200, and Part III Chapter 112 of Florida Statutes.

In addition to general conflict of interest disclosures and controls, the agreement between the Consortium and the SEP consultant team specifically prohibited members of the consultant team from participating in any projects, programs, and activities ultimately included in the State Expenditure Plan document prepared by the SEP consultant, pursuant to the following contract provision:

> *The Consultant agrees to recuse itself from all participation in any projects, programs, and activities ultimately included in the State Expenditure Plan. Attached as composite Exhibit E is a copy of each of the Consultant's agreements with its named team partner firms and individuals regarding such firm's recusal from all participation in any projects, programs, and activities ultimately included in the State Expenditure Plan.*

As part of their agreement with the Consortium, the SEP consultant (ESA and the other members of the SEP consultant team) each executed a Conflict of Interest Statement confirming their understanding of, and compliance with, this prohibition.

Further, all future consultants will also be prohibited from participating in SEP projects, programs, or activities simultaneously on behalf of the Consortium and any of the individual member counties of the Consortium.

D. Legal Compliance

Prior to the release of the Draft Florida SEP for formal review and public comment, Nabors, Giblin & Nickerson, P.A., in its capacity as general counsel to the Gulf Consortium, conducted a legal review of the document to ensure compliance and consistency with the following: the RESTORE Act (33 United States Code Section 1321(t)); the Department of the Treasury Regulations for the Gulf Coast Restoration Trust Fund (31 CFR Part 34); the Gulf Coast Ecosystem Restoration Council Comprehensive Plan; the Gulf Coast Ecosystem Restoration Council State Expenditure Plan Guidelines; and the MOU between the State of Florida and Gulf Consortium dated June 12, 2013. In conclusion, Counsel to the Consortium has determined that the Florida SEP complies and is consistent with theaforementioned laws, rules, regulations, and provisions.

SECTION IV

Overall Consistency with the Goals and Objectives of the Comprehensive Plan

A. Florida-Specific Goals and Objectives

Goals and objectives constitute the framework of all competent resource management plans, and the adoption of goals and objections are an important first step in the plan development process. As part of its Comprehensive Plan the Gulf Coast Ecosystem Restoration Council (Council) has developed goals, objectives, and guiding principles to guide the selection of projects, programs, and activities to be funded under the Council Funded Component and the Spill Impact Component of the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012 (RESTORE Act). While the Florida State Expenditure Plan (SEP) must be consistent with the Council's goals and objectives, there is considerable flexibility to accommodate Florida-specific priorities. Therefore, the development of Florida-specific goals and objectives that represent the consensus of the Gulf Consortium was an important first step as these goals and objectives were used by the SEP consultant as the framework for the development of the Florida SEP.

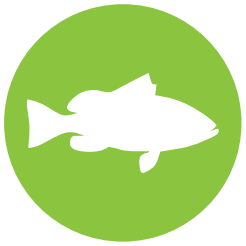
The Gulf Consortium convened a Goal Setting Workshop on August 26, 2015, early in the Florida SEP development process. In the workshop, the SEP consultant presented the Council's goals and objectives, as described in the Initial Comprehensive Plan, and led a discussion on verbiage and interpretation of each goal and objective. In addition, examples of the types of projects consistent with each goal and objective were presented.

There was broad-based support from the Gulf Consortium for adopting the Council's goals and objectives verbatim. The Consortium agreed that all of the Council's goals and objectives were applicable to Florida and appropriate for the Florida SEP. In addition, the Consortium wanted to maintain the maximum degree of flexibility in determining appropriate projects, programs and activities to be included in the Florida SEP, rather than focusing on one or a few priority eligible activities, goals and/or objectives. In a straw vote at the workshop, the Consortium voted to adopt the following goals and objectives for the Florida SEP:

GOALS

Restore and Conserve Habitat

Restore Water Quality and Quantity



Replenish and Protect Living Coastal and Marine Resources

Restore and Revitalize the Gulf Economy

Enhance Community Resilience

OBJECTIVES

1. Restore, Enhance, and Protect Habitat
2. Restore, Improve, and Protect Water Resources
3. Protect and Restore Living Coastal and Marine Resources
4. Restore and Enhance Natural Processes and Shorelines
5. Promote Community Resilience
6. Promote Natural Resource Stewardship and Environmental Education
7. Improve Science-Based Decision-Making Processes.

In reviewing the Council's goals and objectives, the Consortium noted that there was not a Council objective that specifically related to Goal 4 – Restore and Revitalize the Gulf Economy. Therefore, the Consortium voted to adopt an eighth objective specifically addressing the relationship between environmental quality of the Gulf Coast and the Florida economy:

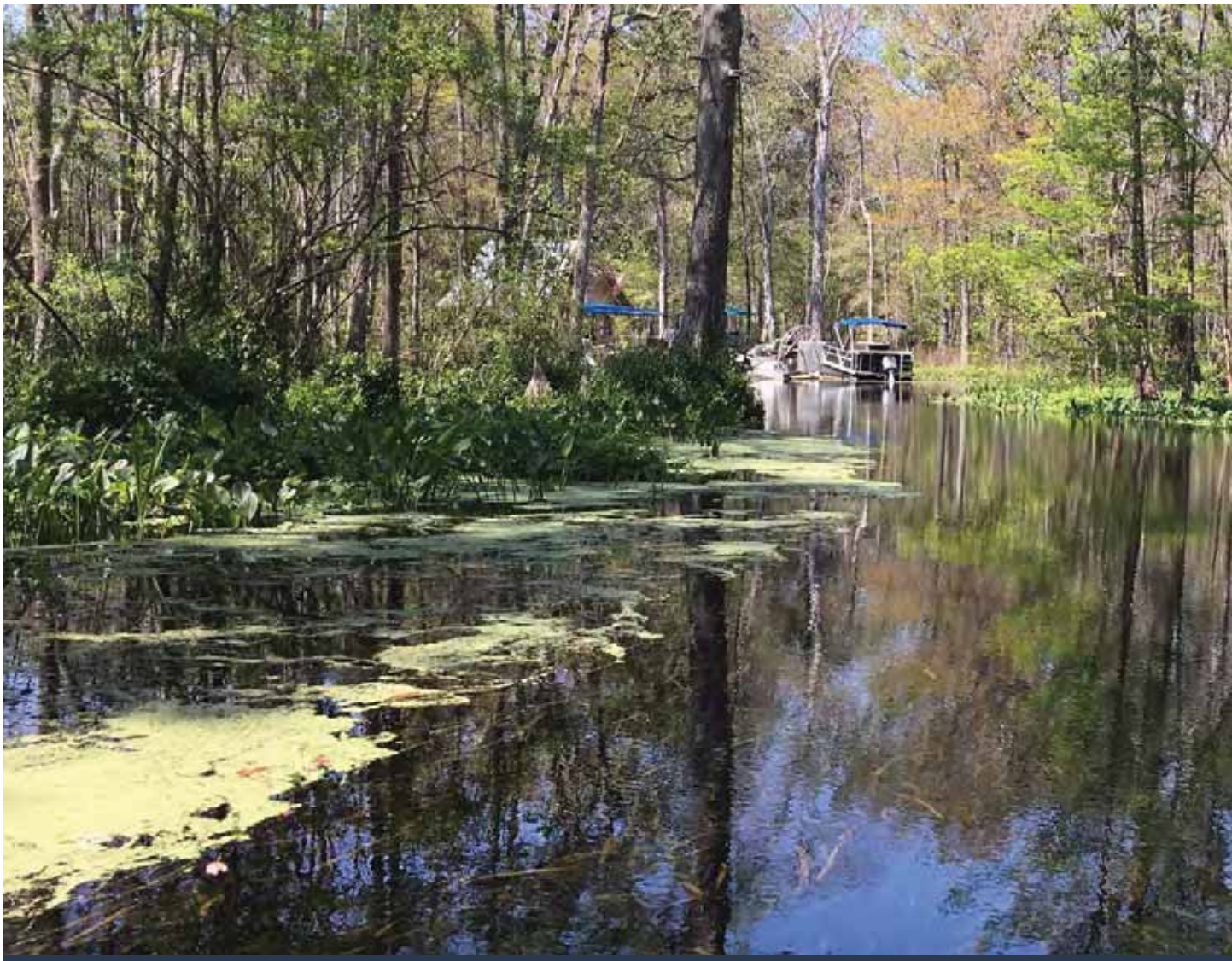
8. Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects, and Promote Projects that Enhance the Synergy between the Environmental Quality of Florida's Gulf Coast and the Florida Economy.

In their deliberations, the Consortium affirmed the importance to the overall economy of Florida of clean coastal waters and beaches, thriving marine and estuarine habitats, and healthy fish and shellfish populations. More than any other Gulf State, Florida's economy is dependent of tourism and coastal recreational opportunities, and it was important to the Gulf Consortium that this dependency be recognized in a separate objective.

At its November 18, 2015, meeting, the Gulf Consortium formally adopted the five goals and eight objectives listed above.

B. Consistency with the Comprehensive Plan

This SEP is fully consistent with, and furthers, the Council's Comprehensive Plan. As discussed in Section II, the projects, programs, and activities proposed in this Florida SEP were nominated through a county-driven process facilitated by the SEP consultant. In the county-driven approach for project nominations, the counties were free to propose projects that covered the full breadth of the RESTORE Act, including a diverse range of both environmental and economic projects. Each county was free to address their own needs and priorities, without being restricted to any particular focus dictated by the Consortium. Therefore, the resultant projects, programs, and activities described in this SEP reflect this diversity by addressing multiple eligible activities, as well as a majority of the Comprehensive Plan goals and objectives.



SECTION V

Proposed Projects, Programs, and Activities

A. Overview of the SEP Development Process

In November 2014, the Gulf Consortium selected the Environmental Science Associates (ESA) consultant team (the SEP consultant) to prepare the Florida SEP. The SEP consultant proposed a scope of work divided into four phases:

These phases and their respective tasks are shown below and the scope of work in each is provided in more detail in the following pages.

PHASE I – FUNDING AND GOAL SETTING

Task 1 – Prepare Planning State Expenditure Plan and Administrative Grant Application

This task involved the preparation of the Planning State Expenditure Plan (PSEP) for the State of Florida, submittal of the PSEP to the Gulf Coast Ecosystem Restoration Council (Council) for review, and coordination with the Council to obtain approval of the PSEP. This task also included the preparation of the Administrative Grant Application (AGA) for a planning grant, submittal of the AGA to the Council for review, and subsequent responses to requests for clarification and additional information from the Council. The PSEP was approved by the Council in 2015, and the planning AGA was approved by the Council on June 23, 2016, for a total amount of $4,640,675.

Task 2 – Conduct Consortium Goal Setting Workshop

This task involved the facilitation of a 1-day goal setting workshop with the Gulf Consortium Board of Directors to deliberate on Florida-specific goals, objectives, and guiding principles for the Florida SEP. In addition, this workshop addressed two key questions: (1) should there be a pre-determined geographic allocation of funds and (2) should there be a pre-determined allocation of funds for environmental versus economic projects.

The workshop was held on August 26, 2015, in St. Petersburg, Florida. This task also included: pre-workshop interviews with all Consortium Directors; the development and distribution of a pre-workshop survey and supporting informational materials; analysis of survey results; and development of summary workshop presentations. Finally, this task involved the development of a final summary report of the workshop proceedings, as well as an action item agenda for the subsequent Consortium meetings where formal decisions were voted on.

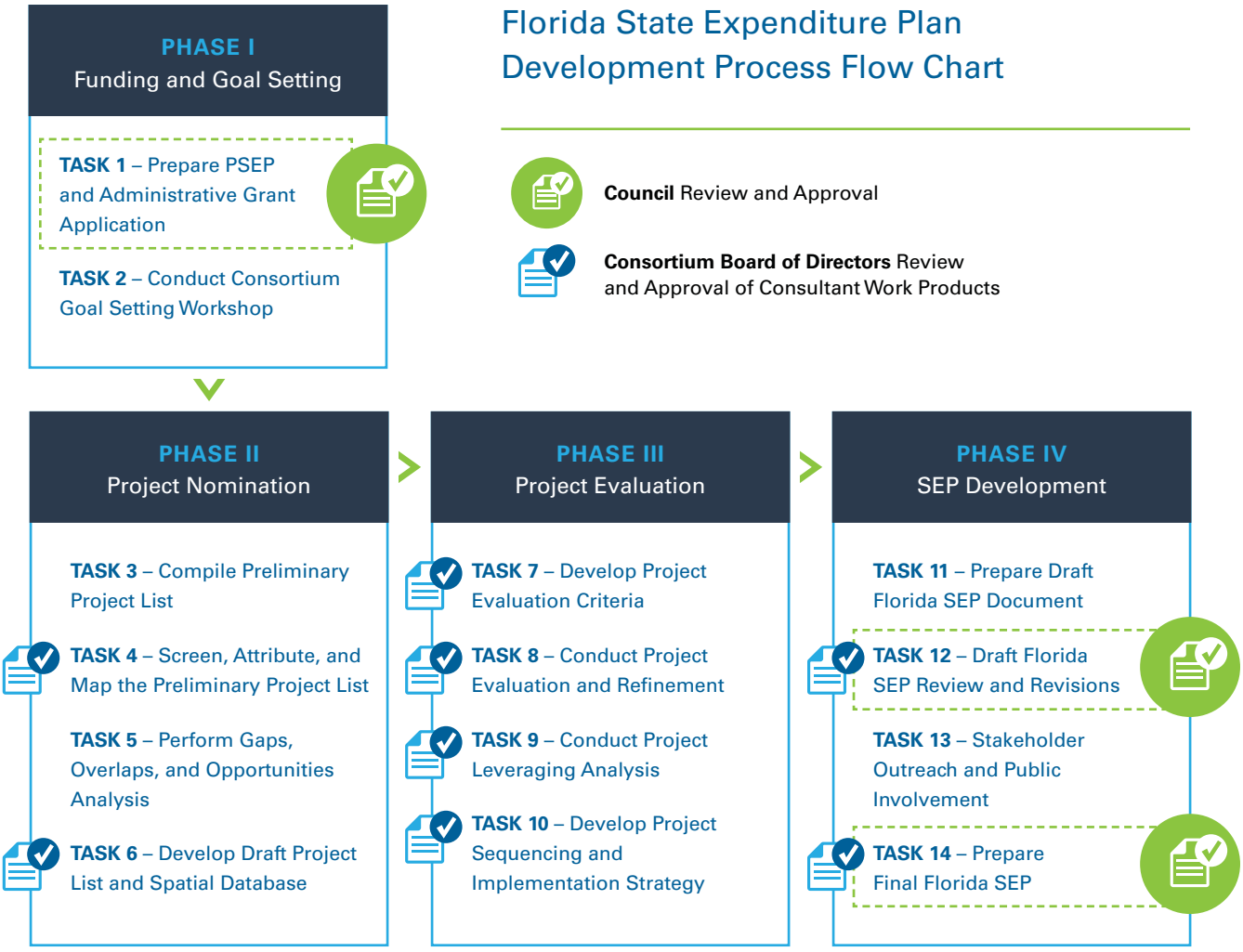
At its November 18, 2015 meeting, the Gulf Consortium formally voted to approve an even distribution of Florida's Spill Impact Component allocation among the 23 member counties. That is, each member county would receive an equal amount of the allocation, without consideration of factors such as miles of shoreline, distance from the spill, population, etc. The Consortium considered several alternative approaches to geographically distributing the funds for projects along the Florida Gulf Coast, but it was determined that the most equitable solution was to divide the available Spill Impact Component funds equally so that each county could: (1) equally participate in Gulf restoration and (2) self-determine their own projects.

Prior to this vote, the SEP consultant had been working under the scope of work contained in the original Request for Proposal (RFP) and Request for Best and Final Offer (RBAFO) and addressed in SEP consultant's final RBAFO response. This original scope of work defined a process whereby the selected consultant team would review the universe of projects contained in the Deepwater Horizon (DWH) project portal developed by the Florida Department

of Environmental Protection (FDEP), conduct a benefit/cost analysis of those projects, and then select and rank a small subset (e.g., 6 to 12) of regional projects determined to be most cost-effective and provide the greatest overall benefits to the state of Florida.

However, the Gulf Consortium recognized that under this approach there would likely be some counties that would not participate in the implementation of the Florida SEP. Therefore, as the debate of the geographic distribution of funds advanced, a strong consensus evolved among the Gulf Consortium that each county should have the ability to sponsor projects and participate in Gulf restoration through the implementation of the Florida SEP. Once this decision was made, the SEP consultant was requested to revise their scope of work to implement a "county-driven" process to project nomination and evaluation, whereby the SEP consultant would work closely with each county to identify and refine their proposed projects for inclusion in the Florida SEP. This revised scope of work was also subsequently incorporated into the planning AGA. At its April 21, 2016 meeting The Consortium amended the SEP consultant's agreement to accommodate the revised scope of work and budget.

The SEP consultant's revised scope of work is depicted graphically in the flow chart below. While the four phases remained the same, the task structure was modified to accommodate the county-driven process. The following text describes Phases II through IV and their respective tasks.



PHASE II – PROJECT NOMINATION

Task 3 – Compile Preliminary Project List

This task involved the development of general screening criteria, which were approved by the Gulf Consortium and used as the guiding criteria throughout the preliminary project list development process. A standard project nomination form was distributed to the 23 individual counties, along with the screening criteria and other guidance materials, to assist the counties in identifying potential project concepts and develop the preliminary project list. The counties used these materials to prepare and submit their preliminary project concepts to the SEP consultant for review. It is important to note that the submittal of project concepts at this stage was totally non-binding for the counties. Project concepts proposed by the individual counties included:

- Environmental and economic projects identified as part of county Direct Component activities through coordination with local Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012 (RESTORE Act) citizen and stakeholder committees
- Environmental projects identified in existing coastal resource and watershed management plans (e.g., National Estuary Program Comprehensive Conservation and Management Plans; Water Management District Surface Water Improvement and Management Plans, etc.)
- Applicable county projects identified in Capital Improvement Programs or other county environmental and economic development initiatives

Task 4 – Screen, Attribute, and Map the Preliminary Project List

The SEP consultant applied the screening criteria to the preliminary project list, which eliminated a few projects that were not eligible for RESTORE Act funding or were otherwise inconsistent with the goals, objectives, and guiding principles adopted by the Consortium. The remaining projects were attributed and converted into a geographical information system (GIS) spatial database. Attribution includes such parameters as project type, area affected by the project, project benefits, project costs, leveraging potential, project partners, etc. In addition, the screened preliminary project list was digitized (e.g., project type, area affected, project cost) so that the full range and scope of the preliminary project list could be visually depicted in a map series. The screened preliminary project list was mapped and summarized in a Technical Memorandum and presented to the Consortium for discussion.

Task 5 – Perform Gaps, Overlaps, and Opportunities Analysis

The SEP consultant conducted an analysis of the preliminary project list to determine if there were substantial gaps in geographic coverage or project type focus. This analysis also explored opportunities to combine similar nearby projects into larger single projects to improve cost-effectiveness, and/or find opportunities to modify or enhance projects in ways that would increase leveraging potential and/or streamline regulatory approvals. The SEP consultant continued to work closely with individual counties to update and/or revise their preliminary project concepts accordingly.

Task 6 – Develop the Draft Project List and Spatial Database

Based on input received from the Consortium and the individual counties in Tasks 4 and 5, respectively, the SEP consultant revised and updated the preliminary project list and developed the draft project list and associated GIS spatial database. The draft project list was mapped, summarized in a technical memorandum, and presented to the Consortium for review and approval. Based on input from the Consortium, the draft project list and spatial database were further revised. Upon Consortium approval, the draft project list will represent the universe of projects that were taken into Phase III – Project Evaluation.

PHASE III – PROJECT EVALUATION

Task 7 – Develop Project Evaluation Criteria

Based on the range of projects represented in the draft project list, the SEP consultant developed project evaluation criteria to comparatively assess each project. Detailed evaluation criteria for environmental projects focused on three key project attributes:

- Technical basis and justification: Evaluating the technical basis of proposed actions was based on best professional judgment. This attribute was assessed in terms of whether or not proposed projects were based on the best available science and/or engineering, as required by the Council, and whether they have a clearly defined technical rationale and justification (i.e., will the project address a demonstrated need).
- Feasibility: Evaluating the feasibility of proposed projects essentially constituted a "reality check" also based largely on best professional judgment. The feasibility attribute was assessed in terms of numerous factors, including but not limited to: technical efficacy (both science and engineering) workability, permitability, constructability, cost-effectiveness, and public acceptance.
- Leveragability: Evaluating leveragability involved an assessment of the ability for the project to attract leveraged funds from a range of sources. Under this task, the primary focus was on funding streams associated with the DWH oil spill settlements.

Separate criteria were developed for economic projects. The recommended project evaluation criteria were summarized in a technical memorandum and presented to the Consortium for review and approval.

It should be noted that the purpose of project evaluation under the county-driven process was not necessarily to eliminate projects, or to prioritize some projects over others, but rather to improve and refine each project included in the final project list to maximize its impact, cost-effectiveness, and grant readiness.

Task 8 – Conduct Project Evaluation and Refinement

To facilitate approval by the Council, all projects ultimately included in the Florida SEP were those that were determined by the SEP consultant to be technically justifiable, feasible, and affordable within the budget limitations of the Spill Impact Component. Toward that end, the SEP consultant applied the approved evaluation criteria to the draft project list to screen out those project concepts that did not meet the criteria or modify them so that they did meet the criteria.

Furthermore, projects that can attract other funds through leveraging increase the overall value of the Florida SEP. Therefore, refining projects so that they can meet criteria for various leveraged funding sources was addressed in this task. Many project concepts submitted by the counties have significant information gaps, while other project submittals are well developed as conceptual or even final designs with accompanying feasibility, engineering, and environmental studies. To fairly and objectively evaluate the various project concepts submitted by the counties, those that were lacking in basic details with regard to such factors as technical justification, project boundaries, anticipated benefits, technical approach, construction methods, cost estimates, etc., needed to be further developed. Therefore, in this task the SEP consultant worked closely with individual counties, as needed, to further refine their project concepts.

Upon completion of project evaluation and refinement activities, a final project list was developed. The methods and findings of the project evaluation/refinement process and the recommended final project list was summarized in a technical memorandum and presented to the Consortium for review and approval. The final project list served as the basis for the remaining tasks.

Task 9 – Conduct Project Leveraging Analysis

In this task, the SEP consultant developed an *Other Grant Sources Inventory* document that addressed potential leveraged funding sources applicable to the final suite of projects recommended in Task 8. This inventory included a wide range of federal, state, private, and non-governmental organization (NGO) grant programs (e.g., National Fish

and Wildlife Foundation) that could potentially be used to leverage projects to be included in the Florida SEP. This task also involved close coordination with the FDEP with regard to the availability and applicability of leveraged funds from the Council Selected Restoration Component (RESTORE Act Pot 2) and the Florida portion of the Natural Resource Damages (NRD) settlement. The final suite of projects was individually linked to potential leveraging sources applicable to each, along with estimated dollar amounts. Upon completion of this task, the final project list, and the leveraging potential for each, was summarized in a technical memorandum and presented to the Consortium for review and approval.

Task 10 – Develop Project Sequencing and Implementation Strategy

The approximate funding levels available to each county from the Spill Impact Component have been estimated for the British Petroleum (BP) settlement. Furthermore, based on current knowledge of the settlement, funds will be paid out over a 15-year period, without the ability to use these funds for bonding and debt payments. Finally, Council implementation grants for all projects included in the Florida SEP must be project-specific grants must be submitted and managed by the Consortium. Individual counties will not be able to engage with the Council independently with regard to implementation grant funds. To address these complexities, a project-sequencing strategy was necessary to expedite and optimize the distribution of Council implementation grant funds over the payout period.

The final suite of projects ultimately included in the Florida SEP varied significantly with regard to their relative complexity and level of development and/or design. For example, some projects are ready to receive construction funds, while other projects may require conceptual planning or engineering design funds. The SEP consultant developed a project-sequencing schedule that optimizes the 15-year payout such that each county is annually making progress on their respective projects. In addition, this task involved the development of an overall implementation strategy that considers multiple alternatives for managing the accounting of Spill Impact Component funds among the 23 counties over the 15-year payout schedule. A draft *Project Sequencing & Implementation Strategy* document was prepared and presented to the Consortium for review and approval. The approved final suite of projects along with the approved project-sequencing and implementation strategy served as the basis for Phase IV – Florida SEP Development.

PHASE IV – FLORIDA SEP DEVELOPMENT

Task 11 – Prepare Draft Florida SEP Document

Using the results of the previous tasks and the priority project rankings, the SEP consultant prepared the draft Florida SEP document to comply with all informational requirements specified by the Council in applicable rules and guidance documents. Prior to release of the Draft SEP for formal review and public comment, the SEP consultant conducted a legal review of the document to ensure compliance and consistency with all applicable federal, state, and local laws, rules, and agreements. Revisions to the Draft SEP were made to address any legal noncompliance or inconsistencies.

Task 12 – Draft Florida SEP Review and Revisions

The SEP consultant made a summary presentation of the Draft Florida SEP to the Gulf Consortium on January 11, 2018. Upon approval by the Consortium, the Draft SEP was submitted to the FDEP for a coordinated review by FDEP and other appropriate state agencies, including: the Florida Fish and Wildlife Conservation Commission, the Department of Economic Opportunity, the Florida Department of Transportation, the Department of Agriculture and Consumer Services, and Florida Water Management Districts with regulatory jurisdiction over projects, programs, and activities included in the Draft SEP. Comments received from the FDEP coordinated review were summarized in a technical memorandum and presented to the Consortium. As directed by the Consortium, the SEP consultant made recommended revisions to the Draft Florida SEP in response to state agency comments.

Task 13 – Stakeholder Outreach and Public Involvement

Pursuant to the Memorandum of Understanding (MOU) between the Governor and the Consortium, the Consortium must formally adopt the Draft Florida SEP, and allow the opportunity for the public to review and comment on the document, prior to submittal of the Draft Florida SEP to the Governor. The SEP consultant developed and implemented a *Stakeholder Outreach and Public Involvement* program to facilitate stakeholder review and to solicit public comments. This program was tailored to meet the specific requirements of the Consortium and the MOU, and was conducted in a manner designed to obtain broad-based participation (see Section II above). Comments received from stakeholders and the public were summarized in a technical memorandum, and presented to the Consortium. As directed by the Consortium, the SEP consultant made further revisions to the Draft Florida SEP in response to public comments.

Task 14 – Prepare Final Florida SEP

The SEP consultant met with Council staff on March 16, 2018 to receive initial comments on the Draft SEP. Response to comments received from the state agencies, the public, and the Council were integrated into a Draft Final SEP. Pursuant to the MOU between the Consortium and the State of Florida, the adopted Draft Final Florida SEP was required to be submitted to the Governor at least 90 days prior to its transmittal to the Council. Upon receipt of the Draft Florida SEP, the Governor was required to provide comments, if any, back to the Consortium within 30 days. The Consortium in turn had 30 days from the date of receipt of the Governor's comments to revise the Draft Florida SEP in accordance with the Governor's comments and submit the revised Final Florida SEP back to the Governor for final approval and formal transmittal to the Council. To facilitate this review process, the SEP consultant made presentations of the revised Draft Florida SEP to the Governor and the Council, and continued their close coordination with the Consortium and the FDEP. Upon receipt of comments on the revised Draft Florida SEP from the Council, the SEP consultant prepared the Final Florida SEP document for formal approval by the Governor and transmittal to the Council.

Project Development Guidance

As provided by the Council, Florida's total Spill Impact Component allocation is $294,338,815. Pursuant to the Gulf Consortium's decision to split this amount evenly among the 23 counties, each county's allocation is approximately $12,660,789. In the process of assisting the counties, the SEP consultant advised each county to develop project proposals that could be largely paid for using the following funding sources:

- Individual county Spill Impact Component allocation ($12.661M)
- Any or all of the county's Direct Component allocation
- Other secured grants or co-funding
- Other committed county funding

The counties were also advised to prioritize fewer, larger projects as opposed to multiple smaller projects to maximize project benefits and minimize associated administrative costs. Furthermore, where appropriate, the counties were advised to consolidate smaller, similar projects (e.g., multiple canal restoration projects) as components under a single program to also simplify future grant writing and minimize administrative costs.

In addition, for projects that could be incrementally scaled up (e.g., convert more septic tanks to sewer), counties were advised to consider "stretching" their budgets, as appropriate, to allow for potential additional funding secured through leveraging. The concept of leveraging financial resources essentially means using one funding source to attract other funding sources. Leveraging has the potential to multiply the overall benefit of the Florida SEP by expanding the total pool of funds available for SEP projects beyond that provided for by Florida's Spill Impact Component allocation. The FDEP identified many projects on the initial project list that could potentially be supplemented with leveraged funds from the Florida's Natural Resource Damages Assessment (NRDA) settlement, as well as funding to be secured by the State from the National Fish and Wildlife Foundation (NFWF) settlement. Economic projects also have the potential to attract leveraged funding from the Florida's economic settlement being managed by Triumph Gulf, Inc.

The consultation process with each of the counties was iterative, and each county approached these challenges in different ways. The resulting list of proposed projects, programs, and activities included herein reflects the unique priorities of each county are represented. A total of 69 projects, programs, and activities are proposed in this Florida SEP. What follows are narrative descriptions for each project and program (Section V.B.), and a tabular and graphical summary of all projects and programs described herein (Section V.C.).

Project/Program Description Template

The format of the narrative project and program descriptions was developed in consultation with Restoration Council staff. Given the large number of projects in the Florida SEP, Council staff advised that narrative descriptions be briefly summarized and limited to five pages or less but still address the topics specified in the Council's SEP guidance document. The resulting narrative project/program description template that is used herein was verbally approved by Council staff. The template headings and the material to be addressed under each heading are described below.

PROJECT NUMBER

Projects are numbered sequentially by county, starting with Escambia County (1) in northwest Florida and ending with Monroe County (23) in south Florida. For counties that have multiple projects, the projects are listed in order of decreasing priority. For example, Pinellas County's third-priority project is listed as Project 16-3.

PROJECT TITLE

Short project title. The term "program" is used if the project has multiple similar components.

PROJECT DESCRIPTION

Overview and Location

One to three sentences that succinctly describe the project or program. A geographic information system (GIS) location map is included for each project.

Need and Justification

One to three paragraphs describing the historical trends, problems, or issues that the project addresses (e.g., water quality degradation in Charlotte Harbor) and how the project will improve the situation. Project-specific graphics are included as appropriate.

Purpose and Objectives

One or two paragraphs describing the specific ecological and/or economic objectives of the project (e.g., restore lost oyster reefs in Apalachicola Bay).

Project Components

One to three paragraphs describing the various aspects or phases of the project. Project-specific graphics are included as appropriate.

CONTRIBUTIONS TO THE OVERALL ECONOMIC AND ECOLOGICAL RECOVERY OF THE GULF

One paragraph describing the anticipated ecological and/or economic outcomes and benefits of the project.

ELIGIBILITY AND STATUTORY REQUIREMENTS

The most applicable RESTORE Act eligible activities are listed. If more than one activity is applicable, then the primary eligible activity is identified.

COMPREHENSIVE PLAN GOALS AND OBJECTIVES

The most applicable Comprehensive Plan Goals and Objectives are listed. If more than one goal and/or objective are applicable, then the primary goal and/or objective are identified.

IMPLEMENTING ENTITIES

One or two sentences describing who the grant sub-recipient will be, and who will be primarily responsible for project implementation.

BEST AVAILABLE SCIENCE AND FEASIBILITY ASSESSMENT

One or two sentences describing previous work that the project is based on. Where applicable, key references are cited. In addition, a statement is made regarding the feasibility of the project with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term.

RISKS AND UNCERTAINTIES

One paragraph describing the risks and uncertainties (e.g., additional technical information needs, property availability, funding shortfalls).

SUCCESS CRITERIA AND MONITORING

One paragraph describing the anticipated project benefits and specific criteria/metrics that will be measured to determine success. Proposed monitoring criteria are listed as bullets.

MILESTONES AND SCHEDULE

One introductory paragraph that defines the estimated time horizon of the project, from planning through implementation, including the estimated start year and end year for the entire project. In addition, a Gantt chart is provided showing high-level milestones for the project as well as anticipated start and end dates for each in years from SEP approval.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Milestone 1																
Milestone 2																
Milestone 3																

BUDGET AND FUNDING SOURCES

One paragraph that describes the total project cost estimate and how it was derived; and summarizes the various sources of committed funding, any budget shortfall, and potential sources of leveraged funding. In addition, a budget table is provided showing the following:

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Planning components		
Planning Subtotal		
Implementation components		
Implementation Subtotal		
Monitoring		
Total Cost		
COMMITTED FUNDING SOURCES		
Spill Impact Component		
Other grants or co-funding		
Other county funds		
Total Committed Funding		
Budget Shortfall		
POTENTIAL LEVERAGED FUNDING SOURCES		
Leveraged Funding Source 1		
Leveraged Funding Source 2		
Leveraged Funding Source 3		

As defined by the Council, "planning" activities include: early planning, conceptual design and feasibility studies, engineering design, and permitting, while "implementation" activities include project construction or execution. Monitoring includes baseline and post-project monitoring to assess and quantify project benefits.

PARTNERSHIPS/COLLABORATION

One paragraph that describes any project partners and co-sponsors, as well as a list of agencies and non-government organizations that have participated or are expected to participate in project planning or funding.

B. Individual Project Descriptions

The following pages include a narrative description for each project and program.

1. Escambia (p 43)
— Bayou Chico Contaminated Sediment Remediation Project

2. Santa Rosa (p 51)
— Santa Rosa Sound Water Quality Improvement Program

3. Okaloosa (p 59)
— Coastal Stormwater Retrofit Program
— Offshore Fish Aggregating Devices (FADs)
— Choctawhatchee Bay Estuary Program
— Shoal River Headwaters Protection Program
— Veterans Park Living Shoreline

4. Walton (p 89)
— Choctawhatchee Bay Septic to Sewer Conversion

5. Bay (p 96)
— North Bay Water Quality Improvement Program
— St. Andrew Bay Stormwater Improvement Program

6. Gulf (p 109)
— St. Joseph Bay/Chipola River Sewer Improvement Program
— St. Joseph Peninsula Coastal Erosion Control Project
— Coastal Public Access Program

7. Franklin (p 128)
— Emergency Operations Center
— Apalachicola Bay Oyster Restoration Project
— Apalachicola Bay Cooperative Dredging Program

8. Wakulla (p 146)
— Wakulla Springshed Water Quality Protection Program
— Coastal Access Program
— Artificial Reef Study and Oyster Habitat Enhancement

9. Jefferson (p 167)
— Wacissa Springshed Water Quality Protection Program
— Wacissa River Park Improvement Program
— Coastal Public Access Program

10. Taylor (p 187)
— Coastal Public Access Program

11. Dixie (p 193)
— Horseshoe Beach Working Waterfront Project
— Shired Island Park Beach Nourishment and Living Shoreline
— Horseshoe Cove Oyster Restoration
— Coastal Public Access Program
— Coastal Septic to Sewer Conversion Program

12. Levy (p 223)
— Waccasassa River Conservation Land Acquisition
— Suwannee Sound/Cedar Key Oyster Restoration
— Coastal Septic to Sewer Conversion Program

13. Citrus (p 242)
— NW Quadrant Force Main Project
— Cross Florida Barge Canal Boat Ramp
— Artificial Reef Program
— Springshed Stormwater Improvement Program

14. Hernando (p 266)
— Artificial Reef Program
— Coastal Habitat Enhancement Program
— Coastal Public Access Program
— Weeki Watchee Springshed Septic to Sewer Conversion Program
— Coastal Stormwater Improvement - Calienta Street

15. Pasco (p 296)
— Port Richey Watershed Stormwater Management Project
— Hammock Creek/Sea Pines Watershed Stormwater Management Project
— Inshore Artificial Reef – Pithlachascotee River
— Coastal Environmental Research Network (CERN)
— Artificial Reef Program – Hudson Reef
— Madison Street and Gulf Drive Stormwater Retrofit Project
— Crews Lake Hydrologic Restoration
— Ranch Road Infrastructure Improvements

16. Pinellas (p 337)
— Lake Seminole Sediment Removal
— Wastewater Collection System Improvements
— Land Acquisition for Floodplain Restoration and Resiliency
— Coastal Public Access Program
— Artificial Reef Program

17. Hillsborough (p 361)
— Cockroach Bay Aquatic Preserve Land Acquisition and Ecosystem Restoration
— Delaney Creek/Palm River Septic to Sewer Conversion Program

18. Manatee (p 371)
— Manatee River Oyster Restoration
— Portosueno Park Living Shoreline
— Preserve Management Plans
— Artificial Reef Program - Borden Reef
— Palmetto Greene Bridge Fishing Pier Replacement
— Applied Research for Shellfish Aquaculture
— Coastal Preserve Trail and Boardwalk Enhancements
— Coastal Watershed Management Plans
— Urban Stormwater Improvements - GT Bray Park

19. Sarasota (p 417)
— Dona Bay Hydrologic Restoration Program

20. Charlotte (p 425)
— Charlotte Harbor Septic to Sewer Conversion Program

21. Lee (p 432)
— North East Caloosahatchee Tributaries Restoration Project

22. Collier (p 439)
— Comprehensive Watershed Improvement Program

23. Monroe (p 446)
— Canal Management Master Plan Implementation

ESCAMBIA COUNTY

Bayou Chico Contaminated Sediment Remediation Project

PROJECT NO. 1-1

Project Description

OVERVIEW AND LOCATION

The Bayou Chico Contaminated Sediment Remediation Project primarily involves the removal of legacy contaminated sediments from Bayou Chico, a small embayment that flows to Pensacola Bay (see **Figure 1-1A**). The project will employ Best Available Science to determine appropriate methods of remediation for contaminated sediments, which may include hydraulic dredging and disposal. Additional project components may include restoration of both submerged and intertidal estuarine habitats following remediation.

Figure 1-1A. Location of Bayou Chico in Escambia County.

NEED AND JUSTIFICATION

Bayou Chico is a small urban bayou with a long history of industrial pollution. It is generally considered to be the most polluted of the three urban bayous in the Pensacola area. Bayou Chico has functioned as a working waterfront since the early 1800s. During the response to the Deepwater Horizon oil spill, the bayou served as a staging/decontamination location for the Vessels of Opportunity. In this time, point and non-point discharges to the bayou have resulted in high accumulated levels of sediment contaminants, including trace metals, polycyclic aromatic hydrocarbons (PAHs), pentachlorophenol (PCP), dioxins/furans and polychlorinated biphenyls (PCBs). The bayou is also adjacent to the American Creosote Works site, which is a federal National Priorities List hazardous materials site that may still be affecting the bayou.

Sediment quality in Bayou Chico has been degraded by an assortment of pollutants (summarized by Mohrherr et al., 2006). In the 1970s, organic pollutants were found to be many times the typical values for coastal sediments. PCBs and dioxins were first studied in the 1990s and detected at high levels. A recent University of West Florida study

found elevated levels of PCBs and dioxins/furans in seafood from the bayou. Trace metals were studied through a series of investigations and were invariably found to be elevated in sediments in the main part of the bayou and between two topographic constrictions in the northern half of the bayou. Benthic organisms are very sensitive to sediment contamination, and studies have also shown a diminished density and diversity of benthic invertebrates in Bayou Chico.

Figure 1-1B. Recently completed projects and proposed dredging in Bayou Chico.

In addition to industrial contaminants, Bayou Chico has been impacted by legacy stormwater runoff and domestic wastewater discharges from urban land uses in its headwaters, resulting in excessive bacterial and nutrient loads. Bayou Chico is a 303(d) listed impaired waterbody for fecal coliform bacteria. In 2011, the FDEP along with local stakeholders developed a Basin Management Action Plan (BMAP) for Bayou Chico to address the total maximum daily load (TMDL) for fecal bacteria. In 2013, a TMDL was developed for Bayou Chico to address nutrient impairments and assigned numerical nutrient criteria to six Water Body identifiers (WBIDs) in the Bayou Chico watershed. These WBIDs include two Class III fresh waterbodies (Jones Creek and Jackson Creek) and four Class III marine waterbodies (Bayou Chico, Bayou Chico Drain, Bayou Chico Beach, and Sanders Beach).

Escambia County and the City of Pensacola share jurisdiction of the Bayou Chico watershed. The County and the City, along with the Emerald Coast Utilities Authority (ECUA), have teamed up to address legacy stormwater and wastewater pollution by jointly implementing stormwater management controls, including baffle boxes and centrifugal separation units in the upper watershed, to alleviate contributing sources of nutrients, sediment, oils and grease. In addition, septic tanks in the watershed have been removed and replaced with central sewer collection systems. These programs have focused on identification, elimination, and prevention of existing sources of pollution. However, the legacy sediment contamination still exists.

As stated above, Bayou Chico has served as a working waterfront dating back to the early 1800s. Portions of the bayou were dredged to allow for the navigation of deep draft vessels in the early 1900s, and these areas have been maintenance dredged several times since then. Most recently, in 2008, the USACE completed a maintenance dredge of the bayou entrance channel and along the northeastern shoreline where most of the industrial land uses are located (see **Figure 1-1B**). That project removed some contaminated sediments and improved circulation and flushing in the bayou—however, this and other previous dredge projects have not removed accumulated sediments in the main body of the bayou, or in its northern and western upper reaches. Sediment removal from these areas was recommended by the NWFWMD in the Surface Water Improvement Management (SWIM) Plan for the Pensacola Bay System, and in the 2011 BMAP as a means to reduce bacteria and nutrient concentrations, and is considered to be essential to the ecological restoration of Bayou Chico.

Figure 1-1C. Sediment mapping survey.

The Bayou Chico Contaminated Sediment Remediation Project builds upon and complements stormwater and wastewater remediation projects previously completed by Escambia County, City of Pensacola, and ECUA to improve conditions in Bayou Chico and its watershed. The removal of accumulated contaminated sediments is anticipated to eliminate toxic sediment/water column interactions and expose natural bottom substrates that will support the recovery of benthic invertebrates and oysters in the bayou, as well as conditions suitable for submerged aquatic vegetation downstream of Bayou Chico in Pensacola Bay. This project is the critical keystone in the ecological restoration of Bayou Chico.

PURPOSE AND OBJECTIVES

The purpose of this project is to remediate the contaminated sediments in Bayou Chico. The project is anticipated to meet the following objectives: (1) improve sediment and water quality; (2) restore benthic invertebrate habitat and conditions for the recovery of submerged aquatic vegetation; and (3) enhance the economic and recreational opportunities along the working waterfront.

PROJECT COMPONENTS

The removal or remediation of contaminated sediments from Bayou Chico has been considered by a number of investigators dating back to the 1970s; however, the assessment of existing conditions and the evaluation of various alternatives have not been fully vetted. Therefore, the first component of the project will be the implementation of a comprehensive conceptual design and feasibility study to determine the following: (1) the types and concentrations of the various contaminants; (2) the vertical and horizontal distribution of sediment contaminants; (3) the grain size distribution and percent of organic matter of targeted sediments; (4) available remediation methods and technologies; (5) available sediment handling and spoil disposal methods; (6) available remediation methods and technologies for dredge spoil dewatering and decontamination; and (7) post-implementation habitat restoration activities for both work and staging areas.

Figure 1-1D. Bayou Chico (photo credit: Mollie Taylor).

Previous studies and investigations have identified an extensive list of known sediment contaminants within the bayou. The 2005 Pensacola Bay Watershed Management Plan compiled information from several regulatory agencies and local academic institutions that indicates contaminants in Bayou Chico may include heavy metals (cadmium, chromium, copper, lead, and mercury), PAHs (benzo(a)-pyrene, anthracene, acenaphthene), pesticides (chlordane, DDD, DDT, endrin, dieldrin, Mirex), and PCBs (Bay Area Resource Council, 2005). In addition, Mohrherr et al. (2006) conducted a thorough review of existing data on toxic contaminants. This project will confirm results of previous available studies.

The second component of the project will be engineering design and permitting. In August 2017, Escambia County's Water Quality and Land Management Division completed soft-sediment mapping of Bayou Chico by probing 485 sample locations (see **Figure 1-1C**). The total volume of sediments to be removed will be dependent upon the results of the sediment mapping efforts conducted as part of the conceptual design and feasibility study. The goal is to remediate legacy contaminants, nutrients, and organics, down to a level that optimizes cost against the ecological goals of eliminating toxic sediment/water column interactions and exposing natural bottom substrates. The permitting complexity of the project will depend largely on contaminant concentrations and the physical handling characteristics of the sediments (e.g., grain size and percent of organics).

The third component of the project will be implementation. Remediation may employ a hydraulic dredge mounted on a floating barge. Ideally, the dredge will use a combination of real-time kinematic (RTK) Global Positioning System (GPS) and navigation software to control the cutterhead elevation and track where material was removed. In this scenario, a pipeline will carry the dredge slurry to a nearby upland location for dewatering. Depending on the types and levels of nutrients and contamination in the sediments, the proper dewatering technique will be applied to determine proper disposal methods. Material may be separated, dried, and tested to determine the final disposal location depending on contaminant level. Final post-construction surveys will determine successful sediment removal from remediated areas, as well as the restoration of the staging area and emergent and submerged vegetative communities. Finally, long-term success monitoring will assess the recovery of water quality, benthic invertebrates, oysters, and emergent and submerged vegetative communities.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

As contributing waters to Pensacola Bay, the removal of legacy pollution in Bayou Chico is expected to improve water quality within the bayou, which will ultimately improve water quality in the bay as well. The Bayou Chico watershed is a mixed-use community with industrial, commercial, and residential owners along the shorelines (see **Figure 1-1D**). Cleaning up the bayou will also bolster the commercial and residential interests in the area by increasing residential property values and by attracting new businesses and industry. These improvements in water quality are also expected to benefit the greater Pensacola Bay fisheries.

Eligibility and Statutory Requirements

This project is consistent with and addresses the following RESTORE Act eligible activities:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches and coastal wetlands of the Gulf Coast region (primary)
- Eligible Activity 2: Mitigation of damage to fish, wildlife, and natural resources.

Comprehensive Plan Goals and Objectives

This project is consistent with and addresses the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 3: Replenish and Protect Living Coastal and Marine Resources

This project is consistent with and addresses the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 3: Protect and Restore Living Coastal and Marine Resources

Implementing Entities

Escambia County will be the implementing entity and sole grant sub-recipient responsible for the engineering design, permitting, implementation, and monitoring of the program.

Best Available Science and Feasibility Assessment

Studies and research on the conditions in Bayou Chico have been conducted by state and local agencies as well as local academic institutions for the last 40 years. Key documents that make up the basis for this project are cited below:

- *FDEP, 2011. Bayou Chico Basin Management Action Plan.*
- *FDEP, 2008. Fecal Coliform TMDL for Bayou Chico Watershed, WBIDS 846, 846A, 846B, 846CB, and 848DA.*
- *Glassen R., Armstrong J., et al., 1977. Bayou Chico Restoration Study. Florida Department of Environmental Regulation.*

- *Mohrherr C., Liebens J., Rao K., August 2006. Sediment and water pollution in Bayou Chico, Pensacola, FL. University of West Florida.*
- *The Nature Conservancy, 2014. Pensacola Bay: Community Based Watershed Plan.*
- *NWFWMD, 2017 Pensacola Bay System Surface Water Improvement Management Plan.*
- *Bay Area Resource Council, 2005. Pensacola Bay Water Management Plan.*

As discussed above, the need and justification for the project are well established; however, the feasibility of the project must be further addressed by the implementation of a comprehensive conceptual design and feasibility study. The permitting complexity and construction feasibility of the project will depend largely on contaminant concentrations and the physical handling characteristics of the sediments (e.g., grain size and percent of organics).

Risks and Uncertainties

At this time the volume, contaminant concentrations, distribution of contaminants, and physical characteristics of the sediments to be removed are largely unknown; thus, viable remediation alternatives have not yet been defined. Consequently, the total project budget cannot be accurately determined prior to the completion of a comprehensive conceptual design and feasibility study.

There are several upland areas nearby that are adequate for implementation staging, but the timing for use of these areas will need to be further addressed in the conceptual design and feasibility study. Currently, the Florida Department of Transportation is using both existing staging sites in Bayou Chico for the construction of the new Pensacola Bay Bridge, and discussions are under way to reserve the use of these staging sites for the proposed remediation project.

Success Criteria and Monitoring

Escambia County will perform post-remediation surveys to ensure compliance with the project plans and specifications. Successful implementation of this project is anticipated to result in the following ecological goals: (1) improve water and sediment quality, (2) restore benthic invertebrate communities, and (3) improved conditions for submerged aquatic vegetation. Therefore, a range of success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Changes in water quality (dissolved oxygen, nutrients, bacteria, and total suspended solids) from existing conditions in Bayou Chico
- Changes in the abundance and distribution of benthic invertebrates and oysters from existing conditions in Bayou Chico
- Changes in the abundance and distribution of emergent and submerged vegetative communities from existing conditions in Bayou Chico

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed metrics. Escambia County is committed to conducting the success monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 8 years. It is expected to start in 2018 and end in 2025. Implementation of this project has been broken down into four milestones as shown in the chart below. The first phase of the project is a conceptual design and feasibility study.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Conceptual design and feasibility study																
Final design and permitting																
Construction																
Monitoring																

Budget and Funding Sources

A preliminary cost estimate for the complete project has been developed by Escambia County based on the best available information and a number of assumptions. The completion of the conceptual design and feasibility study is expected to result in a more detailed and accurate cost estimate. A summary of the preliminary project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Conceptual design and feasibility study	$300,000	$300,000
Planning Subtotal	**$300,000**	**$300,000**
Final design and permitting	$800,000	$800,000
Construction	$21,200,000	$11,260,000
Implementation Subtotal	**$22,000,000**	**$12,060,000**
Monitoring	$300,000	$300,000
Total Cost	**$22,600,000**	**$12,660,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$12,660,000
Other grants or co-funding (GCERC – Bucket 2)		$335,510
City of Pensacola		$800,000
Other county funds		$0
Total Committed Funding		**$13,795,510**
Budget Shortfall		**$8,804,490**
POTENTIAL LEVERAGED FUNDING SOURCES		
Direct Component		
Council-Selected Restoration Component		
Gulf Environmental Benefit Fund		
Natural Resource Damage Assessment		
Triumph Gulf		
F.40 Coastal and Marine Habitat Restoration Grants		
O.42 Shell Marine Habitat Program		
S.25 Innovative Nutrient and Sediment Reduction and Conservation Pilot Project Program		
S.50 Water Projects Priorities Database		

In December 2015, the Gulf Coast Ecosystem Restoration Council (GCERC) identified the Bayou Chico Contaminated Sediment Remediation Project Planning Phase as a Category 1 project in the Initial Funded Priorities List. The Council funded portion will complete planning, design, and permitting of the project. In June 2017, the FDEP sub-awarded the project to Escambia County. Escambia County is currently conducting a feasibility study along with the University of West Florida (UWF) to qualify and quantify the contaminated sediments in Bayou Chico before advertising the Request for Qualifications for design services. The Spill Impact Component (Pot 3) funded planning phase will finalize the feasibility work currently underway and supplement design costs not covered by Pot 2.

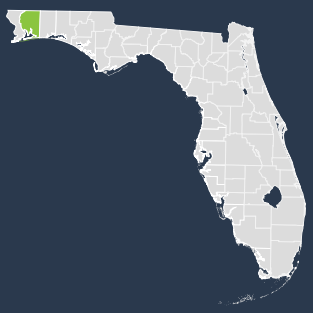
Partnerships/Collaboration

As noted above, the GCERC has funded a portion of the planning, design, and permitting of the Bayou Chico Contaminated Sediment Removal Project. Escambia County has worked with and will continue to coordinate with a number of other stakeholders in the implementation of the project, including:

- City of Pensacola
- Bayou Chico Association
- University of West Florida
- Pensacola and Perdido Bays Estuary Program
- West Florida Regional Planning Council
- Emerald Coast Utilities Authority
- Escambia County Health Department
- Florida Department of Environmental Protection
- Northwest Florida Water Management District
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency.

SANTA ROSA COUNTY

Santa Rosa Sound Water Quality Improvement Program



PROJECT NO. 2-1

Project Description

OVERVIEW AND LOCATION

The Santa Rosa Sound Water Quality Improvement Program comprises three components that will directly contribute to the restoration of water quality in Santa Rosa Sound by reducing loads of nutrients, bacteria, and heavy metals delivered to the sound. The first two components of the program will expand the existing centralized sewer system to allow for the abandonment of 758 septic systems in two areas on the Fairpoint Peninsula. The third component involves the relocation of the effluent outfall from the Navarre Beach Wastewater Treatment Facility (NBWWTF) to eliminate the discharge of up to 900,000 gallons per day (gpd) of treated effluent into Santa Rosa Sound. This program will be implemented in southeastern Santa Rosa County (see **Figure 2-1A**).

Figure 2-1A. Location of Santa Rosa Sound Water Quality Improvement Program components in Santa Rosa County.

NEED AND JUSTIFICATION

Santa Rosa Sound is about 35 miles long, connecting the Pensacola Bay estuary to Choctawhatchee Bay. It is bordered along much of its northern edge by the Fairpoint Peninsula and is separated from the Gulf of Mexico by Santa Rosa Island to the south. Santa Rosa Island is part of the Gulf Islands National Seashore, and the associated waters of the sound are designated Outstanding Florida Waters. Santa Rosa Sound supports seagrass beds, which are important habitat and foraging areas for numerous fish and invertebrate species, including many of commercial and recreational significance. The sound is currently listed by the Florida Department of Environmental Protection (FDEP) as an impaired waterbody for bacteria under Section 303(d) of the federal Clean Water Act. Although the sound is not listed as impaired for nutrients, a recent review of water quality data from a portion of Santa Rosa Sound shows that nutrient and chlorophyll-a concentrations exceed established regulatory threshold values. Recent declines in seagrass coverage have been documented in the sound and may be linked to these water quality issues.

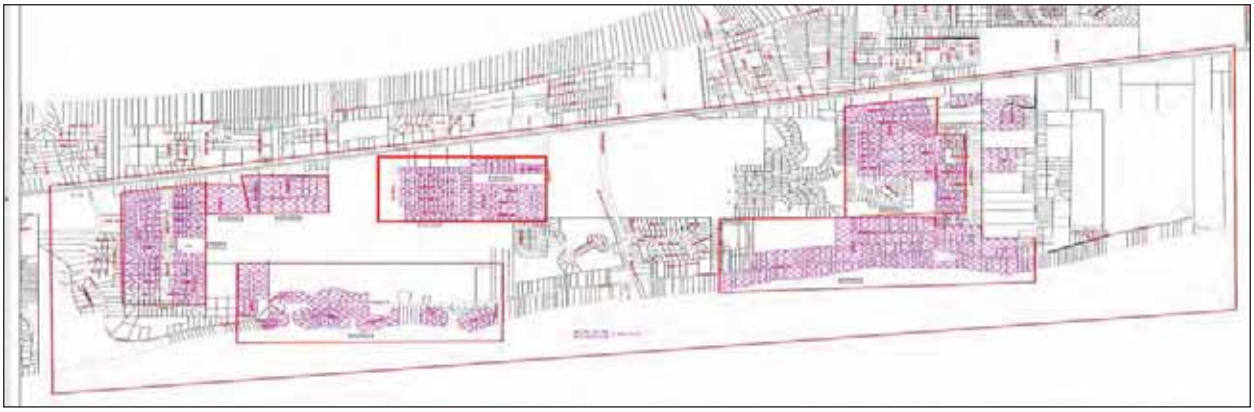


Figure 2-1B. Soundside septic to sewer conversion area - Soundside B is the easternmost sections.

This program will address two significant sources of pollutant loading to Santa Rosa Sound: (1) old and failing septic systems in coastal residential areas; and (2) effluent from the NBWWTF. Two areas on the Fairpoint Peninsula have been prioritized for expansion of an existing centralized sewer system and the abandonment of septic systems: Soundside Drive and Holley by the Sea (HBTS). NBWWTF was originally constructed in the early 1970s and has a capacity to treat 900,000 gpd of domestic wastewater, although actual flows range from 200,000 to 500,000 gpd depending on the season. Santa Rosa County has been working toward the goal of eliminating the discharge of NBWWTF's effluent from the sound since the late 1990s. After assessing various alternative discharge options, the Board of County Commissioners approved a plan to eliminate the NBWWTF discharge into the sound by conveying the effluent to a land application disposal site located on Eglin Air Force Base (AFB) property.

PURPOSE AND OBJECTIVES

The purpose of this program is to reduce pollutant loadings to Santa Rosa Sound from known sources. The objectives of the program are to: (1) improve water quality in Santa Rosa Sound; and (2) restore marine habitats and living resources in the sound that may have been degraded by poor water quality.

PROJECT COMPONENTS

The Santa Rosa Sound Water Quality Improvement Program comprises three components, which are summarized below.

Soundside Drive B Septic to Sewer

The Soundside residential community does not currently have a centralized sewer system and uses septic systems for wastewater treatment and disposal. This proposed program component will expand Santa Rosa County's existing sewer system into the Soundside B area (see **Figure 2-1B**) and allow for the conversion of approximately 163 septic systems to a low-pressure sewer system. The system design is in the beginning stages.

Holley by the Sea Septic to Sewer

The HBTS residential community currently has centralized sewer service in only some areas (see **Figure 2-1C**). The proposed program component includes expanding the existing sewer system, allowing for the abandonment of 595 existing septic systems. The program component is currently being studied to identify the most suitable sewer system for the area (low-pressure system or gravity system).

NBWWTF Effluent Relocation and Reuse

The effluent discharge of the NBWWTF will be permanently relocated from Santa Rosa Sound to a land application site located on 200 acres of Eglin AFB property. The project will include construction of 35 2.5-acre, rapid-rate infiltration basins (RIBs) for groundwater recharge; upgrades to NBWWTF so that the effluent meets FDEP requirements for public reuse; installation of new effluent filters and an effluent pump station; approximately 9 miles of force main ranging in diameter from 6 to 18 inches to convey the effluent from NBWWTF to the rapid-rate infiltration basins site; and an intermediate pump station. In addition to discharging the effluent to a dedicated land application site, the project will include provisions for distributing reuse water to various residential and commercial customers in the area. It will also include provisions to accept treated effluent from the other utilities in the area. See Figure 2-1D for project features.

Figure 2-1C. HBTS subdivision septic to sewer conversion project area.

Figure 2-1D. Santa Rosa regional reuse system program map.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will improve water quality and the biological integrity of Santa Rosa Sound by allowing for the abandonment of 758 septic systems and eliminating the NBWWTF effluent discharge from the sound. These projects will result in the elimination of significant sources of nutrients, bacteria, and heavy metals to the sound, which will have a positive impact on seagrass, fish and shellfish populations, and recreational use of the sound and adjacent waters. These efforts are in line with many state and federal agency actions to reduce pollutant loads, improve surface water quality, and restore degraded habitats and living marine resources. The Santa Rosa County Board of County Commissioners has made the restoration of Santa Rosa Sound a top priority, and the implementation of these program components will contribute significantly to meeting this goal.

This program will also contribute to economic growth in Santa Rosa County, especially tourism and fishing industries. The sewer expansion will increase property values for the parcels it will ultimately serve, and sewer availability will encourage development on currently unimproved parcels in the area. This will, in turn, grow Santa Rosa County's tax base. The proposed project will also increase workforce development and job creation in both the public and private sectors.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

Santa Rosa County will be the sole implementing entity and grant sub-recipient responsible for the design, permitting, construction, operation and maintenance, and monitoring of this project. Santa Rosa County has coordinated with numerous agencies, including Holley Navarre Water System (HNWS), South Santa Rosa Utility (SSRU), and Eglin AFB, in the development of these wastewater projects and may collaborate with other entities in the implementation of the project through leveraging of other potential funds.

Best Available Science and Feasibility Assessment

Significant work has been done to assess and characterize water quality in Santa Rosa Sound and to implement water quality improvement and protection programs. In addition, the Santa Rosa Sound Water Quality Improvement Program is consistent with numerous coastal resource management plans. Recent applicable citations include the following:

- *Lewis, M. J. et al., 2016. Environmental Quality of the Pensacola Bay System: A Retrospective Review for Future Resource Management and Rehabilitation. United States Environmental Protection Agency.*
- *Northwest Florida Water Management District (NWFWMD), 2017. Pensacola Bay System Surface Water Improvement and Management (SWIM) Plan.*

The program components described above are considered to be feasible based on the available information and best professional judgement. A preliminary design report has been completed for the NBWWTF component.

Risks and Uncertainties

No significant risks or uncertainties have been identified during a review of the available information for this program. It is, however, possible that risks and uncertainties will be identified during the preliminary design phase.

Success Criteria and Monitoring

This program will affect water quality in an estuarine system. Specific success criteria will be developed in the program grant request. It is anticipated that quantitative success criteria will be developed for the following:

- Number of septic systems taken off-line
- Estimated annual nitrogen load reductions to Santa Rosa Sound
- Changes in ambient water quality (nutrient and bacterial concentrations) in Santa Rosa Sound.

In the program grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Santa Rosa County is committed to implementing the necessary monitoring program and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this program is approximately 15 years. It is expected to start in 2018 and to end in 2033. The Soundside Drive and HBTS program components are expected to require approximately 6 years from feasibility study through construction. Preliminary design for the NBWWTF effluent relocation will be conducted in Year 1; however, final design and construction -will occur in later years because of the anticipated timing of right-of-way acquisition, the need for interagency agreements, and the complexity of constructing several interconnected components. Implementation of this program has been divided into the three components, as shown in the milestone chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Soundside Drive B Septic to Sewer																
Feasibility study	■															
Preliminary design	■															
Final design	■	■														
Construction			■	■												
HBTS Septic to Sewer																
Feasibility study	■															
Preliminary design	■															
Final design	■	■														
Construction					■	■										
NBWWTF Effluent Relocation and Reuse																
Preliminary Design	■				■											
Final Design									■	■						
Construction												■	■			
Program Monitoring																
Success monitoring		■		■	■	■	■	■			■			■	■	

Budget and Funding Sources

Santa Rosa County has developed a preliminary program budget which is shown in the table below. The total cost of the program is approximately $45 million. The cost of removal of the existing septic systems is included in the cost of the septic tank to sewer projects. Preliminary design is estimated at 3 percent of the project cost. The estimated cost of the water quality success monitoring is $180,000 ($20,000 per year for 9 years).

Santa Rosa County has not secured any other grants or co-funding for these projects at this time. The cost of NBWWTF may be shared by HNWS and SSRU, with the final cost sharing depending on the alignment selected. The source of funding for the remaining balance is yet to be determined; however, Santa Rosa County will be seeking other leveraged funding sources such as low interest loans and grants from FDEP State Revolving Fund program. Santa Rosa County is committed to providing additional county funding, as may be needed; however, the program elements are scalable and can be implemented incrementally as funding allows.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Soundside Drive B Septic to Sewer		
Feasibility study	$45,465	$45,465
Preliminary design	$45,465	$45,465
Planning Subtotal	**$90,930**	**$90,930**
Final design	$324,070	$324,070
Construction	$2,595,000	$2,595,000
Implementation Subtotal	**$2,919,070**	**$2,919,070**
Total	**$3,010,000**	**$3,010,000**
HBTS Septic to Sewer		
Feasibility study	$190,000	$190,000
Preliminary design	$190,000	$190,000
Planning Subtotal	**$380,000**	**$380,000**
Final design	$1,175,000	$1,175,000
Construction	$11,000,000	$2,407,500
Implementation Subtotal	**$12,175,000**	**$3,582,500**
Total	**$12,555,000**	**$3,962,500**
NBWWTF Effluent Relocation and Reuse		
Preliminary Design	$903,000	$903,000
Planning Subtotal	**$903,000**	**$903,000**
Final Design	$2,197,000	$2,197,000
Construction	$27,000,000	$2,407,500
Implementation Subtotal	**$29,197,000**	**$4,604,500**
Total	**$30,100,000**	**$5,507,500**
Monitoring	$180,000	$180,000
Total	**$180,000**	**$180,000**
Total Cost	**$45,845,000**	**$12,660,000**

COMMITTED FUNDING SOURCES	
Spill Impact Component	$12,660,000
Direct Component	$0
Other County funds	$0
Total Committed Funding	**$12,660,000**
Budget Shortfall	**$33,185,000**
POTENTIAL LEVERAGED FUNDING SOURCES	
Gulf Environmental Benefit Fund	
Natural Resource Damage Assessment	
State Revolving Loan Fund	
Florida Rural Water Association	
Triumph Gulf	
F.03 Rural Community Development Initiative Grants	
F.07 Water and Waste Disposal Systems for Rural Communities	
F.08 Water and Waste Disposal Technical Assistance and Training Grants	
F.12 Community Facilities Technical Assistance and Training Grant	
F.13 Community Facilities Guaranteed Loan Program	
F.27 Regional Conservation Partnership Program (RCPP)	
F.63 Water Infrastructure Finance and Innovation Act (WIFIA)	
S.36 Water Projects	
S.50 Water Projects Priorities Database	

Partnerships/Collaboration

The elimination of the septic systems on the Fairpoint Peninsula will require collaboration with HNWS and SSRU to identify priority areas. Both utility systems have expressed interest in a partnership with Santa Rosa County. There are opportunities for cost sharing, and specific budgets will be identified during the planning phase of this project.

The relocation of the NBWWTF effluent outfall is proposed to include partnering with the other wastewater utilities within the region because of their need for a reliable, long-term effluent disposal option, and a source of reuse water for irrigation. Although Santa Rosa County has been in discussions with local utilities for many years regarding partnering opportunities, the extent of the utilities' interest and financial commitment remains to be determined.

Santa Rosa County will continue to coordinate closely with the Florida Department of Environmental Protection, the Northwest Florida Water Management District, local utilities, and Eglin Air Force Base in the continued planning and implementation of this program.

OKALOOSA COUNTY

Coastal Stormwater Retrofit Program

PROJECT NO. 3-1

Project Description

OVERVIEW AND LOCATION

This program involves the retrofitting of stormwater treatment facilities, and the rehabilitation of failing segments of an aging stormwater management system, in Okaloosa County sub-basins draining to Choctawhatchee Bay. Priority sub-basins include: Cinco Bayou, Gap Creek, and Lake Lorraine.

The general location of the proposed stormwater management improvements is shown in **Figure 3-1A**.

NEED AND JUSTIFICATION

Currently, Cinco Bayou is listed as impaired for nutrients; however, Gap Creek, the primary tributary, is not on the 303(d) impaired list. A goal is to keep this waterbody off the impaired list by taking proactive actions to address known sources of excess sediment, nutrients, bacteria, and floatables, all of which effect water quality in Cinco Bayou. In addition, as excess sediments exit the stormwater system into the bay, the flows slow and sediments fall out of suspension. This process has resulted in physical smothering of oyster and seagrass communities, while causing stormwater conveyance and navigation issues near outfalls in Cinco Bayou (see **Figure 3-1B**).

Figure 3-1A. General location of proposed stormwater management improvements in Okaloosa County.

The stormwater management system in this part of Okaloosa County is relatively old and pre-dates current stormwater management design guidelines and regulations enforced by the Florida Department of Environmental Protection (FDEP) and the Northwest Florida Water Management District (NWFWMD). This program will retrofit stormwater treatment facilities and best management practices (BMPs), and will implement other system upgrades, to reduce excess sediment, bacteria, and nutrient loads to Cinco Bayou, Gap Creek, Lake Lorraine, and ultimately Choctawhatchee Bay.

PURPOSE AND OBJECTIVES

The purpose of this program is to retrofit stormwater treatment facilities and to rehabilitate failing segments of an aging stormwater management system in Okaloosa County sub-basins draining to Choctawhatchee Bay. The objectives of the project include: (1) reduce excess sediment, bacteria, and nutrient loadings; (2) improve water quality and habitat conditions in receiving waters; and (3) promote the recovery of seagrass and oyster communities in areas effected by excess nonpoint source pollutant loads.

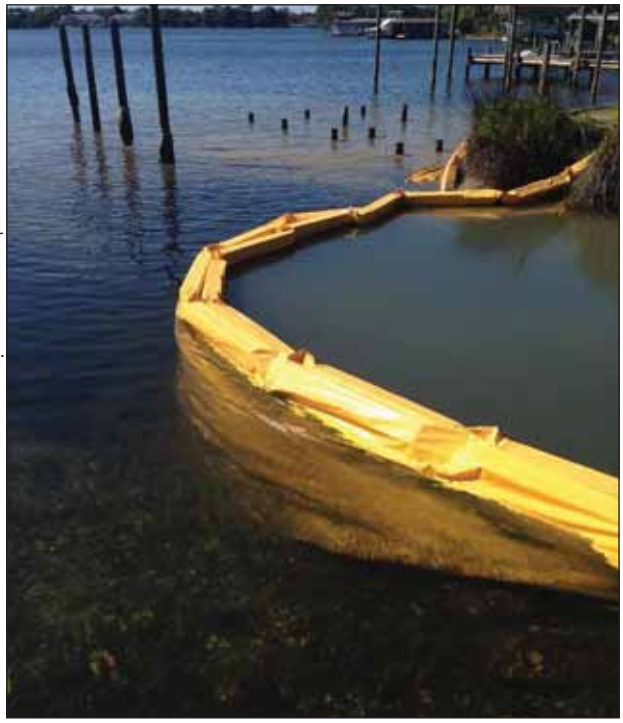


Figure 3-1B. Photo of sedimentation at an outfall in Cinco Bayou.

PROJECT COMPONENTS

Okaloosa County has conducted a thorough system inventory and has identified priority locations for system upgrades and project implementation, as shown in **Figure 3-1C**.

The Okaloosa County Stormwater Retrofit Program will include the following project components at the identified priority locations:

- Construct stormwater retention/detention treatment areas
- Repair broken/aging pipes that are allowing excess sediments into the system
- Install hydrodynamic sediment separators (e.g., Stormceptor© System) in priority locations
- Remove accumulated sediment deltas from outfall locations.

In addition, the program will include pre- and post-construction water quality monitoring in receiving waters to document system improvements.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will contribute to the improvement of surface water quality in Gap Creek, Cinco Bayou, Lake Lorraine, and ultimately Choctawhatchee Bay. The proposed stormwater management system retrofits and upgrades will reduce pollutant loadings of sediment, nutrients, bacteria, and floatables to surface waters. In addition, the program will restore habitats and promote the recovery of seagrass and oyster communities in areas effected by excess nonpoint source pollutant loads. Improvements to surface water quality and estuarine habitats and living resources will in turn contribute to the sustainability of the Okaloosa County economy, which is heavily based on beach and fishing based tourism.

Eligibility and Statutory Requirements

This project is consistent with and addresses the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

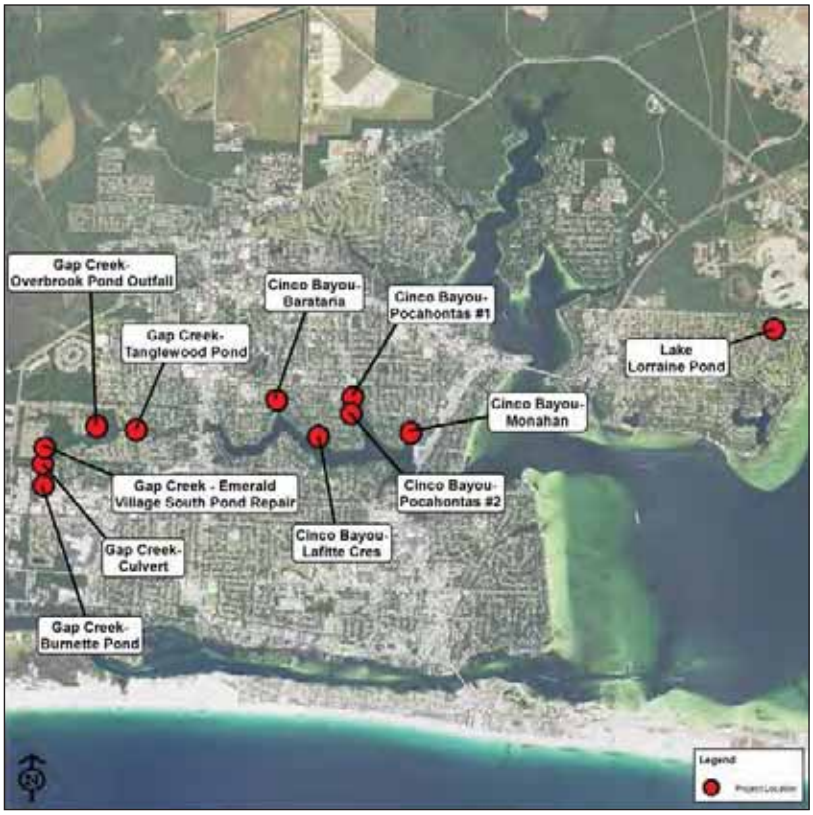


Figure 3-1C. Locations of priority stormwater management system retrofits and upgrades.

Implementing Entities

Okaloosa County will be the sole implementing entity and grant sub-recipient responsible for the design, permitting, construction, and success monitoring of the program. Okaloosa County will administer the project by hiring design professionals, contractors to install the improvements, and environmental consultants to monitor and quantify the improvements.

Best Available Science and Feasibility Assessment

The State of Florida began promulgating stringent stormwater management regulations in the 1980s, and has continued to update and revise stormwater system design guidelines and BMPs based on ongoing scientific research the development of best available technologies. Current Florida stormwater regulations are provided in Section 62-25, Florida Statutes, which exceed federal stormwater management guidelines with respect to water quality treatment. Okaloosa County will develop program components consistent with current State regulations, design guidelines, and BMPs.

Some of the preliminary studies on these project areas have been cooperatively funded by the NWFWMD, and this program is consistent with the following natural resource management plan.

- *NWFWMD, 2017. Choctawhatchee River and Bay Surface Water Improvement and Management (SWIM) Plan. NWFWMD Program Development Series 17-05.*

There have been many stormwater retrofit projects successfully completed in north Florida to provide both precedent and lessons learned. This project is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget, and (3) effectively operate and maintain the project components over the long term.

Risks and Uncertainties

In the evaluation of this program, no significant risks have been identified that would preclude implementation. There is some risk seagrass or oysters may have colonized the fringes of the sediment deltas; therefore, buffers may need to be observed when removing sediment deltas near some outfalls.

Success Criteria and Monitoring

This project will affect stormwater management system improvements, as well as water quality, habitat quality, and marine living resources in the receiving waters of the affected outfalls. Therefore, a range of appropriate success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Number of outfalls retrofitted
- Linear feet of pipe replaced
- Acres of impervious surface treated by the stormwater system BMPs
- Changes in ambient surface water quality (e.g., turbidity) at the affected outfalls.

In the project grant request, a detailed monitoring program will be designed that addresses data collection and assessment methodologies for the above listed criteria. Okaloosa County is committed to implementing the necessary monitoring program and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this program is approximately 7 years. The program is expected to begin in 2018 and end in 2024. Implementation of this program has been divided into several milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study																
Preliminary design																
Final design and permitting																
Phase 1 Construction – Bayou Cinco																
Phase 2 Construction – Gap Creek																
Phase 3 Construction – Lake Lorraine																
Success monitoring																

Budget and Funding Sources

Okaloosa County has estimated at total project cost of $6,460,000 based upon the best available information and is committed to allocating $4,700,000 of its share of the Florida Spill Impact Component to the project. Additional county funding will add another $300,000 as in-kind design services, and Okaloosa County will also be seeking other leveraged funding sources to supplement these monies. In addition, Okaloosa County is committed to providing additional county funding, as may be needed; however, the program elements are scalable and can be implemented incrementally as funding allows.

A summary of the project budget and funding sources is provided in the table below.

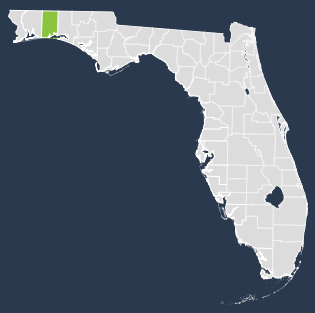
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$96,000	$66,000
Preliminary design	$378,000	$354,000
Planning Subtotal	**$474,000**	**$420,000**
Final design and permitting	$316,000	$280,000
Construction	$4,670,000	$3,570,000
Implementation Subtotal	**$4,986,000**	**$3,850,000**
Monitoring	$1,000,000	$430,000
Total Cost	**$6,460,000**	**$4,700,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$4,700,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds - in-house engineering design services		$300,000
Total Committed Funding		**$5,000,000**
Budget Shortfall		**$1,460,000**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
Triumph Gulf		
S.18 Clean Water State Revolving Fund (CWSRF)		
S.27 Nonpoint Source Management Program (NPSM): Section 319		
S.50 Water Projects Priorities Database		

Partnerships/Collaboration

Okaloosa County will continue to partner with the Choctawhatchee Bay Alliance and the Northwest Florida Water Management District in the development of this program.

OKALOOSA COUNTY

Offshore Fish Aggregating Devices (FADs)



PROJECT NO. 3-2

Project Description

OVERVIEW AND LOCATION

This project involves the deployment of six to eight floating fish aggregating devices (FADs) from 30 to 90 miles offshore to attract pelagic fish species and provide enhanced recreational and commercial charter fishing opportunities. **Figure 3-2A** shows the general location of the proposed FADs off the coast of Okaloosa County.

Figure 3-2A. General location of proposed FADs off the coast of Okaloosa County.

NEED AND JUSTIFICATION

Offshore fishermen have historically benefitted from active and decommissioned National Oceanic and Atmospheric Administration (NOAA) weather buoys in the Gulf of Mexico that act as FADs to attract and concentrate pelagic fish, such as tuna, dolphinfish, and billfish. These structures make fish catch more efficient for both recreational and commercial charter fishermen. There is a strong interest among recreational and commercial charter boat fishermen in Okaloosa County in deploying and maintaining a network of FADs in offshore waters to meet the increasing demand for enhanced pelagic fishing opportunities and to increase fishing-based tourism, which is a major component of the local economy.

From an ecological standpoint, hard substrate and vertical structure are limited habitats in the Gulf of Mexico (Fikes, 2013), and the FAD structures, like artificial reefs, provide: (1) hard substrate to support encrusting and colonial organisms; (2) niche space for small marine invertebrates; and (3) shelter for larval and juvenile fishes. The project is justified by the demonstrated economic benefits of saltwater fishing in coastal communities.

PURPOSE AND OBJECTIVES

The purpose of the proposed project is to construct and deploy FADs in offshore waters of Okaloosa County. Project objectives include: (1) increase the concentration of pelagic fish at known locations in offshore waters; (2) increase recreational and commercial charter fishing opportunities; and (3) enhance fishing-based tourism in Okaloosa and surrounding counties.

PROJECT COMPONENTS

The FADs will be deployed and anchored at six to eight locations approximately 30 to 90 miles in offshore waters, at depths of 200 to 1,000 feet. The total number of FADs to be deployed will be dictated by the available funds. The design of the FAD units will follow guidelines developed by the NOAA. **Figure 3-2B** and **Figure 3-2C** show photographs of FADs, both above and below the water line, respectively.

Project components include planning, site selection, deployment, maintenance, and monitoring. The coordinates of the FADs will be published, and will be available for public use for recreational and commercial charter fishing.

Figure 3-2B. Above-waterline photograph of a typical FAD.

Figure 3-2C. Below-waterline photograph of a typical FAD.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

Okaloosa County is the second-most popular drive-to destination in Florida and relies on beach- and fishing-based tourism. The proposed project will support recreational fishing, commercial fishing charters and headboats, and commercial fisheries. This project will support the increasing demand for offshore fishing opportunities by both residents and tourists by attracting and concentrating fish such as tuna, dolphinfish, and billfish at known locations in Okaloosa County's offshore waters. Similar to artificial reefs, FADs also support encrusting and colonial organisms, such as sponges and corals, and provide shelter for larval and juvenile fishes.

Eligibility and Statutory Requirements

This project is consistent with and addresses the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of tourism in the Gulf Coast region, including recreational fishing (primary).

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 5: Restore and Revitalize the Gulf Economy (primary)
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 8 (Consortium Objective): Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects (primary)
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

Okaloosa County will be the sole implementing entity and grant sub-recipient responsible for the design, permitting, construction, and success monitoring of the program. The Tourist Development Councils from Gulf County to Escambia County have helped to fund an economic impact study for the project.

Best Available Science and Feasibility Assessment

The economic benefits to Florida's coastal communities from fishing are undeniable. Of the entire United States, the economic benefits of saltwater recreational fishing were greatest in west Florida ($4.9 billion, 47,000 jobs), followed by east Florida ($3.3 billion, 29,000 jobs) (NOAA 2011). The economic benefits of FADs include increased sport fishing trips, reduced fuel consumption, commercial and cottage industry development, and potential reductions in pressure on natural reef resources (Sharp, 2011). FADs attract and concentrate fish for more efficient catching, either by line or seine, although the reasons are unknown (FAO, 2017). There is little research indicating direct impacts on pelagic fisheries as a result of FADs, although they can affect tuna movements due to their pervasiveness (Wang et al., 2014), increase impacts of bycatch of species, and result in entanglement/drowning of sea turtles and marine mammals if not properly maintained (NOAA 2017). The following resources provide relevant information on FADs.

- *FAO (Food and Agriculture Organization of the United Nations), 2005-2017. Fish Aggregating Device (FAD). Technology Fact Sheets. Text by J. Prado. In: FAO Fisheries and Aquaculture, Rome. http://www.fao.org/fishery/equipment/fad/en.*
- *NOAA, 2017. Fish Aggregating Devices (FADs): Fishing Gear and Risks to Protected Species. http://www.nmfs.noaa.gov/pr/interactions/gear/fads.htm.*
- *NOAA, 2011. Fisheries Economics of the United States 2011.*
- *Sharp, M. 2011. Economic Benefits of Fish Aggregating Devices in the South Pacific. https://fads2011.sciencesconf.org/1307/document.*

- *Wang, X., Chen, Y., Truesdell, S., Xu, L., Cao, J., & Guan, W., 2014. The Large-Scale Deployment of Fish Aggregation Devices Alters Environmentally-Based Migratory Behavior of Skipjack Tuna in the Western Pacific Ocean. PLOS ONE, 9(5).*

This project is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long-term.

Risks and Uncertainties

No significant risks or uncertainties were identified during the evaluation of this project that would preclude project implementation. FADs will be designed to best available technology guidelines to limit damage from tropical storms as well as adverse impacts to marine species. Regular monitoring and maintenance along with public information on the proper use of the FADs will minimize any adverse impacts.

Success Criteria and Monitoring

The proposed project includes placement structures to support recreational and commercial demand for offshore fishing opportunities. Appropriate success criteria will be developed and described in the implementation grant request. It is anticipated that quantitative success criteria will be developed for:

- Number of FADs deployed
- Increase in recreational use and fishing trips.

In the project grant request, a detailed monitoring program will be described that addresses data collection and assessment methodologies for the above-listed criteria. Okaloosa County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 6 years. It is expected to start in 2018 and end in 2023. The project milestones and schedule are shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study	■															
Preliminary design	■															
Final design and permitting	■															
Construction (buoys)		■														
Construction (deployment)			■	■												
Success monitoring		■	■	■	■	■										

Budget and Funding Sources

Okaloosa County has estimated the total cost of this project to be approximately $500,000, and is committed to allocating $500,000 of its share of the Florida Spill Impact Component to the project. Other county funds (Tourist Development Tax) will be used for continuing maintenance of the FAD network. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$25,000	$25,000
Preliminary design	$25,000	$25,000
Planning Subtotal	**$50,000**	**$50,000**
Final design and permitting	$25,000	$25,000
Construction	$275,000	$275,000
Maintenance	$80,000	$0
Implementation Subtotal	**$380,000**	**$300,000**
Monitoring	$150,000	$150,000
Total Cost	**$580,000**	**$500,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$500,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds – Tourist Development Tax		$80,000
Total Committed Funding		**$580,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
Triumph Gulf		
O.18 FishAmerica Foundation		
S.49 Sport Fish Restoration Program		

Partnerships/Collaboration

Okaloosa County has established a regional partnership for the development of FAD networks with:

- Gulf County
- Bay County
- Walton County
- Santa Rosa County
- Escambia County
- Gulf Shores, Alabama.

The Tourist Development Councils of the above listed counties have funded an economic impact study for the project. Other potential project partners include:

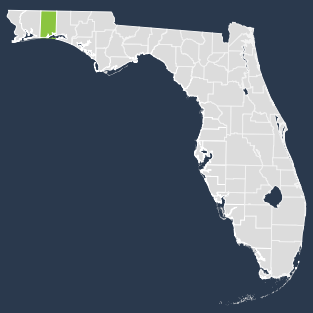
- University of West Florida
- University of Florida/Institute of Food and Agricultural Sciences (IFAS)
- Florida State University
- Florida Fish and Wildlife Conservation Commission
- The Nature Conservancy.

Coordination with the following agencies is anticipated during regulatory permitting and operation:

- Florida Department of Agriculture & Consumer Services
- Florida Fish and Wildlife Conservation Commission
- Florida Department of Environmental Protection
- U.S. Army Corps of Engineers.

OKALOOSA COUNTY

Choctawhatchee Bay Estuary Program



PROJECT NO. 3-3

Project Description

OVERVIEW AND LOCATION

This project involves the establishment of the Choctawhatchee Bay Estuary Program (CBEP), an alliance of federal, state, regional and local partners and stakeholders modeled after the National Estuary Program. The goal of the CBEP will be to develop and implement a Comprehensive Conservation and Management Plan (CCMP) for Choctawhatchee Bay and to undertake various projects designed to improve and protect the natural resources of the Choctawhatchee Bay watershed. **Figure 3-3A** shows the location of Choctawhatchee Bay.

Figure 3-3A. Choctawhatchee Bay Estuary Program Location Map.

NEED AND JUSTIFICATION

Choctawhatchee Bay is a critically important estuary to the economy, community, and way of life of Okaloosa County and neighboring counties as well. It provides fish and wildlife resources, including seagrass habitat, which supports numerous fish and invertebrate species. In addition, it is a popular place for recreational activities and tourism. Choctawhatchee Bay and several of its adjacent beaches are listed as impaired for nutrients and/or bacteria by the FDEP under section 303(d) of the Federal Clean Water Act. These impairments negatively impact the health of the Bay's seagrasses and limit its recreational value. It is for these reasons that the residents of Okaloosa County, Walton County, Holmes County, Washington County, Eglin Air Force Base, and the surrounding municipalities have banded together to coordinate efforts in support of establishing the CBEP to protect this valuable natural resource.

PURPOSE AND OBJECTIVES

The purpose of this project is to establish the CBEP, an alliance of federal, state, regional, and local partners and stakeholders modeled after the National Estuary Program. The objectives of the project are to: (1) use planning grant funds to "stand up" the CBEP organization; (2) develop the CCMP for Choctawhatchee Bay; (3) identify long-term funding sources to maintain the program; (4) implement the CCMP; and (5) improve the coordinated restoration and management of Choctawhatchee Bay.

PROJECT COMPONENTS

The CBEP will be a non-regulatory resource management program that will work to improve the waters, habitats, living resources, and economy of the Choctawhatchee Bay watershed. Okaloosa, Walton, Holmes, and Washington Counties, through an interlocal agreement, have established the Choctawhatchee Bay Estuary Coalition (CBEC). In addition, neighboring municipalities, Eglin Air Force Base, and the Choctawatchee Bay Alliance have also partnered with these counties to establish the critical mass and collaboration needed to establish CBEP. The planning grant funds will be used to stand up the CBEP, including the following activities:

- Fund a planning conference
- Hire a director and staff
- Establish a program budget
- Set up grants/auditing protocols
- Commission a CCMP report.

The CCMP will identify critical-need projects throughout the estuary and begin funding coordination on those projects, which could include septic system abatement, stormwater treatment, habitat restoration initiatives, gravity sanitary sewer rehabilitation, and dirt road paving among others. The CCMP will also identify long-term funding alternatives to sustain the program.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

The Choctawhatchee Bay Estuary Program will establish a coordinated effort to restore and protect the watershed's and estuary's water quality and habitat. Reducing bacteria and nutrients to concentrations that meet state and federal water quality standards will decrease the frequency and magnitude of algal blooms in the water column, thereby increasing water clarity and the amount of sunlight that reaches seagrass on the seafloor. Increased water clarity will improve seagrass health.

Preserving the translucent emerald waters of the region has become known for will also contribute to economic growth in Okaloosa County and adjacent areas, especially its fishery and ecotourism economies. The proposed CBEP will increase workforce development and job creation in both public and private sectors.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activities:

- Eligible Activity 8: Planning assistance (primary)
- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region
- Eligible Activity 3: Implementation of a federally approved marine, coastal, or comprehensive conservation management plan, including fisheries monitoring.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

Okaloosa County will be the lead entity and sub-recipient responsible for coordinating the activities of the CBEC, standing up the CBEP, and developing the CCMP. Other CBEC partners may be identified in the future as sub-recipients of project grants for CCMP implementation.

Best Available Science and Feasibility Assessment

This project is consistent with the following natural resource management plans:

- *NWFWMD, 2017. Choctawhatchee River and Bay System Surface Water Improvement and Management (SWIM) Plan.*

The CBEP will be modeled after the 28 National Estuary Programs across the country, which have been in existence for over 25 years. This program is considered to be feasible with respect to the ability to: (1) stand up the CBEP organization; and (2) prepare the CCMP.

Risks and Uncertainties

In the evaluation of this project, no risks or uncertainties were identified with respect to the ability to: (1) stand up the CBEP organization and (2) prepare the CCMP. Okaloosa County has garnered substantial stakeholder support for this project. There is some risk in the securing of future long-term funding sources to ensure the full implementation of the CCMP and sustainability of the CBEP.

Success Criteria and Monitoring

Specific success criteria will be developed in the planning grant request. It is anticipated that quantitative success criteria will be developed for:

- Standing up the CBEP organization and administrative infrastructure
- Development of the CCMP
- Identification of long-term funding sources to implement the CCMP and sustain the CBEP.

In the planning grant request, a detailed monitoring program design will be described that addresses assessment methodologies for the above-listed criteria. Okaloosa County is committed to implementing the program and quantifying project benefits.

Milestones and Schedule

The total estimated time horizon of this program for Bucket 3 funding is approximately 7 years. The program is expected to begin in 2018 and end in 2024. Implementation of this program has been divided into five milestones, as shown in the chart below. The Estuary Program plans to continue to operate indefinitely after 2024, on other funding sources.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Conferences/equipment/travel/supplies (over 4 years)																
Staff hires – salaries and benefits (over 4 years)																
Comprehensive Conservation Management Plan (CCMP)																
Projects based on CCMP																
Success monitoring																

Budget and Funding Sources

Okaloosa County has estimated a total project cost of $3,800,000, including implementation of CCMP early action projects. Okaloosa County is committed to allocating $1,000,000 of its share of the Florida Spill Impact Component and $1,250,000 of its Direct Component to the project. Okaloosa County will also be seeking other leveraged funding and partnerships with other counties and agencies to supplement these monies. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Planning activities (over 4 years)	$200,000	$200,000
Staff hires – salaries and benefits (over 4 years)	$1,550,000	$275,000
Develop CCMP	$250,000	$250,000
Implement initial CCMP projects	$1,800,000	$275,000
Planning Subtotal	**$3,800,000**	**$1,000,000**
Monitoring	$0	$0
Total Cost	**$3,800,000**	**$1,000,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$1,000,000
Direct Component – MYIP in development		$1,250,000
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$2,250,000**
Budget Shortfall		**$1,550,000**

POTENTIAL LEVERAGED FUNDING SOURCES
Council-Selected Restoration Component
Gulf Environmental Benefit Fund
Natural Resource Damage Assessment
Triumph Gulf
F.19 Conservation Technical Assistance
F.27 Regional Conservation Partnership Program (RCPP)
F.40 Coastal and Marine Habitat Restoration Grants
F.47 Estuary Habitat Restoration Program
F.52 North American Wetlands Conservation Act (NAWCA) - Small Grants
F.53 North American Wetlands Conservation Act (NAWCA) - Standard Grant
F.54 Southeast Region Coastal Program
O.42 Shell Marine Habitat Program

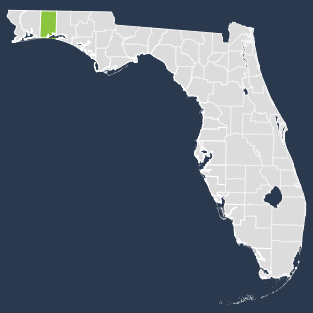
Partnerships/Collaboration

The Choctawhatchee Bay Estuary Program project will be collaborative effort between:

- Okaloosa County
- Walton County
- Holmes County
- Washington County
- The Choctawhatchee Bay Estuary Coalition
- The Choctawhatchee Basin Alliance
- Eglin Air Force Base
- Northwest Florida Water Management District.

OKALOOSA COUNTY

Shoal River Headwaters Protection Program



PROJECT NO. 3-4

Project Description

OVERVIEW AND LOCATION

This program consists of four components that will improve and protect water quality in the headwaters of the Shoal River and its tributaries. The first two components are two phases of a project to expand the centralized sewer facilities near the Bob Sikes Airport to accommodate anticipated commercial and industrial growth in this area. The third component will expand the sewer service to residential, commercial, and industrial developments along Highway 90, east of Crestview to address legacy water quality problems. The fourth component will reduce sedimentation in the Shoal River system by paving and providing stormwater treatment for an existing, well-traveled dirt road. This program will be implemented in central Okaloosa County, near the Bob Sikes Airport and in the area east of Crestview (see **Figure 3-4A**). Although the focus of these program elements is on water quality improvement and protection, the intent of these elements is also to support economic growth. For this reason, this program is classified as infrastructure with respect to the 25 percent infrastructure limitation.

Figure 3-4A. General location of the Shoal River Headwaters Protection Program components.

NEED AND JUSTIFICATION

Northern Okaloosa County is a rural area with high growth rates over the past 10 years, especially to the east of Crestview and around the Bob Sikes Airport Industrial Park (BSAIP), with the potential to impact the sensitive Shoal River ecosystem. The rural areas outside of Crestview lack centralized wastewater infrastructure, and unpaved dirt roads are common. While impairments do not exist now, as the area grows and more traffic disturbs the dirt roadbeds, the potential for local impairments due to nutrients, bacteria, and sediment will increase significantly. In addition, increased groundwater withdrawals for potable water use associated with the development of this area

have the potential to reduce local groundwater levels and aquifer recharge to shallow groundwater lenses that feed local streams in the Shoal River system.

Anticipated future growth includes industrial and residential properties in an area zoned for agricultural, industrial, and residential uses. If centralized sewer service is provided to this area, this infrastructure will provide the opportunity to recruit high-tech industries to the property around the airport, which will bring better-paying jobs to the residents of Okaloosa County. Alternatively, without centralized sewer collection, treatment, and disposal facilities, new development would be dependent on septic systems or small package plants, which would increase sources of water pollution to the Shoal River system. Finally, the program will also address ongoing sedimentation issues east of Crestview, specifically in the Pond Creek tributary of Shoal River. Dorcas Road is a dirt surface and is frequently used by Walton and Okaloosa County residents commuting to Crestview.

Figure 3-4B. Project area for the BSAIP proposed pump station (left) and force main (right).

This program is designed to reduce nonpoint-source pollution and nutrient loading into the Shoal River watershed and prevent impairments from the increasing inputs over time. The Shoal River discharges into the Yellow River Marsh Aquatic Preserve, and it ultimately discharges into East (Pensacola/Escambia) Bay, the Intracoastal Waterway, and the Gulf of Mexico. This program has benefits to the rivers, estuaries, and other waterbodies of Okaloosa, Santa Rosa, and Escambia Counties.

PURPOSE AND OBJECTIVES

The purpose of this program is to provide wastewater and roadway infrastructure improvements to address legacy water quality problems and prevent future water quality problems, associated with anticipated urban growth, in the headwaters of the Shoal River. The objectives of the program are to: (1) reduce nutrient and bacteria loads to the Shoal River from existing septic systems and sewer overflows; (2) reduce sediment loads to Pond Creek, a tributary to the Shoal River, from a heavily traveled dirt road; (3) recharge the shallow aquifer with highly treated wastewater effluent; and (4) minimize future water quality impacts resulting from anticipated urbanization in the Shoal River watershed.

PROJECT COMPONENTS

The overall goal of the program is to protect water quality in the Shoal River system by addressing the periodic sewer overflows in the BSAIP service area and preventing the installation of thousands of septic systems and a series of small package plants in the watershed. The program will also increase capacity at the BSAIP Water Reclamation Facility (WRF) to handle the additional domestic and industrial wastewater flows as growth continues in the area. In

addition, Dorcas Road will be redesigned to prevent sediment from continuing to enter the Shoal River watershed during the area's frequent rain storms.

In addition to the roadwork, this program is a preemptive move to make public sewers available where none exist in areas near BSAIP and in the community immediately east of Crestview. Over the last 10 years, Okaloosa County Water & Sewer (OCWS) has made a commitment to public sewers in north Okaloosa County, investing millions of dollars into a collection system and wastewater treatment and disposal capacity. Funding for this program will allow Okaloosa County to develop a proper master plan for the areas east of Crestview and ensure a high-quality, long-term solution to the present piecemeal approach for handling wastewater.

Figure 3-4C. Project area for the water and sewer system extension to the Highway 90 east area.

This program includes the following four components:

- *BSAIP Phase I:* OCWS will expand the capacity of the BSAIP WRF by expanding the effluent disposal system capacity at the facility from 0.391 million gallons per day (mgd) to 1.132 mgd to match the permitted treatment plant capacity (see **Figure 3-4B**). The WRF and effluent disposal system will eliminate nutrients through a state-of-the-art wastewater facility. The added absorption beds will lead to increased groundwater recharge near the airport. This phase is designed, permitted by the Florida Department of Environmental Protection (FDEP), and ready for construction.

- *BSAIP Phase II*: OCWS will upgrade and increase the capacity of a pump station and a force main that are located at the Bob Sikes Airport (see **Figure 3-4B**). Currently, the pump station conveys its flow directly to the BSAIP WRF through a force main located under the runway. This upgrade will increase flow capacity, address operational concerns, and reduce potential environmental impacts (i.e., sewer spills into Shoal River tributaries).

- *Highway 90 East Sewer Expansion*: The existing sewer system infrastructure will be expanded east of Crestview. This area will include the 10,000+ acre Shoal River Ranch property and other proximate properties (see **Figure 3-4C**).

- *Dorcas Road Dirt to Pave*: Dorcas Road is an east-west connector located between Highway 393 and Richardson Road in Okaloosa County, which connects to Walton County. This roadway floods several times each year at Pond Creek, a tributary to Shoal River, making the roadway impassable. Ongoing maintenance to keep the current dirt road passable results in continual erosion into the creek (see **Figure 3-4D**). The roadway will be designed to convey a 10-year storm event, consistent with the required design frequency for major roadways, as defined in the Florida Department of Transportation (FDOT) Green Book. Low-impact stormwater management features will be included in the roadway design to meet FDOT drainage standards, and the wooden bridge over Pond Creek will be upgraded to a concrete bridge.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

The Shoal River flows from Walton County westward through Okaloosa County before discharging to Blackwater Bay, a segment of the Pensacola Bay estuarine system. The river floodplain corridor is mostly undeveloped; however, increasing urbanization in the vicinity of the city of Crestview threatens the water quality and ecological integrity of Shoal River. This program is about putting in place the necessary infrastructure and other protections to prevent future water quality problems before they happen, while also addressing existing legacy water quality problems.

Figure 3-4D. Dorcas Road at Pond Creek Bridge with significant sedimentation next to the bridge.

The Shoal River Headwater Protection Program will allow Okaloosa County to grow in a manner that protects the Shoal River watershed and its ecological resources. Shoal River, Yellow River, and Pensacola Bay are designated as critical habitat for Gulf sturgeon, and the rivers include critical habitat for several species of protected freshwater mussels. Improvement and protection of water quality and aquatic habitat quality for these species are important components in the management plans for the watershed. Although some waterbodies downstream of this program's projects are listed as impaired for bacteria, most of the Shoal River and Titi Creek tributaries in the project areas currently meet water quality criteria.

Okaloosa County's proactive plan to expand its sewer system and upgrade the BSAIP WRF to handle future wastewater loads will allow future economic growth and development while maintaining good water quality and preventing impairments for nutrients, bacteria, or other pollutants in downstream waters. Likewise, the Dorcas Road project will decrease sediment loads to Pond Creek and protect downstream waters from impairments due to turbidity. The WRF groundwater recharge will foster local aquifer and shallow groundwater lens recharge.

Water and sewer infrastructure will benefit Okaloosa County's economy and contribute to the industrial and residential growth of Okaloosa County. The Okaloosa County Economic Development Council is regularly soliciting economic opportunities to grow its industrial and residential base. In addition, Eglin Air Force Base (AFB) is one of the world's largest military installations, consisting of more than 725 square miles immediately south of Crestview, and many military retirees settle in the area. Eglin AFB and ancillary private-sector support vendors are a large factor in the economy of Okaloosa County, and the Crestview area is well-positioned for defense-related business expansion and residential development.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 6: Infrastructure projects benefiting the economy or ecological resources, including port infrastructure.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Consortium Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

OCWS and the Okaloosa County Roads Division will be the implementing entities and grant sub-recipients responsible for the design, permitting, construction, operation and maintenance, and monitoring of this program. OCWS has coordinated with numerous other agencies in the development of these projects, and may collaborate with other entities in the implementation of the projects through leveraging and other cooperative funding agreements.

Best Available Science and Feasibility Assessment

This project is consistent with the following natural resource management and restoration plans:

- *Northwest Florida Water Management District, 2017. Pensacola Bay System Surface Water Improvement and Management (SWIM) Plan.*
- *Florida Department of Environmental Protection, 2017. Yellow River Marsh Aquatic Preserve Management Plan.*

The WRF Effluent Disposal Expansion portion is permitted and ready for construction. The BSAIP WRF is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct this project within the proposed budget; and (3) effectively operate and maintain this project over the long term. The other program components appear to be feasible; however, a full feasibility assessment cannot be made until preliminary design is completed for each program component.

Risks and Uncertainties

In the evaluation of this program, no significant risks or uncertainties were identified. The final design and permitting of the BSAIP WRF has been completed, and this project is ready for implementation. The other projects of the program are in the planning phases.

Success Criteria and Monitoring

This program will provide for infrastructure improvements that will both reduce existing pollutant loads, and prevent an increase in future pollutant loads, to the headwaters of the Shoal River. Appropriate success criteria will be described in the program grant request for the following metrics:

- Acreage of absorption beds constructed and capacity (in gallons per day) of effluent disposal added
- Linear footage of pipe installed and increased capacity (in gallons per day) of the new lift station/force main
- Linear footage of pipe installed and by increased capacity (in gallons per day) of the wastewater collection system to this service area
- Linear feet of dirt road paved
- Change of ambient water quality conditions in the upper Shoal River.

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In the program grant request, a monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Okaloosa County currently implements an ambient water quality monitoring program and is committed to conducting the necessary monitoring and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this program is approximately 7 years. It is expected to start in 2026 and end in 2032. Implementation of this program has been divided into the four project components, as shown in the milestone chart below. Success monitoring will last 2 years beyond the end of construction of all component projects.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
BSAIP: Phase I																
Final design and permitting										■						
Construction										■	■					
BSAIP: Phase II																
Feasibility study (Phase II)										■						
Preliminary design (Phase II)										■						
Final design (Phase II)											■					
Construction (Phase II)											■	■				
Highway 90 Sewer Expansion																
Feasibility study										■						
Preliminary design										■						
Final design											■					
Construction											■					
Dorcas Road Dirt to Pave																
Preliminary design										■						
Final design											■					
Construction												■	■			
Programmatic water quality monitoring									■	■	■	■	■	■	■	

Budget and Funding Sources

The overall cost of the program has been estimated by Okaloosa County to be $6,820,000. Okaloosa County intends to construct these projects using a combination of in-house construction forces and contractors. Okaloosa County requested $300,000 for water quality monitoring for a 7-year period. Okaloosa County will provide $350,000 for BSAIP project Phase II, $620,000 for the Highway 90 East Sewer Expansion, and $300,000 for the Dorcas Road component. A breakdown of the cost per project is shown in the table below.

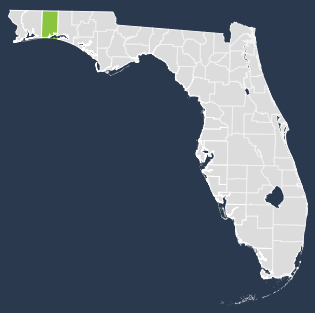
Okaloosa County will also be seeking other leveraged funding sources to supplement these monies, and several sources of leveraged funds have been identified, including State of Florida Water Project funding (appropriation) and State Revolving Fund grants. The BSAIP WRF Effluent Disposal Expansion project and the Highway 90 East work has been submitted for Triumph Gulf Coast funding.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
BSAIP: Phase I		
Final design and permitting	$100,000	$100,000
Construction	$1,400,000	$1,400,000
Implementation Subtotal	**$1,500,000**	**$1,500,000**
BSAIP Phase I Total	**$1,500,000**	**$1,500,000**
BSAIP: Phase II		
Feasibility study	$15,000	$15,000
Preliminary design	$15,000	$15,000
Planning Subtotal	**$30,000**	**$30,000**
Final design and permitting	$120,000	$120,000
Construction	$1,050,000	$700,000
Implementation Subtotal	**$1,170,000**	**$820,000**
BSAIP Phase II Total	**$1,200,000**	**$850,000**
Highway 90 East Sewer Expansion		
Feasibility study	$15,000	$15,000
Preliminary design	$15,000	$15,000
Planning Subtotal	**$30,000**	**$30,000**
Final design and permitting	$50,000	$50,000
Construction	$1,240,000	$620,000
Implementation Subtotal	**$1,290,000**	**$670,000**
Highway 90 East Total	**$1,320,000**	**$700,000**
Dorcas Road Dirt to Pave		
Feasibility study	$0	$0
Preliminary design	$60,000	$60,000
Planning Subtotal	**$60,000**	**$60,000**
Final design and permitting	$140,000	$140,000
Construction	$2,300,000	$2,000,000
Implementation Subtotal	**$2,440,000**	**$2,140,000**
Dorcas Total	**$2,500,000**	**$2,200,000**
Success monitoring	$300,000	$300,000
Total Cost	**$6,820,000**	**$5,550,000**

COMMITTED FUNDING SOURCES	
Spill Impact Component	$5,550,000
Direct Component	$0
Other grants or co-funding	$0
Other County funds – utility funds	$1,270,000
Total Committed Funding	**$6,820,000**
Budget Shortfall	**$0**
POTENTIAL LEVERAGED FUNDING SOURCES	
Northwest Florida Water Management District Cooperative Funding	
Triumph Gulf	
F.21 Watershed Protection and Flood Prevention	
S.10 Community Planning Technical Assistance Grants	
S.18 Clean Water State Revolving Fund (CWSRF)	
S.25 Innovative Nutrient and Sediment Reduction and Conservation Pilot Project Program	
S.27 Nonpoint Source Management Program (NPSM) - Section 319	
S.34 TMDL Water Quality Restoration Grants	

Partnerships/Collaboration

These projects are endorsed by the Okaloosa County Board of County Commissioners and supported by the Okaloosa County Economic Development Council. The Economic Development Council is regularly soliciting economic opportunities for the properties east of Crestview, especially in the Shoal River Ranch area and a future land use-designated industrial park. Other partnerships include Walton County and Northwest Florida Water Management District for the Dorcas Road project.



OKALOOSA COUNTY

Veterans Park Living Shoreline

PROJECT NO. 3-5

Project Description

OVERVIEW AND LOCATION

This project involves the construction of a 2,000-foot-long living shoreline at the Veterans Park site located on the southwest shore of Choctawhatchee Bay in Fort Walton Beach. The general location of the project is shown in **Figure 3-5A**.

NEED AND JUSTIFICATION

As Fort Walton Beach became a popular vacation destination, many of the native coastal strand habitats were developed. Veterans Park is an Okaloosa County–owned property that protects remnants of the native coastal strand and includes natural coastal freshwater ponds and constructed park amenities, which are at risk if the shoreline continues to recede. Heavy boat traffic in a nearby navigation channel creates boat wakes, and the northeast facing shoreline is susceptible to long fetch-producing high waves during winter storms. These forces have caused shoreline erosion and the loss of subtidal habitat. **Figure 3-5B** shows a photograph of the eroded shoreline on the east side of Veterans Park.

The living shoreline project will decrease wave energy and shoreline erosion, and will lessen sediment transport from onshore to offshore, thus eliminating the smothering of nearshore seagrasses that is currently occurring. In addition, the living shoreline will create a quiescent low-energy environment for new seagrass recruitment.

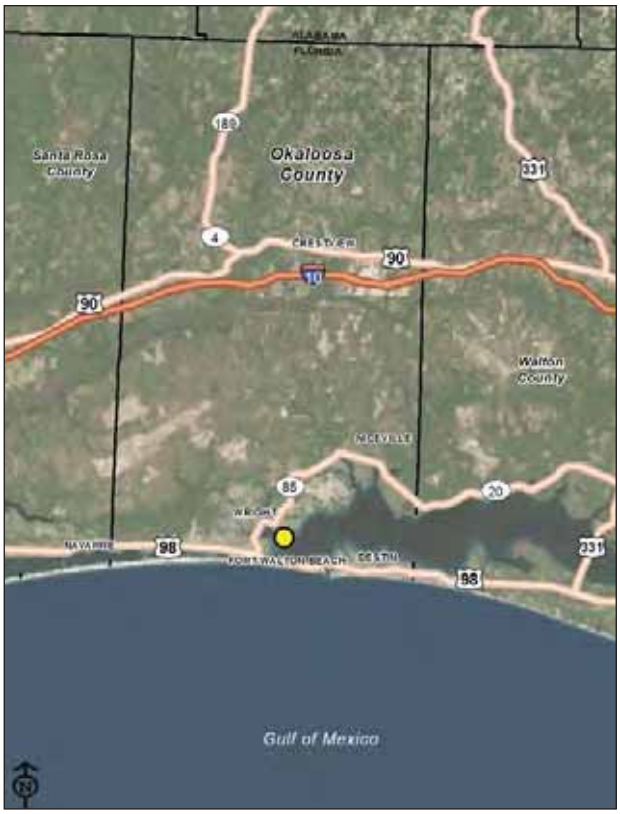


Figure 3-5A. Location of the Veterans Park living shoreline project in Okaloosa County.

PURPOSE AND OBJECTIVES

The purpose of this project is to construct a living shoreline at Veterans Park. The objectives include: (1) shoreline stabilization to protect subtidal, intertidal, and upland habitats and public property; (2) restoration of seagrasses in the nearshore subtidal areas; (3) provision of benthic and intertidal hard substrate habitat for encrusting marine organisms (e.g., oysters); (4) provision of wildlife habitat for shorebirds and wading birds; and (5) improved aesthetics for park visitors.

Figure 3-5B. Photograph of eroded shoreline on the east side of Veterans Park.

PROJECT COMPONENTS

Okaloosa County has completed a conceptual design and feasibility study for the project. **Figure 3-5C** shows the conceptual plan for the project. Okaloosa County proposes to use a blend of clean materials and native vegetation to reduce erosion and create sustainable fish and wildlife habitat.

Figure 3-5C. Conceptual plan for the Veterans Park living shoreline project.

The living shoreline will include low and high salt marsh creation areas, seagrass recruitment areas, and segmented, nearshore oyster-reef breakwaters to attenuate wave energy and provide habitat for fish and wildlife. The oyster breakwaters will consist of clean repurposed concrete rubble, limestone, or prefabricated concrete units and will serve as suitable substrate, or "cultch," for oyster colonization.

There will be gaps in the oyster reef to maintain tidal circulation and flushing, and the location of the breakwaters will avoid existing nearby seagrass beds; however, the close proximity to existing seagrass beds will aid in natural recruitment of seagrass seed source or rhizomes. Upon completion of the living shoreline project, other park amenities will be constructed, including a kayak launch, improved boat ramp access and staging, and a fixed fishing pier.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will contribute to the ecological recovery of the Gulf by: (1) stabilizing an eroding shoreline to protect subtidal, intertidal, and upland habitats and public property; (2) restoring seagrasses in the nearshore subtidal areas; (3) providing benthic and intertidal hard substrate habitat for encrusting marine organisms (e.g., oysters); (4) providing wildlife habitat for shorebirds and wading birds; and (5) improving aesthetics for park visitors.

This project will also support existing, and augment future, public access and recreational uses of the coastal zone, as well as provide opportunities for public environmental education through citizen participation in salt marsh plantings and monitoring. The project is also expected to provide economic benefits to Okaloosa County in the form of increased ecotourism.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 1: Restore and Conserve Habitat (primary)
- Goal 3: Replenish and Protect Living Coastal and Marine Resources
- Goal 4: Enhance Community Resilience.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 4: Restore and Enhance Natural Processes and Shorelines (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources
- Objective 5: Promote Community Resilience.

Implementing Entities

Okaloosa County will be the sole implementing entity and grant sub-recipient responsible for the design, permitting, construction, and success monitoring of the program.

Best Available Science and Feasibility Assessment

Living shoreline design and construction, as well as oyster reef restoration, have been well studied, and a range of best siting practices and successful construction methods have been developed. This program has been informed by key literature in this field, including the following references:

- *National Oceanic and Atmospheric Administration (NOAA), 2015. Guidance for Considering the Use of Living Shorelines. Final report prepared by the NOAA Living Shoreline Workgroup.*

- *Baggett, L.P., S.P. Powers, R. Brumbaugh, L.D. Coen, B. DeAngelis, J. Greene, B. Hancock, and S. Morlock, 2014. Oyster Habitat Restoration Monitoring and Assessment Handbook. The Nature Conservancy, Arlington, VA, USA, 96pp.*
- *Nordstrom, K. F., 2014. Living with Shore Protection Structures: A Review. Estuarine, Coastal and Shelf Science 150: 11-23.*

This project is also consistent with:

- *Northwest Florida Water Management District (NWFWMD), 2017. Choctawhatchee River and Bay Surface Water Improvement and Management (SWIM) Plan. NWFWMD Program Development Series 17-05.*

There are several completed living shoreline projects in north Florida to provide both precedent and lessons learned. This project is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term.

Risks and Uncertainties

In the evaluation of this program, no significant risks have been identified that would preclude implementation. There is some risk that constructed living shorelines could be damaged during tropical storm events; however, potential damage from storm surge and high waves will be factored into the siting and construction methods. In addition, the final design will consider and accommodate current sea-level rise and storm surge predictions for Choctawhatchee Bay.

Success Criteria and Monitoring

This project will affect habitat quality, marine living resources, and water quality in the vicinity of Veterans Park. Therefore, a range of appropriate success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Linear feet of living shoreline constructed
- Linear feet of shoreline stabilized
- Changes in percent cover of seagrass and salt marsh species
- Changes in ambient surface water quality (e.g., turbidity).

In the project grant request, a detailed monitoring program will be designed that addresses data collection and assessment methodologies for the above-listed criteria. Okaloosa County is committed to implementing the necessary monitoring program and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this program is approximately 4 years. The program is expected to begin in 2030 and end in 2033. Implementation of this program has been divided into several milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Final design and permitting																
Construction Phase 1 – Oyster Reef breakwaters																
Construction Phase 2 – vegetation																
Construction Phase 3 – park amenities																
Success monitoring																

Budget and Funding Sources

Okaloosa County has estimated at total project cost of $4,000,000 based upon the best available information, and is committed to allocating $910,000 of its share of the Florida Spill Impact Component to the project. Additional county funding will add another $150,000, and Okaloosa County will also be seeking other leveraged funding sources to supplement these monies. A summary of the project budget and funding sources is provided in the table below.

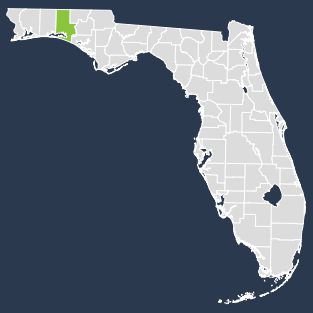
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Final design and permitting	$150,000	$150,000
Construction	$3,600,000	$510,000
Implementation Subtotal	**$3,750,000**	**$660,000**
Monitoring	$250,000	$250,000
Total Cost	**$4,000,000**	**$910,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$910,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds – Tourist Development Tax		$150,000
Total Committed Funding		**$1,060,000**
Budget Shortfall		**$2,940,000**
POTENTIAL LEVERAGED FUNDING SOURCES		
Gulf Environmental Benefit Fund		
Natural Resource Damage Assessment		
Triumph Gulf		
F.43 Coastal Resilience Grants Program		
F.51 National Coastal Wetlands Grants		
F.52 North American Wetlands Conservation Act (NAWCA) - Small Grants		
F.53 North American Wetlands Conservation Act (NAWCA) - Standard Grant		
F.54 Southeast Region Coastal Program		
O.42 Shell Marine Habitat Program		
S.52 SWFWMD Cooperative Funding Initiative		

Partnerships/Collaboration

Okaloosa County will continue to partner with the Choctawhatchee Bay Alliance and the Northwest Florida Water Management District for development and implementation of this project.

WALTON COUNTY

Choctawhatchee Bay Septic to Sewer Conversion



PROJECT NO. 4-1

Project Description

OVERVIEW AND LOCATION

This program involves the extension of central wastewater collection infrastructure south along U.S. Highway 331 (U.S. 331) to residential areas in southern Walton County currently served by on-site septic systems for sewage treatment and disposal. Also, existing wastewater infrastructure west of U.S. 331 will be upgraded to accommodate flows from newly serviced parcels. The program will reduce nutrient and bacterial loads to Choctawhatchee Bay by removing failing septic systems. The program improvements are located near the town of Freeport, as shown in **Figure 4-1A**.

Figure 4-1A. Location of Choctawhatchee Bay Water Quality Improvement Program.

NEED AND JUSTIFICATION

Choctawhatchee Bay is a large estuary with a major alluvial river basin (Choctawhatchee River) at the eastern end and a narrow Gulf pass (East Pass) at the western end. Secondary inflows originate from a series of bayous. Because of its configuration and lack of a substantial outfall, Choctawhatchee Bay was historically an oligohaline (low salinity) coastal embayment until the pass was dredged in 1929. Since then, the bay has exhibited salinity gradients typical for an estuary. For an estuary of this size, there is relatively low exchange of bay and Gulf waters, which fosters the potential for water quality issues. The Florida Department of Environmental Protection (FDEP) verified that the primary sources of nutrient loading to the estuary are the Choctawhatchee River and secondary inflows from smaller tributaries and bayous. The two primary non-point sources of nutrients to the bay are stormwater runoff and septic systems. The eastern portion of Choctawhatchee Bay is listed by FDEP as impaired for bacteria, nutrients, and nutrient response variables under Section 303(d) of the federal Clean Water Act.

The water quality in this portion of the bay is of major concern because of the prevalence of failing septic systems adjacent to contributing waterbodies. A study was conducted in the project area to determine the quantity of existing septic systems, and the water quality of discharges to roadside swales from septic systems after a major rain event. These samples showed fecal coliform counts up to 3,090 Most Probable Number, far above allowable state limits. There are 655 septic systems in the study area, with an additional 284 possible as existing parcels are built out.

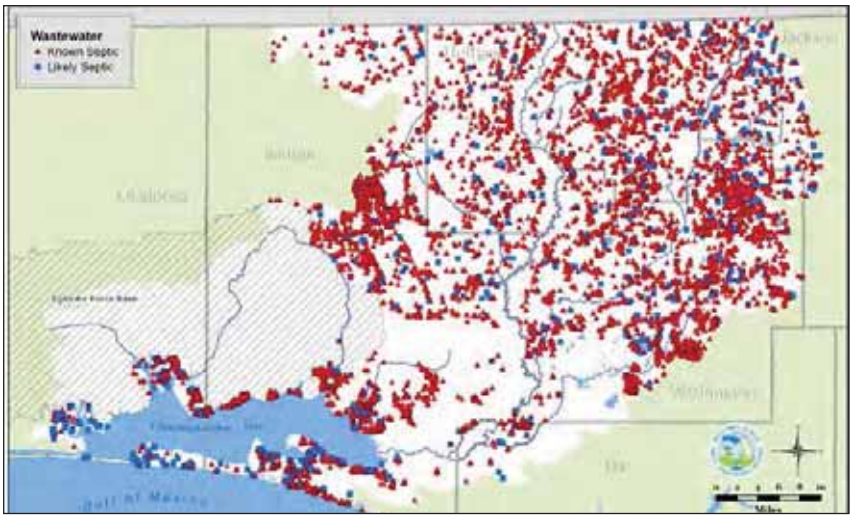


Figure 4-1B. NWFWMD assessment of septic systems in the Choctawhatchee Bay watershed.

The 2017 update of the Surface Water Improvement and Management Plan for Choctawhatchee Bay prepared by the Northwest Florida Water Management District (NWFWMD) includes "needs and opportunities for improved wastewater collection and treatment" as a watershed priority, specifically septic system abatement. **Figure 4-1B** indicates the high concentrations of septic systems in this project area along the bay's northeastern shore. This program will directly address issues related to nutrient and bacteria loadings to Choctawhatchee Bay.

PURPOSE AND OBJECTIVES

The purpose of this program is to reduce pollutant loadings to Choctawhatchee Bay from coastal septic systems. The objectives of the program are to: (1) improve water quality in Choctawhatchee Bay; and (2) restore marine habitats and living resources in the bay that may have been degraded by poor water quality.

PROJECT COMPONENTS

Walton County plans to address water quality issues in eastern Choctawhatchee Bay by expanding its centralized wastewater collection system. Areas with existing wastewater service along U.S. 331 are sporadic, and there is no sewer service at the southern extent of this roadway. This program includes expansion of the existing sewer system to four communities, allowing for the removal of more than 600 septic systems. **Figure 4-1C** shows the areas where existing septic systems are to be retrofitted with central sewer facilities. This program includes the following components or phases (see **Figure 4-1C**):

- Phase I: Lift stations and off-site improvements to the Freeport Wastewater Treatment Facility (WWTF)
- Phase II: Sewer collection and conveyance Improvements from Choctawhatchee Bay to the Riverwalk Subdivision (Segments I–IV)
- Phase III: Expansion of sewer to Areas 1 through 4.

The new centralized sewer system will ultimately service 939 parcels. The program also includes wastewater conveyance and treatment upgrades to infrastructure west of U.S. 331 to accommodate resulting wastewater flows, including the construction of a new Freeport WWTF. Treated effluent from the WWTF will be disposed of via reuse and spray irrigation. Installation of a central sewer system will take areas of relatively concentrated septic systems off-line and significantly reduce nutrient and bacteria inputs to the eastern portion of Choctawhatchee Bay.

Figure 4-1C. U.S. 331 corridor project areas.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

The proposed sewer infrastructure improvements along the U.S. 331 corridor are needed to eliminate existing old and failing septic systems along Choctawhatchee Bay, and to prevent the construction of new septic systems as development pressures increase. The infrastructure that will be constructed as part of this project is essential to the collection and transmission of domestic wastewater that will be collected from the southern part of Walton County to the WWTF in Freeport. This will foster the improvement of water quality, estuarine habitats, and fisheries and will promote seafood harvesting.

Provision of reliable wastewater treatment along the U.S. 331 corridor will also improve local conditions for small businesses along this vital arterial roadway to the Gulf beaches. The City of Freeport has a limited economic base, and rural-area economic development is critically important to Freeport's future. For the economy to grow with a strong tax base and with new business and employment, opportunities for all adequate infrastructure must be available. By extending wastewater transmission lines along U.S. 331, existing and planned residential, commercial, and industrial developments will be more stable. The City of Freeport and Walton County anticipate an increase in population in the affected area, and this program will ensure that increased growth does not contribute to future water quality problems.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activities:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystem, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources
- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources
- Consortium Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Walton County will be the sole implementing entity and grant sub-recipient responsible for the design, permitting, construction, operation and maintenance, and monitoring of this project. Walton County has coordinated with numerous other agencies in the development of the County's wastewater management plan, and may collaborate with other entities in the implementation of the project through leveraging and other cooperative funding agreements.

Best Available Science and Feasibility Assessment

Significant work has been done to monitor and characterize water quality in the Choctawhatchee Bay watershed and to implement water quality improvement and protection programs. In addition, this program is consistent with the goals of the following natural resources management plan:

- *NWFWMD, 2017. Choctawhatchee River and Bay Surface Water Improvement and Management Plan.*

The program components described above are considered to be feasible based on the available information and best professional judgement. A conceptual study has been completed for the force main expansion, which developed project alternatives, identified program components, and assessed improvements to the City of Freeport WWTF.

Risks and Uncertainties

No significant risks or uncertainties have been identified during a review of the available information for this program. It is, however, possible that risks and uncertainties will be identified during the preliminary design phase.

Success Criteria and Monitoring

This project will affect surface waters and living marine resources in nearshore Choctawhatchee Bay adjacent to the sewer improvement areas. Therefore, a range of success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Number of septic systems taken off-line
- Estimated reduction in nutrient and bacteria loads attributable to the wastewater improvements
- Changes in ambient water quality (nutrients, bacteria, chlorophyll-a) in the Choctawhatchee Bay in the vicinity of wastewater improvements.

In the project grant request, a detailed monitoring program will be described that addresses data collection and assessment methodologies for the above-listed criteria. Walton County is committed to conducting the monitoring necessary to support to quantify project benefits. Water quality monitoring will be coordinated with the Choctawhatchee Basin Alliance.

Milestones and Schedule

The total estimated time horizon for Phases I and II of this project is approximately 7 years. These programs will be conducted concurrently, and are expected to begin in 2018 and end in 2024. The time horizon of Phase III is approximately 6 years, and is expected to begin in 2027 and end in 2032. The project phases and respective milestones are shown in the chart below. This project is ready to begin engineering design and permitting.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Phases I & II																
Final Design (Phase I & II)	■	■	■	■												
Construction (Phase I)			■													
Construction (Phase II)					■											
Phase III																
Final design										■	■					
Construction												■	■			
Monitoring				■		■	■				■			■	■	

Budget and Funding Sources

Walton County has developed a cost estimate of $14,252,925 for the program. Walton County is committed to allocating its entire $12,660,000 share of the Florida Spill Impact Component to the program, and could provide additional county funding, as may be needed; however, the program elements are scalable and can be implemented incrementally as funding allows. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Phases I–II		
Final design and permitting	$1,528,117	$1,528,117
Construction: Lift stations and offsite improvements	$2,099,666	$2,099,666
Construction: Segments I–IV	$3,965,646	$3,965,646
Implementation Total	**$7,593,429**	**$7,593,429**
Phase III		
Final design and permitting	$857,128	$857,128
Construction	$5,682,368	$4,089,443
Implementation Total	**$6,539,496**	**$4,946,571**
	$120,000	$120,000
Total Cost	**$14,252,925**	**$12,660,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$12,660,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$12,660,000**
Budget Shortfall		**$1,592,925**
POTENTIAL LEVERAGED FUNDING SOURCES		
TIF funds (local)		
Natural resource damage assessment		
F.02 Rural Business Development Grants		
F.03 Rural Community Development Initiative Grants		
F.07 Water and Waste Disposal System for Rural Communities		
F.08 Water and Waste Disposal Technical Assistance and Training Grants		
F.11 Community Facilities Direct Loan and Grant Program in Florida		
F.12 Community Facilities Technical Assistance and Training Grant		
F.13 Community Facilities Guaranteed Loan Program		
F.17 Grant Program to Establish a Fund for Financing Water and Wastewater Projects		
F.31 Public Works and Economic Adjustment Assistance Programs		
F.63 Water Infrastructure Finance and Innovation Act (WIFIA)		
O.22 Florida Rural Water Association Loan Program		
O.40 Southeast Rural Community Assistance Project, Inc. (SERCAP) Loan Fund Program		
O.46 Water/Wastewater Loans		
S.10 Community Planning Technical Assistance Grants		

POTENTIAL LEVERAGED FUNDING SOURCES (CONT'D.)
S.13 Florida Job Growth Grant Fund
S.14 Small Cities Community Development Block Grant (CBDG) Program
S.15 Small Cities CBDG Section 108 Loan Guarantees
S.18 Clean Water State Revolving Fund (CWSRF)
S.27 Nonpoint Source Management Program (NPSM): Section 319
S.36 Water Projects
S.50 Water Projects Priorities Database
Triumph Gulf

Walton County will be seeking other leveraged funding sources to close the budget shortfall. One possible financial assistance opportunity is the U.S. Department of Agriculture Rural Development Water and Waste Disposal Loan and Grant Program. Typically, this program requires a preliminary design report and financial review of the applicant that results in a determination of grant/loan combination for the construction of the project. The Department of Economic Opportunity also provides grants/loan combinations for infrastructure projects based on a scoring criterion related to the percentage of low- and moderate-income (LMI) residents. A minimum LMI of 51 percent is typically required to qualify.

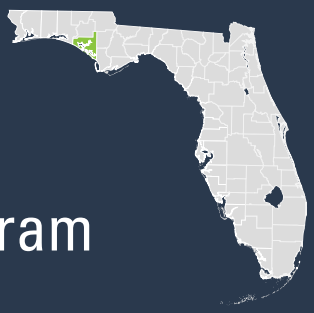
Matching funds are expected to be a combination of Pot 1 funds, State Revolving Funds (FDEP), and possibly Transportation Infrastructure Funds (TIF) funds for the U.S. 331 segment. Another potentially available funding source identified by Walton County is the FDEP 319 Grant Program for improved water quality in Choctawhatchee Bay.

Partnerships/Collaboration

The primary partnership for this project is between Walton County and the City of Freeport. Additional collaborations will be with the Choctawhatchee Basin Alliance for water quality monitoring before and after project completion.

BAY COUNTY

North Bay Water Quality Improvement Program



PROJECT NO. 5-1

Project Description

OVERVIEW AND LOCATION

This program involves a septic-to-sewer conversion eliminating 893 existing septic systems in the Deer Point Lake and North Bay watershed. In addition, the program includes the construction of a raw water line to supplement the reuse of treated effluent at the Lansing Smith Steam Plant, eliminating once-through cooling water withdrawals and heated effluent discharges to and from North Bay. **Figure 5-1A** shows the location of the North Bay water quality improvement program components.

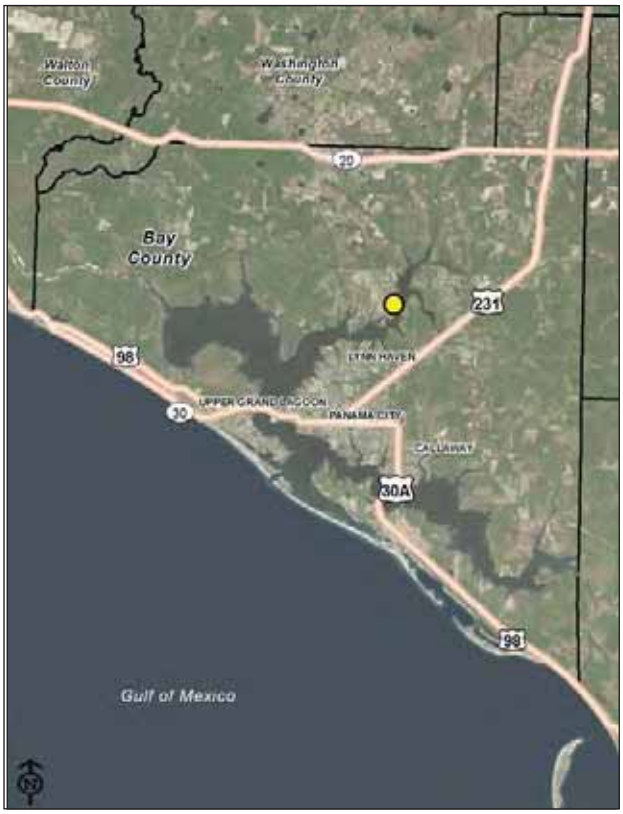


Figure 5-1A. Location of the North Bay water quality improvement program components.

NEED AND JUSTIFICATION

Deer Point Lake is a 5,000-acre impoundment and drinking water reservoir located seven miles north of Panama City off U.S. Route 231 and State Route 77 at Southport. Deer Point Lake is fed by natural freshwater streams, and prior to its impoundment, this water body was a segment of the St. Andrew Bay estuarine system. Deer Point Lake is currently designated as a Class I (potable water) waterbody, and approximately 50 million gallons per day (mgd) of raw water is pumped from the reservoir, providing the main source of potable water for Bay County. In addition to supplying drinking water, between 500 mgd and 1,000 mgd of fresh water spills over Deer Point Dam into North Bay.

Because of its use as a drinking water reservoir, Bay County has established the Deer Point Lake Protection Zone (DLPZ), a regulatory overlay to prevent pollution of the reservoir. However, a majority of the residential areas in the DLPZ are still using septic systems for on-site wastewater treatment and disposal. A large percentage of these septic systems are old, failing, and/or do not meet current standards for construction resulting in bacterial and nutrient

discharges to the reservoir. While these pollutants are removed in the drinking water treatment process, surface water discharges over the dam have impacted the downstream waters of North Bay and the St. Andrew Bay estuarine system. North Bay is currently listed by the Florida Department of Environmental Protection (FDEP) as an impaired waterbody for nutrients and nutrient response variables under Section 303(d) of the federal Clean Water Act. In addition, North Bay and St. Andrew Bay are listed as impaired for fecal coliform bacteria and bacteria in shellfish.

Figure 5-1B. Schematic of the proposed program components.

The septic-to-sewer component of this program will remove 893 old and failing septic systems in the DLPZ and replace them with centralized sewer facilities. Sewage will be collected and conveyed to North Bay Wastewater Treatment Facility (NBWWTF) for advanced treatment, thus eliminating septic system discharges of nutrients and bacteria to Deer Point Lake and the downstream waters of North Bay and St. Andrew Bay.

The raw water line component of this program is part of a larger master planning effort to improve water quality and enhance water conservation within the St. Andrew Bay watershed. Currently, Gulf Power's Lansing Smith Steam Plant (LSSP) electrical generating plant withdraws and discharges 3 mgd of saline cooling water to and from North Bay. Although the use of ambient surface water for permitted cooling process is currently a permitted process, concerns about impacts to marine life from impingement and entrainment and the discharge of heated power plant effluent to North Bay may preclude future reauthorization.

This program component involves the use of treated effluent from the NBWWTF to provide cooling water to the LSSP in lieu of North Bay surface waters. In addition, the current disposal of treated effluent into rapid-rate infiltration basins (RIBs) will be phased out. To implement this component, a new raw water line from Resota Beach Road to NBWWTF will be required to supplement the treated effluent and provide sufficient capacity of reuse cooling water to LSSP, until a sufficient volume of treated effluent is available.

PURPOSE AND OBJECTIVES

The purpose of this program is to implement a series of integrated water/wastewater infrastructure improvements in the North Bay watershed to address the following objectives: (1) construct centralized sewer facilities to replace 893 old and failing septic systems and reduce nutrient and bacteria discharges to Deer Point Lake and North Bay and (2) construct a raw water line to supplement the reuse of treated effluent at the LSSP, eventually eliminating once-through cooling water withdrawals and heated effluent discharges to and from North Bay.

PROJECT COMPONENTS

As discussed above, this program has two primary components:

1. Build a raw water pipeline from Econfina Creek near Resota Beach Road (upstream of Deer Point Lake) to NBWWTF. The line will transmit raw water to NBWWTF to supplement NBWWTF's effluent reuse supply. Supplementing NBWWTF's reuse effluent with raw water is required to provide the capacity of reuse cooling

water to LSSP, to allow for the replacement and elimination of cooling water withdrawals from North Bay. Bay County has received a Consumptive Water Use permit from the NWFWMD for the raw water withdrawals.

2. Expand the existing wastewater collection infrastructure to provide sanitary sewer service to the west Deer Point Lake area. The expansion will be done in two phases. Collection and conveyance systems are anticipated to be both via gravity flow and lift stations. It should be noted that residential hook ups to the new sewer conveyance lines is a mandatory requirement contained in the land development regulations addressing the DLPZ.

Figure 5-1B shows a schematic of the proposed program components, while **Figure 5-1C** shows a detailed plan view of the residential areas to be served by new centralized sewer facilities.

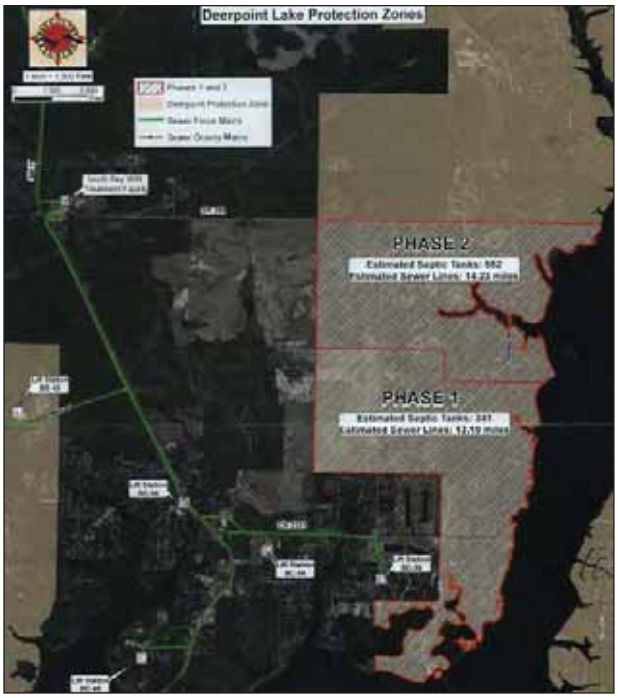


Figure 5-1C. Deer Point Lake area to be served by new centralized sewer facilities.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

The proposed water/wastewater infrastructure improvements will eliminate septic system discharges of nutrients and bacteria to Deer Point Lake and North Bay, and will eliminate power plant cooling water withdrawals and heated effluent discharges to and from North Bay. North Bay is an integral component of the St. Andrew Bay estuarine system, an ecologically important estuary that supports numerous fisheries and has high recreational value.

The program will not only remove old and failing septic tanks, but will also reduce current groundwater discharges of treated effluent from the NBWWTF to the existing RIB facilities. Furthermore, by converting the LSSP to a closed cooling water system maintained by raw water and treated effluent, larval and juvenile fish and shellfish mortality resulting from North Bay surface water withdrawals will be eliminated. The LSSP has a permit to deep-well inject excess cooling water from its closed freshwater cooling water system. Therefore, the discharge of heated effluent to North Bay from the LSSP will also be eliminated, which is expected to improve conditions for both seagrass and benthic invertebrate communities. Overall, the combined effects of these integrated infrastructure improvements are expected to substantially improve water quality and enhance marine life in North Bay and the St. Andrew Bay estuarine system.

Eligibility and Statutory Requirements

This program is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This program is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This program is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

The Bay County Board of County Commissioners will be the grant sub-recipient, and Bay County Utility Services will be the primary implementing entity responsible for the design, permitting, construction, operation and maintenance, and monitoring of the program components. Gulf Power (Southern Company) may implement other facets of the larger program aimed at eliminating the discharge of cooling water from LSSP to North Bay. Bay County has coordinated with FDEP and numerous other agencies in the development of the wastewater management plan and may collaborate with other entities in the implementation of the project through leveraging other funding opportunities.

Best Available Science and Feasibility Assessment

Significant work has been done to monitor and characterize water quality in the St. Andrew Bay watershed and to implement water quality improvement and protection programs. The Northwest Florida Water Management District (NWFWMD) recently updated the St. Andrew Bay Watershed Surface Water Improvement and Management (SWIM) Plan. This program is consistent with the goals of the approved plan which recommends septic to sewer conversion projects to address legacy non-point source pollution:

- *NWFWMD, 2017. St. Andrew Bay Watershed Surface Water Improvement and Management Plan.*
- *Ecology and Environment, Inc., 2016. St. Andrew Bay Watershed Characterization Report. Prepared for NWFWMD.*

Based on Bay County's master planning efforts, this project is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the program components within the proposed budget, and (3) effectively operate and maintain the program components over the long term.

Risks and Uncertainties

In the evaluation of this program, no significant risks or uncertainties have been identified that would preclude implementation of the components discussed above. There are some uncertainties with regard to the eventual decommissioning of the once-through cooling water system at the LSSP, as this aspect of the program is under the control of Gulf Power.

Success Criteria and Monitoring

This project will affect the surface waters and living marine resources of Deer Point Lake and North Bay. Therefore, a range of success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Number of septic systems taken off-line
- Changes in ambient water quality (nutrients, bacteria, chlorophyll-a) in Deer Point Lake and North Bay.

In the project grant request, a detailed monitoring program will be described that addresses data collection and assessment methodologies for the above-listed criteria. Bay County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 16 years. It is expected to start in 2018 and end in 2033. The feasibility study through final design for each program component is estimated to be 6 months to 24 months long. Design for Deer Point Phase II is assumed to start after design for Deer Point Phase I is complete. Construction is estimated to be 12 to 24 months long for each project. Implementation of this program has been divided into three phases, each with four milestones, plus success monitoring, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Raw Water Line																
Feasibility study	■															
Preliminary design		■														
Final design		■	■													
Construction			■	■												
Deerpoint Septic to Sewer Phase I																
Feasibility study				■												
Preliminary design					■											
Final design						■	■									
Construction									■	■						
Deerpoint Septic to Sewer Phase II																
Feasibility study												■				
Preliminary design													■			
Final design													■	■		
Construction															■	■
Success monitoring		■			■	■		■			■	■			■	■

Budget and Funding Sources

Bay County has estimated that Deer Point Phases I and II would cost approximately $10,000,000. This estimate does not include the on-site costs of decommissioning the homeowners' septic tanks or the cost for lateral connection installation. The raw water line cost is an estimated $1,500,000. Water quality data will need to be collected,analyzed, and reviewed to document performance for an estimated cost of $555,000 ($69,375 per year for 8 years). The total cost of the program is therefore estimated at $12,060,000. Bay County is committing $6,500,000 of its share of Florida's Spill Impact Component to this project. For Deer Point Phase I, Bay County has secured a $1 million grant from FDEP for improving North Bay's wastewater collection system. No money has been drawn from this grant.

Matching funds for the project include Direct Component funds for the Gulf Power reuse line, which is part of the overall programmatic approach, but not part of this project. Direct Component funds may also be used to supplement homeowners' connections costs once the sewage collection system has been installed. Bay County is committed to providing additional county funding, as may be needed; however, the program elements are scalable and can be implemented incrementally as funding allows. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Raw Water Line		
Feasibility study	$50,000	$50,000
Preliminary design	$50,000	$50,000
Planning Subtotal	**$100,000**	**$100,000**
Final design	$140,000	$140,000
Construction	$1,260,000	$1,260,000
Implementation Subtotal	**$1,400,000**	**$1,400,000**
Total	**$1,500,000**	**$1,500,000**
Deer Point Lake Septic to Sewer Phase 1		
Feasibility study	$100,000	$100,000
Preliminary design	$100,000	$100,000
Planning Subtotal	**$200,000**	**$200,000**
Final design	$300,000	$300,000
Construction	$5,000,000	$2,500,000
Implementation Subtotal	**$5,300,000**	**$2,800,000**
Total	**$5,500,000**	**$3,000,000**
Deer Point Lake Septic to Sewer Phase 2		
Feasibility study	$70,000	$70,000
Preliminary design	$70,000	$70,000
Planning Subtotal	**$140,000**	**$140,000**
Final design	$365,000	$365,000
Construction	$4,000,000	$1,495,000
Implementation Subtotal	**$4,365,000**	**$1,860,000**
Total	**$4,505,000**	**$2,000,000**
Monitoring	$555,000	$0
Total Cost	**$12,060,000**	**$6,500,000**

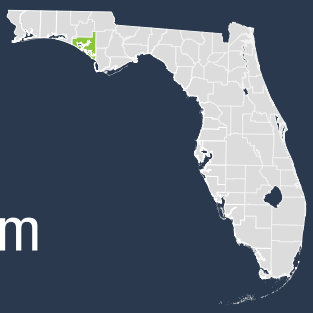
COMMITTED FUNDING SOURCES	
Spill Impact Component	$6,500,000
Direct Component	$0
Other grants and co-funding – FDEP grant for Deer Point Lake Phase I	$1,000,000
Other County funds	$0
Total Committed Funding	**$7,500,000**
Budget Shortfall	**$4,560,000**
POTENTIAL LEVERAGED FUNDING SOURCES	
Natural Resource Damage Assessment	
Triumph Gulf	
F.11 Community Facilities Direct Loan and Grant Program in Florida	
F.17 Grant Program to Establish a Fund for Financing Water and Wastewater Projects	
F.27 Regional Conservation Partnership Program (RCPP)	
F.63 Water Infrastructure Finance and Innovation Act (WIFIA)	
O.22 Florida Rural Water Association Loan Program	
O.40 SERCAP Loan Fund Program	
O.43 Southeast Aquatics	
O.46 Water/Wastewater Loans	
S.10 Community Planning Technical Assistance Grants	
S.13 Florida Job Growth Grant Fund	
S.14 Small Cities Community Development Block Grant (CBDG) Program	
S.15 Small Cities Community Development Block Grants (CBDG) Section 108 Loan Guarantees	
S.18 Clean Water State Revolving Fund (CWSRF)	
S.18 Clean Water State Revolving Fund (CWSRF)	
S.21 CWSRF Small Community Wastewater Construction Grants	
S.36 Water Projects	

Partnerships/Collaboration

Bay County will continue to collaborate with the Florida Department of Environmental Protection and Gulf Power as the primary implementing partners. Another potential partner is the Northwest Florida Water Management District through collaboration on related projects funded under the Surface Water Improvement and Management (SWIM) program.

BAY COUNTY

St. Andrew Bay Stormwater Improvement Program



PROJECT NO. 5-2

Project Description

OVERVIEW AND LOCATION

This multi-faceted program involves the retrofitting of various stormwater best management practices (BMPs) in both densely urbanized and more rural areas in the St. Andrew Bay watershed to reduce legacy non-point source pollution from untreated stormwater runoff. The focus of the program is on the Grand Lagoon and North Bay segments of the St. Andrew Bay system. Proposed stormwater BMPs include: the retrofitting of centrifugal separation units and baffle boxes at major stormwater outfalls, and the acquisition and construction of regional stormwater treatment system in the Grand Lagoon watershed; and the paving of dirt roads and creation of grassed swale treatment systems in the North Bay watershed. The program also includes small scale habitat restoration projects, and the funding of an ambient water quality monitoring program for the greater St. Andrew Bay estuarine system. **Figure 5-2A** shows the general location of the program components.

Figure 5-2A. St. Andrew Bay Location Map.

NEED AND JUSTIFICATION

St. Andrew Bay is an ecologically and economically important estuarine system in northwest Florida. Much of the older development in the Panama City area and adjacent portions of unincorporated Bay County in the St. Andrew Bay watershed consist of dense residential and commercial land uses constructed prior to promulgation of current state stormwater management regulations. Non-point source pollution is generated when stormwater runoff collects pollutants from across the landscape and carries them into receiving waters. Typical sources of non-point source pollution include stormwater runoff from urban and agricultural lands and erosion and sedimentation from construction sites, unpaved roads, and destabilized stream banks. Pollutants carried in runoff include nutrients, microbial pathogens, sediment, petroleum products,

metals, pesticides, and other contaminants. Modern stormwater BMPs are designed to reduce non-point source pollution through various physical and chemical processes.

The Florida Department of Environmental Protection FDEP has identified 37 waterbody segments in the St. Andrew Bay watershed as impaired based on Florida's Impaired Surface Waters Rule. Waterbody segments verified as impaired, based on sufficient data and identified causative pollutants, form the list of waters for which total maximum daily loads (TMDLs) will be developed. The Grand Lagoon segment is impaired for nutrients, while the North Bay segment is impaired for both nutrients and bacteria. This program will reduce legacy non-point source loadings of nutrients, bacteria and sediments at priority outfalls to Grand Lagoon and North Bay through the retrofitting of various stormwater BMPs.

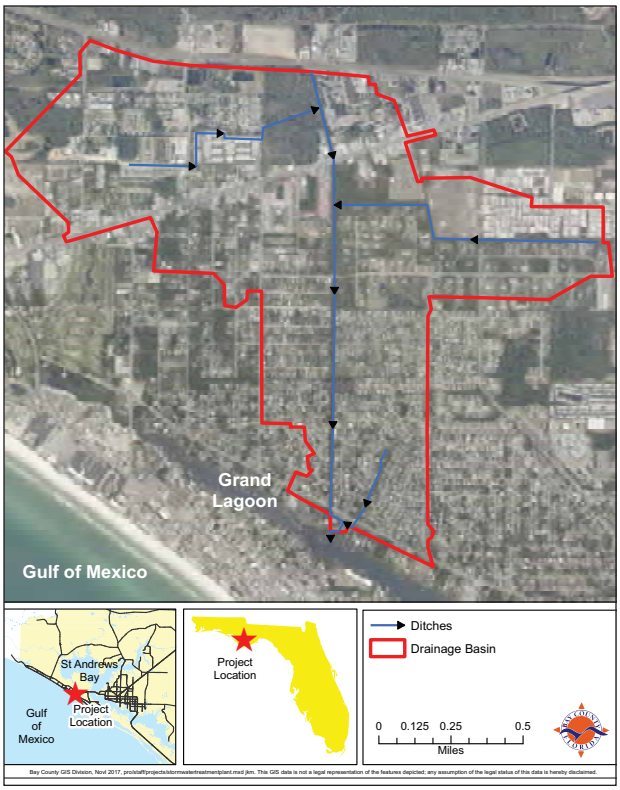


Figure 5-2B. Proposed Grand Lagoon Stormwater Treatment Facility. (Bay County)

PURPOSE AND OBJECTIVES

This purpose of this program is to reduce legacy non-point source pollution at priority locations in Grand Lagoon and North Bay through the retrofitting of a variety of BMPs. The objectives of the program are to: (1) reduce non-point source loadings of nutrients, bacteria, and sediment percent; and (2) improve water quality and habitat conditions in receiving surface waters.

PROJECT COMPONENTS

This program has five primary components or projects: (1) implement a water quality monitoring program to establish baseline data and inform decisions on County priority projects; (2) retrofit five high priority stormwater outfalls with centrifugal separation units and/or baffle boxes; (3) acquire property and construct a regional stormwater treatment facility in the Grand Lagoon watershed; (4) pave 11.27 miles of dirt roads and install vegetated stormwater swales; and (5) fund small-scale habitat restoration projects at priority locations near the stormwater improvements.

For the first component, Bay County will fund the St. Andrew Bay Resource Management Association (St. Andrew Bay Watch) to expand their current sampling regimen in the watershed to include nutrients, fecal coliform bacteria, chlorophyll-a, turbidity, temperature, pH, dissolved oxygen, salinity, tide, and precipitation. Annual reports will be provided on water quality trends and their potential impacts to benthic organisms. This program will provide baseline and post-project water quality data.

For the second component, Bay County will use existing data to locate, design and permit the retrofit installation of five centrifugal separation units or baffle boxes at priority outfalls in the St. Andrew Bay watershed to remove trash, greases and oils, sediments, and nutrients. The successful implementation of these systems is reliant on regular vacuum truck service to remove materials trapped by the units. These units can be installed exclusive of the design, construction, and operation of the stormwater treatment facility.

For the third component, Bay County will identify parcel(s) in the Grand Lagoon watershed to be acquired and used for the construction of a regional stormwater treatment facility to provide both sediment and nutrient sequestration. The land for the stormwater treatment facility will require a property assessment and purchase agreement. Concurrently, Bay County will start the design and permitting process for the retention pond and stormwater facilities. Once the property is acquired, the project can be bid and awarded to a contractor to complete implementation of the project elements. **Figure 5-2B** shows the portion of the Grand Lagoon basin to be addressed by the regional stormwater treatment facility.

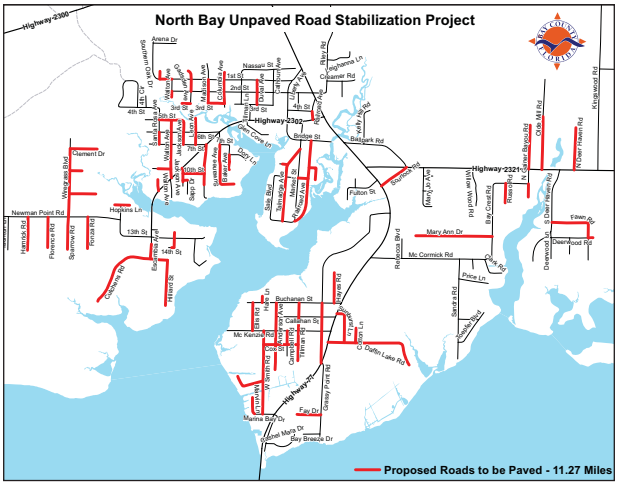


Figure 5-2C: Proposed North Bay Road Stabilization. (Bay County)

For the fourth component, Bay County has successfully completed a road paving program near Grand Lagoon and proposes to expand this program into North Bay (see Figure 5-2C). This program will not only pave roads but will also install grassed swales that trap sediments and prevent the nutrients in those sediments from reaching the Bay. The length of unpaved roads in the County has been reduced from 375 miles in 1991 to less than 212 miles in 2017.

Bay County will also help to fund smaller-scale restoration projects around the St. Andrew Bay System. Bay County will act much like an estuary program, providing matching funds for habitat and water quality improvement projects whose sponsors (local non-profits, school groups, community service initiatives) apply for matching funds. Bay County would allocate $75,000 per year to these projects. Projects may include: oyster shell recycling, seagrass or marsh restoration, living shoreline stabilization, and other smaller-scale projects deemed appropriate to the health of St. Andrew Bay watershed.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

St. Andrew Bay is an ecologically important estuary that supports numerous fisheries and has a high recreational value. Overall, the stormwater retrofits, dirt road paving and stabilization, and the regional stormwater treatment facility will significantly reduce environmental impacts to Grand Lagoon and St. North Bay, resulting in: (1) reduced watershed loadings of nutrients, bacteria, and sediment; (2) improved ambient surface water quality at receiving water locations; and (3) improved conditions for seagrasses, benthic invertebrates, and other marine living resources.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

Bay County will be the primary implementing entity and grant sub-recipient responsible for the design, permitting, construction, operation and maintenance, and monitoring of the stormwater retrofit, stormwater treatment facility and road paving projects. The St. Andrew Bay Resource Management Association (St. Andrew Bay Watch) will be an additional sub-recipient with the County on the Water Quality Monitoring Program.

Best Available Science and Feasibility Assessment

Significant work has been done to monitor and characterize water quality in the St. Andrew Bay watershed and to implement water quality improvement and protection programs. The Northwest Florida Water Management District (NWFWMD) recently updated the St. Andrew Bay Watershed Surface Water Improvement and Management (SWIM) Plan. This program is consistent with the goals of the approved plan which recommends stormwater refrofit projects to address legacy non-point source pollution:

- *NWFWMD, 2017. St. Andrew Bay Watershed SWIM Plan.*

This program is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the program components within the proposed budget; and (3) effectively operate and maintain the program components over the long term.

Risks and Uncertainties

The stormwater retrofits pose little risk as the technology has been available for many years and have a proven track record for success. The regional stormwater treatment facility component is contingent upon the parcel's availability for sale by a willing seller.

Success Criteria and Monitoring

This project will affect stormwater management system improvements, as well as water quality, habitat quality, and marine living resources in the receiving waters of the affected outfalls. Therefore, a range of appropriate success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Number of outfalls retrofitted
- Linear feet of pipe replaced
- Acres of impervious surface treated by the stormwater system BMPs
- Changes in ambient surface water quality (e.g., turbidity) at the affected outfalls.

In the project grant request, a detailed monitoring program will be designed that addresses data collection and assessment methodologies for the above listed criteria. Bay County is committed to implementing the necessary monitoring program and coordinating with other local and regional water quality monitoring entities to quantify project benefits. As stated above, a component of this program is the implementation of a system-wide ambient surface water quality monitoring program, so metrics for the performance of that program will also be developed in the project grant request.

Milestones and Schedule

The planning, implementation, and success monitoring of this project is anticipated to be spread over a 12-year period, as shown in the milestone chart below. The start date is 2018 and the anticipated end date is 2029.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
St. Andrew Bay Watch – water quality monitoring	■	■	■	■	■											
Stormwater retrofit product selection and permitting	■															
Phase 1: Construction – stormwater retrofits		■	■													
Property acquisition	■															
Design and permitting of Stormwater treatment facility	■	■														
Phase 2: Construction – stormwater treatment facility					■											
Phase 3 Design – paving dirt roads			■													
Phase 3: Construction – paving dirt roads				■	■	■										
Small-scale habitat Restoration projects	■	■	■	■	■	■	■	■	■	■						
Success monitoring			■	■	■	■	■	■	■	■	■	■				

Budget and Funding Sources

Bay County has estimated the total program cost to be approximately $14,900,000. The property acquisition cost for the Grand Lagoon Stormwater Treatment Facility is estimated at $1.6 million dollars. The remaining amount will be allocated to the construction of the facility, paving dirt roads, and the stormwater retrofits. The design and permitting work will be conducted by Bay County staff as in-kind services. Small-scale habitat restoration projects will be allocated $75,000 per year for the first 10 years from Pot 3 with potential leveraging from outside sources to sustain the project long-term. St. Andrew Bay Watch has requested $100,000 per year for five years to implement the water quality

monitoring program and conduct the success monitoring that will cover establishing a pre-construction baseline and post-construction reporting. Bay County is committing $6,160,000 of its share of Florida's Spill Impact Component to this project, and is committed to providing additional county funding, as may be needed; however, the program elements are scalable and can be implemented incrementally as funding allows. A summary of the project budget and funding sources is provided in the table below.

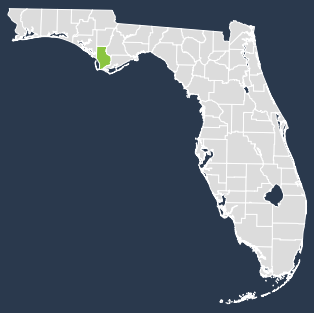
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Preliminary Design – Stormwater Retrofit System (selection and permitting)	$75,000	$0
Preliminary Design – Stormwater Treatment Facility (feasibility and permitting)	$75,000	$0
Planning Subtotal	**$150,000**	**$0**
Phase 1: Construction – stormwater retrofits	$1,000,000	$1,000,000
Property acquisition	$1,600,000	$1,600,000
Phase 2: Final design and permitting stormwater treatment facility	$200,000	$0
Phase 2: Construction – stormwater treatment facility	$4,300,000	$1,300,000
Phase 3: Construction – paving dirt roads	$5,900,000	$1,000,000
Small-scale habitat restoration projects	$1,050,000	$560,000
Implementation Subtotal	**$14,050,000**	**$5,460,000**
Monitoring - St. Andrew Bay Watch baseline and success monitoring	$700,000	$700,000
Total Cost	**$14,900,000**	**$6,160,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$6,160,000
Direct Component		$0
Other Grants or co-funding		$0
Other County funds – in-house engineering design		$350,000
Total Committed Funding		**$6,510,000**
Budget Shortfall		**$8,390,000**
POTENTIAL LEVERAGED FUNDING SOURCES		
Gulf Environmental Benefit Fund		
Natural Resource Damage Assessment		
Triumph Gulf		
F.27 Regional Conservation Partnership Program (RCPP)		
F.63 Water Infrastructure Finance and Innovation Act (WIFIA)		
S.27 Nonpoint Source Management Program (NPSM) - Section 319		
S.34 TMDL Water Quality Restoration Grants		
S.50 Water Projects Priorities Database		

Partnerships/Collaboration

Bay County is partnering with the St. Andrew Bay Resource Management Association on this program and anticipates collaborating with the Northwest Florida Water Management District and the Florida Department of Environmental Protection.

GULF COUNTY

St. Joseph Bay/Chipola River Sewer Improvement Program



PROJECT NO. 6-1

Project Description

OVERVIEW AND LOCATION

This program includes septic-to-sewer conversions in in the Beacon Hill area of Gulf County, the City of Port St. Joe, and the City of Wewahitchka. These sewer upgrades will allow for the abandonment of 850 septic systems located on small urban lots, and the replacement of 27,300 linear feet of failing sewer infrastructure that carries wastewater flows from 260 small urban lots. This program will help to improve and protect water quality in St. Joseph Bay, the Chipola River by removing ongoing sewage inputs to these water bodies. General locations of the three program components are shown in **Figure 6-1A**.

Figure 6-1A. Location of proposed wastewater infrastructure improvements in Gulf County.

NEED AND JUSTIFICATION

Much of Gulf County's economic base depends on the seafood industry associated with Apalachicola Bay and St. Joseph Bay, and on ecotourism associated with the area's coastal aquatic preserves and beaches. The sustainability of natural resources within the region and the protection of the health and productivity of these waterbodies is critical. Several waterbodies in Gulf County (and downstream of Gulf County waters) are designated Outstanding Florida Waters because of their natural attributes, giving them special protection from water quality degradation. These include the Chipola River, the Apalachicola River, St. Joseph Bay, and Apalachicola Bay. St. Joseph Bay is a designated Aquatic Preserve and part of the Gulf of Mexico Ecological Management Site (GEMS) Program, but is currently listed by the Florida Department of Environmental Protection (FDEP) as impaired for nutrients and fecal coliform bacteria under Section 303(d) of the federal Clean Water Act. Apalachicola Bay, also an Aquatic Preserve, GEMS Site, and National Estuarine Research Reserve, has also been listed as impaired for bacteria in shellfish and for fecal coliform bacteria. Protection/improvement of water quality in these bays is of significant economic and ecological importance.

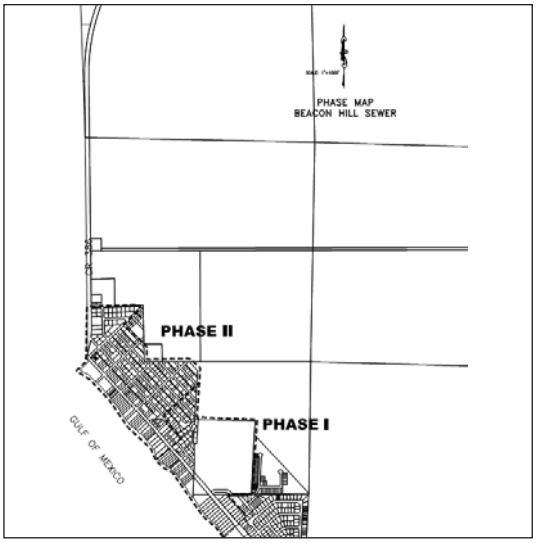


Figure 6-1B. Beacon Hill sewer upgrade project area.

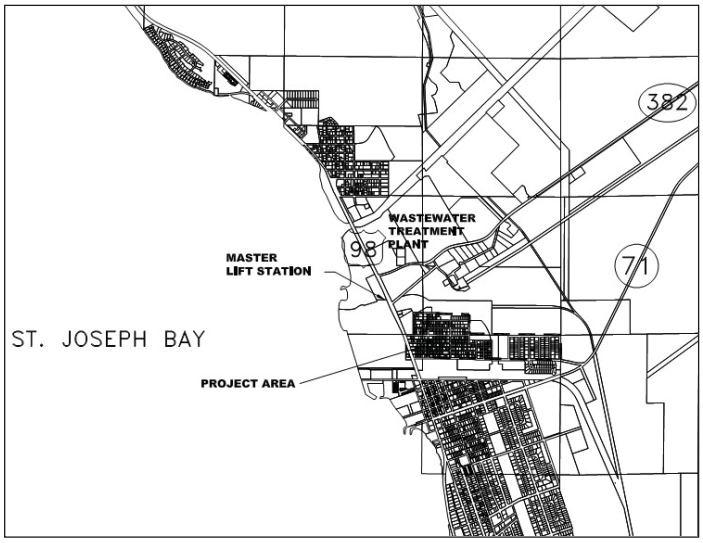


Figure 6-1C. Port St. Joe sewer upgrade project area.

Aging septic systems and sewer infrastructure can contribute to the degradation of water quality in nearby waterbodies. Excess nutrients can lead to algal blooms, which may negatively impact recreational use of the bays. For example, the 2017 scallop season was postponed because of a harmful blue-green algae bloom. Harmful algal blooms are typically related to eutrophication from anthropogenic sources. Existing septic systems can discharge bacteria and viruses to groundwater and surface water, potentially exposing residents and tourists to harmful pathogens. Additionally, these water quality impairments are a direct threat to many of the region's wildlife species of concern.

This program will improve water quality and reduce nutrient and bacterial loads by replacing failing sewer infrastructure directly adjacent to St. Joseph Bay, and by abandoning septic systems near public beaches and the portions of the Apalachicola River watershed. The program will build upon previous efforts to abandon residential septic systems and provide residents access to a safe and sanitary sewer system. These efforts are in line with many of actions of the state and federal agencies to restore surface water and groundwater quality, protect fish and wildlife, and decrease the risk of exposing residents and tourists to harmful pathogens in nearshore waters and seafood products.

PURPOSE AND OBJECTIVES

The purpose of this program is to improve and upgrade failing wastewater infrastructure in the Beacon Hill area of Gulf County, the City of Port St. Joe, and the City of Wewahitchka. The objectives of the project are to: (1) reduce pathogen and nutrient loads to St. Joseph Bay; (2) reduce pathogen and nutrient loads to the Chipola River and Apalachicola Bay; and (3) enhance the local economy and better accommodate future growth in Gulf County.

PROJECT COMPONENTS

This program consists of the following components:

Beacon Hill Septic to Sewer: There is no wastewater sewer infrastructure in Beacon Hill along Highway 98 between St. Joe Beach and Mexico Beach. Therefore, septic systems are used for treatment and disposal of domestic waste. Approximately 8 years ago, the City of Port St. Joe constructed a wastewater force main from its lift station in St. Joe Beach to Beacon Hill. This line has not been put into service and is considered a "dry line" (a public or private pipe that is intended for future use when authorized). This project proposes to activate the "dry line" by constructing a new lift

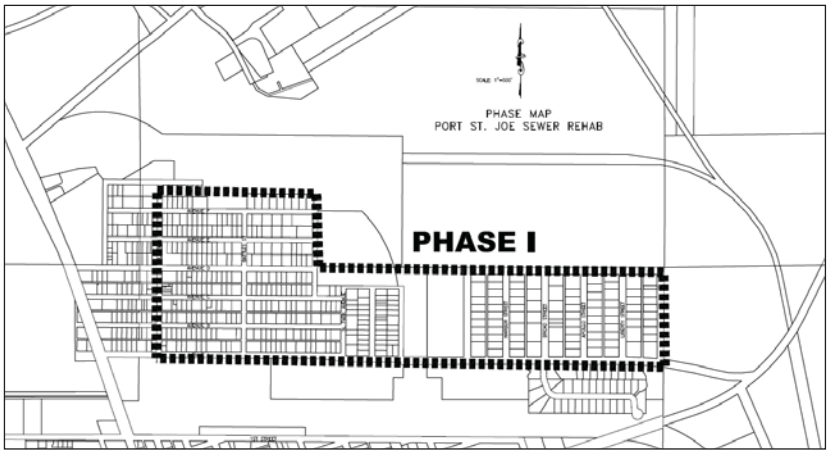


Figure 6-1D. Port St. Joe sewer upgrade project area close up.

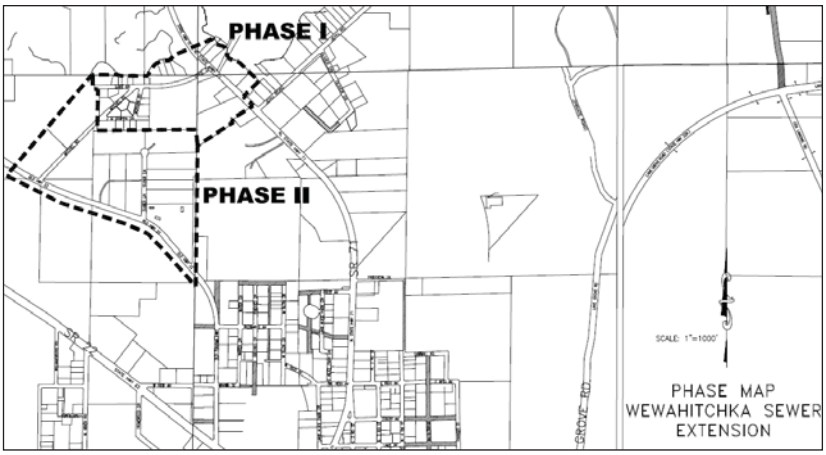


Figure 6-1E. Wewahitchka sewer expansion Phases 1-2 project area.

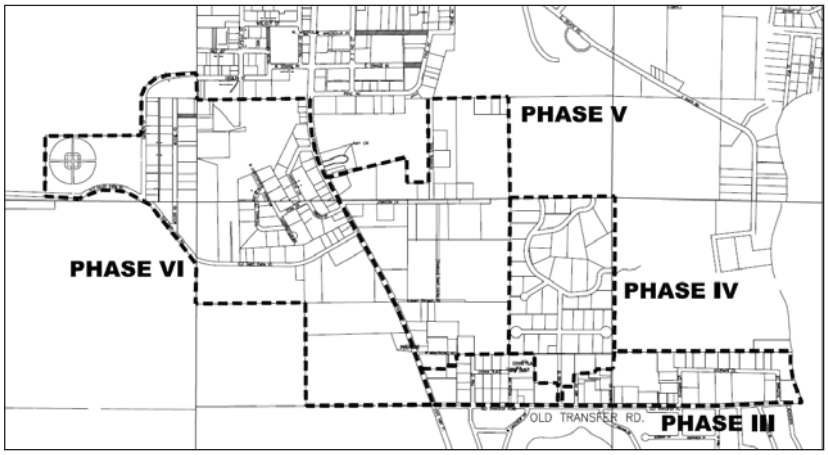


Figure 6-1F. Wewahitchka sewer expansion Phases 3-6 project area.

station and low-pressure collection system to service approximately 650 customers in Beacon Hill. This will allow for the abandonment of approximately 390 septic systems: 65 in Phase I and 325 in Phase II (see **Figure 6-1B**).

Port St. Joe Sewer Upgrade: Older neighborhoods in the City of Port St. Joe have 50- to 60-year-old wastewater sewer infrastructure that was built primarily with terracotta pipe, which is prone to failure. In Phase I, the existing pipe has had leakage problems and has caused road collapses due to pipe failures over the system's 27,300 linear feet of sewer, which collects wastewater from 260 small urban lots. The frequency of failures has led to the conclusion that replacement, rather than rehabilitation/repair, is the better long-term solution because terracotta pipe cannot be relied on as a safe, reliable long-term method for sewage conveyance (see **Figures 6-1C** and **6-1D)**.

Wewahitchka Septic to Sewer: The City of Wewahitchka's wastewater collection system does not cover its entire utility franchise area, and the City of Wewahitchka is therefore proposing to expand its existing low-pressure sewer system and add lift stations to provide sewers to a currently unserved area, which consists of six phases (see **Figures 6-1E** and **6-1F**). This will allow for the abandonment of septic systems, which will help to reduce the impacts on the Chipola River in the Apalachicola Bay watershed.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

The proposed wastewater infrastructure improvements are significant and will allow for the abandonment of 850 septic systems located on small urban lots, and the replacement of 27,300 linear feet of failing sewer infrastructure that carries wastewater flows from 260 small urban lots. These upgrades are proposed for areas that are likely to contribute to groundwater and surface water degradation in St. Joseph Bay, the Chipola River, and Apalachicola Bay.

St. Joseph Bay and Apalachicola Bay are widely recognized to be of regional ecological significance and have been given special protective designations to reflect their importance to the Gulf of Mexico ecosystem. Because of the sensitive nature of the receiving waters, these areas are considered high priority for protection, restoration, and conservation. Removal of sewage-related pollution sources will improve and continue to protect their water quality and living marine resources. St. Joseph Bay supports vital seagrass resources that support numerous fish and invertebrate species, including many of commercial importance; while Apalachicola Bay once supported the largest oyster fishery in Florida. Good water quality is essential for the maintenance of healthy seagrass systems and harvestable oyster bars. Replacement of failing sewer lines, installation of a new sanitary sewer system to these communities, and removal of impacts from existing septic systems will contribute to the ecological health of these water bodies for years to come.

This program will help the local seafood industries and contribute to economic growth in Gulf County, including growth in the tourism industry. The program will also increase property values of parcels that will be provided sewer service, and sewer availability will encourage development to currently unimproved parcels in program areas. This will in turn grow Gulf County's tax base. The proposed program will also increase workforce development and job creation in both the public and private sectors.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activities:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

The City of Port St. Joe will be the implementing entity and grant sub-recipient responsible for the design, permitting, construction, operation and maintenance, and monitoring of the Beacon Hill and Port St. Joe projects. The City of Wewahitchka will be the implementing entity and grant sub-recipient responsible for the design, permitting, construction, operation and maintenance, and monitoring of the Wewahitchka project. Both entities have coordinated closely with Gulf County on the needs assessment and conceptual planning of these projects.

Best Available Science and Feasibility Assessment

The importance of water quality in St. Joseph Bay, the Apalachicola River, and Apalachicola Bay has been well studied and characterized. This program is consistent with the goals of the following natural resource management plans:

- *Northwest Florida Water Management District(NWFWMD), 2017. Apalachicola River and Bay Surface Water Improvement and Management (SWIM) Plan.*
- *FDEP, 2013. Apalachicola National Estuarine Research Reserve Management Plan.*
- *FDEP, 2008. St. Joseph Bay Aquatic Preserve Management Plan.*

Gulf County and the municipalities have coordinated on the needs assessment and conceptual planning of these projects; however, detailed feasibility studies have not yet been completed. However, based on planning efforts conducted to date, this program is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget, and (3) effectively operate and maintain the project components over the long term.

Risks and Uncertainties

In the evaluation of this program no significant risks or uncertainties have been identified that would preclude implementation of the program discussed above. The total cost estimate is expected to be revised upon completion of feasibility studies.

Success Criteria and Monitoring

This program will affect water quality in adjacent and downstream freshwater and estuarine systems of St. Joseph Bay and the Chipola River. Specific success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for the following changes:

- Number of septic systems taken off-line
- Estimated reduction in nutrient and bacteria loads attributable to the wastewater improvements
- Changes in ambient water quality (nutrients, bacteria, chlorophyll-a) in St. Joseph Bay and the Chipola River in the vicinity of wastewater improvements.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Gulf County in coordination with the municipalities is committed to implementing the necessary monitoring and coordinating with the FDEP and the NWFWMD to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this program approximately 12 years. The program is expected start date is 2018, and the end date in 2029. Implementation of this program has been divided into the three project components, with four phases each, as shown in the milestone chart below. Water quality-based success monitoring will extend two years beyond the end of construction activities.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Beacon Hill Septic to Sewer																
Feasibility study						■										
Preliminary design						■										
Final design and permitting							■									
Construction								■	■							
Port St. Joe Sewer Upgrade																
Feasibility study	■															
Preliminary design	■															
Sewer System Acquisition	■															
Final designand permitting			■													
Construction				■	■											
Wewahitchka Septic to Sewer																
Feasibility study								■								
Preliminary design								■								
Final design and permitting									■							
Construction									■	■						
Success monitoring						■	■			■	■	■				

Budget and Funding Sources

Gulf County has developed a preliminary cost estimate for this program based on previous infrastructure assessments and similar completed projects. Gulf County is committed to allocating $7,000,000 of its share of the Florida Spill Impact Component, as well as $2,000,000 of its Direct Component, to this program. Gulf County will also be seeking other leveraged funding sources such as low interest loans and grants from FDEP State Revolving Fund program. Gulf County is also committed to providing additional county funding, as may be needed; however, the program elements are scalable and can be implemented incrementally as funding allows. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Beacon Hill Septic to Sewer Phase I & II		
Feasibility study and preliminary design	$100,000	$100,000
Planning Subtotal	**$100,000**	**$100,000**
Final design and permitting	$300,000	$200,000
Construction	$3,600,000	$1,700,000
Implementation Subtotal	**$3,900,000**	**$1,900,000**
Total	**$4,000,000**	**$2,000,000**
Port St. Joe Sewer Upgrade Phase I		
Feasibility study and preliminary design	$100,000	$100,000
Planning Subtotal	**$100,000**	**$100,000**
Sewer system acquisition	$1,000,000	$500,000
Final design and permitting	$500,000	$500,000
Construction	$5,400,000	$1,900,000
Implementation Subtotal	**$6,900,000**	**$2,900,000**
Total	**$7,000,000**	**$3,000,000**
Wewahitchka Septic to Sewer Phase I to IV		
Feasibility study and preliminary design	$100,000	$100,000
Planning Subtotal	**$100,000**	**$100,000**
Final design and permitting	$300,000	$300,000
Construction	$4,100,000	$1,350,000
Implementation Subtotal	**$4,400,000**	**$1,650,000**
Total	**$4,500,000**	**$1,750,000**
Monitoring	$250,000	$250,000
Total Cost	**$15,750,000**	**$7,000,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$7,000,000
Direct Component		$2,000,000
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$9,000,000**
Budget Shortfall		**$6,750,000**

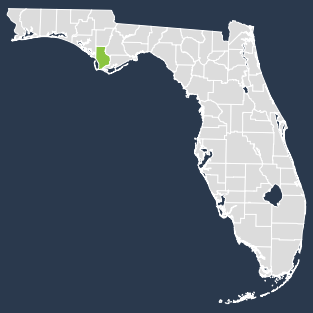
POTENTIAL LEVERAGED FUNDING SOURCES
Gulf Environmental Benefit Fund
Natural Resource Damage Assessment
Florida Rural Water Association
Triumph Gulf
F.03 Rural Community Development Initiative Grants
F.07 Water and Waste Disposal Systems for Rural Communities
F.08 Water and Waste Disposal Technical Assistance and Training Grants
F.12 Community Facilities Technical Assistance and Training Grant
F.13 Community Facilities Guaranteed Loan Program
F.27 Regional Conservation Partnership Program (RCPP)
F.63 Water Infrastructure Finance and Innovation Act (WIFIA)
S.36 Water Projects
S.50 Water Projects Priorities Database

Partnerships/Collaboration

Gulf County will continue to work closely with the City of Wewahitchka and the City of Port St. Joe in the implementation of this program. In addition, Gulf County will coordinate with the Florida Department of Environmental Protection with respect to leveraged funding sources, primarily the State Revolving Fund program.

GULF COUNTY

St. Joseph Peninsula Coastal Erosion Control Project



PROJECT NO. 6-2

Project Description

OVERVIEW AND LOCATION

This project involves the placement of a series of segmented, submerged, and emergent breakwater structures offshore of a severely eroded shoreline in support of a beach-nourishment effort at Stump Hole, along the south end of the St. Joseph Peninsula (see **Figure 6-2A**). Although this project addresses ecological restoration, the primary focus is on coastal erosion control. For this reason, this project is classified as infrastructure with respect to the 25 percent infrastructure limitation.

NEED AND JUSTIFICATION

The St. Joseph Peninsula is a salient geological feature along the Gulf County coastline. In recent decades, the southern end of the peninsula has suffered from severe coastal erosion, resulting in the periodic washout of Highway 30E, the only roadway providing access to and from the barrier island community of St. Joe Beach. The roadway has been stabilized by a rock revetment but is still vulnerable to washout, and this portion of the beach is not sustainable under current conditions. **Figure 6-2B** shows Highway 30E during a storm event.

Figure 6-2A. Location of the St. Joseph Peninsula coastal erosion control project.

St. Joe Beach is not only a popular recreation area with over 100,000 visitors per year, it establishes the barrier between the Gulf of Mexico and St. Joseph Bay, which is home to critical marine and estuarine habitats and species endemic to the area. The southern end of the peninsula also encompasses St. Joseph Peninsula State Park as well as an Eglin Air Force Base tracking station.

In 2009, the St. Joseph Peninsula Beach Restoration Project resulted in the placement of 3.6 million cubic yards of sand along 7.5 miles of the beach. The southern mile of this reach has lost on average 26 feet of beach width per year since that project was completed. In an effort to find a more sustainable and cost-effective solution, Gulf

County sought pre-application consultations with the Florida Department of Environmental Protection (FDEP), U.S. Army Corps of Engineers (USACE), and the U.S. Fish and Wildlife Service (USFWS). The agencies recognized that beach nourishment alone may not be a viable long-term solution to the protection of the dune system at this location. Based on the preliminary design and pre-application consultations, the agencies acknowledged that coastal erosion protection structures such as breakwaters or groins could be recommended for approval at this site if they will not cause a significant adverse impact to the beach dune system, and are expected to enhance the longevity of beach nourishment and thus support sea turtle nesting.

Figure 6-2B. Highway 30E at Stump Hole on the St. Joseph Peninsula during a storm event.

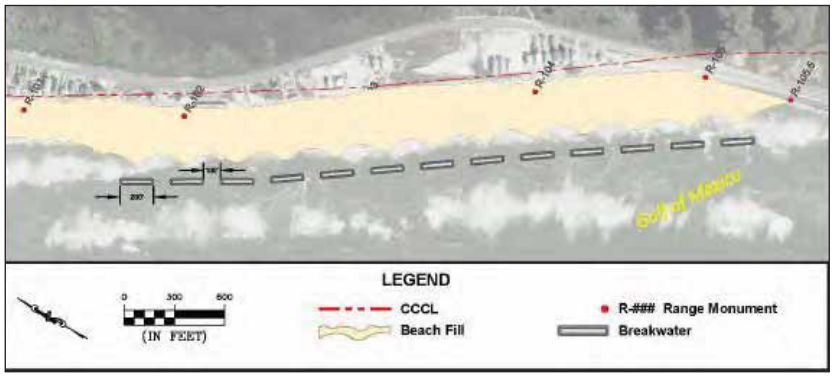


Figure 6-2C. Proposed breakwater alignment plan view (MRD Assoc, 2017).

Another beach nourishment project is scheduled for this segment in 2018; however, monitoring data and coastal dynamics analysis shows that beach nourishment alone is not enough to sustain this segment of the beach. This project is needed to stabilize this segment of the St. Joseph Peninsula and protect it from further coastal erosion.

PURPOSE AND OBJECTIVES

The purpose of this project is to construct a series of segmented, submerged, and emergent breakwater structures offshore of a severely eroded shoreline along the south end of the St. Joseph Peninsula. Project objectives include: (1) stabilize and protect the existing shoreline and beach from future erosion and storm event washouts; (2) create conditions that trap and accrete sand along the affected segment; (3) protect and enhance sea turtle beach nesting habitat; (4) provide offshore structural habitat for fish, shellfish, and coastal birds; and (5) extend the interval between beach nourishment projects, reducing the maintenance costs to Gulf County, and the State of Florida as a cost share partner.

PROJECT COMPONENTS

A preliminary design for the project has been completed and includes the placement of 13 segmented, submerged breakwaters 200 feet in length and 40 feet in width from R-101 to R-105.5, with 100-foot gaps between each structure (MRD, 2017). To reduce scour and settlement of the breakwaters, marine mattresses will be used as a base layer. **Figure 6-2C** and **Figure 6-2D** show plan view and cross sections of the project, respectively.

The armor stone that will make up the breakwater material will be based on the final location and water depths at the project site and, therefore, are still to be determined in the final design phase. The project will dissipate wave energy, creating a quiescent area landward of the breakwaters where sediment can fall out of suspension and accumulate in the lee of the structures. Longshore transport processes are not interrupted, so sand is still allowed to migrate laterally as the breakwaters hold the "toe of slope." The structures create a "cusped" beach, as depicted in **Figure 6-2C**.

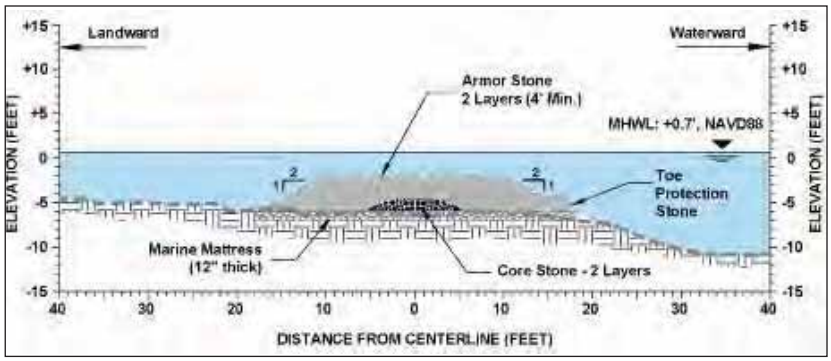


Figure 6-2D. Proposed breakwater cross section view (MRD Assoc, 2017).

Contributions to the Overall Economic and Ecological Recovery of the Gulf

The increased beach width in this area will not only provide more protection for beach recreation and protection of the highway and other infrastructure, but it will also provide additional area for sea turtle and shorebird nesting. In addition to protecting the shoreline, the segmented breakwaters will also create a nearshore artificial reef. The reef may be ephemeral (covered in sand during portions of the year), but this is typical of hardbottom found in the nearshore area. There are several species of marine invertebrates and crustaceans (e.g. stone crabs) that thrive in this environment. It also will improve recreational fishing in the area attracting baitfish, whiting, pompano, redfish, sheepshead, and snappers.

The economy of the St. Joe Beach has flourished with an increase in the number of tourists and part-time residents over the past decade. This project will protect the infrastructure and roadway that provides the access to this coastal community. The project will also employ local workers, which will support economic recovery efforts.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activities:

- Eligible Activity 7: Coastal flood protection and related infrastructure (primary)
- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 4: Enhance Community Resilience (primary)
- Goal 1: Restore and Conserve Habitat.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 5: Promote Community Resilience (primary)
- Objective 1: Restore, Enhance, and Protect Habitats.

Implementing Entities

Gulf County will be the implementing entity and sole grant sub-recipient responsible for the design, permitting, construction, and success monitoring of the program.

Best Available Science and Feasibility Assessment

Studies on the conditions on the St. Joseph Peninsula have been conducted by state and local agencies, as well as engineering consultants for decades. Key documents that make up the basis for this project are listed below:

- *FDEP Permit issued December 2007.*
- *MRD Associates, 2012. 42-Month Post Construction Monitoring Report 2012 - St. Joseph Peninsula Beach Restoration Project, Gulf County, Florida.*
- *MRD Associates, 2014. 66-Month Post Construction Monitoring Report 2014 - St. Joseph Peninsula Beach Restoration Project, Gulf County, Florida.*
- *FDEP Permit issued December, 2016.*
- MRD Associates, 2017. *St. Joseph Peninsula South Beach Erosion Control Project Design Report.*

The need and justification for the project are well established, and the FDEP and USACE have previously authorized permits for beach nourishment at this location. However, the agencies have not approved a final design for coastal erosion control structures. Nonetheless, this project is considered to be feasible with respect to the ability to: (1) obtain necessary permits and (2) construct the project within the proposed budget.

Risks and Uncertainties

At this time, the following project elements still need to be determined in the final design phase: (1) the distance offshore/depth for the breakwater; (2) segment gap dimensions; and (3) armor stone material and diameter/weight. The shoreline response has been predicted using numerical modeling software, but the actual effect will need to be monitored closely. The standard requirement for FDEP permit compliance is 5 years with annual reporting. The design of this project will allow for some adjustments to the breakwaters to achieve the desired shoreline protection.

Success Criteria and Monitoring

Gulf County will perform post-construction surveys to ensure compliance with the project plans and specifications and will monitor the response of the beach after the structures are placed. Beach and structure surveys will be based off existing FDEP range monuments, and profiles/cross sections will be at published offsets and azimuths. It is anticipated that success criteria will include the following:

- Linear and square feet of breakwater structure placed
- Linear and square feet of beach restored and protected
- 5-year assessment of beach stability.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Gulf County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The final design, implementation, and success monitoring of this project is anticipated to be spread over a 6-year period, as shown in the milestone chart below. It is expected to start in 2018 and end in 2023.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study																
Preliminary design																
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

A preliminary total cost estimate of $6,000,000 has been developed by Gulf County for this project. Gulf County is committed to allocating $3,000,000 of its share of the Florida Spill Impact Component. Gulf County is also committed to providing additional county funding, as may be needed, but will also be seeking other leveraged funding sources to supplement these monies. A summary of the project budget and funding sources is provided in the table below.

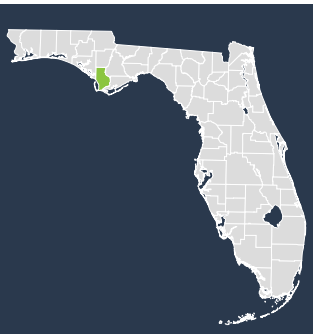
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$50,000	$50,000
Preliminary design	$50,000	$50,000
Planning Subtotal	**$100,000**	**$100,000**
Final design and permitting	$300,000	$220,000
Construction	$5,300,000	$2,380,000
Implementation Subtotal	**$5,600,000**	**$2,600,000**
Monitoring	$300,000	$300,000
Total Cost	**$6,000,000**	**$3,000,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$3,000,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$3,000,000**
Budget Shortfall		**$3,000,000**

POTENTIAL LEVERAGED FUNDING SOURCES
Natural Resource Damage Assessment
Gulf Environmental Benefit Fund
Triumph Gulf
F.43 Coastal Resilience Grants Program
O.10 Climate Adaptation Fund
O.17 Environmental Solutions for Communities
S.09 Pre-Disaster Mitigation Program
S.16 Beach Management Funding Assistance (BMFA) Program
S.20 Coastal Partnership Initiative - Florida Coastal Management Program
S.26 Land and Water Conservation Fund (LWCF)

Gulf County plans to apply for additional grant funding/leveraging to make up the overall project budget shortfall. However, the project will be phased in a manner that will allow for completion of portions of the project based on the amount of funding available.

Partnerships/Collaboration

Gulf County will coordinate with the Florida Department of Environmental Protection Beach Management Funding Assistance Program which has typically provided a 30 percent cost-share of the overall project cost for beach nourishment and stabilization.



GULF COUNTY

Coastal Public Access Program

PROJECT NO. 6-3

Project Description

OVERVIEW AND LOCATION

This program involves public land acquisition and the construction and/or improvement of recreational amenities to enhance public access to the Chipola River, Dead Lakes, St. Joseph Bay, and the Gulf of Mexico. Gulf County has evaluated several priority sites, the locations of which are shown in **Figure 6-3A**.

NEED AND JUSTIFICATION

Gulf County is a rural, sparsely populated coastal county with abundant natural resources. For these reasons, the county is experiencing a growth in nature-based tourism, especially fishing-related activities. Existing recreational opportunities are often over capacity during seasonal influxes of visitors. In addition, navigational access to the Gulf of Mexico by recreational boaters in Gulf County is often overwhelmed during the summer scallop season. Therefore, there is a need to acquire additional public coastal access sites and develop supporting recreational amenities and associated infrastructure at these sites.

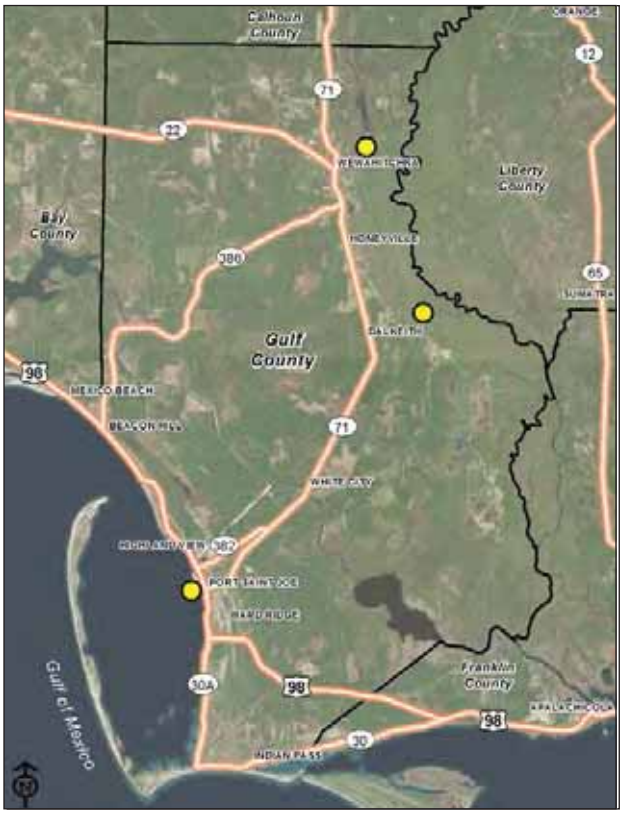


Figure 6-3A. Locations of priority public access sites proposed for acquisition.

In addition to the acquisition of new public access sites, this program includes the improvement and expansion of existing public access sites. Furthermore, the program will partner with other agencies to diversify the types of recreational opportunity amenities offered. Coastal access in Gulf County has historically focused on boat ramps, and this program will further that work while also creating non-motorized vessel launch facilities, trails, and other park amenities.

PURPOSE AND OBJECTIVES

The purposes of this program are to acquire and develop additional publicly owned coastal access sites in Gulf County. Objectives of the program include: (1) improve public access to the nearshore waters of Gulf County and the Gulf of Mexico; (2) take pressure off existing coastal access facilities; (3) diversify the types of coastal recreational opportunity amenities offered to residents and visitors; and (4) grow the nature-based tourism industry in Gulf County.

Figure 6-3B. The existing Indian Pass boat ramp.

PROJECT COMPONENTS

The first component of this program will involve a feasibility study to inventory existing facility usage, and to assess other optimal locations for the acquisition and development of new public access facilities, with a focus on the Chipola River, Dead Lakes, St. Joseph Bay, and the Gulf of Mexico. The study will assess improvements needed at existing county-owned facilities where a new boat ramp, floating docks, paved parking, and restroom facilities may be warranted. The existing Indian Pass boat ramp (see **Figure 6-3B)** is an example of a heavily used boat ramp that lacks adequate amenities and infrastructure to support the public demand.

The study will also look at working with other local, state, and federal agencies, including the City of Port St. Joe, the Florida Park Service, the Florida Fish and Wildlife Conservation Commission, and the Northwest Florida Water Management District to establish cooperative agreements to use and enhance publically held lands. Finally, the study will assess acquisition of private lands that may be on the market for public access and boat ramp facilities.

Other components of this program include: (1) prioritization of sites for public acquisition; (2) acquisition of priority sites; (3) engineering design and permitting of site improvements; and (4) success monitoring. Gulf County does not have a formal conservation lands acquisition program; therefore, Spill impact Component funds will be used to develop and implement such a program, with a focus on coastal passive recreation sites.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will improve public access to the coastal waters of Gulf County and enhance public recreational opportunities. In addition, this program will contribute to the local economy through increased local resident expenditures for recreational activities, as well as increased spending by visiting tourists.

Implementing Entities

Gulf County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of projects completed under this program.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of tourism in the Gulf Coast region, including recreational fishing.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Gulf Consortium Objective:

- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The primary focus of this program is public recreational access and tourism promotion; therefore, BAS does not apply.

This program is considered to be feasible with respect to the ability to: (1) acquire priority properties; (2) obtain necessary permits; (3) construct recreational amenities; and (4) effectively operate and maintain recreational amenities in perpetuity. Regulatory permitting will address potential impacts to marine habitats and living resources, and cultural resources, as appropriate.

Risks and Uncertainties

Land acquisition activities are always at risk with respect to securing a willing seller and negotiating reasonable terms. In addition, coastal park and recreational amenities are at risk for damage by tropical storms and sea-level rise. However, the proposed recreational improvements will factor coastal storm hazards and sea-level rise into the design, as appropriate. Gulf County has identified potential properties, but additional due diligence is needed.

Success Criteria and Monitoring

This program will involve property acquisition and the development of boat ramps and other recreational amenities. Specific success criteria will be developed and described in the implementation grant request. It is anticipated that quantitative success criteria will be developed for:

- Acres of coastal access properties acquired
- New boat ramps constructed
- Increase in recreational use.

In the implementation grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Gulf County is committed to conducting the monitoring necessary to quantify project benefits.

Project Milestones and Schedule

The project is expected to start in 2022 and end in 2033. Implementation of this program has been divided into five milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Property feasibility/assessments																
Property acquisition																
Boat ramp/amenity design and permitting																
Construction of recreational amenities																
Success monitoring																

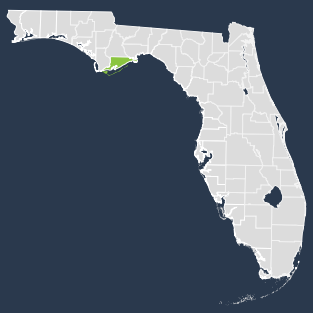
Budget/Funding and Leveraged Resources

Gulf County has estimated the total cost to acquire and improve identified priority waterfront properties to be approximately $2,660,000. Gulf County is proposing to use $2,660,000 of their Spill Impact Component allocation to implement this program. A summary of the cost and funding sources for this program is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$100,000	$100,000
Property assessments	$150,000	$150,000
Planning Subtotal	**$250,000**	**$250,000**
Property acquisition	$1,500,000	$1,500,000
Final design and permitting	$200,000	$200,000
Construction	$660,000	$660,000
Implementation Subtotal	**$2,360,000**	**$2,360,000**
Monitoring	$50,000	$50,000
Total Cost	**$2,660,000**	**$2,660,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$2,660,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$2,660,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
Triumph Gulf		
S.10 Community Planning Technical Assistance Grants		
S.19 Coastal and Estuarine Land Conservation Program (CELCP)		
S.20 Coastal Partnership Initiative - Florida Coastal Management Program		
S.23 Florida Recreation Development Assistance Program (FRDAP)		
S.26 Land and Water Conservation Fund (LWCF)		
S.45 Florida Boating Improvement Program (FBIP)		
S.49 Sport Fish Restoration Program		

Partnerships/Collaboration

Gulf County will seek partnerships in the acquisition and management of the subject properties. Potential partners include the City of Port St. Joe, Florida Park Service, the Florida Fish and Wildlife Conservation Commission, and the Northwest Florida Water Management District. Where appropriate, Gulf County will establish cooperative agreements to use and enhance publically held lands.



FRANKLIN COUNTY

Emergency Operations Center

PROJECT NO. 7-1

Project Description

OVERVIEW AND LOCATION

This project involves the construction of a new emergency operations center (EOC) for Franklin County. The new EOC facility will be constructed on existing county-owned land adjacent to the Apalachicola Regional Airport located west of the City of Apalachicola. **Figure 7-1A** shows the location of the proposed new EOC facility. This project is classified as infrastructure with respect to the 25 percent infrastructure limitation.

Figure 7-1A. Franklin County potential EOC location.

NEED AND JUSTIFICATION

An EOC is a central command and control facility responsible for carrying out emergency preparedness and emergency management activities, as well as disaster response functions at a strategic level in situations such as tropical storms and hurricanes. Franklin County's existing EOC building is situated in an old 1960s-era National Weather Service building, and is the oldest county EOC facility in the State of Florida. Franklin County, a low-lying coastal county that is extremely vulnerable to coastal flooding, is in need of a new EOC facility constructed in a sustainable location outside the coastal flood zone, with the latest technology, to serve the residents of Franklin County.

PURPOSE AND OBJECTIVES

The purpose of this project is to replace the existing Franklin County EOC facility with a new facility in a location out of the coastal floodplain. The objectives of the project are to: (1) construct a new facility with state-of-the-art technology; (2) improve emergency management operations in Franklin County; and (3) promote resilience and sustainability in this coastal community. This new EOC will allow Franklin County to respond in a timely manner to a wide array of emergency situations, especially hurricane evacuation and response.

PROJECT COMPONENTS

Franklin County will construct a new EOC facility on county-owned lands adjacent to the Apalachicola Regional Airport located immediately west of the City of Apalachicola. The proposed location is in an area of minimal flood hazard, as determined by Federal Emergency Management Agency (FEMA). The county will hire an architect/engineer to design the facility, and will bid the construction activities to local contractors. The new EOC will be built to exceed the latest technology standards and allow multiple local, state, and federal agencies to use the facility as their base of operations for extended periods of time during an emergency. The building will also have facilities for training and simulation events to prepare for emergency situations.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will contribute to the community resilience and sustainability of coastal Franklin County. In addition, design and construction will employ local architects, engineers and contractors, thereby contributing to Franklin County's economy.

Eligibility and Statutory Requirements

This project is consistent with and addresses the following RESTORE Act eligible activity:

- Eligible Activity 6: Infrastructure projects benefiting the economy or ecological resources, including port infrastructure

Comprehensive Plan Goals and Objectives

This project is consistent with and addresses the following Comprehensive Plan Goals:

- Goal 4: Enhance Community Resilience.

This project is consistent with and addresses the following Comprehensive Plan Objectives:

- Objective 5: Promote Community Resilience.

Implementing Entities

Franklin County will be the sole sub-recipient on the grant responsible for design, permitting, and construction of the EOC.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The primary focus of this program is community resilience; therefore, BAS does not apply.

This program is considered to be feasible with respect to the ability to: (1) utilize existing county-owned properties; (2) obtain necessary permits; (3) construct the EOC facility; and (4) effectively operate and maintain the facility in perpetuity.

Success Criteria and Monitoring

Specific success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- New EOC facility constructed
- Improved emergency response to tropical storms and hurricanes.

Franklin County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 4 years. It is expected to start in 2018 and end in 2021. Implementation of this project has been divided into five milestones, as shown in the chart below. This project is ready to begin the feasibility study.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Property assessment																
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

Franklin County has estimated the cost of the new EOC facility to be approximately $1,500,000. Franklin County is committed to allocating $1,000,000 of its share of the Florida Spill Impact Component to this project, and will also be seeking other leveraged funding sources to supplement these monies. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Property assessment	$50,000	$50,000
Planning Subtotal	**$50,000**	**$50,000**
Final design and permitting	$200,000	$200,000
Construction	$1,220,000	$720,000
Implementation Subtotal	**$1,420,000**	**$920,000**
Monitoring	$30,000	$30,000
Total Cost	**$1,500,000**	**$1,000,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$1,000,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$1,000,000**
Budget Shortfall		**$500,000**

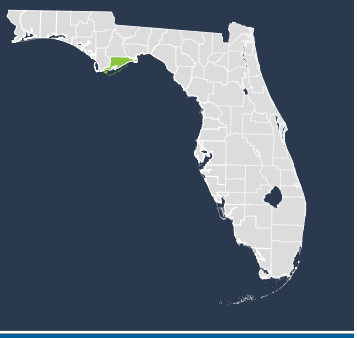
POTENTIAL LEVERAGED FUNDING SOURCES
Direct Component
Triumph Gulf
F.03 Rural Community Development Initiative Grants
F.11 Community Facilities Direct Loan and Grant Program in Florida
F.13 Community Facilities Guaranteed Loan Program
F.18 Economic Impact Initiative Grants
S.01 Strategic Economic and Community Development
S.07 Flood Mitigation Assistance Program
S.09 Pre-Disaster Mitigation Program
S.10 Community Planning Technical Assistance Grants

Partnerships/Collaboration

Franklin County currently receives state and federal emergency management grants that cover the operating budget of its emergency management program. Franklin County plans to apply for additional grant funding/leveraging to apply toward the overall project budget. If successful, these funds would be allocated to other future sustainability efforts in Franklin County.

FRANKLIN COUNTY

Apalachicola Bay Oyster Restoration



PROJECT NO. 7-2

Project Description

OVERVIEW AND LOCATION

The Apalachicola Bay Oyster Restoration Project involves the placement of substrate (cultch) on degraded reefs in Apalachicola Bay (see **Figure 7-2A**) to restore once highly productive oyster reefs that have been degraded primarily due to reduced freshwater flows, subsequent increases in salinity and associated predation and disease, as well as harvesting pressures. **Figure 7-2B** shows the location of proposed oyster restoration areas in Apalachicola Bay.

Figure 7-2A. Apalachicola Bay Oyster Restoration Project location.

NEED AND JUSTIFICATION

The proposed project is needed for Franklin County to recover from the oyster fishery failure declared in Apalachicola Bay (and Florida's west coast) by the National Oceanic and Atmospheric Administration (NOAA) in 2013. The resource disaster was declared pursuant to the Inter-Jurisdictional Fisheries Act and the Magnuson-Stevens Fishery Conservation and Management Act, based on reduced numbers of oysters and associated economic and ecological resources following the dramatic decline in oysters and oyster harvesting trips in Apalachicola Bay after August 2012. The effects on the fishery are anticipated to continue over multiple generations, thereby compromising the long-term sustainability of the reefs. The project is justified by the demonstrated success of historical cultching (substrate placement) efforts since the 1880s and cultching projects implemented in Apalachicola Bay in response to hurricanes in 1985.

PURPOSE AND OBJECTIVES

The purpose of this project is to restore oyster reef habitat and associated ecological functions for estuarine dependent species in support of ecological and economic sustainability in Apalachicola Bay using a combination of proven restoration techniques to reestablish reef infrastructure. Objectives of the proposed project are to: (1) provide suitable habitat for oyster settlement and reef building; (2) provide three-dimensional structural habitat for oysters and associated species; (3) recover and support a sustainable oyster fishery; and (4) contribute to the economic revitalization of Apalachicola Bay and the Franklin County coast. These objectives, and the proposed approach for restoration, are consistent with those developed for oyster restoration in the Gulf of Mexico by NOAA (2016) as part of the *Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement.*

Figure 7-2B. Locations of potential restoration sites in Apalachicola Bay (Source: FDACS).

PROJECT COMPONENTS

This project will augment several other planned or ongoing oyster restoration projects in the Apalachicola Bay and the Big Bend areas, all of which will contribute to cumulative regional benefits to oyster recovery along the Florida Gulf coast. To inform their project implementation, Franklin County will utilize success monitoring information from other oyster restoration projects—including efforts funded by Natural Resource Damage Assessment (NRDA), National Fish and Wildlife Foundation (NFWF), and RESTORE Act—Council Selected Restoration Component.

Cultch (e.g., natural shell or other suitable material) will be placed on existing and/or former subtidal oyster reefs in the Bay, thereby providing the substrate on which oysters can settle. Cultch placement will also provide structural habitat for numerous other recreationally and commercially important species. Approximately 35,000 cubic yards (cy) of suitable oyster reef substrate will be placed within permitted areas determined to have the most need for shelling, using methods best suited to the individual locations (see **Figure 7-2B**). Actual restoration locations may be adapted to reflect changes in environmental conditions or budgeting time frames, as well as to consider monitoring data derived from other ongoing oyster restoration projects.

Depending on the depth at the reef location, large and small barges will be used to transport shell material to the placement sites, and cultch will be deployed from barges (see **Figure 7-2C**) to form parallel ridges of appropriate thickness on hard bottom.

Components of the proposed project include:

- Feasibility study to determine and prioritize restoration sites
- Cultch placement on existing and historic locations of oyster reefs at appropriate depths on appropriate hard bottom, with considerations for elevation relative to mean low water
- Pre- and post-monitoring and data collection.

Data for in situ water quality and bay bottom characteristics will be collected to inform site selection, cultch volumes, and monitoring. A shellfish hatchery to provide a source of oyster larvae to local oyster reefs and others along the Gulf Coast may be proposed for a future phase.

Figure 7-2C. Cultch being placed on a bay bottom from a barge for restoration (source: White 2012).

Contributions to the Overall Economic and Ecological Recovery of the Gulf

The proposed project will contribute to the recovery of the oyster reefs and associated ecological sustainability in Apalachicola Bay, a designated Outstanding Florida Water, Aquatic Preserve, and National Estuarine Research Reserve. Oysters are an ecological keystone species and contribute to the integrity and healthy function of the nearshore ecosystem. Healthy, interconnected oyster populations form reefs that provide the hard substrate needed for oyster larvae to settle, grow, and sustain the population. In addition to providing habitat for oysters, oyster reefs: (1) serve as habitat for a diversity of marine organisms, from small invertebrates to large recreationally and commercially important species such as stone crab, blue crab, red drum, and black drum; (2) provide structural integrity that reduces shoreline erosion; and (3) improve water quality and help recycle nutrients by filtering large quantities of water (Grabowski et al., 2012; NOAA, 2016).

The proposed project will also contribute to the recovery of Florida's oyster fishery and artisanal oyster harvesting (hand tonging). Oyster landings from Apalachicola Bay in the last half-century accounted for about 90 percent of Florida's commercial oyster harvest (Arnold and Berrigan, 2002) and were harvested primarily from public reefs. In 2012, Apalachicola Bay oyster fishers harvested more than 3 million pounds of oyster meat, about 92 percent of the Florida oyster harvest and 10 percent of the harvest nationwide; the total declined to around 1 million pounds in 2013, affecting the 12,000 to 14,000 seafood industry jobs in Franklin County (Pillon, 2014).

Eligibility and Statutory Requirements

The proposed project is consistent with, and addresses, the following RESTORE Act eligible activities:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region (primary)
- Eligible Activity 2: Mitigation of damage to fish, wildlife, and natural resources
- Eligible Activity 4: Workforce development and job creation.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 3: Replenish and Protect Living Coastal and Marine Resources (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 4: Enhance Community Resilience
- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 3: Protect and Restore Living Coastal and Marine Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 5: Promote Community Resilience
- Consortium Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Franklin County will be the implementing entity and grant sub-recipient responsible for the design, permitting, construction, operation and maintenance, and monitoring for the proposed project. Franklin County will coordinate with appropriate agencies and oystermen associations during planning and implementation of this project, and may collaborate with agencies or other entities via leveraging and other funding agreements.

Best Available Science and Feasibility Assessment

The oyster fishery collapse in Apalachicola Bay has been attributed to drought and upstream water withdrawals and subsequent increases in salinities and associated predation and disease (FWC, 2013; Havens et al., 2013) as well as harvesting pressures (Havens et al., 2013). The decline in oyster landings and recruitment of juvenile oysters is considered "unprecedented" and is also due to recruitment failure or high mortality of oysters smaller than 3 inches in size (market size) (Havens et al., 2013). The Florida Fish and Wildlife Conservation Commission (FWC, 2013) reports that full recovery from the oyster collapse will require 5 years and significant funding. The value of restoring oyster reefs and oyster recruitment is well documented and includes enhanced estuarine habitats, shoreline stabilization, reduced storm surge and erosion, water quality improvements, and shelter for over 300 species that are, in turn, consumed by recreationally and commercially important finfish and crustaceans (NOAA, 2016; Peterson et al., 2003).

The proposed project approach is justified by the use of traditional cultching of degraded reefs as a management technique allowing resource managers "to mitigate resource losses, increase oyster production, and contribute direct economic benefit to fisheries-dependent communities"; this method has been used previously in Apalachicola Bay (Arnold and Berrigan, 2002; Berrigan, 1990). The proposed project is consistent with Gulf-wide objectives and restoration techniques outlined in the science-based *Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement,* which presents detailed information supporting the value of oyster reef restoration (NOAA, 2016). Project implementation will be consistent with Best Management Practices, as outlined by Florida Department of Agricultural and Consumer Services (FDACS).

The feasibility of the proposed approach is demonstrated by the success of previous Apalachicola Bay oyster reef restoration following hurricanes Elena and Kate in 1985, which resulted in an estimated benefit-to-cost ratio of almost 21:1 after 10 years (Arnold and Berrigan, 2002; Berrigan, 1990). The proposed project will build on and enhance the efforts of similar projects and, when combined, will ensure adequate substrate to support a sustainable oyster fishery. Other proposed or underway projects that target sustainable oyster reefs in the Bay include: (1) Apalachicola Bay Oyster Restoration (18-acre/$4.2M GEBF-funded restoration and research project); (2) Florida Oyster Cultch Placement (24,000 cy/130-acre/$1.9M NRDA Phase III Early Restoration Project); and (3) Apalachicola Bay Oyster Restoration (95,000 cy/317-acre/$4.68M RESTORE Project).

Based on preliminary information from regulating agencies such as Florida Department of Environmental Protection (FDEP) and FDACS, construction costs for similar projects, and operation and maintenance of other projects, the proposed project is considered feasible with respect to: (1) permitting; (2) construction within the proposed budget; and (3) effective long-term operation and maintenance of the project components. Key literature reviewed in the evaluation of this project includes the following:

- *Arnold, W. and M. Berrigan, 2002. A summary of the oyster (Crassostrea virginica) fishery in Florida. A Report to the Division of Marine Fisheries, Florida Fish and Wildlife Commission, St. Petersburg, Florida, USA.*
- *Baggett, L. P. et al., 2015. Guidelines for evaluating performance of oyster habitat restoration. Restoration Ecology 23: 737–745. doi:10.1111/rec.12262.*
- *Berrigan, M., 1990. Biological and economical assessment of an oyster resource development project in Apalachicola Bay, Florida. J. Shellfish Res. 9: 149-158.*
- *FWC, 2013. 2012-2013 Florida Gulf Coast Oyster Disaster Report. May 2013. http://www.floridajobs.org/docs/default-source/2015-community-development/2015-cmty-plan-acsc/20122013floridagulfcoastoysterdisasterreport.pdf?sfvrsn=2.*
- *Grabowski, J.H. et al., 2012. Economic valuation of ecosystem services provided by oyster reefs. BioScience 62: 900–909.*
- *Havens, K. et al., 2013. Apalachicola Bay oyster situation report. Technical Publication 201. Gainesville, FL: University of Florida Sea Grant.*
- *National Academy of Sciences (NAS), 2017. Effective Monitoring to Evaluate Ecological Restoration in the Gulf of Mexico. Washington, DC: The National Academies Press. doi: 10.17226/23476.*
- *NOAA, 2016. Final Programmatic Damage Assessment and Restoration Plan (PDARP) and Final Programmatic Environmental Impact Statement (PEIS). http://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.*
- *Peterson, C.H., J.H. Grabowski, and S.P. Powers, 2003a. Estimated enhancement of fish production resulting from restoring oyster reef habitat: quantitative valuation. Marine Ecology Progress Series 264:249-264.*
- *Pillon, D., 2014. Florida oysters in crisis: 'Our industry needs to be shut down,' Apalachicola seafood rep says. Gulf Coast Beaches section of AL.com. September 2014.*
- *White, H., 2012. Restoration is good for business. Coastal Review Online, NC Press Association. https://www.coastalreview.org/author/howardwhite.*

Risks and Uncertainties

Droughts, hurricanes, hydrologic and water quality changes, and harvesting pressure can all substantially compromise an oyster restoration effort. Although drought conditions have receded in the southeast in recent years, the hydrology and ecology of Apalachicola Bay continues to be impacted by upstream water withdrawals in Georgia and Alabama. The proposed project will preclude oyster harvest from restored areas until oysters are of legal size, and will require continued coordination and combined efforts of oystermen and agencies in support of improved fishery management strategies. Monitoring data from this and other ongoing oyster restoration projects will be used in an adaptive management manner to assess the effects of restoration methods and to minimize project risks and uncertainties to the greatest extent possible.

Success Criteria and Monitoring

This project will restore oysters in areas where natural oyster reefs and populations have been degraded. Therefore, a range of success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Increases in areal extent of viable oyster reefs
- Increases in average reef height
- Increases in oyster density
- Oyster size-frequency distribution representative of a sustainable oyster population.

An economic success criterion of benefits (economic returns for increased landings) versus cost (of restoration) may be used. More specific quantitative criteria will be developed within planning and monitoring frameworks developed for oyster reef restoration or enhancement in the Gulf (NOAA, 2016). Criteria for three environmental variables (water temperature, salinity, and dissolved oxygen) are also recommended (Baggett et al., 2014). Well-defined goals and objectives, statistically sufficient monitoring designs, and project documentation are absent from many restoration projects (NAS, 2017), but are critical to the success of the proposed project. The implementation grant request will include a detailed monitoring program design that addresses goals, objectives, data collection, and data assessment and evaluation for these success criteria.

Milestones and Schedule

The total estimated time horizon of this project is approximately 10 years. It is expected to start in 2018 and end in 2027. Implementation of this project has been divided into five milestones, as shown in the chart below. This project is ready to begin the feasibility study.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study																
Preliminary design																
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

The project budget was developed based on previous oyster restoration specific to Florida's west coast, with estimates ranging from about $75 to $120/cy of material and $15,000 to $25,000/acre of material placed. Franklin County is committed to allocating $5,000,000 of its share of the Florida Spill Impact Component to this program, but will also be seeking other leveraged funding sources to supplement these funds. If additional leveraged funds become available, they would be applied to the areal expansion of the reef restoration project as well as the development of a shellfish hatchery to provide a source of oyster larvae to local oyster reefs and others along the Gulf Coast. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$75,000	$75,000
Preliminary design	$75,000	$75,000
Planning Subtotal	**$150,000**	**$150,000**
Final design and permitting	$100,000	$100,000
Construction	$4,500,000	$4,500,000
Implementation Subtotal	**$4,600,000**	**$4,600,000**
Monitoring	$250,000	$250,000
Total Cost	**$5,000,000**	**$5,000,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$5,000,000
Direct Component		$0
Other Grants and Co-Funding		$0
Other County funds		$0
Total Committed Funding		**$5,000,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Council-Selected Restoration Component		
Gulf Environmental Benefit Fund		
Natural Resource Damage Assessment		
Triumph Gulf		
F.27 Regional Conservation Partnership Program (RCPP)		
F.32 Fisheries Finance Program		
F.33 Sea Grant National Marine Aquaculture Initiative - Integrated Projects to Increase Aquaculture Production		
F.34 Sea Grant National Marine Aquaculture Initiative - Addressing Impediments to Aquaculture Opportunities		
F.35 Saltonstall-Kennedy Competitive Research Program		
F.36 Marine Fisheries Initiative (MARFIN)		
F.40 Coastal and Marine Habitat Restoration Grants		
F.47 Estuary Habitat Restoration Program		
F.52 North American Wetlands Conservation Act (NAWCA) - Small Grants		
F.53 North American Wetlands Conservation Act (NAWCA) - Standard Grant		
F.54 Southeast Region Coastal Program		
O.24 Gulf of Mexico Oyster Aquaculture Small Grants		
O.42 Shell Marine Habitat Program		

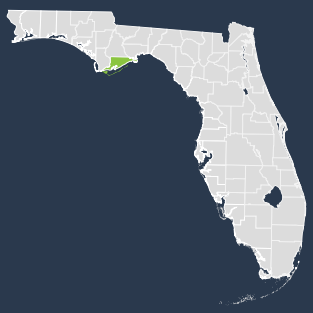
Partnerships/Collaboration

Potential project partners include University of Florida/Institute of Food and Agricultural Sciences, Florida State University, FWC, and The Nature Conservancy. Coordination with the following agencies is anticipated:

- Florida Department of Agricultural and Consumer Services
- Florida Fish and Wildlife Conservation Commission
- Florida Department of Environmental Protection
- Northwest Florida Water Management District
- National Marine Fisheries Service
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service.

FRANKLIN COUNTY

Apalachicola Bay Cooperative Dredging Program



PROJECT NO. 7-3

Project Description

OVERVIEW AND LOCATION

This program continues joint efforts by Franklin County and the U.S. Army Corps of Engineers (USACE) to maintain waterways that are critical to the commercial, charter, and recreational fishing industries in Franklin County. The program specifically addresses the maintenance dredging of the Eastpoint Channel and the Two-Mile Channel. The general location of these projects is shown in **Figure 7-3A**. Although this project addresses ecological restoration, the primary focus is on dredging to improve navigational access and to support of economic activities. For this reason, this project is classified as infrastructure with respect to the 25 percent infrastructure limitation.

Figure 7-3A. Location of the Eastpoint Channel and Two-Mile Channel maintenance dredge projects.

NEED AND JUSTIFICATION

Apalachicola Bay and St. George Sound have an open fetch frequently exposing the fleet of recreational and commercial fishing boats to high winds and waves. Captains rely on the navigation channels for safe passage to and from the fishing/oyster areas. When these channels shoal in as a result of sediment loads from the Apalachicola River and sediment transport from the bays, maintenance dredging is required to restore safe passage and refuge for the fleet. Eastpoint Channel and Two-Mile Channel are both past their routine maintenance interval and require maintenance dredging to restore published navigation depths. The Eastpoint Channel has not been dredged since 1985. The project areas are shown in **Figures 7-3A** and **7-3B**, respectively, for the Eastpoint Channel and Two-Mile Channel Projects. Depths shown in red indicate areas shallower than -6-foot mean low water (MLW) and require maintenance dredging.

Figure 7-3B. Eastpoint Channel dredge project limits (source: USACE, Mobile District).

Figure 7-3C. Two-Mile Channel dredge project limits (source: USACE, Mobile District).

PURPOSE AND OBJECTIVES

The purpose of this project is to remove accumulated sediments from the Eastpoint and Two-Mile Channels. The objectives of the project are to: (1) restore navigation depths for commercial, charter, and recreational fishing interests; and (2) beneficially reuse the dredge material to create a 26-acre marsh for habitat creation and shoreline protection. Beneficial reuse of spoil material from the Two-Mile Channel is also a possibility that will be evaluated during the final design process.

PROJECT COMPONENTS

The Eastpoint Channel maintenance dredge is currently permitted by USACE through 2023. The channel will be dredged to –6.4 feet NAVD 88 (-6.0 feet MLW) with -2-foot advanced maintenance and -2-foot allowable over-dredge, with 5:1 side slopes. This will generate approximately 244,000 cubic yards of dredged material that will be pumped to the containment cell. This is consistent with previous dredging projects in this channel as permitted by the Florida Department of Environmental Protection (FDEP) and the USACE. Dredge spoil from the channel will be beneficially reused, creating 26 acres of coastal marsh seaward of the existing breakwaters protecting the channel, subject to final design. Reuse of the dredge spoil in this manner will reduce project costs, create habitat, and establish a sustainable barrier for the Eastpoint Channel. **Figure 7-3D** shows the location and approximate extent of the marsh creation area.

The seaward edge of the marsh will be stabilized with rock to prevent erosion and planted with salt marsh vegetation, providing habitat for juvenile fish, shellfish, and crustaceans. In turn, this will provide foraging areas for a variety of native and migratory shorebirds and waterfowl.

The Eastpoint Channel project has design plans complete and both state and federal permits in hand. Therefore, this project will be ready to bid and construct upon project grant award. Construction is estimated to take 24 months. Updated pre-construction bathymetric surveys will be required immediately prior to construction to document current channel conditions and provide updated construction volumes. The project will be bid and managed by the USACE. Project grant funds will be used to update the project design volumes and for construction.

The Two-Mile Channel will also be dredged to -6.4 feet NAVD 88 (-6.0 feet MLW) with -2-foot advanced maintenance and -2-foot allowable over-dredge, with 5:1 side slopes. This project will generate approximately 450,000 cubic yards of dredged material and the final disposal location will be based on the results of the sediment-sampling effort, and determined during the design and permitting stage. This project has used a dedicated, 40-acre, upland dredge material management area on Apalachicola Regional Airport property in the past, but this facility now requires renovation prior to construction. The County and USACE will collaborate on the design and permitting of the new facility before accepting material from this project. Beneficial reuse options similar to those proposed at Eastpoint will also be explored. Design and permitting of the Two-Mile Channel project is not yet complete; therefore, project grant funds will be used to complete these activities. Construction of this project is anticipated to take 36 months.

Figure 7-3D. Location and approximate extent of the marsh creation area at the Eastpoint dredge site.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will contribute to economic recovery, sustainability, and resilience of the economy of Franklin County and adjacent counties. Commercial, charter, and recreational fishing—particularly the oyster industry—are major economic drivers in Franklin County, and safe navigable waterways are critical to the continued success and growth of these industries. Construction of these dredging projects will bring revenue to local Franklin County contractors. Once the projects are complete, they will increase the number of safe fishing days for recreational and commercial fishing fleets, and will allow larger vessels to access local waterways. In addition, the marsh creation will increase emergent wetland habitat and provide refuge for fish and wildlife.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 6: Infrastructure projects benefiting the economy or ecological resources, including port infrastructure.

Comprehensive Plan Goals and Objectives

This project is consistent with and addresses the following Comprehensive Plan Goals:

- Goal 5: Restore and Revitalize the Gulf Economy (primary)
- Goal 4: Enhance Community Resilience.

This project is consistent with, and addresses, the following Comprehensive Plan Objective:

- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Project (primary)s
- Objective 5: Promote Community Resilience.

Implementing Entities

Franklin County proposes to add USACE as a sub-recipient on the grant in order to provide funding of this collaborative effort to design, permit, and construct the dredging projects.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The primary focus of this program is maintenance dredging for port infrastructure; therefore, BAS does not apply. Regulatory permitting will address potential impacts to marine habitats and living resources, and cultural resources, as appropriate.

The USACE completed maintenance dredging project in the Two-Mile Channel in 2002, and acceptable dredging and spoil handling technologies were determined and authorized in permits for that project. Therefore, there is a recent precedent for successful permitting and construction of maintenance dredging projects in Apalachicola Bay. Therefore, this program is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (3) conduct the proposed maintenance dredging activities; and (3) effectively manage spoil disposal and beneficial reuse areas in perpetuity.

Risks and Uncertainties

The Eastpoint Channel project has completed design plans, and both state and federal permits in hand, so it is assumed that any major risks and uncertainties were adequately addressed during the permitting process. The Two-Mile Channel project has not been designed or permitted yet, and this project will generate close to twice as much dredged material. Therefore, there are some uncertainties with regard to the dredged material disposal location(s) and the potential for beneficial reuse of this material for the latter project. These uncertainties are expected to be resolved during the design and permitting process for the Two-Mile Channel project.

Success Criteria and Monitoring

This program addresses the maintenance of public navigation channels, and the improvement of fishing fleet access to Apalachicola Bay and the Gulf. Specific success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Acres and/or linear feet of channel restored to design depths
- Increase in safe fishing days.

In the project grant request, a monitoring program will be described that addresses data collection and assessment methodologies for the above-listed criteria. Franklin County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this program is approximately 16 years. It is expected to start in 2018 and to end in 2033. Implementation of this project has been divided into milestones for both the Eastpoint Channel and Two-Mile Channel program, respectively, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Eastpoint Channel																
Final design	■															
Construction – dredging and marsh creation				■	■											
Two-Mile Channel																
Feasibility study									■							
Preliminary design									■							
Final design and permitting										■						
Construction – dredging and disposal												■	■	■		
Success monitoring			■			■	■				■				■	■

Budget and Funding Sources

A total cost estimate of $6,660,000 has been developed by Franklin County and USACE for both projects based on the best available information and prior dredging projects. Franklin County is committed to allocating $6,660,000 of its share of the Florida Spill Impact Component to this program, but will also be seeking other leveraged funding sources to supplement these monies if. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Eastpoint Channel		
Final design	$100,000	$100,000
Construction – dredging and marsh creation	$2,900,000	$2,900,000
Implementation Subtotal	**$3,000,000**	**$3,000,000**
Two-Mile Channel		
Feasibility study	$150,000	$150,000
Preliminary design	$150,000	$150,000
Planning Subtotal	**$300,000**	**$300,000**
Final design and permitting	$100,000	$100,000
Construction	$2,900,000	$2,900,000
Implementation Subtotal	**$3,000,000**	**$3,000,000**
Monitoring	$360,000	$360,000
Total Cost	**$6,660,000**	**$6,660,000**

COMMITTED FUNDING SOURCES	
Spill Impact Component	$6,660,000
Direct Component	$0
Other grants or co-funding (USACE)	$0
Other County funds	$0
Total Committed Funding	**$6,660,000**
Budget Shortfall	**$0**
POTENTIAL LEVERAGED FUNDING SOURCES	
Council-Selected Restoration Component	
Gulf Environmental Benefit Fund	
Natural Resource Damage Assessment	
Triumph Gulf	
F.01 Strategic Economic and Community Development	
F.02 Rural Business Development Grants	
F.14 Business and Industry Loan Guarantees	
F.31 Public Works and Economic Adjustment Assistance Programs	
F.33 Sea Grant National Marine Aquaculture Initiative - Integrated Projects to Increase Aquaculture Production	
F.36 Marine Fisheries Initiative (MARFIN)	
F.40 Coastal and Marine Habitat Restoration Grants	
F.41 Habitat Conservation	
F.43 Coastal Resilience Grants Program	
F.54 Southeast Region Coastal Program	
O.13 Conserve Wildlife Projects	
O.18 FishAmerica Foundation	
O.19 Fisheries Innovation Fund	
O.25 Gulf Star	
O.34 Resilient Communities Program	
S.12 Competitive Florida Partnership Grant	
S.13 Florida Job Growth Grant Fund	
S.20 Coastal Partnership Initiative - Florida Coastal Management Program	
S.49 Sport Fish Restoration Program	

Partnerships/Collaboration

Franklin County plans to apply for additional grant funding/leveraging to apply toward the overall project budget. If successful, these funds would be allocated to other future joint channel maintenance in a partnership with U.S. Army Corps of Engineers.

WAKULLA COUNTY

Wakulla Springshed Water Quality Protection Program

PROJECT NO. 8-1

Project Description

OVERVIEW AND LOCATION

This multi-faceted program involves improvements to domestic wastewater and stormwater infrastructure to address legacy water pollution sources in the Wakulla Springs springshed, the Wakulla River, the St. Marks River, and Apalachee Bay. Program components include: (1) improvement and expansion of existing sewer infrastructure to continue an ongoing septic-to-sewer conversion program; (2) upgrade and expansion of one sewage treatment plant, and the potential purchase of another; and (3) design and construction of a stormwater conveyance and treatment system. The general locations of the program components in Wakulla County are shown in **Figure 8-1A.**

Figure 8-1A. Wakulla Springshed Water Quality Protection Program location map.

NEED AND JUSTIFICATION

Wakulla Spring is classified as a first magnitude spring and a major exposure point for the Floridan Aquifer. The spring forms the Wakulla River which flows 9 miles (14 km) to the southeast where it joins the St. Mark's River. After a short 5 miles (8.0 km) the St. Mark's empties into the Gulf of Mexico at Apalachee Bay. Both the Wakulla River and the St. Marks River are classified as Outstanding Florida Waters (OFW). Wakulla Spring is a regionally significant natural and recreational resource, and the spring vent and run are protected as part of the Edward Ball Wakulla Springs State Park managed by the Florida Department of Environmental Protection (FDEP). The underlying hydrogeology of the Wakulla springshed is the Woodville Karst Plain groundwater-surface water system. This karst geologic system is characterized by a thin sandy overburden layer, and an underlying porous limestone matrix. The areal extent of the Woodville Karst Plain is shown in **Figure 8-1B**. The Florida Aquifer in this area is highly

vulnerable to pollutant discharges to both land surface and the shallow groundwater system due to the limited confining layer.

Although the St. Marks River/Apalachee Bay watershed generally has good water quality, portions of the Wakulla River, St. Marks River, and Apalachee Bay are listed as verified impaired by the Florida Department of Environmental Protection (FDEP) for bacteria and nutrients, and a total maximum daily load (TMDL) for nutrients has been established for a segment of the Wakulla River. Old and failing septic systems and wastewater conveyance and treatment facilities contribute nutrients and bacteria to these waterbodies, and upgrades to the existing infrastructure is anticipated to result in substantial reductions in pollutant loads to downstream waters (*Northwest Florida Water Management District (NWFWMD), 2017). This multi-faceted* program will reduce pollutant loads to both Wakulla Springs and the affected surface water bodies through master sewer planning, expansion of centralized sewer to areas currently served by septic systems, expansion of wastewater treatment capacity, and improvements to stormwater management infrastructure.

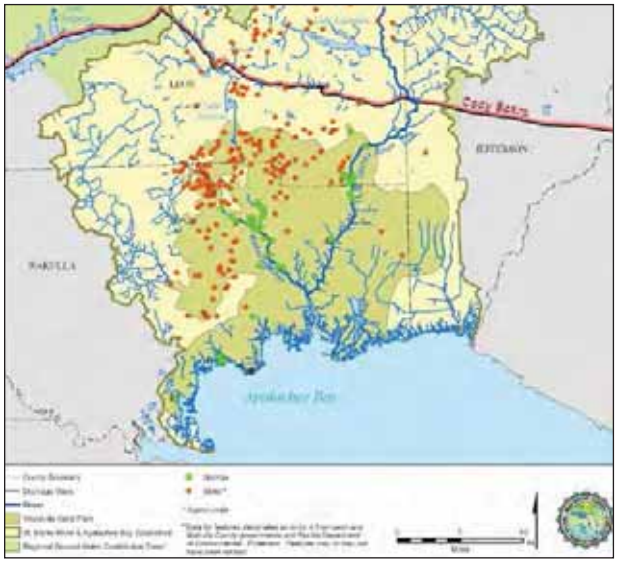


Figure 8-1B. Hydrogeologic features in the program area (source: NWFWMD, 2009).

Figure 8-1C. Wakulla Gardens and Grieners septic to sewer areas.

PURPOSE AND OBJECTIVES

The purpose of this program is to provide wastewater and stormwater infrastructure improvements to reduce discharges of pollutants to the springshed of Wakulla Springs - and to the surface waters of the Wakulla River, St. Marks River, and Apalachee Bay - from existing septic systems and sewer overflows. The objectives of the program are to: (1) reduce nutrient and bacteria loads to the groundwater from septic tanks; and, (2) reduce nutrient, bacteria and sediments load to surface waters from sanitary sewer overflows and untreated stormwater runoff.

PROJECT COMPONENTS

The program includes the following five components:

- **Master Sewer Plan:** Sewer service in Wakulla County is currently provided by a patchwork combination of private and public utilities (see Figure 8-1E). This is a master planning effort to assess the various wastewater systems in the southern portion of Wakulla County to identify how they could be most efficiently consolidated, integrated, and operated. It involves WINCO and the Talquin coastal sewer system in the Shell Point and Spring Creek areas.

- **Wakulla Springs Springshed Program:** This component involves expansion of the sanitary sewer infrastructure in the Wakulla Springs springshed. It includes phases in Wakulla Gardens (Phases 2B through 8) and the Magnolia/Grieners Addition (Phase 3). These neighborhoods are high density and many of the >1,000 septic systems are aging, dating to the 1940s and 1950s. These communities are in a watershed that is known for a distinctive bowl-shaped groundwater flow effect because of its location in the Woodville Karst Plain. This is part of an ongoing program to eliminate septic systems in the area. This area is especially vulnerable to groundwater pollutant inputs because of the prevalent karst lithology. Wakulla County has already completed the first two phases of the program. **Figure 8-1C** shows Wakulla Gardens and the Magnolia/ areas.

Figure 8-1D. Coastal Sewer Program.

- **Coastal Sewer Program:** This component combines four areas within Wakulla County for the design and construction of new and upgraded sewer infrastructure in low-lying coastal areas that are subject to flooding during moderate rain events: Shell Point, Oyster Bay, Spring Creek, and Live Oak Island. These communities are located directly adjacent to Apalachee Bay in the Woodville Karst Plain in an area with thin overburden, and coastal springs and are likely contributing nutrients to the shallow groundwater system and Apalachee Bay. Currently, the communities of Shell Point, Oyster Bay, and Spring Creek area have access to a central sewer system, but 80 percent of the residences use septic systems; and Live Oak Island uses septic systems exclusively. Once connections to the central sewer are made, abatement of existing septic systems would occur. This project is at the beginning of the planning phase; therefore, the number of lots which would connect to the proposed sewer is unknown at this time. The project includes the purchase of existing privately-owned (Talquin) sewer systems, and the design and construction of new and upgraded sewer infrastructure to Shell Point and Oyster Bay. This project also addresses operational issues in the Live Oak Island and Spring Creek areas. Wakulla County is currently experiencing low wastewater flows from these areas, accelerating the deterioration of existing infrastructure. A potential solution is to increase flows by installing a sanitary sewer pipe in a subaqueous crossing from Live Oak Island to Shell Point to alleviate the low flows and allow for the abandonment of additional septic systems. **Figure 8-1D** shows the coastal areas to connected to central sewer systems.

Figure 8-1E. Otter Creek WWTP, Talquin, and WINCO service areas.

- **Otter Creek WWTP Upgrade Feasibility Plan**: This component involves conducting a study to determine the feasibility of upgrading the existing Otter Creek WWTP by adding two additional clarifier tanks, as well as other system improvements to both increase treatment capacity and efficiency. The expanded capacity is needed to treat flows from expanded sewer in the western and southern parts of Wakulla County and south/ southwest of the Wakulla River, and to accommodate future growth in Wakulla County. **Figure 8-1E** shows the location of the Otter Creek WWTP and the various sewer service areas in Wakulla County.

- **Panacea Stormwater Improvements:** This component includes the design and construction of a stormwater conveyance (culverts, cross drains, treatment swales and ponds, etc.) system in the Panacea area east of U.S. Highway 98 to address local coastal flooding and stormwater pollution loads into the Apalachee Bay system (see **Figure 8-1E**).

Contributions to the Overall Economic and Ecological Recovery of the Gulf

The projects in this program will reduce existing nutrient and bacteria loads to groundwater and surface waters in the St. Marks River/Apalachee Bay watershed. These pollutant load reductions are anticipated to result in improvements in surface water quality in Wakulla Springs, the Wakulla River, the St. Marks River, and Apalachee Bay. Water quality improvements will likely be reflected in reduced nutrient, bacteria, and chlorophyll-a concentrations, and nuisance algae blooms, in the affected waterbodies. Localized seagrass losses in Apalachee Bay have been linked to reduced water clarity as a result of high phytoplankton concentrations (NWFWMD, 2017). Improved water quality resulting from this program is expected to contribute to better habitat conditions for desirable submerged aquatic vegetation as well as living marine resources.

Although primarily a water quality improvement program, the component projects may also contribute to economic growth in Wakulla County. The sewer expansion should increase property values for the parcels it will ultimately serve, and sewer availability may encourage development of currently unimproved parcels in the project area. This could, in turn, grow Wakulla County's tax base. Proposed wastewater and stormwater elements could also increase workforce development and job creation in both the public and private sectors.

Eligibility and Statutory Requirements

This program is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This program is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This program is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

Wakulla County would be the sole implementing entity and grant sub-recipient responsible for the design, permitting, construction, operation and maintenance, and monitoring of this project. Wakulla County has coordinated with numerous other agencies in the development of the wastewater management plan, and may collaborate with other entities in the implementation of the project through leveraging other potential funding opportunities.

Best Available Science and Feasibility Assessment

This program is consistent with the goals and recommendations of the following natural resource management plans:

- *NWFWMD, 2017. St. Marks River and Apalachee Bay Surface Water Improvement and Management (SWIM) Plan.*
- *FDEP, 2015. Final Basin Management Action Plan (BMAP) for the Implementation of the Total Maximum Daily Load for Nutrients (Biology) by the Florida Department of Environmental Protection in the Upper Wakulla River and Wakulla Springs Basin.*

Wakulla County has conducted preliminary feasibility assessments and cost estimates of the proposed improvements; however, it is anticipated that the completion of the Master Sewer Plan and detailed feasibility studies for the individual components will allow for refined definition of the program components and costs. This program is considered to be feasible with respect to the ability to obtain necessary permits; however, the feasibility of constructing the project within the proposed budgets, and effectively operate and maintain the project components over the long term, will be determined in the master planning component.

Risks and Uncertainties

This program is in the feasibility stage; however, no significant risks or uncertainties have been identified at this time. The septic sewer component of this program is an extension of ongoing work already underway in the affected area.

Success Criteria and Monitoring

This project will affect water quality in groundwater and surface waters adjacent to the sewer improvement areas. Therefore, a range of success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Number of septic systems taken off-line
- Estimated reduction in nutrient and bacteria loads attributable to the wastewater improvements
- Changes in ambient water quality (nutrients, bacteria, chlorophyll-a) in the affected surface in the vicinity of wastewater improvements.

In the project grant request, a detailed monitoring program will be described that addresses data collection and assessment methodologies for the above-listed criteria. Wakulla County is committed to conducting the monitoring necessary to quantify program benefits. Water quality monitoring will be coordinated with state and regional entities including the NWFWMD.

Milestones and Schedule

The total estimated time horizon to implement this program, from feasibility studies through success monitoring, is approximately 16 years. The program is expected to start in 2018, and end in 2033. The proposed project schedules are shown on the milestone chart below. The schedule indicates the duration of all planning activities (feasibility) and implementation (design, permitting, construction, and connections). To verify performance, water quality monitoring would be required for the entire period.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Master Sewer Plan/Preliminary Engineering Report																
WINCO Utility						■										
Coastal Sewer		■	■													
Springshed Program: Magnolia/Grieners Phase 3																
Access fees		■														
Springshed Program: Wakulla Gardens Phases 2B–8																
Access fees (Phase 2B)		■														
Access fees (Phase 3)			■	■												
Access fees (Phase 4)				■			■									
Design and permitting (Phase 5)					■											
Access fees (Phase 5)						■	■	■	■							
Access fees (Phase 6)						■										
Access fees (Phase 7)						■										
Access fees (Phase 8)								■	■							
Coastal Sewer Program																
Utility acquisition feasibility study	■	■														
Design, engineering, and permitting			■	■												
Construction	■			■	■											
Access Fees							■									
Otter Creek WWTP Upgrade																
Wastewater treatment facility feasibility plan	■	■														
Panacea Stormwater																
Feasibility study/Preliminary design												■				
Final design and permitting												■				
Construction												■	■	■		
Success monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Budget and Funding Sources

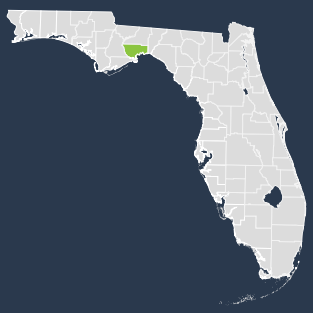
Wakulla County has developed a cost estimate of $8,040,570 for the program activities. Wakulla County is committed to allocating $7,790,570 of its share of the Florida Spill Impact Component to the program, and will be allocating matching dollars from other grants and county funds to cover the costs of the program. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Master Sewer Plan/PER		
WINCO Utility	$30,000	$30,000
Coastal Sewer	$119,533	$119,533
Planning Total	**$149,533**	**$149,533**
Springshed Program: Magnolia Gardens and Grieners Addition – Phase 3		
Access fees	$446,600	$446,600
Implementation Total	**$446,600**	**$446,600**
Springshed Program: Wakulla Gardens – Phase 2B - 8		
Access fees (Phase 2B)	$161,700	$161,700
Access fees (Phase 3)	$816,200	$816,200
Access fees (Phase 4)	$777,700	$777,700
Design and permitting (Phase 5)	$397,334	$397,334
Access fees (Phase 5)	$334,950	$334,950
Access fees (Phase 6)	$292,600	$292,600
Access fees (Phase 7)	$154,000	$154,000
Access fees (Phase 8)	$469,700	$469,700
Implementation Total	**$3,404,184**	**$3,404,184**
Coastal Sewer Program: Talquin Sewer System-Shell Point		
Utility acquisition feasibility study	$110,000	$110,000
Planning Total	**$110,000**	**$110,000**
Coastal Sewer Program: Shell Point, Live Oak Island, and Spring Creek		
Design, engineering, and permitting	$211,083	211,083
Construction	$1,000,000	$1,000,000
Access Fees	$115,500	$115,500
Implementation Total	**$1,326,583**	**$1,326,583**
Otter Creek WWTP Upgrade		
Wastewater treatment facility feasibility plan	$1,100,000	$1,100,000
Planning Total	**$1,100,000**	**$1,100,000**
Panacea Stormwater		
Feasibility study/Preliminary design	$50,000	$50,000
Planning Subtotal	**$50,000**	**$50,000**
Final design and permitting	$50,000	$50,000
Construction	$1,193,020	$943,020
Implementation Subtotal	**$1,243,020**	**$993,020**
Total	**$1,293,020**	**$1,043,020**
Monitoring	$210,650	$210,650
Total Cost	**$8,040,570**	**$7,790,570**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$7,790,570
Direct Component		$0
Other County funds		$250,000
Total Committed Funding		**$8,040,570**
Budget Shortfall		**$0**

POTENTIAL LEVERAGED FUNDING SOURCES
Natural Resource Damage Assessment
Triumph Gulf
F.03 Rural Community Development Initiative Grants
F.06 SEARCH: Special Evaluation Assistance for Rural Communities and Households
F.07 Water and Waste Disposal Systems for Rural Communities
F.11 Community Facilities Direct Loan and Grant Program in Florida
F.12 Community Facilities Technical Assistance and Training Grant
F.17 Grant Program to Establish a Fund for Financing Water and Wastewater Projects
O.22 Florida Rural Water Association Loan Program
O.40 Southeast Rural Community Assistance Project, Inc. (SERCAP) Loan Fund Program
O.43 Southeast Aquatics
O.46 Water/Wastewater Loans
S. 32 Springs Restoration
S.13 Florida Job Growth Grant Fund
S.14 Small Cities Community Development Block Grant (CBDG) Program
S.15 Small Cities CBDG Section 108 Loan Guarantees
S.18 Clean Water State Revolving Fund (CWSRF)
S.21 CWSRF Small Community Wastewater Construction Grants
S.36 Water Projects

Partnerships/Collaboration

Wakulla County has coordinated with numerous other agencies in the development of the wastewater management master plan, and will collaborate with other entities as required. Some of the potential partnerships include the WINCO and Talquin Utilities.



WAKULLA COUNTY

Coastal Access Program

PROJECT NO. 8-2

Project Description

OVERVIEW AND LOCATION

This program involves public land acquisition and the construction and/or improvement of recreational amenities to enhance public access to coastal waters and the Gulf of Mexico. Wakulla County has evaluated several priority sites. The percent locations of five priority sites discussed below are shown **Figure 8-2A**.

NEED AND JUSTIFICATION

Approximately 63 percent of Wakulla County - nearly a quarter of a million acres – is protected as conservation or preservation lands (Florida Natural Areas Inventory (FNAI), 2017). Those lands include the Apalachicola National Forest (269 square miles), St. Marks National Wildlife Refuge (97 square miles), and Edward Ball Wakulla Springs State Park (9 square miles). Wakulla Springs is one of the world's largest springs; its water flow has been measured at 1.23 billion gallons per day. Because of these rich natural resources, Wakulla County is a regional leader in ecotourism, and has established eco-tourism as a major economic development strategy in their Comprehensive Plan. This program seeks to build on earlier recreational access efforts of the Wakulla County through a combination of coastal zone land acquisition and park development/enhancement.

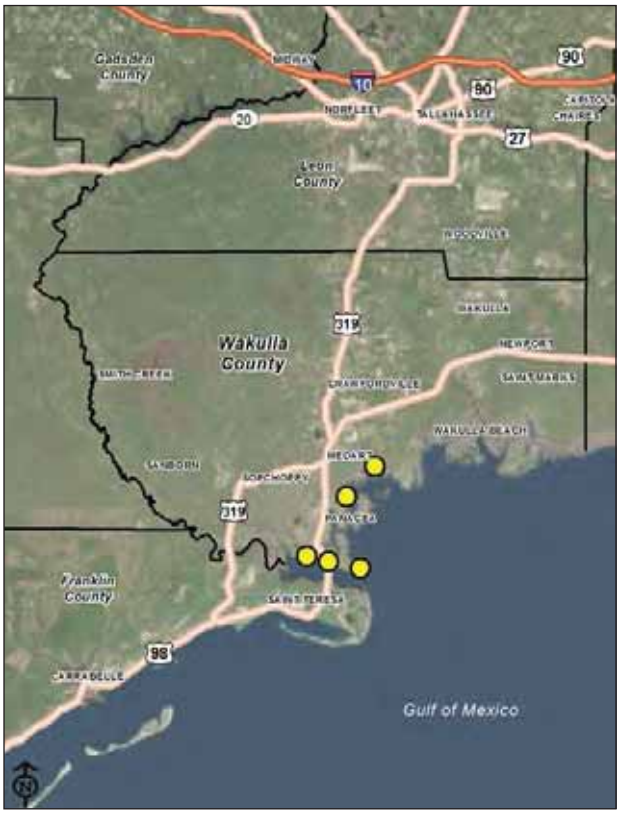


Figure 8-2A. Location of potential coastal public access sites in Wakulla County.

Based on their experiences over the last 25 years with the St. Marks Trail – the first paved rails to trails facility in Florida – Wakulla county is seeking to improve and expand their trail network. Wakulla County also has nine boat ramp locations, but these areas are heavily utilized and parking is often unavailable. In addition, waterfront sites that are suitable for recreational access are often in demand for development. Passive recreational development at key

waterfront locations rather than dense residential development is a proven strategy to reduce catastrophic economic damage during storm events. Finally, preserving native habitats at passive recreation sites promotes both ecosystem sustainability and public environmental education.

PURPOSE AND OBJECTIVES

The purpose of this program to increase and enhance public access to the coastal zone of Wakulla County. The program objectives include: (1) evaluate the potential for recreational use development of five currently identified priority sites; (2) publicly acquire and/or secure lease agreements for sites/parcels determined to be feasible for public recreational use development; (3) construct recreational use facilities; (4) preserve and protect native habitats where feasible; (5) operate and maintain recreational facilities over the long term; and (6) promote ecotourism in Wakulla County.

PROJECT COMPONENTS

The program components include the following:

- Conduct feasibility and conceptual design studies at five currently identified priority sites evaluate the potential for recreational use development
- Publicly acquire and/or secure lease agreements for sites/parcels determined to be feasible for public recreational use development
- Construct recreational use facilities
- Operate and maintain recreational facilities over the long term.

Wakulla County had identified five sites that have potential for public access to the coastal zone and recreational use development, which are discussed below. While five projects have been defined in this program, if these project sites become unavailable, other sites that meet the goals of this program will be substituted.

Bayside Marina

The Bayside Marina parcel is a 2.6-acre private marina located on Ochlockonee Bay, in the City of Panacea. The marina is also located at the headwaters of a tidal spring run with exceptional habitat value. This site could be acquired and converted to a public boat ramp.

Old Oaks Place Trailhead

This parcel is owned by the Florida Department of Transportation, and is located at the southern terminus of the Ochlockonee Bay Bike Trail (existing 14-mile trail) and the Capital City to the Sea Loop Trail (to be completed by 2019). This site could be acquired or leased, and developed to provide trailhead amenities including parking, restrooms, and playground, walking paths, stormwater features, educational kiosk, and signage on U.S. Route 98.

Skipper Bay

Skipper Bay is an undeveloped embayment located in the Panacea Unit of the St. Marks National Wildlife Refuge. The site is only accessible by a dirt road, and there are no facilities there. Native habitats include long-leaf pine and black rush salt marsh. Through a use agreement, the terminus of the access road could be improved to include parking, composting bathrooms, and an interpretive trail/boardwalk.

Spring Creek

Located at the end of County Road 365, Spring Creek is a small fishing village with an artesian spring run that flows directly to the Spring Creek estuary. Several parcels are available for sale at this location that could provide for protection of the spring run and public access to coastal waters. In addition, there are historic and cultural resources of significance at this location. Consolidation of available parcels under public ownership would conserve the unique resources of this site, as well as provide public access to an unspoiled portion of the Gulf Coast.

Figure 8-2B. Mashes Sand Beach located at the mouth of Ochlockonee Bay.

Mashes Sands Beach

Mashes Sands Park is a waterfront sandy beach at the northern mouth of Ochlockonee bay. The sand beach is partially owned by Wakulla County. Adjacent privately-owned parcels to the east and north are available for sale, and could provide substantial land area to expand the county park facilities. The site also connects to the Ochlockonee Bay Bike Trail. Potential recreational amenities could include parking, restrooms, and an interpretive nature trail/boardwalk. In addition, the adjacent lands have been disturbed by previous dredge and fill activities and offer the opportunity to for extensive habitat restoration, and living shoreline project could be constructed to protect the sandy beach from erosion. **Figure 8-2B** shows an aerial photograph of Mashes Sands beach site.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will expand and enhance public access to the coastal waters of Wakulla County by its residents and visitors. The three of the five priority sites discussed above are currently in private ownership, and action needs to be taken soon. With increased amenities attracting a wider number of user groups, the acquisition and improvement of the sites discussed above, as well as other potential sites identified in the future, should reduce overcrowding existing parks and boat ramps. In addition, Wakulla County actively promotes ecotourism, and increasing publicly-owned recreational sites will contribute to the growth and sustainability of the Wakulla County economy. Finally, the program will also include ecosystem restoration and preservation of native habitats where feasible, which in turn will enhance community resilience through the establishment of non-structural, natural buffers against storms and flooding.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of Tourism in the Gulf Coast region, including recreational fishing.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 5: Restore and Revitalize the Gulf Economy (primary)
- Goal 1: Restore and Conserve Habitat.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Consortium Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects (primary)
- Objective 1: Restore, Enhance, and Protect Habitats.

Implementing Entities

Acquisition activities will either be conducted by an NGO on behalf of the Gulf Consortium or by Wakulla County as a sub-recipient to the Gulf Consortium. Development of park projects will be conducted by Wakulla County as a sub-recipient.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The primary focus of this program is public recreational access and tourism promotion; therefore, BAS does not apply.

This program is considered to be feasible with respect to the ability to: (1) acquire or secure use agreements for the priority properties; (2) obtain necessary permits; (3) construct recreational amenities; and (4) effectively operate and maintain recreational amenities in perpetuity. Regulatory permitting will address potential impacts to marine habitats and living resources, and cultural resources, as appropriate.

Risks and Uncertainties

Land acquisition activities are always at risk with respect to securing a willing seller and negotiating reasonable terms. Wakulla County will only negotiate land acquisition with willing sellers. Coastal park and recreational amenities are also at risk for damage by tropical storms and sea-level rise. However, the proposed recreational improvements will factor coastal storm hazards and sea-level rise into the design, as appropriate.

Success Criteria and Monitoring

This program involves property acquisition and/or use agreements, and the construction of canoe/kayak launces and other recreational amenities. Specific success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Acres of coastal access properties acquired or leased
- Recreational amenities constructed
- Increase in public recreational use.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Wakulla County is committed to conducting the monitoring necessary to quantify program benefits.

Milestones and Schedule

This program will commence in 2018 and be completed in 2031. The milestone chart below shows that feasibility studies and preliminary design work will be initiated in 2018 for all the parcels. Then, as funds become available, the lands will be purchased. Wakulla County may use other county funds to acquire properties and be reimbursed with Spill Impact Component funds in the future. Once the land is owned by Wakulla County, final design and permitting will commence. Construction of the Bayside Marina Park Amenities will occur in 2030 with monitoring to follow the year after construction.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Bayside Marina																
Feasibility study	■															
Land acquisition		■														
Final design and permitting				■												
Construction (boat ramp/dock/parking lot)				■												
Old Oaks Place Trail Head																
Final design and permitting				■												
Skipper Bay Park																
Feasibility study			■													
Land acquisition									■							
Construction										■						
Spring Creek Lands																
Feasibility study						■										
Land acquisition											■					
Construction													■			
Mashes Sands Park																
Feasibility study						■										
Final design and permitting						■										
Success monitoring					■						■			■		

Budget and Funding Sources

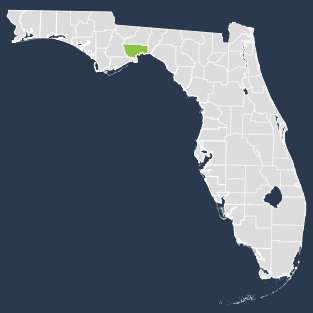
Wakulla County has estimated the total cost to implement this program to be $3,175,000, and is dedicating $3,175,00 of their Spill Impact Component allocation to this program. However, this cost estimated includes planning and design, and includes only construction costs for a boat ramp rehabilitation at the Bayside Marina site. The feasibility studies will determine which sites can be developed for recreation use, as well as more detailed cost estimates for the construction of amenities at each. If some sites are determined to not be feasible, Wakulla County will assess other potential sites or reallocate funds to other projects in future SEP amendments. A summary of the costs and funding sources for this program is provided in the following table.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Bayside Marina		
Feasibility study/preliminary engineering report	$25,000	$25,000
Planning Subtotal	**$25,000**	**$25,000**
Land acquisition	$800,000	$800,000
Final design and permitting	$25,000	$25,000
Construction (boat ramp/dock/parking lot)	$450,000	$450,000
Implementation Subtotal	**$1,275,000**	**$1,275,000**
Total	**$1,300,000**	**$1,300,000**
Old Oaks Place Trail Head		
Final design and permitting	$125,000	$125,000
Implementation Total	**$125,000**	**$125,000**
Skipper Bay Park		
Feasibility study/preliminary engineering report	$25,000	$25,000
Planning Subtotal	**$25,000**	**$25,000**
Land acquisition	$275,000	$275,000
Final Design and permitting	$25,000	$25,000
Construction	$85,000	$85,000
Implementation Subtotal	**$385,000**	**$385,000**
Total	**$410,000**	**$410,000**
Spring Creek		
Feasibility study/preliminary engineering report	$25,000	$25,000
Planning Subtotal	**$25,000**	**$25,000**
Land acquisition	$1,750,000	$1,750,000
Construction	$500,000	$500,000
Implementation Subtotal	**$2,250,000**	**$2,250,000**
Total	**$2,275,000**	**$2,275,000**
Mashes Sands Park		
Feasibility study/preliminary engineering report	$25,000	$25,000
Planning Subtotal	**$25,000**	**$25,000**
Final design and permitting	$100,000	$100,000
Implementation Subtotal	**$100,000**	**$100,000**
Total	**$125,000**	**$125,000**
Monitoring	$9,000	$0
Total Cost	**$4,244,000**	**$4,235,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$4,235,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$9,000
Total Committed Funding		**$4,244,000**
Budget Shortfall		**$0**

POTENTIAL LEVERAGED FUNDING SOURCES
Gulf Environmental Benefit Fund
Natural Resource Damage Assessment
Triumph Gulf
F.40 Coastal and Marine Habitat Restoration Grants
F.43 Coastal Resilience Grants Program
O.15 Doppelt Family Trail Development Fund
O.42 Shell Marine Habitat Program
O.43 Southeast Aquatics
S.20 Coastal Partnership Initiative - Florida Coastal Management Program
S.23 Florida Recreation Development Assistance Program (FRDAP)
S.24 Greenways and Trails Program
S.26 Land and Water Conservation Fund (LWCF)
S.29 Recreational Trails Program
S.30 Shared-Use Nonmotorized (SUN) Trail Program (if paved trails)
S.40 Transportation Alternatives Program - Set-Aside
S.45 Florida Boating Improvement Program (FBIP)
S.46 Florida ESA Section 6
S.49 Sport Fish Restoration Program

Partnerships/Collaboration

Wakulla County will continue to partner with the Florida Department of Transportation on trail development projects, and would partner with the U.S. Fish and Wildlife Service on the Skipper Bay site.



WAKULLA COUNTY

Artificial Reef and Oyster Habitat Enhancement

PROJECT NO. 8-3

Project Description

OVERVIEW AND LOCATION

The project involves a feasibility study to develop a County artificial reef program; and the placement of oyster cultch at nearshore oyster reef sites, to enhance recreational fishing and diving opportunities and to improve coastal habitats. **Figure 8-3A** shows the general location of the proposed reef sites.

NEED AND JUSTIFICATION

Wakulla County experienced a 52% increase in the number of registered recreational vessels between 2000 and 2009, demonstrating a need to expand its artificial reef program in support of recreational fishing and diving opportunities, and their associated economic benefits. Artificial reefs can also provide: (1) hard substrate to support encrusting and colonial benthic organisms (e.g., sponges and corals); (2) habitat for small marine invertebrates; and (3) shelter for larval and juvenile fishes. Wakulla County does not currently have an organized artificial reef program. Spill Impact Component funds are proposed to be used to develop such a program in Wakulla County.

Figure 8-3A. Artificial reef location map.

Wakulla County nearshore waters have historically supported oyster reefs, and provided most of Florida's oyster harvest after the oyster decline in neighboring Apalachicola Bay after hurricanes Kate and Elena in 1985. However, there has been a significant reduction in oysters and oyster reefs along Florida's Panhandle and Big Bend areas, inclusive of Wakulla County, over the last few decades. Wakulla County proposes to address this loss by restoring oyster reefs and associated fisheries habitat by placing suitable materials at appropriate sites in nearshore waters.

PURPOSE AND OBJECTIVES

The purpose of this program is to enhance both offshore and nearshore hard bottom habitats. The objectives of the program are to: (1) evaluate the feasibility of deploying artificial reefs in a 40-acre artificial reef site in Wakulla County offshore water; (2) deploy suitable cultch materials to restore oyster reef habitat and associated ecological functions for estuarine dependent species; and (3) support increased public recreational fishing and diving opportunities; and (4) improve the ecological and economic sustainability. The objectives of the artificial reef project are consistent with those of the Florida Fish and Wildlife Conservation Commission's (FWC's) artificial reef program listed below:

1. Enhance private recreational and charter fishing and diving opportunities
2. Provide a socio-economic benefit to local coastal communities
3. Increase reef fish habitat
4. Reduce user conflicts
5. Facilitate reef related research
6. Do no harm to fishery resources, essential fish habitat (EFH), or human health.

PROJECT COMPONENTS

This program involves the following three components:

- Feasibility study for the development of a Wakulla County artificial reef program, including: acquisition of concrete, rock, and/or steel materials appropriate for reef construction; identification, selection and permitting of offshore artificial reef sites; and the deployment of appropriate materials at five permitted offshore reef sites.
- Construction of five artificial reef modules.
- Nearshore oyster reef restoration, including nearshore site selection and subsequent deployment (via barge) of cultch material at priority locations in Ochlockonee Bay, Skipper Bay, and Apalachee Bay.
- Pre- and post-monitoring and data collection for the oyster reef restoration project.

Additional planning assistance will be required for permitting, design, and implementation of both projects. Locations of artificial reefs and oyster reef restoration sites will be made available to the public once completed and locations will remain available for recreational use.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

Wakulla County's population growth and number of registered recreational boats point clearly to a large community of recreational fishers and boaters, both resident and tourist, and the proposed projects will contribute to the economy of Wakulla County. The artificial reef project will: (1) support increased demand for recreational fishing, boating, and other water related activities; and (2) enhance the abundance, distribution, and structural diversity of hardbottom habitat in Wakulla County's coastal waters. The oyster reef restoration will provide: (1) habitat for a diversity of marine organisms, from small invertebrates to large recreationally and commercially important species such as stone crab, blue crab, red drum, and black drum; (2) structural integrity that reduces shoreline erosion; and (3) improved water quality via filtration of large quantities of water (Grabowski, et al. 2012; NOAA, 2016).

Eligibility and Statutory Requirements

This project is consistent with and addresses the following RESTORE Act eligible activity:

- Activity 10: Promotion of tourism in the Gulf Coast region, including recreational fishing (primary)
- Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 5: Restore and Revitalize the Gulf Economy (primary)
- Goal 3: Replenish and Protect Living Coastal & Marine Resources.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects (primary)
- Objective 3: Protect and Restore Living Coastal and Marine Habitats.

Implementing Entities

Wakulla County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction and success monitoring of the program.

Best Available Science and Feasibility Assessment

The recreational and economic benefits of artificial reefs along Florida's Gulf coast are widely recognized (Adams et al., 2011). Oyster reef habitat enhancement and restoration via traditional cultching methods is also widely accepted as a management technique that allows resource managers "to mitigate resource losses, increase oyster production, and contribute direct economic benefit to fisheries-dependent communities", as used previously in nearby Apalachicola Bay (Arnold and Berrigan, 2002; Berrigan, 1990). Restoration will also help address the 66% decline in oyster reefs that has occurred in the last 30 years along the Big Bend, inclusive of Wakulla County (Seavey et al., 2011). The scientific literature on the ecological benefits of artificial reefs is not yet consistent and includes evidence both: 1) in favor of artificial reefs that provide fisheries habitat; and 2) indicating the reefs simply attract and congregate fish with no benefits to fish stocks (see Lindberg et al., 2014; Fikes, 2013; Bortone et al., 1994; others). However, research has produced best practices guidance on site selection, design features, and construction methods, criteria that are now part of the FWC permitting regulations for artificial reefs. As a program, the proposed projects will enhance recreational and economic opportunities and support the ecological health of Wakulla County's coastal waters.

Key literature that forms the basis for the Wakulla County Artificial Reef Program are cited below:

- *Adams, C., et al., 2011. The economic benefits associated with Florida's artificial reefs. EDIS document FE649 (2011): 1-6.*

- *Arnold, W. and M. Berrigan, 2002. A summary of the oyster (Crassostrea virginica) fishery in Florida. A Report to the Division of Marine Fisheries, FWC, St. Petersburg, Florida, USA.*

- *Bortone, S.A., Martin, et al., 1994. Factors affecting fish assemblage development on a modular artificial reef in a northern Gulf of Mexico estuary. Bull. Mar. Sci. 55 (2-3), 319-332.*
- *Grabowski, J.H. et al., 2012. Economic valuation of ecosystem services provided by oyster reefs. BioScience 62: 900–909.*
- *Lindberg, W.J., et al., 2014. Rationale and Evaluation of an Artificial Reef System Designed for Enhanced Growth and Survival of Juvenile Gag, Mycteroperca microlepis. Proc.66th Gulf and Caribbean Fisheries Institute November 4 – 8. Corpus Christi, TX. Pages 320-325.*
- *NOAA. 2016. Final Programmatic Damage Assessment and Restoration Plan (PDARP) and Final Programmatic Environmental Impact Statement (PEIS), which can be found at: http://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.*

This project is feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term. The permitting of the offshore artificial reef sites will be facilitated through Nationwide U.S. Army Corps of Engineers permits and through the FWC for site specific state criteria. Furthermore, this project is consistent with the National Artificial Reef Plan published in 1985, the Florida Artificial Reef Strategic Plan (FWC, 2003).

Risks and Uncertainties

No significant risks or uncertainties were identified during the evaluation of this project that would preclude project implementation. Wakulla County will ensure design to limit damage to artificial reefs from tropical storms. Regulatory constraints will address issues such as spatial boundaries for navigation, channels, marine habitat resources, historic areas, sand borrow areas, existing structures and leases, etc. The proposed project will preclude oyster harvest from restored areas until oysters are of legal size and will require continued coordination and combined efforts of oystermen and agencies in support of improved fishery management strategies. Monitoring data will be used to assess the effects of restoration methods and are critical to managing project risks and uncertainties.

Success Criteria and Monitoring

This and all artificial reef projects involve the placement of hard substrate to: support recreational demand for offshore reef fishing and scuba diving opportunities and enhance the abundance, distribution, and structural diversity of hard bottom habitat in the affected waters. Therefore, a range of success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Increase in the areal extent of new artificial reef habitat
- Acres of restored nearshore oyster habitat
- Metrics on the recruitment of benthic encrusting organisms and fish
- Increase in recreational usage.

The proposed project will be constructed consistent with the Gulf States Marine Fisheries Commission's *Guidelines for Artificial Reef Materials* (2004). In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Wakulla County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately twelve years. It is expected to start in 2018 and end in 2031. The anticipated project milestones and schedule are shown in the chart below.

MILESTONE	YEARS TO COMPLETE															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Artificial Reef Reconstruction																
Feasibility study/preliminary engineering report			■													
Construction									■	■	■	■	■	■		
Oyster Restoration Program																
Feasibility study/preliminary engineering report			■													
Final design and permitting				■												
Construction					■											
Success monitoring				■		■	■									

Budget and Funding Sources

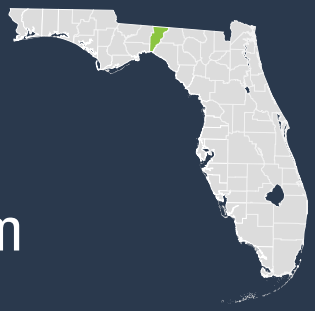
Wakulla County has estimated the total cost of this program to be $634,430, including $367,597 for the artificial reef program feasibility study, and $236,833 for the oyster restoration component. The project budget and secured funding sources are shown in the table below.

MILESTONES	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Artificial Reef Reconstruction		
Feasibility study/preliminary engineering report	$25,000	$25,000
Construction	$342,597	$342,597
Planning Subtotal	**$367,597**	**$367,597**
Oyster Restoration Program		
Feasibility study/preliminary engineering report	$49,583	$49,583
Planning Subtotal	**$49,583**	**$49,583**
Final design and permitting	$100,000	$100,000
Construction	$87,250	$87,250
Implementation Subtotal	**$187,250**	**$187,250**
Total Cost	**$236,833**	**$236,833**
Monitoring	$30,000	$30,000
Total Cost	**$634,430**	**$634,430**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$634,430
Direct Component		
Other grants or co-funding		
Other County funds		
Total Committed Funding		**$634,430**
Budget Shortfall		**$0**

POTENTIAL LEVERAGED FUNDING SOURCES
Natural Resource Damage Assessment
Triumph Gulf
O.18 FishAmerica Foundation
S.41 Artificial Reef Construction and Monitoring
S.49 Sport Fish Restoration Program

Partnerships/Collaboration

Wakulla County will collaborate with the Florida Artificial Reef Program managed by the Florida Fish and Wildlife Conservation Commission. This collaboration includes representatives from nearly all coastal counties in Florida and assists with material collection resources, technical construction assistance, artificial reef construction best practices, and outreach. Wakulla County may also collaborate with Franklin County and the oyster harvesting community.



JEFFERSON COUNTY

Wacissa Springshed Water Quality Protection Program

PROJECT NO. 9-1

Project Description

OVERVIEW AND LOCATION

This program consists of wastewater system upgrades that will improve and protect water quality in the groundwater recharge area of the Wacissa River. The program components include the extension of central sewage collection and conveyance facilities as well as the replacement of three major lift stations. These improvements will replace the existing septic systems and a package treatment plant that currently serve this area, and provide central wastewater conveyance and treatment infrastructure to a portion of the Jefferson County that is rapidly growing. The general location of the proposed wastewater system upgrades is shown in **Figure 9-1A**. Although the focus of these program elements is on water quality improvement and protection, the intent of these elements is also to support economic growth. For this reason, this program is classified as infrastructure with respect to the 25 percent infrastructure limitation.

Figure 9-1A. Jefferson Headwaters Protection Program location map.

NEED AND JUSTIFICATION

The Wacissa River is a large, spring-fed stream located in south-central Jefferson County, Florida. Its headwaters are located about a mile south of the town of Wacissa, where the river emerges crystal clear from a group of large limestone springs. Spring flows have been estimated to average 400 cubic feet per second. The springs that feed the Wacissa River emerge in a bottomland forest below the Cody Scarp, a relic marine terrace marked by a line of hills to the north. From its headsprings, the river flows approximately 12 miles south through a broad cypress swamp before breaking into numerous braided channels which join the Aucilla River a few miles further south. The groundwater recharge area for this spring system extends northward of the Cody Scarp, where the soils are sandy and well-drained, and the landscape has few surface water features.

The wastewater infrastructure improvements proposed in this program are targeted for the groundwater recharge area of the Wacissa spring system. This portion of Jefferson County is rural, but has been growing in recent years, and the County is promoting additional economic development in this area. This portion of the County is currently served only by onsite septic systems and an existing package plant. The proposed program will take off line several hundred septic tanks as well as an existing package plant, and construct central sewage collection and conveyance facilities to accommodate future economic growth. These improvements are expected to both existing reduce nutrient loads to the groundwater recharge area, as well as prevent future water quality degradation.

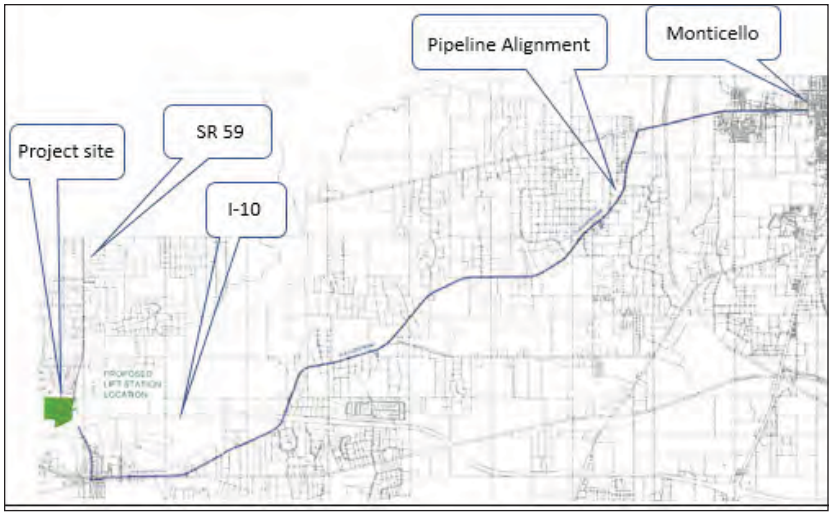


Figure 9-1B. Alignment of new sewer pipeline along Old Lloyd Road.

PURPOSE AND OBJECTIVES

The purpose of this program is to provide wastewater infrastructure improvements to reduce discharges of domestic wastewater to the groundwater recharge area, and to prevent future water quality problems, associated with anticipated urban growth, in the headwaters of the Wacissa River. The objectives of the program are to: (1) reduce nutrient and bacteria loads to the groundwater recharge area of the Wacissa River from existing septic systems and sewer overflows; (2) minimize future water quality impacts resulting from anticipated urbanization in the springshed and headwaters of the Wacissa River.

PROJECT COMPONENTS

This program includes two main components:

- *I-10 to SR-59 Sewer Expansion*: installation of approximately 11 miles of new sanitary sewer pipeline from the existing sewer infrastructure in the City of Monticello to the intersection of I-10 and SR-59 along Old Lloyd Road. This will allow for abandonment of existing septic systems and removal of a package treatment plant, and to prevent installation of new septic systems during future development of the area

- *Lift Station Rehabilitation*: rehabilitation and upgrade of three existing lift stations in the City of Monticello to address existing sanitary sewer overflows and upgrade the lift stations to accommodate higher flows in the future.

Figure 9-1B shows the location of the proposed sewer line extension from the City of Monticello to the I-10 and SR-59 intersection at Lloyd, where economic development is anticipated in the near future.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

Domestic wastewater and septic systems have been identified by the Florida Department of Environmental Protection (FDEP) as possible sources of nitrogen to the Wacissa River and Springs (FDEP, 2017). This program will reduce existing nutrient and bacteria loadings to the groundwater recharge area of Wacissa River, which originates from a group of artesian springs at its headwaters. In addition, the program will prevent future increases in pollution from domestic wastewater by providing infrastructure to accommodate future growth. Over time, these improvements are expected to reduce nutrient concentrations in spring flows, and improve surface water quality in the Wacissa River.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 6: Infrastructure projects benefiting the economy or ecological resources, including port infrastructure.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Consortium Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Jefferson County will be the project grant sub-recipient, and will pass through grant funds to the City of Monticello per an interlocal agreement. The City would be the sole implementing entity responsible for the permitting, construction, and success monitoring of the project.

Best Available Science and Feasibility Assessment

Water quality issues related to nutrients in the Wacissa River and Springs are described in the following report.

- *Florida Department of Environmental Protection (FDEP), 2017. Nutrient TMDL for Wacissa River and Springs (WBIDs 3424 and 3424Z) and Documentation in Support of Development of Site-Specific Numeric Interpretations of the Narrative Nutrient Criterion.*

This program is consistent with the components and recommendations of the following natural resource management plans:

- *Suwannee River Water Management District, 2017. Coastal Rivers Basin Surface Water Improvement and Management (SWIM) Plan.*

This program is feasible with respect to the ability to: (1) obtain necessary permits; (2) construct this project within the proposed budget; and (3) effectively operate and maintain this project over the long term.

Risks and Uncertainties

The program is in the conceptual phase, but no significant risks or uncertainties have been identified. Program risks and uncertainties would be identified during feasibility and design phases.

Success Criteria and Monitoring

This program will provide for infrastructure improvements that will both reduce existing pollutant loads, and prevent an increase in future pollutant loads, to the springshed and headwaters of the Wacissa River. Appropriate success criteria will be described in the program grant request for the following metrics:

- Linear footage of pipe installed and increased capacity (in gallons per day) of the new lift station/force main.
- Number of septic tanks and package plants taken off line
- Estimated nutrient load reductions to groundwater associated with the wastewater infrastructure improvements
- Changes in ambient water quality in Wacissa Spring flows.

In the program grant request, a monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Jefferson County and the City of Monticello are committed to conducting the necessarymonitoring, and coordinating with other regional water quality monitoring entities, to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this program, from feasibility through construction and success monitoring, is approximately 11 years, with periods of no activity based on SEP funding sequencing. The program is expected to start in 2018 and end in 2028. Implementation of this program has been divided into the several project components, as shown in the milestone chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
I-10 to SR 59 Sewer Expansion																
Feasibility study	■															
Preliminary design	■															
Final design and permitting		■														
Construction				■					■							
Lift Station Rehabilitation																
Preliminary design	■															
Final design and permitting	■															
Construction				■	■											
Success monitoring			■			■	■	■		■	■					

Budget and Funding Sources

The overall cost of the program has been estimated by Jefferson County to be $7,160,000, and the County is committed to allocating $7,160,000 of its share of the Florida Spill Impact Component to cover this estimated program cost. Jefferson County will also be seeking other leveraged funding sources to supplement these monies including the State Revolving Fund program. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
I-10 to SR 59 Sewer Expansion		
Feasibility study	$50,000	$50,000
Preliminary design	$50,000	$50,000
Planning Subtotal	**$100,000**	**$100,000**
Final design and permitting	$385,000	$385,000
Construction	$6,400,000	$6,400,000
Implementation Subtotal	**$6,785,000**	**$6,785,000**
Total	**$6,885,000**	**$6,885,000**
Lift Station Rehabilitation		
Preliminary design	$5,000	$5,000
Planning Subtotal	**$5,000**	**$5,000**
Final design and permitting	$20,000	$20,000
Construction	$150,000	$150,000
Implementation Subtotal	**$170,000**	**$170,000**
Total	**$175,000**	**$175,000**
Monitoring	$100,000	$100,000
Total Cost	**$7,160,000**	**$7,160,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$7,160,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
	Total Committed Funding	**$7,160,000**
	Budget Shortfall	**$0**

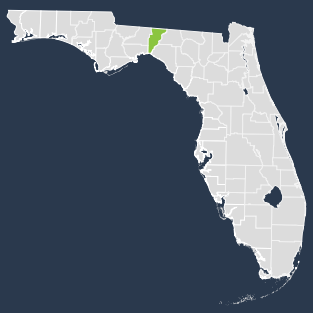
POTENTIAL LEVERAGED FUNDING SOURCES
Natural Resource Damage Assessment
F.03 Rural Community Development Initiative Grants
F.06 SEARCH: Special Evaluation Assistance for Rural Communities and Households
F.07 Water and Waste Disposal Systems for Rural Communities
F.11 Community Facilities Direct Loan and Grant Program in Florida
F.12 Community Facilities Technical Assistance and Training Grant
F.15 Rural Economic Development Loan & Grant Program in Florida
F.17 Grant Program to Establish a Fund for Financing Water and Wastewater Projects
F.47 Estuary Habitat Restoration Program
O.22 Florida Rural Water Association Loan Program
O.40 Southeast Rural Community Assistance Project, Inc. (SERCAP) Loan Fund Program
O.43 Southeast Aquatics
O.46 Water/Wastewater Loans
S.13 Florida Job Growth Grant Fund
S.14 Small Cities CBDG Program
S.15 Small Cities CBDG Section 108 Loan Guarantees
S.18 Clean Water State Revolving Fund (CWSRF)
S.21 CWSRF Small Community Wastewater Construction Grants
S.36 Water Projects

Partnerships/Collaboration

The primary partnership for this program will be between Jefferson County and the City of Monticello.

JEFFERSON COUNTY

Wacissa River Park Improvement Program



PROJECT NO. 9-2

Project Description

OVERVIEW AND LOCATION

This program involves the improvement and expansion of public access and recreational park facilities at Wacissa River Park and adjacent lands. The subject properties are located just south of County Road 59 (Gamble Road) south of the town of Wacissa (see **Figure 9-2A**).

NEED AND JUSTIFICATION

The Wacissa River is a large, spring-fed stream located in south-central Jefferson County, Florida. Its headwaters are located about a mile south of the town of Wacissa, where the river emerges crystal clear from a group of large limestone springs. Spring flows have been estimated to average 400 cubic feet per second. The springs that feed the Wacissa River emerge in a bottomland forest below the Cody Scarp, a relic marine terrace marked by a line of hills to the north. From its headsprings, the river flows approximately 12 miles south through a broad cypress swamp before breaking into numerous braided channels which join the Aucilla River a few miles further south. The river is managed by the Florida Fish and Wildlife Conservation Commission (FWC) as part of the Aucilla Wildlife Management Area, and has been declared an Outstanding Florida Water (OFW) by the FDEP.

Figure 9-2A. Location of Wacissa Spring in Jefferson County.

Wacissa Spring is a very popular recreation location for both Jefferson County residents and tourists who use the spring for swimming, diving, fishing, canoeing, kayaking, and small boat access. Jefferson County has maintained limited park facilities at the springhead for many years, and current amenities include a boat ramp, restrooms, and pavilions. Due to a continued increase in recreational usage, Jefferson County has obtained grants and provided additional funding to improve the facilities at the existing park. The proposed park improvements are shown in **Figure 9-2B.**

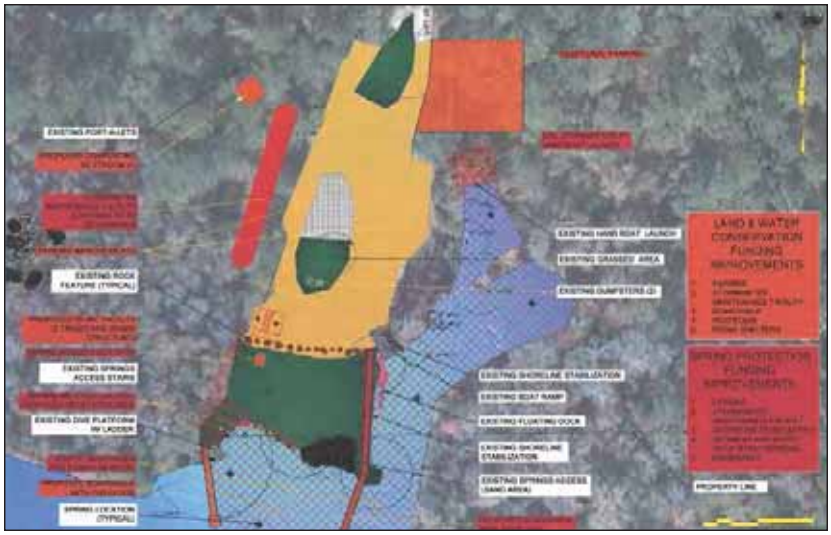


Figure 9-2B. Proposed improvements to the existing Wacissa Spring Park facilities.

There are currently several user groups accessing the same area, resulting in overcrowding and the potential for safety issues when the boat ramp and swimming hole are immediately adjacent to one another. There is a need to provide additional park facilities in adjacent areas to relieve overcrowding, and to meet the increasing public demand for recreational access to this exceptional natural resource.

Figure 9-2C. Location of Malloy Landing parcels in vicinity of Wacissa Spring Park.

PURPOSE AND OBJECTIVES

The purpose of this program is to improve and expand public access and recreational park amenities in the headwaters of the Wacissa River. The objectives of the program are to: (1) enhance public recreational access and opportunities, (2) relieve overcrowding, (3) improve public safety, and (4) reduce adverse impacts to natural resources (e.g., water quality, submerged aquatic vegetation) resulting from overuse.

PROJECT COMPONENTS

The first component of this program is conducting a feasibility study to determine if other nearby properties can be acquired and developed to provide water access and other park amenities. The primary property of interest is an area known as Malloy Landing, which is located along the Little River spring run which enters the Wacissa River about a quarter mile downstream of Wacissa River Park (see **Figure 9-2C**).

As part of the feasibility study Jefferson County will conduct planning sessions with state and local stakeholders, and will evaluate potential locations and preliminary designs of program elements and amenities. The study will evaluate property acquisition costs and the potential for integrating the Malloy Landing parcels into a more comprehensive Wacissa River Park masterplan. In addition, the feasibility study will assess the viability of constructing additional park amenities including:

- Pervious parking areas
- Composting bathrooms
- Pavilions
- Multi-use trails
- Environmental kiosks
- Canoe/kayak/boat launch.

It should be noted that the Little River spring run is relatively shallow and natural in character. In providing additional recreational amenities at the Malloy Landing site, Jefferson County will ensure that the natural resources of the area are protected and enhanced. Any small boat access facility constructed there will not involve channel dredging or other significant shoreline modifications.

If the feasibility study indicates that the acquisition and integration of the Malloy Landing parcels into the overall Wacissa River Park masterplan is a viable alternative, then additional components of the program would include:

- Property assessments
- Land acquisition
- Preliminary design
- Final design and permitting
- Construction
- Success monitoring.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

Jefferson County has no improved roads to the Gulf of Mexico, and very limited access to tidal rivers. This program will improve public access to the Wacissa River, a tributary to the Aucilla River, which flows to the Gulf. In addition, this program will contribute to the local economy through increased local resident expenditures for recreational activities, as well as increased spending by visiting tourists.

Eligibility and Statutory Requirements

This project is consistent with and addresses the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of Tourism in the Gulf Coast region, including recreational fishing.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Gulf Consortium Objective:

- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Jefferson County will be the sole implementing entity and grant sub-recipient responsible for the feasibility study, design, permitting, construction, and success monitoring of this program.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The primary focus of this program is public recreational access and tourism promotion; therefore, BAS does not apply.

The feasibility study will determine the viability of acquiring adjacent properties, constructing park amenities on those properties, and integrating the park improvements into a comprehensive Wacissa River Park masterplan. Jefferson County has demonstrated the ability to effectively operate and maintain public parks over the long term.

Risks and Uncertainties

Acquiring privately-owned properties may be at risk if the owners are not willing sellers and/or acceptable terms cannot be negotiated. If acquiring the Malloy Landing parcels is not feasible, then Jefferson County will evaluate other areas and improvements that are consistent with the goals of the Wacissa River Park masterplan.

Success Criteria and Monitoring

This program will involve property acquisition and the development of recreational amenities. Specific success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Acres of new public recreational lands acquired in the Wacissa River headwaters
- Improvements made to Wacissa Park
- Increase in recreational use.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed metrics. Jefferson County is committed to conducting the success monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this program is approximately seven years. It is expected to start in 2018 and end in 2024. Implementation of the program has been broken down into the milestones shown in the chart below. The first phase of the project is a feasibility study, which will determine the remaining phases.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study																
Property assessments and preliminary design																
Land acquisition																
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

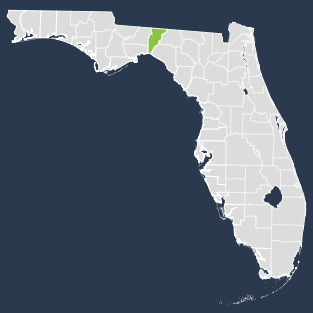
A preliminary cost estimate of $2,000,000 has been developed by Jefferson County based on the best available information. Jefferson County is committed to allocating $2,000,000 of its share of the Florida Spill Impact Component, and has received Springs restoration grant funding form the Suwannee River Water Management District, and Water and Land Conservation grant funds from the State of Florida, to support completed park improvements. Additional leveraged funding will be sought if the program costs exceed the requested Spill Impact Component funding. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$200,000	$200,000
Property assessments and preliminary design	$200,000	$200,000
Planning Subtotal	**$400,000**	**$400,000**
Land acquisition	$1,000,000	$1,000,000
Final design and permitting	$50,000	$50,000
Construction	$500,000	$500,000
Implementation Subtotal	**$1,550,000**	**$1,550,000**
Total	**$1,950,000**	**$1,950,000**
Monitoring	$50,000	$50,000
Total Cost	**$2,000,000**	**$2,000,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$2,000,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$2,000,000**
Budget Shortfall		**$0**

POTENTIAL LEVERAGED FUNDING SOURCES
Natural Resource Damage Assessment
S.10 Community Planning Technical Assistance Grants
S.23 Florida Recreation Development Assistance Program (FRDAP)
S.26 Land and Water Conservation Fund (LWCF)
S.28 Parks and Open Space Florida Forever Grant Program
S.45 Florida Boating Improvement Program (FBIP)
S.49 Sport Fish Restoration Program

Partnerships/Collaboration

Jefferson County will partner with the Wacissa Springs Committee and other stakeholders in the planning and design of park facilities. In addition, Jefferson County will coordinate closely with the Florida Department of Environmental Protection and the Florida Fish and Wildlife Conservation Commission in the permitting and natural resource management aspects of the program.



JEFFERSON COUNTY

Coastal Public Access Program

PROJECT NO. 9-3

Project Description

OVERVIEW AND LOCATION

This program involves conducting feasibility and conceptual design studies to evaluate the potential of acquiring and/or securing lease agreements on several parcels adjacent to the Aucilla/Wacissa river system to provide coastal public access for Jefferson County residents and visitors. If it is determined that one or more sites are feasible for public recreational use development, then the program would also include the construction and operation of recreational facilities on those sites. The location of identified priority sites in Jefferson County are shown on **Figure 9-3A**.

Figure 9-3A. Project location in Jefferson County.

NEED AND JUSTIFICATION

Jefferson County has approximately 7 miles of coastline fronting the Gulf of Mexico, all of which within the boundaries of the St. Mark's National Wildlife Refuge (SMNWR). In addition, there are no improved public roads to the Gulf. For these reasons, Jefferson County residents and visitors have very limited opportunities to access the coastal zone. The primary tidal rivers flowing to the Gulf include the Aucilla River, and its primary tributary, the Wacissa River. Other than the upper Wacissa River which is currently impounded, the Wacissa/Aucilla river system is navigable to the Gulf. There is an increasing demand by Jefferson County residents for access to the coastal zone and the Gulf of Mexico, and for enhanced recreational facilities that facilitate public enjoyment of the county's pristine natural resources.

PURPOSE AND OBJECTIVES

The purpose of this program to increase and enhance public access to the coastal zone of Jefferson County. The program objectives include: (1) evaluate the potential for recreational use development of four currently identified priority sites; (2) publicly acquire and/or secure lease agreements for sites/parcels determined to be feasible for public recreational use development; (3) construct recreational use facilities; (4) operate and maintain recreational facilities over the long term; and (5) promote ecotourism in Jefferson County.

Figure 9-3B. Aerial photograph of the Wacissa Dam site.

PROJECT COMPONENTS

The program components include the following:

- Conduct feasibility and conceptual design studies at four currently identified priority sites evaluate the potential for recreational use development
- Publicly acquire and/or secure lease agreements for sites/parcels determined to be feasible for public recreational use development
- Construct recreational use facilities
- Operate and maintain recreational facilities over the long term.

Jefferson County had identified four sites that have potential for public access to the coastal zone and recreational use development, which are discussed below.

1. **Historic Wacissa Dam:** Approximately four miles downstream of the Wacissa Spring headwaters is an earthen railroad bridge structure that impounds the Wacissa River. The dam has been designated by Jefferson County as an historically significant structure. The western end of the dam is eroded and water flows over the dam at this point; however, the dam still precludes upstream passage of fish and wildlife. The Florida Fish and Wildlife Conservation Commission (FWC) owns upland property to the east of the dam that is accessible via a dirt road. The concept for this site involves modification to the dam structure, and construction of a canoe/kayak launch and other passive recreational use facilities on the adjacent uplands. The FWC has indicated a preference to remove the dam entirely to restore upstream fish and wildlife passage and navigability. The feasibility study for this site will address various alternatives for the dam including: complete removal; partial removal; dam reconstruction including a portage and a water level control structure. The latter alternative would allow for water level and chemical management of the exotic plant species *Hydrilla*, which has extremely dense upstream of the dam. Use of this site would require extensive coordination and a use agreement with FWC. **Figure 9-3B** below shows an aerial photograph of the Wacissa Dam site.

2. **Goose Pasture Campground:** The Goose Pasture site is located on the east bank of the Wacissa River, and is owned by the Suwannee River Water Management District. Although the site is currently used as an RV campground, there are no significant recreational or sanitation facilities located on the site. The majority of the site is uplands with planted pines. The concept for this site includes the construction of a canoe/kayak launch or a small boat ramp, parking, bathrooms and other recreational amenities including hiking and mountain biking trails. In addition, there opportunities for habitat restoration on this site. **Figure 9-3C** shows an aerial photograph of the Goose Pasture campground site.

Figure 9-3C. Aerial photograph of the Goose Pasture campground site and the County Rock Mine site.

Figure 9-3D. Aerial photograph of the Pinhook River site.

3. **County Rock Mine:** The county rock mine site is a parcel owned by Jefferson County which is mined for local limestone rock and aggregate. The parcel is located about 400 feet north of the Aucilla River, adjacent to the Aucilla Wildlife Management Area (WMA) and the Florida Scenic Trail. The concept for this site includes regrading and landscaping, the construction of parking, bathrooms and other amenities including hiking and mountain bike trails. In addition, the construction of an interpretive boardwalk/trail to the Aucilla River, as well as a canoe/kayak launch, is envisioned for this site. The county owns the rock mine site; however, coordination with FWC will be conducted with regard to allowable activities adjacent to the Aucilla WMA, and a use agreement with FWC will be needed for trail access to the river. **Figure 9-3C** above shows an aerial photograph of the County Rock Mine site located to the east of the Goose Pasture campground site, on County Road 681.

4. **Pinhook River Site:** The Pinhook River site is located within the boundaries of the SMNWR, and is only accessible by a dirt road through the wildlife refuge. The site is located on Pinhook River which is a tidal creek that connects to the Gulf of Mexico approximately one mile downstream. This site would provide the most direct access to the Gulf of Mexico for Jefferson County residents and visitors. Currently, there is only a wooden bridge that crosses the creek, with no other facilities. The dirt roadway at this location is the Florida Scenic Trail. The concept for this site includes improvement of the roadway for vehicular access to the site, construction of a canoe/kayak launch, and the creation of unpaved parking area and placement of portable sanitation facilities. Recreational development and use of this site would require a lease agreement with the U.S. Fish and Wildlife Service. **Figure 9-3D** below shows an aerial photograph of the Pinhook River site.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will expand and enhance public access to the coastal rivers of Jefferson County by its residents and visitors. Jefferson County is very limited with regard to coastal public access opportunities. The priority sites described above are currently in public ownership but historically have been under-utilized, and have not been actively managed. With increased amenities attracting a wider number of user groups, enhanced recreational use of these sites could reduce overcrowding other local parks. The program will also help promote ecotourism, thus contributing to the growth and sustainability of the Jefferson County economy.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of Tourism in the Gulf Coast region, including recreational fishing.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objective:

- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Jefferson County will be the sole implementing entity and grant sub-recipient responsible for the feasibility and conceptual design studies, permitting, construction, and success monitoring of projects completed under this program.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The primary focus of this program is public recreational access and tourism promotion; therefore, BAS does not apply.

This program is considered to be feasible with respect to the ability to: (1) acquire or secure use agreements for the priority properties; (2) obtain necessary permits; (3) construct recreational amenities; and (4) effectively operate and maintain recreational amenities in perpetuity. Regulatory permitting will address potential impacts to marine habitats and living resources, and cultural resources, as appropriate.

Risks and Uncertainties

Land acquisition activities are always at risk with respect to securing a willing seller and negotiating reasonable terms. Jefferson County will only negotiate land acquisition with willing sellers. Coastal park and recreational amenities are also at risk for damage by tropical storms and sea-level rise. However, the proposed recreational improvements will factor coastal storm hazards and sea-level rise into the design, as appropriate.

Success Criteria and Monitoring

This program involves property acquisition and/or use agreements, and the construction of canoe/kayak launches and other recreational amenities. Specific success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Acres of coastal access properties acquired or leased
- Recreational amenities constructed
- Increase in public recreational use.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Jefferson County is committed to conducting the monitoring necessary to quantify program benefits.

Milestones and Schedule

The total estimated time horizon of this program is approximately 13 years. The start date is 2021 and the end date is 2033. The project milestone chart is shown below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Wacissa Historic Dam Site																
Feasibility study				■												
Preliminary design				■												
Final design and permitting					■											
Construction					■	■										
Goose Pasture Campground Site																
Feasibility study						■										
Preliminary design						■										
Final design and permitting							■									
Construction							■	■								
Pinhook River Site																
Feasibility study								■								
Preliminary design								■								
Final design and permitting									■							
Construction													■	■		
County Rock Mine Site																
Feasibility study													■			
Preliminary design													■			
Final design and permitting														■		
Construction														■	■	
Success monitoring				■		■	■	■	■	■		■	■		■	■

Budget and Funding Sources

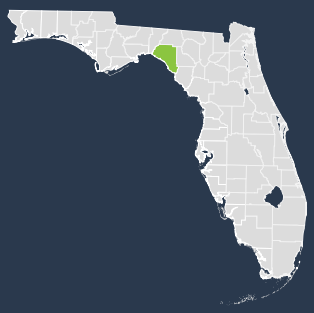
Jefferson County has estimated the total cost to implement this entire program to be $3,500,000, and is dedicating $3,500,00 of their Spill Impact Component allocation to this program. However, this cost assumes the recreational development of all four priority sites. The feasibility studies will determine which sites can be developed for recreation use, as well as more detailed cost estimates for each. If some sites are determined to not be feasible, Jefferson County will assess other potential sites or reallocate funds to other projects in future SEP amendments. A summary of the costs and funding sources for this program is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Wacissa Historic Dam Site		
Feasibility study	$50,000	$50,000
Property assessments and preliminary design	$50,000	$50,000
Planning Subtotal	**$100,000**	**$100,000**
Final design and permitting	$125,000	$125,000
Construction	$620,000	$620,000
Implementation Subtotal	**$745,000**	**$745,000**
Total	**$845,000**	**$845,000**
Goose Pasture Campground Site		
Feasibility study	$50,000	$50,000
Property assessments and preliminary design	$50,000	$50,000
Planning Subtotal	**$100,000**	**$100,000**
Final design and permitting	$125,000	$125,000
Construction	$620,000	$620,000
Implementation Subtotal	**$745,000**	**$745,000**
Total	**$845,000**	**$845,000**
Pinhook River Site		
Feasibility study	$50,000	$50,000
Property assessments and preliminary design	$50,000	$50,000
Planning Subtotal	**$100,000**	**$100,000**
Final design and permitting	$125,000	$125,000
Construction	$620,000	$620,000
Implementation Subtotal	**$745,000**	**$745,000**
Total	**$845,000**	**$845,000**
County Rock Mine Site		
Feasibility study	$50,000	$50,000
Property assessments and preliminary design	$50,000	$50,000
Planning Subtotal	**$100,000**	**$100,000**
Final design and permitting	$125,000	$125,000
Construction	$620,000	$620,000
Implementation Subtotal	**$745,000**	**$745,000**
Total	**$845,000**	**$845,000**
Monitoring	$120,000	$120,000
Total Cost	**$3,500,000**	**$3,500,000**

COMMITTED FUNDING SOURCES	
Spill Impact Component	$3,500,000
Direct Component	$0
Other grants or co-funding	$0
Other County funds	$0
Total Committed Funding	**$3,500,000**
Budget Shortfall	**$0**
POTENTIAL LEVERAGED FUNDING SOURCES	
Florida Boating Improvement Fund	
Natural Resource Damage Assessment	
O.15 Doppelt Family Trail Development Fund	
O.32 Open Rivers Fund	
O.33 Pulling Together Initiative	
S.05 T. Mark Schmidt Off-Highway Vehicle Recreation Grant Program	
S.07 Flood Mitigation Assistance Program	
S.09 Pre-Disaster Mitigation Program	
S.10 Community Planning Technical Assistance Grants	
S.24 Greenways and Trails Program	
S.29 Recreational Trails Program	
S.53 Regional Initiative Valuing Environmental Resources (RIVER) Cost Share Program	
Recreational Trails Program	

Partnerships/Collaboration

Jefferson County anticipates partnering with the Florida Fish and Wildlife Conservation Commission, the Suwannee River Water Management District, and the U.S. Fish and Wildlife Service in the implementation of this program.



TAYLOR COUNTY

Coastal Public Access Program

PROJECT NO. 10-1

Project Description

OVERVIEW AND LOCATION

The Taylor County Coastal Access Program involves County acquisition of coastal parcels and construction of boat ramps and other recreational amenities to improve public access to the coastal zone. The locations of potential acquisition sites under consideration at this time are shown in **Figure 10-1A**.

NEED AND JUSTIFICATION

Taylor County ranks second only to Monroe County among Florida Gulf Coast counties in the number of miles of shoreline. Taylor County lands include the Big Bend Wildlife Management Area, Hickory Mound, Snipe Island, Spring Creek, and Tide Swamp units, totaling over 60,000 acres of public land managed by Florida Fish and Wildlife Conservation Commission (FWC). For all this shoreline and public land, there are very few public boat ramps for boaters to access the Gulf waters. In addition, the nearshore waters of Taylor County support extensive seagrass resources and a burgeoning scallop fishery. This fishery draws thousands of local boaters and visitors from other areas during the summer scallop harvesting season, which is open from July through September.

Figure 10-1A. Location of potential boat ramp sites in Taylor County.

Taylor County currently maintains existing public boat ramps at Keaton Beach and Steinhatchee; however, during the summer scallop season, these facilities are strained beyond capacity as visitors come from around Florida and Georgia to ply the nearshore waters. The number of vehicles and vessels causes severe congestion on the roadways and waterways in these two areas of Taylor County, putting extreme pressure on both the local infrastructure and natural resources.

The Keaton Beach boat ramp also suffers from a poor location at the headwaters of a densely developed residential canal (see **Figure 10-1B**). This ramp supports a large number of visitors who have to compete with local boat traffic in the narrow canal, creating unsafe boating conditions and localized water pollution. Taylor County residents have become increasingly frustrated with the vehicle and boat traffic problems in these small communities and have asked the County to explore additional boat ramp facilities in Keaton Beach, Steinhatchee, and other areas throughout the county.

Figure 10-1B. Location of the existing Keaton Beach boat ramp.

PURPOSE AND OBJECTIVES

The purposes of this program are to increase the number of public boat ramp facilities and to expand the capacity of existing Taylor County/FWC boat ramp facilities. This program also includes infrastructure improvements to roads, parking areas, and county park facilities to accommodate the increasing seasonal influx of visitors. The objectives of this program are to: (1) improve public access to the Gulf of Mexico; (2) take pressure off existing infrastructure and natural resources at the Keaton Beach and Steinhatchee locations; and (3) enhance the local economy by providing the coastal infrastructure to support a greater number of visitors to Taylor County.

Figure 10-1C. Location of potential sites for boat ramp expansion or new construction.

PROJECT COMPONENTS

Due to the natural undeveloped coastline and extremely shallow nearshore waters of Taylor County, there are limited opportunities for new boat ramp facilities that don't involve substantial environmental impacts. Taylor County has identified two existing ramps managed by FWC, and eight potential new boat ramp sites, as shown in **Figure 10-1C**.

The first step in this program is to conduct a feasibility study to determine the suitability of these various sites. The suitability analysis will evaluate whether the sites:

- Relieve existing vehicular traffic congestion
- Relieve existing boat traffic congestion
- Have navigable channel access of at least -3 feet Mean Low Water
- Have paved road access
- Have adequate upland area for parking large numbers of vehicles and boat trailers
- Have additional upland area for other park amenities.

If the various sites do not meet these criteria, then improvements to meet these criteria must minimize environmental impacts and be permittable under current environmental regulations.

The feasibility study will rank the proposed sites, and potentially other sites, with respect to the above-listed criteria. The study will also estimate cost of property acquisition, design, permitting, and construction of amenities, including: bathymetric surveys, environmental assessments, traffic and vessel studies, dredge and fill analysis, and spoil disposal alternatives.

Once the feasibility study is complete, the property appraisals can be completed in preparation for sale. For the existing FWC properties, a Memorandum of Agreement would be required between Taylor County and FWC to expand the boat ramp facilities, potentially pave roads, and construct additional amenities such as restrooms, docks, etc. Future program phases include property acquisition, engineering design and permitting, construction, and monitoring.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will contribute to economic recovery, vitality, and resilience of the economy of Taylor County and adjacent counties. Scallop season generates a big influx of tourism dollars during the summer months. Keaton Beach, Dekle Beach, and Steinhatchee are the primary developed areas with Gulf access, while the city of Perry also provides lodging for visitors to the area. Of these towns, Perry and Steinhatchee have the most commercial business interests in the form of fuel, restaurants, and hotels. Keaton Beach and Dekle Beach are predominantly made up of private residences that are rented seasonally. Expanding boat access into new areas may bring commercial opportunities to other parts of the county. By partnering with FWC, the existing facilities could be expanded with minimal environmental impact.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of Tourism in the Gulf Coast Region, including recreational fishing (primary).

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Gulf Consortium Objective:

- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Property acquisition activities will either be conducted by Taylor County as a sub-recipient, or by a conservation lands non-government organization (NGO) on behalf of the Taylor County and Gulf Consortium. Design, permitting, and construction of boat ramps and park facilities will be conducted by Taylor County as a sub-recipient.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The primary focus of this program is public recreational access and tourism promotion; therefore, BAS does not apply.

This program is considered to be feasible with respect to the ability to: (1) acquire priority properties; (2) obtain necessary permits for suitable locations; (3) construct recreational amenities; and (4) effectively operate and maintain recreational amenities in perpetuity. Regulatory permitting will address potential impacts to marine habitats and living resources, and cultural resources, as appropriate.

Risks and Uncertainties

The greatest risk in any land acquisition program is securing a willing seller at an affordable price. Strategies to mitigate this risk will be pursued, including the possibility of securing an applicable NGO to serve as an interim buyer as well as only submitting project grant applications for parcels with executed sales contracts.

Another risk and uncertainty is the ability to obtain environmental permits for new boat ramp construction. As stated above, the nearshore waters of Taylor County are very shallow, and there are very few natural channels that are reasonably navigable by recreational boaters. Accordingly, the feasibility study will place greater weight on the permitability of the various sites evaluated. Coastal park and recreational amenities are also at risk for damage by tropical storms and sea-level rise. However, the proposed recreational improvements will factor coastal storm hazards and sea-level rise into the design, as appropriate.

Success Criteria and Monitoring

This program involves property acquisition and the construction of boat ramps and other recreational amenities. Specific success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Acres of coastal access properties acquired
- New boat ramps constructed
- Increase in recreational use.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Taylor County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this program is approximately 16 years. It is expected to start in 2018 and end in 2033. Implementation of this project has been divided into six milestones, as shown in the chart below. The program will be phased in a manner that will allow for purchase of property and construction of recreational amenities based on the amount of funding available, as well as the availability of parcels for acquisition. This project is ready to begin the feasibility study.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study	■															
Property appraisals	■					■		■								
Property Acquisition		■					■		■				■			
Final design and permitting														■		
Construction														■	■	
Success monitoring															■	■

Budget and Funding Sources

Taylor County is committed to allocating its entire $12,660,000 share of the Florida Spill Impact Component to this program, but will also be seeking other leveraged funding sources to supplement these monies. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$300,000	$300,000
Property appraisals	$200,000	$200,000
Planning Subtotal	**$500,000**	**$500,000**
Property acquisition	$11,000,000	$11,000,000
Final design and permitting	$300,000	$300,000
Construction	$760,000	$760,000
Implementation Subtotal	**$12,060,000**	**$12,060,000**
Monitoring	$100,000	$100,000
Total Cost	**$12,660,000**	**$12,660,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$12,660,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$12,660,000**
Budget Shortfall		**$0**

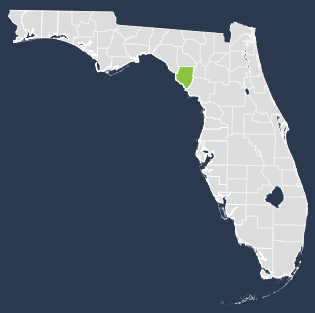
POTENTIAL LEVERAGED FUNDING SOURCES
Natural Resource Damage Assessment
O.11 Conservation Acquisition Revolving Fund
S.19 Coastal and Estuarine Land Conservation Program (CELCP)
S.20 Coastal Partnership Initiative – Florida Coastal Management Program
S.23 Florida Recreation Development Assistance Program (FRDAP)
S.26 Land and Water Conservation Fund (LWCF)
S.33 Stan Mayfield Working Waterfronts Florida Forever Grant Program
S.45 Florida Boating Improvement Program (FBIP)
S.49 Sport Fish Restoration Program
S.53 Regional Initiative Valuing Environmental Resources (RIVER) Cost Share Program

Partnerships/Collaboration

Taylor County will cooperate with Florida Fish and Wildlife Conservation Commission, applicable NGOs, and local landowners in the implementation of this program.

DIXIE COUNTY

Horseshoe Beach Working Waterfront Project



PROJECT NO. 11-1

Project Description

OVERVIEW AND LOCATION

This project involves the dredging of the main Horseshoe Beach navigation channel and turning basin, and the construction of a commercial dock for staging vessels and offloading seafood products directly to wholesale trucks. The location of the town of Horseshoe Beach is shown in **Figure 11-1A**. The primary focus of this project is infrastructure improvements to support economic growth and development. For this reason, this project is classified as infrastructure with respect to the 25 percent infrastructure limitation.

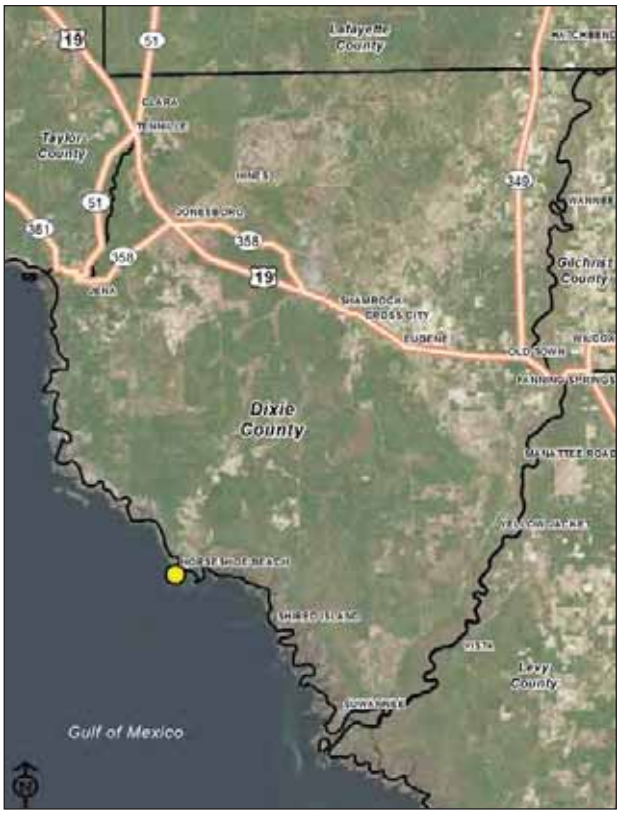


Figure 11-1A. Location of Horseshoe Beach in Dixie County.

NEED AND JUSTIFICATION

Commercial, charter, and recreational fishing are important components of Dixie County's economy. The Horseshoe Beach main channel was last dredged in 1996 and, with recent storms such as Hurricane Hermine, areas have shoaled and become encumbered with debris that are hazards to navigation. There is a need to maintenance dredge this channel to provide safe navigational access to both commercial and recreational fishing vessels.

In addition, commercial dockage for offloading seafood is currently limited in Horseshoe Beach and throughout Dixie County in general. Dixie County owns waterfront property that abuts the main navigation channel; however, the property needs to be redeveloped to support a working waterfront. This project is compatible with and supports Project 11-3 – Horseshoe Cove Oyster Restoration.

PURPOSE AND OBJECTIVES

The purpose of this project is to rehabilitate the working waterfront for commercial fisherman in Horseshoe Beach. Project objectives include: (1) improve navigational access through maintenance dredging of the auxiliary channels; and (2) construct a commercial dock for staging vessels and offloading seafood directly to wholesale trucks.

PROJECT COMPONENTS

Components of this project include: (1) feasibility and conceptual design study; (2) engineering design and permitting; (3) maintenance dredging; (4) construction of dockage and supporting infrastrucute; and (5) success monitoring.

Maintenance dredging of the Horseshoe Beach main channel and turning basin have been previously permitted by the U.S. Army Corps of Engineers (USACE), and there is an existing permitted dredged material management area (DMMA) east of Horseshoe Beach. The proposed dredging will be to the following specifications:

Figure 11-1B. Proposed commercial fishing dock in the Town of Horseshoe Beach.

- Channel areas and turning basin dredged to -5 feet Mean Low Water (MLW)
- Dredge disposal at the previously permitted DMMA.

It is anticipated that Dixie County will coordinate with the USACE for the dredging construction, and that a portion of the requested Spill Impact Component funds would be used as local cost share monies.

Construction of the commercial dock will take place on a County-owned waterfront parcel, as shown in **Figure 11-1B.** Construction will include:

- Rehabilitation of the concrete seawall
- Concrete pilings with rubber fenders pier/wharf structure for larger vessels
- Aluminum gangway to floating dock for smaller vessels
- Other amenities, including restroom facilities and a bait shop.

The County may acquire additional adjacent properties in the future to support the expansion of the working waterfront.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

Dixie County has a growing commercial fishing industry, and providing safe navigation to a harbor with a clean, stable, and reliable loading and unloading area for the fishing fleet will enhance the seafood industry in the area. The same model has been used around the Gulf Coast and actually brings commercial businesses in the form of restaurants catering to tourists that seek the "sea to table" experience. In addition to commercial fishing, charter fishing guides and captains also need a clean, safe location to meet their clients. With a maintained channel depth of -7.5 feet MLW, Horseshoe Beach can become a launching point for larger commercial and recreational vessels. Docks and offloading facilities will be upgraded to support future growth of the local fishing industry.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 6: Infrastructure projects benefiting the economy or ecological resources, including port infrastructure (primary).

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 5: Restore and Revitalize the Gulf Economy
- Goal 4: Enhance Community Resilience.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Consortium Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects (primary)
- Objective 5: Promote Community Resilience.

Implementing Entities

Dixie County will be the sole implementing entity and grant sub-recipient responsible for the design, permitting, construction, and success monitoring of the project.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The primary focus of this program is public infrastructure improvements and economic development; therefore, BAS does not apply.

Maintenance dredging of the navigation channel and turning basin have been previously approved by USACE, and there is a permitted DMMA to accommodate dredge spoil disposal.

This project is considered to be feasible with respect to the ability to: (1) secure necessary property agreements and permits; (2) dredge the navigation channel and turning basin; (3) construct the commercial docking facilities; and (4) operate and maintain the improved infrastructure over the long term.

Risks and Uncertainties

Coastal infrastructure is at risk for damage by tropical storms and sea-level rise. However, the engineering design of the proposed infrastructure improvements will consider coast storm hazards and sea-level rise, as appropriate. In the evaluation of this project no significant risk or uncertainties have been identified. In addition, acquiring privately-owned properties may be at risk if the owners are not willing sellers and/or acceptable terms cannot be negotiated.

Success Criteria and Monitoring

This project will improve navigation and port infrastructure and create local jobs. Therefore, a range of appropriate success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Pre- and post-construction dredge surveys
- Increase in local commercial and recreational seafood landings
- Increase in local economic activity.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Dixie County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 6 years. It is expected to start in 2018 and end in 2023. The anticipated project milestones and schedule are shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study and preliminary design																
Engineering design and permitting																
Maintenance dredging																
Construction of commercial dockage																
Success monitoring																

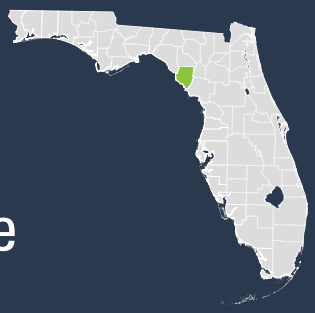
Budget and Funding Sources

A preliminary total cost estimate of $6 million has been developed for this project using available information from comparable projects, and certain assumptions. Dixie County is committed to allocating $3,000,000 of its share of the Florida Spill Impact Component to this program, but will also be seeking other leveraged funding sources to supplement these monies. Dixie County has secured grants from the Federal Emergency Management Agency (FEMA) to pay for damages caused by hurricane Hermine, and some of those funds may be applied to this project. A summary of the project budget and funding sources is provided in the following table.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study and preliminary design	$100,000	$100,000
Planning Subtotal	**$100,000**	**$100,000**
Final design and permitting	$250,000	$250,000
Maintenance dredging	$3,000,000	$1,500,000
Construction of commercial dockage	$2,600,000	$1,100,000
Implementation Subtotal	**$5,850,000**	**$2,850,000**
Success monitoring	$50,000	$50,000
Total Cost	**$6,000,000**	**$3,000,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$3,000,000
Direct Component		$0
Other grants or co-funding - FEMA		$3,000,000
Other County funds		$0
Total Committed Funding		**$6,000,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
F.33 Sea Grant National Marine Aquaculture Initiative - Integrated Projects to Increase Aquaculture Production		
F.35 Saltonstall-Kennedy Competitive Research Program		
O.19 Fisheries Innovation Fund		
S.20 Coastal Partnership Initiative - Florida Coastal Management Program		
S.33 Stan Mayfield Working Waterfronts Florida Forever Grant Program		

Partnerships/Collaboration

Dixie County will collaborate with the Town of Horseshoe Beach and the U.S. Army Corps of Engineers in the design and implementation of this project.



DIXIE COUNTY

Shired Island Park Beach Nourishment and Living Shoreline

PROJECT NO. 11-2

Project Description

OVERVIEW AND LOCATION

This project involves beach nourishment, the creation of a living shoreline, and the improvement of recreational amenities at Shired Island County Park, which is located on the shores of Shired Creek and the Gulf of Mexico, north of the Suwannee River in southwestern Dixie County (see **Figure 11-2A**).

Figure 11-2A. Location of Shired Island County Park in Dixie County.

NEED AND JUSTIFICATION

Dixie County is a rural, sparsely populated coastal county with abundant natural resources. For these reasons the county is experiencing a growth in ecotourism; however, recreational opportunities for residents and tourists are limited by relatively few public park facilities with direct access to the Gulf of Mexico. Shired Island County Park encompasses approximately 70 acres, with facilities that include a boat ramp, a fishing pier, hiking trails, a sandy beach, tent campsites, bathrooms, and an outdoor shower. It is one of only a few locations along the Dixie County shoreline where a sand beach naturally occurs.

The park is a locally popular site for fishing, kayaking, camping, hiking, and wildlife viewing. The location also includes a historically significant site for cultural resources artifacts. However, in 2016 the park experienced substantial storm damage from hurricane Hermine, resulting in significant beach erosion and the destruction of the fishing pier. In addition, the bathroom facilities were badly damaged. While the fishing pier has been rebuilt using Federal Emergency Management Agency (FEMA) funds, there is still a need to restore and protect the beach and to make other improvements to the park facilities.

Beach nourishment would restore the beach, which currently has overnight camping and day-use kayakers competing for space. In addition, the creation of a living shoreline would reduce wave energy and erosion along the beach, and create both subtidal and supratidal habitat that would attract invertebrates, fish, and wildlife.

Figure 11-2B. Aerial photograph of Shired Island County Park and proposed improvements.

PURPOSE AND OBJECTIVES

The purpose of this project is to improve both the natural environment and recreational amenities at Shired Island County Park. The objectives of the project include: (1) restore the sandy beach; (2) construct a living shoreline offshore of the beach to protect the shoreline from future erosion and enhance local habitats and fishing; (3) construct new bathroom and shower facilities and other amenity improvements; and (5) create local construction jobs.

PROJECT COMPONENTS

Components of this project include: (1) completion of a conceptual design and feasibility study; (2) engineering design and permitting; (3) construction; and (4) success monitoring. The conceptual design and feasibility study would determine the following: (1) volume of sand required for beach nourishment; (2) local compatible beach sand sources; (3) location and materials for living shoreline; (4) amenity upgrades (restrooms, parking, campsites, etc.); and (5) the availability and potential costs of acquiring additional adjacent property to expand the park. This study would also provide a detailed cost estimate for the project. **Figure 11-2B** shows an aerial photograph of Shired Island County Park and the potential alignment of the living shoreline element.

This park borders the Big Bend Seagrasses Aquatic Preserve, so engineering design and permitting must consider the sensitive nature of the existing marine environment and incorporate design features that are compatible with local habitats and hydrographic conditions, while also protecting and improving local water quality.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will improve marine and coastal habitat conditions in Shired Island County Park and will support local recreational fishing. In addition, the project will bolster ecotourism as a component of the Dixie County economy and will provide improved public access to their growing number of residents. Project construction will be completed by local contractors, which will also infuse money into the local economy. In addition, the project will improve the local environment and protect the shoreline from future storm damage, thus contributing to the long-term sustainability and resiliency of Shired Island County Park.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activities:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region (primary)
- Eligible Activity 10: Promotion of tourism in the Gulf Coast region, including recreational fishing.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 3: Replenish and Protect Living Coastal and Marine Resources (primary)
- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 4: Restore and Enhance Natural Processes and Shorelines (primary)
- Objective 3: Protect and Restore Living Coastal and Marine Resources
- Consortium Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Dixie County will be the sole implementing entity and grant sub-recipient responsible for land acquisition, design, permitting, construction, and success monitoring.

Best Available Science and Feasibility Assessment

The benefits of beach renourishment and living shorelines are well documented. A key document used as the basis for the living shoreline component of this project is cited below:

- *NOAA, 2015. Guidance for Considering the Use of Living Shoreline. National Oceanic and Atmospheric Administration Living Shorelines Workgroup.*

Beach renourishment and the construction of improved amenities are considered to be feasible project components; however, the ability to secure necessary permits and construct a living shoreline in this location needs to be determined through the completion of a comprehensive conceptual design and feasibility study.

Risks and Uncertainties

Coastal park amenities are at risk for damage by tropical storms and sea-level rise. However, the proposed living shoreline will be designed to reduce coastal storm hazards, and sea-level rise will be factored into the design. In the evaluation of this program, no other significant risks or uncertainties have been identified that would preclude project construction.

Success Criteria and Monitoring

This project will restore the beach and improve nearshore habitats at Shired Island County Park, as well as enhance recreational opportunities and create local jobs. Therefore, a range of success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Restoration of beach profiles through pre- and post-construction surveys
- Metrics on fish and wildlife utilization of the living shoreline
- Increase in recreational use
- Local construction jobs created.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Dixie County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 7 years. The expected start date is 2018, and the end date is 2024. The anticipated project milestones and schedule are shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study and preliminary design																
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

A preliminary total cost estimate of $2 million has been developed for this project using available information from comparable projects and certain assumptions. This cost estimate does not include additional property acquisition. Dixie County is committed to allocating $2,000,000 of its share of the Florida Spill Impact Component to this project, but will also be seeking other leveraged funding sources to supplement these monies. A summary of the project budget and funding sources is provided in the table below.

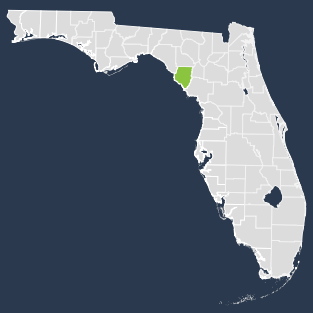
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study and preliminary design	$150,000	$150,000
Planning Subtotal	**$150,000**	**$150,000**
Final design and permitting	$250,000	$250,000
Construction	$1,550,000	$1,550,000
Implementation Subtotal	**$1,800,000**	**$1,800,000**
Monitoring	$50,000	$50,000
Total Cost	**$2,000,000**	**$2,000,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$2,000,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$2,000,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Gulf Environmental Benefit Fund		
Natural Resource Damage Assessment		
F.43 Coastal Resilience Grants Program		
F.43 Coastal Resilience Grants Program		
O.15 Doppelt Family Trail Development Fund		
O.34 Resilient Communities Program		
O.41 Shell Grants; O.42 Shell Marine Habitat Program		
S.16 Beach Management Funding Assistance (BMFA) Program		
S.20 Coastal Partnership Initiative - Florida Coastal Management Program		
S.24 Greenways and Trails Program		
S.29 Recreational Trails Program		

Partnerships/Collaboration

The Florida Department of Environmental Protection typically cost-shares about 30 percent of the total cost of beach nourishment projects, and this project may qualify. In addition, Dixie County may collaborate with the Suwannee River Water Management District and the Florida Fish and Wildlife Conservation Commission with regard to leveraged funding for the living shoreline component.

DIXIE COUNTY

Horseshoe Cove Oyster Restoration



PROJECT NO. 11-3

Project Description

OVERVIEW AND LOCATION

The Horseshoe Cove Oyster Restoration Project involves the placement of reef building substrate in Horseshoe Cove along the Dixie County coastline to restore once healthy oyster reefs that have been degraded due primarily to the combined stresses of reduced freshwater flows, subsequent increases in salinity and associated predation and disease, as well as harvesting pressures. **Figure 11-3A** shows the location of proposed areas along the Dixie County coast.

Figure 11-3A. Proposed oyster restoration areas along the Dixie County coast.

NEED AND JUSTIFICATION

Although 90 percent of the Florida oyster harvest historically came from Apalachicola Bay in Florida's northwest panhandle, the estuarine waters north and south of the Suwannee River along Florida's Big Bend, including Dixie and Levy Counties, provide most of Florida's remaining commercial oyster harvest. Commercial shellfish harvest is approved in Dixie County from Horseshoe Beach south, but is conditionally closed or restricted depending on water quality. Although the Big Bend area has the greatest length of undeveloped coastline in the continental United States, the areal extent of intertidal oyster reefs here has declined by 66 percent over the last 30 years (Seavey et al. 2011). The decline is also demonstrated by the commercial oyster fishery failure declared for Florida's Gulf coast by NOAA in 2013, pursuant to the Inter-Jurisdictional Fisheries Act and the Magnuson-Stevens Fishery Conservation and Management Act. The continued effects of the decline over multiple generations will compromise the long term sustainability of the oyster fishery. The proposed restoration is needed to restore loss of oyster harvest from intertidal and subtidal areas in the Suwannee Sound and provide oyster reefs for fisheries habitat. The proposed project is justified by the success of traditional and more recent cultching efforts used

to support the recovery of oysters and associated habitat along Florida's Gulf Coast.

Figure 11-3B. Locations of potential oyster reef restoration sites in Horseshoe Cove.

PURPOSE AND OBJECTIVES

The purpose of this project is to restore oyster reef habitat and associated ecological functions for estuarine dependent species in support of ecological and economic sustainability in Horseshoe Cove using a combination of proven restoration techniques to re-establish reef infrastructure. Objectives of the proposed project are to: (1) provide suitable habitat for oyster settlement and reef building; (2) provide three-dimensional structural habitat for oysters and associated species; (3) recover and support a sustainable oyster fishery; and (4) contribute to the economic revitalization of the Big Bend coast. These objectives, and the proposed approach for restoration, are consistent with those developed for oyster restoration in the Gulf of Mexico by the National Oceanic and Atmospheric Administration (NOAA, 2016) as part of the *Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement.*

PROJECT COMPONENTS

Potential areas for oyster restoration in Horseshoe Cove, from the town of Horseshoe Beach south to Shired Creek, are shown in **Figure 11-3B**.

Cultch (i.e., suitable material such as cleaned shell, rock, and/or concrete) from local sources will be placed at locations where natural oyster reproduction is present, and reefs will be reseeded with juvenile stocks to: (1) create reef infrastructure, (2) stimulate spat setting, (3) enhance ecological function, and (4) accelerate oyster recovery, as long-term solutions to current habitat degradation. Approximately 33,000 cubic yards of suitable oyster reef substrate will be placed in designated locations. Oyster clusters from donor reef sites in the Suwannee Sound area will be transplanted to recipient reef sites. The project has five primary components, listed below:

- Feasibility study to determine restoration and donor sites
- Cultch material placement on degraded oyster reefs (recipient sites) to appropriate depths
- Transplant/relay of live of oysters from donor sites to recipient sites
- Repopulation of reefs with hatchery-reared seed where reproductive potential is low
- Pre- and post- monitoring and data collection to inform site selection, cultch volumes, and monitoring

The proposed project will restore oyster reefs and habitat needed to support ecologically healthy and economically sustainable oyster populations in Horseshoe Cove.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

The proposed project will contribute to the recovery of the oyster reefs and associated ecological sustainability in Horseshoe Cove. Restored oyster reefs will help to address losses of oysters and associated economic and ecological resources linked to episodic freshwater flow reductions from the Suwannee River and other local tributaries by adding needed substrate for repeated oyster recruitment anticipated under more favorable conditions. Restored reefs will increase the sustainability of the reef systems (Frederick et al., 2015) and reduce storm impacts in the absence of barrier reefs (Edwards and Raabe, 2004).

Oysters are an ecological keystone species that contribute to the integrity and healthy function of the nearshore ecosystem (NOAA, 2016). Healthy, interconnected oyster populations form reefs that provide the hard substrate needed for oyster larvae to settle, grow, and sustain the population. In addition to providing habitat for oysters, the reefs: (1) are habitat for a diversity of marine organisms, from small invertebrates to large recreationally and commercially important species such as stone crab, blue crab, red drum, and black drum; (2) provide structural integrity that reduces shoreline erosion; and (3) improve water quality and help recycle nutrients by filtering large quantities of water (Grabowski et al., 2012). Restored reefs will also provide wintering habitat for the state's largest population of oystercatchers (designated as threatened in Florida), which roost on high-tide sandbars and oyster reefs.

Unlike most of Florida, coastal towns such as Horseshoe Beach and others along the Big Bend coast remain working waterfront communities and a return to oyster harvesting occurred in the years following an oyster collapse in Apalachicola Bay. For example, when oyster landings in Franklin County declined dramatically after hurricanes Kate and Elena (1985), landings in Dixie and Levy Counties were the primary contributors from peninsular west Florida (Arnold and Berrigan, 2002). The proposed project will provide wages for participants and will generate revenues through the purchase of equipment, fuel and lubricants, supplies, and services from local businesses, as well as temporary employment for fishermen during closed oyster season. Long-term economic benefits of harvesting, processing, and marketing fishery products will support local commercial fisheries and recreation.

Eligibility and Statutory Requirements

The proposed project is consistent with, and addresses, the following RESTORE Act eligible activities:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region (primary)
- Eligible Activity 2: Mitigation of damage to fish, wildlife, and natural resources
- Eligible Activity 4: Workforce development and job creation.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 3: Replenish and Protect Living Coastal and Marine Resources (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 4: Enhance Community Resilience
- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 3: Protect and Restore Living Coastal and Marine Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 5: Promote Community Resilience
- Consortium Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Figure 11-3C. Transplanted oyster clusters in the Big Bend area (source: Mark Berrigan).

Implementing Entities

Dixie County will be the implementing entity and grant sub-recipient responsible for the design, permitting, construction, operation and maintenance, and monitoring for the proposed project. Dixie County staff will coordinate with appropriate agencies during planning and implementation of this project and may collaborate with agencies or other entities via leveraging and other funding agreements.

Best Available Science and Feasibility Assessment

The proposed project is based on years of oyster reef restoration along the Gulf Coast as well as specific examples of successful restoration of nearshore oyster reef restoration (e.g., LaPeyre et al., 2014), and examples specific to the Big Bend area (e.g., Frederick et al. 2015; Arnold and Berrigan, 2002). **Figure 11-3C** shows a photograph of transplanted oyster clusters in the Big Bend area. Success is demonstrated by oyster densities on restored or created reefs that increased by 2.65 times on rock, 14.5 times on clam bags, and 9.2 times overall compared with control sites (LaPeyre et al., 2014). The value of restoring oyster reefs is also well documented and includes enhanced estuarine habitats, shoreline stabilization, reduced storm surge and erosion, water quality improvements, and shelter for over 300 species that in turn are consumed by recreationally and commercially important finfish and crustaceans (NOAA, 2016; Peterson et al., 2003). The ratio of restored reef to the resulting restored estuarine habitat is an estimated 1:670 in the Big Bend (Frederick et al., 2015).

The proposed project approach is consistent with Gulf-wide objectives and restoration techniques outlined in the science-based *Final Programmatic Damage Assessment and Restoration Plan* and *Final Programmatic Environmental Impact Statement*, as described earlier, which presents detailed information supporting the value of oyster reef restoration (NOAA, 2016). Project implementation will be consistent with Best Management Practices, as outlined by Florida Department of Agriculture & Consumer Services (FDACS).

The proposed project will, combined with other proposed or ongoing projects along the Big Bend coast, provide regional benefits in the form of improved management and sustainability of oyster habitat and associated ecological functions. Other proposed or underway projects that target sustainable oyster reefs include: the State of Florida's Restoring Resilience to Oyster Reefs in the Big Bend of Florida's Gulf Coast in Dixie and Levy Counties—4.6 miles of oyster reef restoration proposed for funding under the Council Selected Component (proposed for $5,181,697 but not funded under the first FPL); and the NFWF/University of Florida Recovery and Resilience of OysterReefs in the Big Bend of Florida—32 acres/3 miles of restored reefs ($8,334,400 currently underway).

Based on preliminary information provided by regulatory and management agencies such as Florida Department of Environmental Protection (FDEP), the Florida Fish and Wildlife Conservation Commission (FWC), and FDACS, construction costs for similar projects, and operation and maintenance of other projects, the proposed project is considered feasible with respect to: (1) permitting; (2) construction within the proposed budget; and (3) effective long-term operation and maintenance of the project components. Key literature reviewed in the evaluation of this project includes the following:

- *Arnold, W. and M. Berrigan, 2002. A summary of the oyster (Crassostrea virginica) fishery in Florida. A Report to the Division of Marine Fisheries, Florida Fish and Wildlife Conservation Commission (FFWCC). St. Petersburg, Florida, USA.*
- *Edwards, R. and E. Raabe, 2004. Ecological Characteristics and Forcing Functions of the Suwannee River Estuary. In B. Katz and E. Raabe (Ed.) Suwannee River Basin and Estuary Integrated Science Workshop. Sponsored by USGS, SRWMD, FMRI. Cedar Key, Florida.*
- *Frederick et al., 2015. Restoring Resilient Oyster Reefs in Florida's Big Bend. Final Report to The Nature Conservancy and NOAA. 49 pages.*
- *Grabowski, J.H. et al., 2012. Economic valuation of ecosystem services provided by oyster reefs. BioScience 62: 900–909.*
- *Kaplan DA, et al., 2016. Freshwater Detention by Oyster Reefs: Quantifying a Keystone Ecosystem Service. PLOS ONE 11(12): e0167694. https://doi.org/10.1371/journal.pone.0167694.*
- *La Peyre, M., et al., 2014. Oyster reef restoration in the northern Gulf of Mexico: Extent, methods and outcomes. Ocean & Coastal Management 89: 20-28.*
- *National Academy of Sciences (NAS), 2017. Effective Monitoring to Evaluate Ecological Restoration in the Gulf of Mexico. Washington, DC: The National Academies Press. doi: 10.17226/23476.*
- *NOAA. 2016. Final Programmatic Damage Assessment and Restoration Plan (PDARP) and Final Programmatic Environmental Impact Statement (PEIS. http://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.*

Risks and Uncertainties

Establishing monitoring goals and success criteria are critical to reducing and managing risk and uncertainty for the proposed project. The proposed project will preclude oyster harvest from restored areas until oysters are of legal size and will require continued coordination and combined efforts of oyster fishers and agencies in support of improved fishery management strategies. In addition, oyster populations are still expected to periodically decline in response to natural declines in freshwater flows, although oyster reefs will help to hold freshwater in the estuaries.

The project will require cooperation with the Florida Fish and Wildlife Conservation Commission with respect to the transplanting of natural, living oyster seed and juveniles from public reefs onto donor sites. A "Special Activity License to Collect and Release Juvenile Oysters" has been issued for similar oyster restoration projects and is anticipated for this project.

Success Criteria and Monitoring

This project will restore oysters in areas where natural oyster reefs and populations have been degraded. Therefore, a range of success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Increases in areal extent of oyster reefs
- Increases in average reef height
- Increases in oyster density
- Oyster size-frequency distribution representative of a sustainable oyster population.

An economic success criterion of benefits (economic returns for increased landings) versus cost (of restoration) may also be used. More specific quantitative criteria will be developed within planning and monitoring frameworks developed for oyster reef restoration or enhancement in the Gulf (NOAA, 2016). Criteria for three environmental variables (water temperature, salinity, and dissolved oxygen) are also recommended (Baggett et al., 2014). Well-defined goals and objectives, statistically sufficient monitoring designs, and project documentation are absent from many restoration projects (NAS, 2017), but are critical to the success of the proposed project. The project grant request will include a detailed monitoring program design that addresses goals, objectives, data collection, and data assessment and evaluation for these success criteria.

Milestones and Schedule

The total estimated time horizon of this project is approximately 7 years. The expected start date is 2018, and the expected end date is 2024. Implementation of this project has been broken down into four milestones as shown in the chart below. This project is ready to begin the feasibility study.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study and preliminary design																
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

The project budget was developed based on previous oyster restorations specific to Florida's west coast, with estimates ranging from about $75 to $120/cubic yard of material and $15,000 to $25,000/acre of material placed. Dixie County is committed to allocating $1,000,000 of its share of the Florida Spill Impact Component to this program, but will also be seeking other leveraged funding sources to supplement these monies. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study and preliminary design	$100,000	$100,000
Planning Subtotal	**$100,000**	**$100,000**
Final design and permitting	$150,000	$150,000
Construction	$700,000	$700,000
Implementation Subtotal	**$850,000**	**$850,000**
Monitoring	$50,000	$50,000
Total Cost	**$1,000,000**	**$1,000,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$1,000,000
Direct Component		$0
Other grants and co-funding		$0
Other County funds		$0
Total Committed Funding		**$1,000,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Council-Selected Restoration Component		
Gulf Environmental Benefit Fund		
Natural Resource Damage Assessment		
F.30 Planning and Local Technical Assistance Program		
F.32 Fisheries Finance Program		
F.33 Sea Grant National Marine Aquaculture Initiative - Integrated Projects to Increase Aquaculture Production		
F.34 Sea Grant National Marine Aquaculture Initiative - Addressing Impediments to Aquaculture Opportunities		
O.24 Gulf of Mexico Oyster Aquaculture Small Grants		
O.25 Gulf Star		
O.34 Resilient Communities Program		
O.42 Shell Marine Habitat Program		
S.11 Competitive Florida Economic Development Project Grant		
S.13 Florida Job Growth Grant Fund		

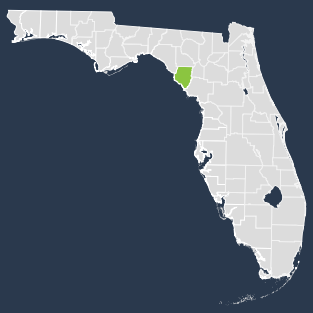
Partnerships/Collaboration

Potential project partners include:

- University of Florida/Institute of Food and Agricultural Sciences
- Florida State University
- Florida Fish and Wildlife Conservation Commission
- The Nature Conservancy.

Coordination with the following agencies is anticipated:

- Florida Department of Agriculture & Consumer Services
- Florida Fish and Wildlife Conservation Commission
- Florida Department of Environmental Protection
- Suwannee River Water Management District
- National Marine Fisheries Service
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service.



DIXIE COUNTY

Coastal Public Access Program

PROJECT NO. 11-4

Project Description

OVERVIEW AND LOCATION

This program involves public land acquisition and the construction and/or improvement of recreational amenities to enhance public access to coastal waters and the Gulf of Mexico. Dixie County has evaluated several priority sites. The locations of three priority sites discussed below are shown **Figure 11-4A**.

Figure 11-4A. Location of priority coastal public access sites in Dixie County.

NEED AND JUSTIFICATION

Dixie County is a rural, sparsely populated coastal county with abundant natural resources. For these reasons, the county is experiencing a growth in ecotourism; however, recreational opportunities for residents and tourists are limited by relatively few public park facilities with direct access to the Gulf of Mexico. In addition, navigational access to the Gulf of Mexico by recreational boaters in Dixie County, and the other counties of the Big Bend area of Florida, is very much restricted due to the naturally shallow coastal waters and relatively few dredged channels. Therefore, there is a need to acquire additional pubic coastal access sites and to develop supporting recreational amenities at these sites.

The County is looking to enhance facilities at existing parks and boat ramps (see Project 11-2), and partner with other agencies to expand the types of recreational amenities offered. In the past, coastal access in the county has primarily focused on boat ramps. This program will further that work and will also include non-motorized vessel launch facilities and an observation tower for bird watching.

Figure 11-4B. Aerial photograph of the Rocky Point boat ramp site.

Figure 11-4C. Aerial photograph of the Freeman Tract with proposed improvements.

PURPOSE AND OBJECTIVES

The purpose of this program is to publicly-acquire and/or develop additional coastal public access sites. Objectives of the program include: (1) enhance and expand existing publicly-owned passive recreational facilities in the coastal zone; (2) increase public access to the coastal zone and Gulf of Mexico; and (3) grow the ecotourism industry in Dixie County.

PROJECT COMPONENTS

Components of this program include: (1) identification and prioritization of potential sites for improved public access to the coastal zone; (2) acquisition or lease agreements for the use priority sites; (3) engineering design and permitting of site improvements; and (4) success monitoring. Dixie County does not have a formal conservation lands acquisition program. Therefore, Spill impact Component funds will be used to develop and implement such a program, with a focus on coastal passive recreation sites.

Dixie County has identified three potential sites for acquisition and/or improvement in the near term, including:

- Rocky Creek boat ramp site improvements
- Freeman Tract use agreement and recreational improvements
- Cow Creek site acquisition and recreational improvements.

The Rocky Creek boat ramp is an existing County-owned facility where a new boat ramp and floating dock was constructed in 2016. However, this site lacks adequate paved parking, bathroom facilities, and stormwater treatment best management practices. There are also restoration and public educational opportunities at this site. **Figure 11-4B** shows an aerial photograph of the Rocky Creek boat ramp site.

The Freeman Tract is an island property currently owned by the Florida Fish and Wildlife Conservation Commission (FWC). The property has an existing observation tower overlooking a large saltmarsh and the Gulf. The hiking trail and footbridge to the island need to be upgraded and replaced, and the observation tower needs maintenance. There are also restoration and public educational opportunities at this site. Dixie County is interested in entering into a lease agreement with the FWC to make improvements and operate and maintain the area as acounty park site. **Figure 11-4C** shows an aerial photograph of the Freeman Tract.

The Cow Creek site is located at the end of SW Highway 361, a road that dead ends in an extensive salt marsh. The concrete bridge over Cow Creek is in disrepair and is in need of replacement. Concepts for this site include: (1) replacement of the concrete bridge with a wooden single-lane bridge; (2) construction of a kayak launch in Cow Creek; and (3) construction of an observation tower, parking facilities, and composting bathrooms at the terminus of SW Highway 361. There are also substantial restoration opportunities at this site where portions of the filled roadway could be removed to allow improved tidal flow and restore wetland habitats. Acquisition or lease agreement for lands outside county rights-of-way may be needed to implement the proposed improvements. **Figure 11-4D** shows an aerial photograph of the Cow Creek site and proposed improvements.

Figure 11-4D. Aerial photograph of the Cow Creek site with proposed improvements.

If these project sites become unavailable, other sites that meet the goals of this program will be substituted.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will improve public access to the coastal zone of Dixie County for both residents and visitors, and will bolster ecotourism as a component of the Dixie County economy. In addition, some sites may provide substantial opportunities for habitat restoration and protection.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of Tourism in the Gulf Coast region, including recreational fishing.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 5: Restore and Revitalize the Gulf Economy (primary)
- Goal 1: Restore and Conserve Habitat.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Consortium Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects (primary)
- Objective 1: Restore, Enhance, and Protect Habitats.

Implementing Entities

Dixie County will be the will be the sole implementing entity and grant sub-recipient responsible for land acquisition, design, permitting, construction, and success monitoring.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The primary focus of this program is recreational use and tourism promotion; therefore, BAS does not apply. Any impacts associated with the construction of recreational amenities will be addressed during regulatory permitting.

This project is considered to be feasible with respect to the ability to: (1) secure necessary property agreements and permits; (2) construct the proposed recreational improvements; and (3) operate and maintain the improved infrastructure over the long term.

Risks and Uncertainties

Coastal park and recreational amenities are at risk for damage by tropical storms and sea-level rise. However, the proposed recreational improvements will factor coastal storm hazards and sea-level rise into the design, as appropriate. Dixie County has identified several priority properties and is ready to proceed with property acquisitions and improvements.

Success Criteria and Monitoring

This program will involve property acquisition and/or leasing and the development of recreational amenities. Specific success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Acres of coastal access properties acquired
- Increase in recreational use.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Dixie County is committed to conducting the monitoring necessary to quantify project benefits.

Project Milestones and Schedule

The total estimated time horizon of this project is approximately 5 years. It is expected to start in 2021 and end in 2026. Implementation of this project has been divided into five milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study and preliminary design																
Property acquisition																
Final design and permitting																
Construction (recreational amenities)																
Success monitoring																

Budget/Funding and Leveraged Resources

Dixie County had developed a preliminary cost estimate for this program of $1,460,000. Dixie County is committed to allocating $1,460,000 of its share of the Florida Spill Impact Component to this program, but will also be seeking other leveraged funding sources to supplement these monies. A summary of the project budget and funding sources is provided in the table below.

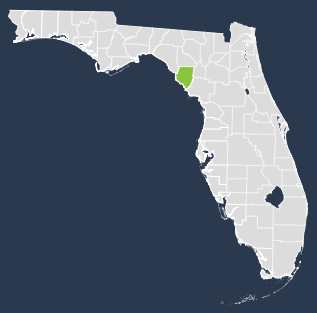
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study and preliminary design	$250,000	$250,000
Planning Subtotal	**$250,000**	**$250,000**
Property acquisition and/or lease agreements	$200,000	$200,000
Final design and permitting	$160,000	$160,000
Construction (recreational amenities)	$800,000	$800,000
Implementation Subtotal	**$1,160,000**	**$1,160,000**
Monitoring	$50,000	$50,000
Total Cost	**$1,460,000**	**$1,460,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$1,460,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$1,460,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
S.38 Small County Outreach Program		
S.39 Small County Road Assistance Program		
S.45 Florida Boating Improvement Program (FBIP)		
S.49 Sport Fish Restoration Program		

Partnerships/Collaboration

Dixie County will partner with the Florida Fish and Wildlife Conservation Commission and the Suwannee River Water Management District in the acquisition and improvement of the subject properties.

DIXIE COUNTY

Coastal Septic to Sewer Conversion Program



PROJECT NO. 11-5

Project Description

OVERVIEW AND LOCATION

This program consists of the expansion of three existing sewer systems to areas served by septic systems and the development of one new wastewater treatment system in Dixie County. All four components will convert existing on-site septic systems to a centralized wastewater treatment system. Three components will be located on the Gulf of Mexico coastline and the fourth (Old Town) will be located next to the Suwannee River near Fanning Springs along U.S. Highway 19, as shown in **Figure 11-5A**.

Figure 11-5A. Location of wastewater improvement projects in Dixie County.

NEED AND JUSTIFICATION

The entirety of Dixie County's coastline is part of the Big Bend State Aquatic Preserve (BBSAP), which contains some of the world's largest coastal salt marsh and seagrass habitats and one of the most pristine coastal areas in Florida (Florida Department of Environmental Protection (FDEP), 2014). Seagrass is an important habitat for a large number of fish and invertebrate species, including many of commercial importance. Seagrasses are greatly affected by poor water quality and water clarity, and seagrass declines in the BBSAP have been linked to increased stressors such as nutrient and turbidity inputs from adjacent coastal watersheds (*Suwannee River Water Management District (SRWMD), 2017)*. Protection of seagrasses in the BBSAP is a major focus of management activities, and identifying and eliminating negative water quality impacts from anthropogenic sources is the highest priority action.

Dixie County is still very rural, and development patterns in the coastal zone of the county is characterized by small coastal towns with limited wastewater collection and treatment infrastructure. Most residential and commercial areas are still served by onsite septic systems, which have been identified as a source of pollutants to coastal watersheds

in Dixie County (FDEP, 2008). This program will address needed improvements to domestic wastewater treatment and disposal in the developed coastal areas of Dixie County. It is anticipated that this program will decrease nutrient and bacteria loads to the Suwannee River (and associated springs), Steinhatchee River, and Gulf of Mexico by expanding centralized wastewater infrastructure to areas currently served by septic systems. If it is determined that centralized wastewater facilities are not feasible or cost-effective in certain areas, then the program will evaluate the potential improving wastewater treatment via advanced septic system retrofits.

PURPOSE AND OBJECTIVES

The purpose of this project is to eliminate septic systems through the expansion of sewer mains and construction of one new wastewater treatment system. The objective of this project is to improve water quality in the Gulf of Mexico coastal waters, Steinhatchee River watershed, and Suwannee River watershed, including Fanning Springs and Manatee Springs.

PROJECT COMPONENTS

The project involves modifications to existing centralized sewer facilities and the construction of new facilities to collect domestic wastewater from areas currently served by only individual septic systems. This will include new collectors, force mains, and lift stations to accommodate increased flows from the septic system areas. Additional treatment capacity may also need to be added at existing wastewater treatment plants.

The program consists of the following four components:

- *Jena Sewer Collection System:* Sewer main expansion from Steinhatchee in Taylor County to the Town of Jena in Dixie County to facilitate abandonment of septic systems in Jena.
- *Old Town Sewer Collection System:* Sewer main expansion from the City of Fanning Springs in Gilchrist/Levy Counties to Old Town to facilitate abandonment of septic systems in Old Town.
- *Suwannee Sewer Collection System:* Expansion of the existing wastewater collection system in the town of Suwannee to facilitate abandonment of septic systems in Suwannee.
- *Horseshoe Beach Sewer Collection and Treatment:* Design and construction of wastewater collection and treatment infrastructure in the town of Horseshoe Beach to facilitate abandonment of septic systems in Horseshoe Beach.

Although problem areas have been identified, feasibility studies and preliminary designs are needed for all four components to better define the extent and cost of the proposed improvement. Once these studies are complete, the projects can proceed with engineering design, construction, and monitoring.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will improve water quality conditions in the Gulf of Mexico near Horseshoe Beach, as well as in the Steinhatchee and Suwannee Rivers (including Fanning and Manatee Springs), which discharge directly into the Gulf of Mexico. These are ecologically and economically important rivers that support numerous fisheries and have high recreational values. The Suwannee River has been listed by the Florida Department of Environmental Protection (FDEP) as impaired for nutrients, dissolved oxygen, and fecal coliform bacterial and a total maximum daily load (TMDL) has been established for the middle and lower Suwannee River system. The Steinhatchee River is designated as an Outstanding Florida Water, making it worthy of special protection from water quality degradation. Eliminating

septic systems and providing advanced treatment of wastewater before it is discharged will decrease nutrient and bacterial loads to these rivers and downstream waters, and will protect ecological resources in the Gulf such as shellfish and seagrass. If it is determined that centralized wastewater facilities are not feasible or cost-effective in certain areas, then the program will evaluate the potential improving wastewater treatment via advanced septic system retrofits.

The provision of improved wastewater service in these areas will also prevent future water quality problems and increase property values for the parcels it will ultimately serve. In addition, this project should encourage redevelopment of currently unimproved parcels in the project area. This will, in turn, revitalize the local economy and grow Dixie County's tax base. The proposed project will also increase local workforce development and job creation.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

Dixie County will be the grant sub-recipient responsible for the feasibility studies, design, permitting, construction, operation and maintenance, and monitoring of this project.

Best Available Science and Feasibility Assessment

Water quality issues related to nutrients in the Suwannee River and associated springs are described in the following report, and references cited therein:

- *FDEP, 2008. Nutrient and Dissolved Oxygen TMDL for the Suwannee River, Santa Fe River, Manatee Springs (3422R), Fanning Springs (3422S), Branford Springs (3422J), Ruth Springs (3422L), Troy Spring (3422T), Royal Spring (3422U), and Falmouth Spring (3422Z).*

This program is also consistent with the goals and objectives of the following natural resource management plans:

- *Florida Department of Environmental Protection (FEDP), 2014. Big Bend Seagrasses Aquatic Preserve Management Plan.*
- *FDEP, 2014. Big Bend Seagrasses Aquatic Preserve Management Plan.*
- *SRWMD, 2017. Suwannee River Basin Surface Water Improvement and Management (SWIM) Plan.*
- *SRWMD, 2017. Coastal Rivers Basin Surface Water Improvement and Management (SWIM) Plan.*

Dixie County has not completed a feasibility study specific to this program, and very few engineering details are known. Requirements to attain feasibility (permitability, constructability, maintainability, etc.) will be identified in the feasibility and preliminary engineering phases.

Risks and Uncertainties

No significant risks or uncertainties have been identified at this time, and this program is similar to that proposed for neighboring Levy County. Program risks and uncertainties will be fully evaluated in the feasibility and conceptual design studies.

Success Criteria and Monitoring

This program will affect water quality in adjacent and downstream freshwater and estuarine systems of the Steinhatchee River and Suwannee River. Specific success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for the following changes:

- Number of septic systems taken off-line
- Estimated reduction in nutrient and bacteria loads attributable to the wastewater improvements
- Changes in ambient water quality (nutrients, bacteria, chlorophyll-a) in the Steinhatchee River and Suwannee River in the vicinity of wastewater improvements.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Dixie County in coordination with the municipalities is committed to implementing the necessary monitoring and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon for the Dixie County septic-to-sewer conversion project is approximately 6 years. It is expected to start in 2026 and end in 2031, with two additional years of success monitoring extending to 2024. Implementation of each of the program components has been divided into the milestones, as shown in the chart below. The feasibility study through the final design is estimated to be 18 months and the construction 12 to 15 months for each project. All four components may start concurrently.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Jena Sewer Collection System																
Feasibility study																
Preliminary design																
Final design and permitting																
Construction																
Old Town Sewer Collection System																
Feasibility study																
Preliminary design																
Final design and permitting																
Construction																
Suwannee Sewer Collection System																
Feasibility study																
Preliminary design																
Final design and permitting																
Construction																
Horseshoe Beach Sewer Collection and Treatment																
Feasibility study																
Preliminary design																
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

At this time, the total number of septic systems to be taken off-line is not known, but it is estimated to be as many as 1,000. Based on available information, the total project cost is estimated at $10,000,000. A detailed cost estimate will be provided from the feasibility and preliminary design studies. Dixie County is committed to allocating $5,200,000 of its share of the Florida Spill Impact Component to this program, but does not have the financial capacity to make up project funding shortfalls with other Dixie County funds. Therefore, Dixie County will be seeking other leveraged funding sources as necessary to complete the program. However, this type of project can be implemented in phases as funds become available. A summary of the project budget and funding sources is provided in the following table.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Jena Sewer Collection System		
Feasibility study	$30,000	$30,000
Preliminary design	$30,000	$30,000
Planning Subtotal	**$60,000**	**$60,000**
Final design and permitting	$160,000	$160,000
Construction	$2,260,000	$1,060,000
Implementation Subtotal	**$2,420,000**	**$1,220,000**
Total	**$2,480,000**	**$1,280,000**
Old Town Sewer Collection System		
Feasibility study	$30,000	$30,000
Preliminary design	$30,000	$30,000
Planning Subtotal	**$60,000**	**$60,000**
Final design and permitting	$160,000	$160,000
Construction	$2,260,000	$1,060,000
Implementation Subtotal	**$2,420,000**	**$1,220,000**
Total	**$2,480,000**	**$1,280,000**
Suwannee Sewer Collection System		
Feasibility study	$30,000	$30,000
Preliminary design	$30,000	$30,000
Planning Subtotal	**$60,000**	**$60,000**
Final design and permitting	$160,000	$160,000
Construction	$2,260,000	$1,060,000
Implementation Subtotal	**$2,420,000**	**$1,220,000**
Total	**$2,480,000**	**$1,280,000**
Horseshoe Beach Sewer Collection and Treatment		
Feasibility study	$30,000	$30,000
Preliminary design	$30,000	$30,000
Planning Subtotal	**$60,000**	**$60,000**
Final design and permitting	$160,000	$160,000
Construction	$2,260,000	$1,060,000
Implementation Subtotal	**$2,420,000**	**$1,220,000**
Total	**$2,480,000**	**$1,280,000**
Monitoring	$80,000	$80,000
Total Cost	**$10,000,000**	**$5,200,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$5,200,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
	Total Committed Funding	**$5,200,000**
	Budget Shortfall	**$4,800,000**

POTENTIAL LEVERAGED FUNDING SOURCES
Council-Selected Restoration Component
Natural Resource Damage Assessment
F.03 Rural Community Development Initiative Grants
F.07 Water and Waste Disposal Systems for Rural Communities
F.08 Water and Waste Disposal Technical Assistance and Training Grants
F.11 Community Facilities Direct Loan and Grant Program in Florida
F.13 Community Facilities Guaranteed Loan Program
F.17 Grant Program to Establish a Fund for Financing Water and Wastewater Projects
O.22 Florida Rural Water Association Loan Program
O.40 Southeast Rural Community Assistance Project, Inc. (SERCAP) Loan Fund Program
O.46 Water/Wastewater Loans
S.14 Small Cities Community Development Block Grant (CBDG) Program
S.15 Small Cities CBDG Section 108 Loan Guarantees
S.18 Clean Water State Revolving Fund (CWSRF)
S.21 CWSRF Small Community Wastewater Construction Grants
S.13 Florida Job Growth Grant Fund
S.53 Regional Initiative Valuing Environmental Resources (RIVER) Cost Share Program

Partnerships/Collaboration

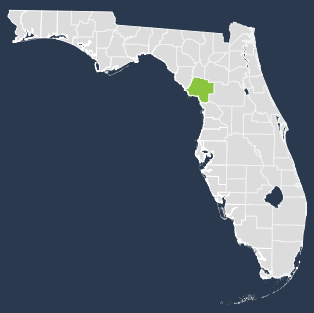
Dixie County will work with the following partners to accomplish these goals:

- City of Fanning Springs
- Town of Steinhatchee
- Town of Suwannee
- Town of Horseshoe Beach.

In addition, Dixie County will partner with the Suwannee River Water Management District with respect to water quality success monitoring.

LEVY COUNTY

Waccasassa River Conservation Land Acquisition



PROJECT NO. 12-1

Project Description

OVERVIEW AND LOCATION

This project involves the public acquisition of a 226-acre privately-owned parcel located on the shores of the Waccasassa River. Once acquired, the parcel will be maintained as conservation lands, with some improvements and amenities for passive recreational uses. The project is located in Gulf Hammock West of U.S. Highway 19, off County Road 326 (see **Figure 12-1A**).

Figure 12-1A. Location of the Waccasassa River corridor land acquisition.

NEED AND JUSTIFICATION

The Waccasassa River is a one of the least disturbed rivers in the state, and connects to the Gulf through the Waccasassa Bay Preserve State Park. The subject property is an existing privately owned fish camp that is being considered for residential development. Acquiring this property will secure the land for conservation and public passive recreation. Currently, there is public access to the Waccasassa River via a boat ramp at a nearby parcel at Waccasassa Park. This acquisition will add a public boat ramp and dock facility and extend the publicly held areas along the Waccasassa River corridor. Other conservation lands along the river corridor include: Bronson Blue Spring (Levy County), Devil's Hammock Wildlife Management Area (Florida Fish and Wildlife Conservation Commission), Waccasassa Park (Levy County), and the Waccasassa Bay Preserve State Park (Florida Park Service). Acquisition of the subject property will add to and close gaps in the existing publicly owned conservation lands along the Waccasassa River corridor.

PURPOSE AND OBJECTIVES

The purpose of this project is to acquire additional publicly owned conservation and passive recreation lands along the largely unspoiled Waccasassa River. The objectives of the project are to: (1) add to and close gaps in the existing publicly owned conservation lands along the Waccasassa River corridor; (2) provide improved public boat access to the river for local residents and visitors; and (3) enhance public recreation, environment education, and law enforcement facilities on the site.

PROJECT COMPONENTS

Components of this project include a feasibility study, property appraisal, design and permitting of park amenities, construction, and monitoring.

Levy County will acquire 226 privately held acres along the shores of the Waccasassa River for public access and conservation. A portion of this parcel, approximately 6 acres, is currently a privately owned fish camp and has an existing boat ramp and limited dockage. The 220 acres of undeveloped lands on the site will be managed for wildlife conservation. Upon acquisition by Levy County, the launching facilities will be upgraded to include additional parking for vehicles and trailers. The ramps will allow small motorized and non-motorized vessels to be launched in separate areas, reducing ramp congestion. Levy County would also add a handicap-accessible canoe/kayak launch. The amount of Levy County–held property in this vicinity would expand from 5 acres to 226 acres, and the types of recreation offered from this location would expand as well.

Figure 12-1B. Existing boat ramp and dock facility.

Figure 12-1C. Existing property manager's facility.

Structures on the property will remain and be managed by Levy County. Levy County will hire a vendor to run the convenience store; in addition to the store, there are a property manager's residence, four cabins, and 25 recreational vehicle (RV) hookups that could be renovated and expanded for up to 50 RV hookups. There is an opportunity to offer the property manager's residence to local law enforcement (Florida Fish and Wildlife Conservation Commission officer) or convert its use to a nature center. There are also educational opportunities as the structures could be converted to an educational classroom partnering with the school board or local non-profit organizations. **Figure 12-1B** and **Figure 12-1C** show existing facilities on the property. While specific parcels have been defined in this project, if these project sites become unavailable, other sites that meet the goals of this program will be substituted.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will increase publicly owned conservation and passive recreation lands along the largely unspoiled Waccasassa River, adding to and closing gaps in the existing publicly owned conservation lands along the river corridor. In addition, the project will provide improved public boat access to the river for local residents and visitors. Waterfront sites that are suitable for recreational access are often in demand for development. Preserving this site as a conservation and passive recreation site will preserve critical watershed habitat, enhance public recreation and access to the Gulf, and promote ecotourism in Levy County.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast Region (primary)
- Eligible Activity 10: Promotion of tourism in the Gulf Coast region, including recreational fishing.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 1: Restore and Conserve Habitat (primary)
- Goal 5 Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 1: Restore, Enhance, and Protect Habitats (primary)
- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Acquisition activities will be conducted either by Levy County as a sub-recipient to the Gulf Consortium or by a conservation lands non-government organization (NGO) on behalf of the Gulf Consortium. Improvement of the park facilities will be conducted by Levy County as a sub-recipient.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The main focus of this project is land acquisition for conservation, as well as the provision of passive recreational amenities. Therefore, a Best Available Science is not applicable. Regulatory permitting of the recreational component will address potential impacts to marine habitats and living resources, and cultural resources, as appropriate.

This program is considered to be feasible with respect to the ability to: (1) obtain suitable properties from a willing seller; (2) improve boat ramps and park amenities; and (3) effectively operate and maintain the facilities over the long term.

Risks and Uncertainties

Land acquisition activities are always at risk with respect to securing a willing seller and negotiating reasonable terms. In addition, coastal park and recreational amenities are at risk for damage by tropical storms and sea-level rise. However, the proposed recreational improvements will factor coastal storm hazards and sea-level rise into the design, as appropriate.

Success Criteria and Monitoring

This program addresses public land acquisition and the improvement of boater access to the Gulf. It is anticipated that quantitative success criteria will be developed for:

- Acres acquired for conservation
- Recreational amenities completed
- Public recreation use.

In the project grant request, a detailed monitoring program will be described that addresses data collection and assessment methodologies for the above-listed criteria. Levy County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 3 years due to the need to acquire the subject property before other potential buyers. It is expected to start in 2018 and end in 2020. Implementation of this project has been divided into 6 milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study																
Property appraisal																
Property acquisition																
Final design and permitting – park amenities																
Construction – park amenities																
Success monitoring																

Budget and Funding Sources

Levy County is committed to allocating $2,960,000 of its share of the Florida Spill Impact Component to this project, but will also be seeking other leveraged funding sources to supplement these monies as needed. This budget allocation is based on the current estimated market value of the subject property. A summary of the project budget and funding sources is provided in the table below.

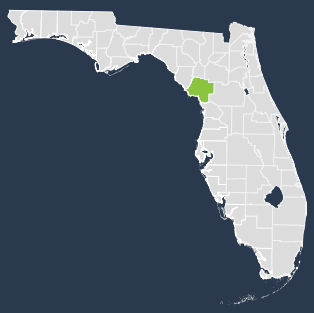
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$40,000	$40,000
Property appraisal	$40,000	$40,000
Planning Subtotal	**$80,000**	**$80,000**
Property acquisition	$2,000,000	$2,000,000
Final design and permitting – park amenities	$200,000	$200,000
Construction – park amenities	$655,000	$655,000
Implementation Subtotal	**$2,855,000**	**$2,855,000**
Monitoring	$25,000	$25,000
Total Cost	**$2,960,000**	**$2,960,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$2,960,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$2,960,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
S.19 Coastal and Estuarine Land Conservation Program (CELCP)		
S.20 Coastal Partnership Initiative – Florida Coastal Management Program		
S.23 Florida Recreation Development Assistance Program (FRDAP)		
S.26 Land and Water Conservation Fund (LWCF)		
S.45 Florida Boating Improvement Program (FBIP)		
O.11 Conservation Acquisition Revolving Fund		
O.26 Healthy Watersheds Consortium Grant Program		
O.28 Merck Family Fund		
O.34 Resilient Communities Program		
O.43 Southeast Aquatics		
S.28 Parks and Open Space Florida Forever Grant Program		
S.53 Regional Initiative Valuing Environmental Resources (RIVER) Cost Share Program		

Partnerships/Collaboration

Levy County will work with other non-profit and state organizations on management planning once the land is acquired. Potential partners include the Suwannee River Water Management District and the Florida Fish and Wildlife Conservation Commission. If leveraged or co-funding opportunities are available, Levy County would apply those funds to similar parcels for coastal public access and conservation.

LEVY COUNTY

Suwannee Sound / Cedar Key Oyster Restoration



PROJECT NO. 12-2

Project Description

OVERVIEW AND LOCATION

The Suwannee Sound / Cedar Key Oyster Restoration Project involves the placement of reef-building substrate in Suwannee Sound, Cedar Key, and Waccasassa Bay along the Levy County coastline to restore once productive oyster reefs that have been degraded primarily from the combined stresses of reduced freshwater flows, subsequent increases in salinity and associated predation and disease, as well as harvesting pressures. **Figure 12-2A** shows the location of proposed oyster restoration areas along the Levy County coast.

Figure 12-2A. Proposed oyster restoration areas along the Levy County coast.

NEED AND JUSTIFICATION

Although 90 percent of the Florida oyster harvest historically came from Apalachicola Bay in Florida's northwest panhandle, the estuarine waters north and south of the Suwannee River along Florida's Big Bend, including Dixie and Levy Counties, provide most of Florida's remaining commercial oyster harvest. Commercial shellfish harvest is approved in Dixie County from Horseshoe Beach south, but can be conditionally closed or restricted depending on water quality. Although the Big Bend area has the greatest length of undeveloped coastline in the continental United States, the areal extent of intertidal oyster reefs in the area has declined by 66 percent over the last 30 years (Seavey et al., 2011). The decline is also demonstrated by the commercial oyster fishery failure declared for the Florida Gulf Coast by the National Oceanic and Atmospheric Administration (NOAA) in 2013, pursuant to the Inter-Jurisdictional Fisheries Act and the Magnuson-Stevens Fishery Conservation and Management Act. Continued effects of the decline over multiple generations will compromise the long-term sustainability of the oyster fishery. The proposed restoration is needed to restore loss of oyster harvest from intertidal and subtidal areas in the Suwannee Sound, Cedar Key, and

Waccasassa Bay, and to provide oyster reefs for fisheries habitat. The proposed project is justified by the success of traditional and more recent cultching efforts used to support the recovery of oysters and associated habitat along the Florida Gulf Coast.

Figure 12-2B. Locations of potential restoration sites in Suwannee Sound, Cedar Key, and Waccasassa Bay in Levy County.

PURPOSE AND OBJECTIVES

The purpose of this project is to restore oyster reef habitat and associated ecological functions for estuarine-dependent species in support of ecological and economic sustainability in Suwannee Sound, Cedar Key, and Waccasassa Bay using a combination of proven restoration techniques to reestablish reef infrastructure. Objectives of the proposed project are to: (1) provide suitable habitat for oyster settlement and reef building; (2) provide three-dimensional structural habitat for oysters and associated species; (3) recover and support a sustainable oyster fishery; and (4) contribute to the economic revitalization of the Big Bend coast. These objectives, and the proposed approach for restoration, are consistent with those developed for oyster restoration in the Gulf of Mexico by NOAA (2016) as part of the *Final Programmatic Damage Assessment and Restoration Plan* and *Final Programmatic Environmental Impact Statement*.

PROJECT COMPONENTS

Potential areas for oyster restoration in Suwannee Sound, Cedar Key, and Waccasassa Bay are shown in **Figure 12-2B**.

Cultch (i.e., suitable material such as shell, rock, and/or concrete) will be placed at locations where natural oyster reproduction is present, and reefs will be reseeded with juvenile stocks to: (1) create reef infrastructure, (2) stimulate spat setting, (3) enhance ecological function, and (4) accelerate oyster recovery, as long-term solutions to current habitat degradation. Approximately 33,000 cubic yards (cy) of suitable oyster reef substrate will be placed in designated locations. Oyster clusters from donor reef sites will be transplanted to recipient reef sites, as represented in **Figure 12-2C**. The project has five primary components, listed below:

- Feasibility study to determine restoration and donor sites
- Cultch material placement on degraded oyster reefs (recipient sites) to appropriate depths
- Transplant/relay of live of oysters from donor sites to recipient sites
- Repopulation of reefs with hatchery-reared seed where reproductive potential is low
- Pre- and post-monitoring and data collection to inform site selection, cultch volumes, and monitoring

The proposed project will restore oyster reefs and habitat needed to support ecologically healthy and economically sustainable oyster populations in Suwannee Sound, Cedar Key, and Waccasassa Bay.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

Figure 12-2C. Participants collecting oyster clusters from a donor reef for transport to a recipient reef.

The proposed project will contribute to the recovery of the oyster reefs and associated ecological sustainability in Suwannee Sound, Cedar Key, and Waccasassa Bay, all of which are part of a designated Aquatic Preserve and an Outstanding Florida Water. Restored oyster reefs will help to address reductions in oysters and associated economic and ecological resources that have been linked to episodic reductions in freshwater flows from the Suwannee River. This restoration will provide substrate for repeated recruitment by oysters under favorable conditions, increase the sustainability of the reef systems (Frederick et al., 2015), and reduce storm impacts in the absence of barrier reefs (Edwards and Raabe, 2004).

Oysters are an ecological keystone species that contribute to the integrity and healthy function of the nearshore ecosystem (NOAA, 2016). Healthy, interconnected oyster populations form reefs that provide the hard substrate needed for oyster larvae to settle, grow, and sustain the population. In addition to providing habitat for oysters, the reefs: (1) are habitat for a diversity of marine organisms, from small invertebrates to large recreationally and commercially important species such as stone crab, blue crab, red drum, and black drum; (2) provide structural integrity that reduces shoreline erosion; and (3) improve water quality and help recycle nutrients by filtering large quantities of water (Grabowski et al., 2012). Restored reefs will also provide wintering habitat for the state's largest population of oystercatchers (designated as threatened in Florida), which roost on high-tide sandbars and oyster reefs.

Unlike most of Florida, Cedar Key and other coastal towns along the Big Bend coast remain working waterfront communities, and a return to oyster harvesting has occurred in the years following an oyster collapse in Apalachicola Bay. For example, when oyster landings in Franklin County dropped precipitously after hurricanes Kate and Elena (1985), landings in Dixie and Levy Counties were the primary contributors of oysters from peninsular west Florida (Arnold and Berrigan, 2002). The proposed project will provide wages for participants and will generate revenues through the purchase of equipment, fuel and lubricants, supplies, and services from local businesses, as well as temporary employment for fishermen during closed oyster season. Long-term economic benefits of harvesting, processing, and marketing fishery products will support local commercial fisheries and recreation. This project will complement and build upon the economic success of the clam industry in Cedar Key.

Eligibility and Statutory Requirements

The proposed project is consistent with, and addresses, the following RESTORE Act eligible activities:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region (primary)
- Eligible Activity 2: Mitigation of damage to fish, wildlife, and natural resources
- Eligible Activity 4: Workforce development and job creation.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 3: Replenish and Protect Living Coastal and Marine Resources (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 4: Enhance Community Resilience
- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 3: Protect and Restore Living Coastal and Marine Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 5: Promote Community Resilience
- Consortium Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Levy County will be the grant sub-recipient; however, it is the intent of Levy County to subcontract the Cedar Key Oysterman Association (CKOA) to be responsible for the design, permitting, construction, operation and maintenance, and monitoring for the proposed project, based on their 30 years of experience performing oyster restoration in the area. The CKOA will coordinate with appropriate agencies during planning and implementation of this project and may collaborate with agencies or other entities via leveraging and other funding agreements.

Best Available Science and Feasibility Assessment

The proposed project is based on years of oyster reef restoration along the Gulf Coast as well as specific examples of successful restoration of nearshore oyster reef restoration (e.g., LaPeyre et al., 2014), and examples specific to the Big Bend area (e.g., Frederick et al., 2015; Arnold and Berrigan, 2002). Success was demonstrated by oyster densities on restored or created reefs that increased by 2.65 times on rock, 14.5 times on clam bags, and 9.2 times overall compared with control sites (LaPeyre et al., 2014). The value of restoring oyster reefs is also well documented and includes enhanced estuarine habitats, shoreline stabilization, reduced storm surge and erosion, water quality improvements, and shelter for over 300 species that in turn are consumed by recreationally and commercially important finfish and crustaceans (NOAA, 2016; Peterson et al., 2003). The ratio of restored reef to the resulting restored estuarine habitat is an estimated 1:670 in the Big Bend (Frederick et al., 2015).

The proposed project approach is consistent with Gulf-wide objectives and restoration techniques outlined in the science-based *Final Programmatic Damage Assessment and Restoration Plan* and *Final Programmatic Environmental Impact Statement, as described earlier*, which presents detailed information supporting the value of oyster reef restoration (NOAA, 2016). Project implementation will be consistent with Best Management Practices, as outlined by Florida Department of Agriculture & Consumer Services (FDACS).

The proposed project will, combined with other proposed or ongoing projects along the Big Bend coast, provide regional benefits in the form of improved management and sustainability of oyster habitat and associated ecological functions. Other proposed or underway projects that target sustainable oyster reefs include: (1) the State of Florida's *Restoring Resilience to Oyster Reefs in the Big Bend of Florida's Gulf Coast in Dixie and Levy Counties* – 4.6 miles of oyster reef restoration proposed for funding under the Council Selected Component (proposed for $5,181,697 but not funded under the first FPL); and (2) the University of Florida's (and partners) *Recovery and Resilience of Oyster Reefs in the Big Bend of Florida* – 32 acres / 3 miles of restored reefs ($8,334,400 current underway).

Based on preliminary information provided by regulatory and management agencies such as Florida Department of Environmental Protection (FDEP), the Florida Fish and Wildlife Conservation Commission (FWC), and FDACS, construction costs for similar projects, and operation and maintenance of other projects, the proposed project is considered feasible with respect to: (1) permitting, (2) construction within the proposed budget, and (3) effective long-term operation and maintenance of the project components. Key literature reviewed in the evaluation of this project includes the following:

- *Arnold, W. and M. Berrigan, 2002. A summary of the oyster (Crassostrea virginica) fishery in Florida. A Report to the Division of Marine Fisheries, Florida Fish and Wildlife Conservation Commission (FWC). St. Petersburg, Florida, USA.*
- *Edwards, R. and E. Raabe, 2004. Ecological Characteristics and Forcing Functions of the Suwannee River Estuary. In B. Katz and E. Raabe (Ed.) Suwannee River Basin and Estuary Integrated Science Workshop. Sponsored by USGS, SRWMD, FMRI. Cedar Key, Florida.*
- *Frederick et al., 2015. Restoring Resilient Oyster Reefs in Florida's Big Bend. Final Report to The Nature Conservancy and NOAA. 49 pages.*
- *Grabowski, J.H. et al., 2012. Economic valuation of ecosystem services provided by oyster reefs. BioScience 62: 900–909.*
- *Kaplan DA, et al., 2016. Freshwater Detention by Oyster Reefs: Quantifying a Keystone Ecosystem Service. PLOS ONE 11(12): e0167694. https://doi.org/10.1371/journal.pone.0167694.*
- *La Peyre, M., et al., 2014. Oyster reef restoration in the northern Gulf of Mexico: Extent, methods and outcomes. Ocean & Coastal Management 89: 20-28.*
- *National Academy of Sciences (NAS), 2017. Effective Monitoring to Evaluate Ecological Restoration in the Gulf of Mexico. Washington, DC: The National Academies Press. doi: 10.17226/23476.*
- *NOAA. 2016. Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement. http://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.*

Risks and Uncertainties

Establishing monitoring goals and success criteria are critical to reducing and managing risk and uncertainty for the proposed project. The proposed project will preclude oyster harvest from restored areas until oysters are of legal size and will require continued coordination and combined efforts of oyster fishers and agencies in support of improved fishery management strategies. In addition, oyster populations are still expected to periodically decline in response to natural declines in freshwater flows, although oyster reefs will help to hold freshwater in the estuaries.

The project will require cooperation with the FWC because of the transplanting of natural, living oyster seed and juveniles from public reefs onto donor sites. A "Special Activity License to Collect and Release Juvenile Oysters" has been issued for similar projects and is anticipated for this restoration project.

Success Criteria and Monitoring

This project will restore oysters in areas where natural oyster reefs and populations have been degraded. Therefore, a range of success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Increases in areal extent of oyster reefs
- Increases in average reef height
- Increases in oyster density
- Oyster size-frequency distribution representative of a sustainable oyster population.

An economic success criterion of benefits (economic returns for increased landings) versus cost (of restoration) may also be used. More specific quantitative criteria will be developed within planning and monitoring frameworks developed for oyster reef restoration or enhancement in the Gulf (NOAA, 2016). Criteria for three environmental variables (water temperature, salinity, and dissolved oxygen) are also recommended (Baggett et al., 2014). Well-defined goals and objectives, statistically sufficient monitoring designs, and project documentation are absent from many restoration projects (NAS, 2017) but are critical to the success of the proposed project. The project grant request will include a detailed monitoring program design that addresses goals, objectives, data collection, and data assessment and evaluation for these success criteria.

Milestones and Schedule

The total estimated time horizon of this project is approximately seven years. It is expected to start in 2018 and end in 2024. Implementation of this project has been broken down into five milestones, as shown in the chart below. This project is ready to begin the feasibility study.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study																
Preliminary design																
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

The project budget was developed based on previous oyster restorations specific to Florida's west coast, with estimates ranging from about $75 to $120/cy of material and $15,000 to $25,000/acre of material placed. Levy County is committed to allocating $2,000,000 of its share of the Florida Spill Impact Component to this project, but will also be seeking other leveraged funding sources to supplement these monies to expand the extent of the project. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$100,000	$100,000
Preliminary design	$100,000	$100,000
Planning Subtotal	**$200,000**	**$200,000**
Final design & permitting	$100,000	$100,000
Construction	$1,500,000	$1,500,000
Implementation Subtotal	**$1,600,000**	**$1,600,000**
Monitoring	$200,000	$200,000
Total Cost	**$2,000,000**	**$2,000,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$2,000,000
Direct Component		$0
Other grants and co-funding		$0
Other County funds		$0
	Total Committed Funding	**$2,000,000**
	Budget Shortfall	**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Council-Selected Restoration Component		
Natural Resource Damage Assessment		
Gulf Environmental Benefit Fund		
F.32 Fisheries Finance Program		
F.33 Sea Grant National Marine Aquaculture Initiative - Integrated Projects to Increase Aquaculture Production		
F.34 Sea Grant National Marine Aquaculture Initiative - Addressing Impediments to Aquaculture Opportunities		
O.24 Gulf of Mexico Oyster Aquaculture Small Grants		
O.42 Shell Marine Habitat Program		

Partnerships/Collaboration

Potential project partners include:

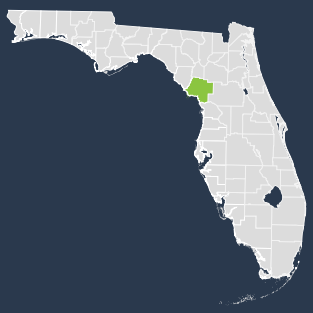
- University of Florida/Institute of Food and Agricultural Sciences
- Florida State University
- Florida Fish and Wildlife Conservation Commission
- The Nature Conservancy.

Coordination with the following agencies is anticipated:

- Florida Department of Agriculture & Consumer Services
- Florida Fish and Wildlife Conservation Commission
- Florida Department of Environmental Protection
- Suwannee River Water Management District
- National Marine Fisheries Service
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service.

LEVY COUNTY

Coastal Septic to Sewer Conversion Program



PROJECT NO. 12-3

Project Description

OVERVIEW AND LOCATION

This program involves the provision of centralized sewer and/or advanced onsite septic systems, with abandonment of older septic systems, in two populated areas of coastal Levy County: Yankeetown and Inglis located on the tidal Withlacoochee River; Fowler's Bluff located on the Suwannee River. The general locations of the two project areas are shown in **Figure 12-3A**.

Figure 12-3A. Location of the Levy County Septic to Sewer Conversion projects.

NEED AND JUSTIFICATION

Septic systems are contributing sources of nutrients and bacteria, and Levy County has identified the need to reduce non-point source contributions for nutrients and bacteria from septic systems in the Withlacoochee and Suwannee Rivers. The tidal Withlacoochee River is currently impaired for both bacteria and nutrients, as determined by the Florida Department of Environmental Protection (FDEP).

It is not known exactly how many septic systems exist in the targeted project areas, but Levy County has estimated a range of 80 to 100 units in Fowler's Bluff and as many as 1,000 units in southern Levy County. No centralized wastewater infrastructure exists in these portions of Levy County, which are currently served only by private septic systems. These areas consist of a mix of residential, industrial, and commercial land uses. It is assumed that a large percentage of the existing septic systems are aging, failing, and/or do not meet current standards for construction.

This septic-to-sewer conversion program is expected to improve water quality in the Withlacoochee and Suwannee Rivers, as well as downstream in the Gulf of Mexico, by moving domestic wastewater from aging septic systems to modern treatment systems, thereby reducing nutrient and bacteria loads to groundwater and surface waters. Levy County is still very rural, but future growth is anticipated in the targeted areas, especially in southern Levy County, as demand for fishing and ecotourism destinations increases. Improved wastewater infrastructure is needed to address legacy water pollution issues as well as prevent future water quality problems from inadequate infrastructure.

PURPOSE AND OBJECTIVES

Old and failing septic systems are contributing sources of water pollution to the environment, impacting the health and safety of humans and marine life habitat. The purpose of the program is to install central sanitary sewer infrastructure needed to abandon existing septic systems in the southern Levy County and Fowler's Bluff areas. The objectives of this project are to: (1) reduce nutrient and fecal coliform bacteria concentrations and improve water quality in the tidal Withlacoochee and Suwannee Rivers, and the Gulf of Mexico; and (2) provide centralized sewer infrastructure to prevent future water quality impacts from anticipated growth in the southern Levy County area.

PROJECT COMPONENTS

This program is only conceptual at this time. In the first phase of the program, Levy County proposes to conduct a study to evaluate the feasibility of the proposed septic-to-sewer conversion program in the two targeted areas. The study will identify and prioritize areas for conversion, suitable treatment methods and effluent disposal sites, and evaluate sewer system alternatives (gravity, low-pressure sewer, and vacuum). In addition, for other low-density areas in the county, the study will also evaluate the suitability and treatment efficiency (including nutrient removal) of advanced on-site treatment and disposal systems. As currently envisioned, the program consists of the following components:

- Construct wastewater collection, treatment, and disposal infrastructure in southern Levy County near the Towns of Yankeetown and Inglis to allow for the abandonment of septic systems in the area.
- Construct wastewater collection, treatment, and disposal in the Fowler's Bluff area on the Suwannee River to allow for the abandonment of septic systems in the area.

The Towns of Yankeetown Inglis are a high priority as the tidal Withlacoochee River is currently impaired and increased growth is projected for this area. Potential properties to the east have been identified as a potential site for a new wastewater treatment plant (WWTP) and effluent disposal area (spray irrigation). Fowlers Bluff is a small community composed of mostly second homes; however, residents there have indicated a willingness to invest in wastewater improvements.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project is expected to improve water quality conditions in the Withlacoochee and Suwannee Rivers, which discharge directly into the Gulf of Mexico. These are ecologically and economically important rivers that support numerous fisheries and have high recreational values. The Suwannee River has been listed by the FDEP as impaired for nutrients, dissolved oxygen, and fecal coliform bacterial, and a total maximum daily load (TMDL) has been established for the middle and lower Suwannee River system. The Withlacoochee River is designated as an Outstanding Florida Water, making it worthy of special protection from water quality degradation. However, the tidal Withlacoochee is also impaired for nutrients and bacteria, as determined by the FDEP. Eliminating septic systems and providing improved treatment of wastewater before it is discharged will decrease nutrient and bacterial loads to these rivers and downstream waters, and will protect ecological resources in the Gulf of Mexico, such as shellfish

and seagrass. If it is determined that centralized wastewater facilities are not feasible or cost-effective in certain areas, then the program will evaluate the potential improving wastewater treatment via advanced septic system retrofits.

The provision of improved wastewater service in these areas will also prevent future water quality problems and increase property values for the parcels it will ultimately serve. In addition, this project should encourage redevelopment of currently unimproved parcels in the project area. This will, in turn, revitalize the local economy and grow Levy County's tax base. The proposed project will also increase local workforce development and job creation.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

Levy County will be the sole implementing entity and grant sub-recipient responsible for the feasibility studies, design, permitting, construction, operation and maintenance, and monitoring of this project.

Best Available Science and Feasibility Assessment

The relationship between old and failing septic systems and water quality problems in the Suwannee River and the Withlacoochee River, and potential pollutant load reductions associated with septic-to-sewer conversions in these areas, can be reasonably inferred. This program is consistent with the following natural resource management plans:

- *Suwannee River Water Management District (SRWMD), 2017. Suwannee River Basin Surface Water Improvement and Management (SWIM) Plan.*

- *FDEP, 2014. Big Bend Seagrasses Aquatic Preserve Management Plan.*

Levy County has not completed a feasibility study specific to this program, and very few engineering details are known. Requirements to attain feasibility (permittability, constructability, maintainability, etc.) will be identified in the feasibility and preliminary engineering phases.

Risks and Uncertainties

This project is conceptual at this time as a feasibility study and alternatives analysis has not yet been conducted. However, this type of project can be engineered for the types of conditions present in this locale. Finally, right-of-way is available for the new sanitary sewer system and Levy County owns, or can feasible acquire parcels of land that can be used for the WWTP. Risks and uncertainties will be identified during the feasibility and preliminary design phases.

Success Criteria and Monitoring

This program will affect water quality in adjacent and downstream freshwater and estuarine systems of the Withlacoochee River and Suwannee River. Specific success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for the following changes:

- Number of septic systems taken off-line
- Estimated reduction in nutrient and bacteria loads attributable to the wastewater improvements
- Changes in ambient water quality (nutrients, bacteria, chlorophyll-a) in the Withlacoochee River and Suwannee River in the vicinity of wastewater improvements.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Levy County in coordination with the municipalities is committed to implementing the necessary monitoring and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 9 years. The program is expected to begin in 2024 and end in 2032. Implementation of this program has been divided into two phases, as shown in the milestone chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Southern Levy County Wastewater Improvements																
Feasibility study							■									
Preliminary design								■								
Land acquisition									■							
Final design and permitting										■	■					
Construction												■	■			
Fowler's Bluff Wastewater Improvements																
Feasibility study							■									
Preliminary design								■								
Land acquisition									■							
Final design and permitting										■	■					
Construction												■	■			
Success/monitoring										■	■			■	■	

Budget and Funding Sources

The total program cost is estimated by Levy County to be $31 million. Levy County is committed to allocating $7,700,000 of its share of the Florida Spill Impact Component to this project, and will also be seeking other leveraged funding sources to make up the budget shortfall. Levy County is also committed to providing additional county funding, as may be needed; however, the program elements are scalable and can be implemented incrementally as funding allows. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
South Levy Wastewater System Improvements		
Feasibility study	$150,000	$150,000
Preliminary design	$150,000	$150,000
Planning Subtotal	**$300,000**	**$300,000**
Land acquisition	$500,000	$500,000
Final design and permitting	$1,000,000	$1,000,000
Construction	$17,500,000	$1,500,000
Implementation Subtotal	**$19,000,000**	**$3,000,000**
Total	**$19,300,000**	**$3,300,000**
Fowlers Bluff Wastewater System Improvements		
Feasibility study	$100,000	$100,000
Preliminary design	$100,000	$100,000
Planning Subtotal	**$200,000**	**$200,000**
Land acquisition	$500,000	$500,000
Final design and permitting	$1,000,000	$1,000,000
Construction	$9,600,000	$2,300,000
Implementation Subtotal	**$11,100,000**	**$3,800,000**
Total	**$11,300,000**	**$4,000,000**
	$400,000	$400,000
Total Cost	**$31,000,000**	**$7,700,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$7,700,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
	Total Committed Funding	**$7,700,000**
	Budget Shortfall	**$23,300,000**
POTENTIAL LEVERAGED FUNDING SOURCES		
Council-Selected Restoration Component		
Natural Resource Damage Assessment		
F.02 Rural Business Development Grants		
F.03 Rural Community Development Initiative Grants		
F.06 SEARCH: Special Evaluation Assistance for Rural Communities and Households		
F.07 Water and Waste Disposal Systems for Rural Communities		
F.08 Water and Waste Disposal Technical Assistance and Training Grants		

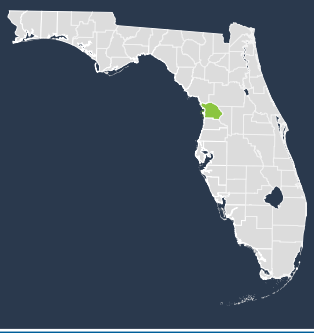
POTENTIAL LEVERAGED FUNDING SOURCES (CONT'D.)
F.11 Community Facilities Direct Loan and Grant Program in Florida
F.12 Community Facilities Technical Assistance and Training Grant
F.13 Community Facilities Guaranteed Loan Program
F.15 Rural Economic Development Loan and Grant Program in Florida
F.17 Grant Program to Establish a Fund for Financing Water and Wastewater Projects
F.63 Water Infrastructure Finance and Innovation Act (WIFIA)
O.22 Florida Rural Water Association Loan Program
O.40 Southeast Rural Community Assistance Project, Inc. (SERCAP) Loan Fund Program
O.43 Southeast Aquatics
O.46 Water/Wastewater Loans
S.10 Community Planning Technical Assistance Grants
S.13 Florida Job Growth Grant Fund
S.14 Small Cities CBDG Program
S.15 Small Cities CBDG Section 108 Loan Guarantees
S.18 Clean Water State Revolving Fund (CWSRF)
S.21 CWSRF Small Community Wastewater Construction Grants
S.36 Water Projects
S.52 Southwest Florida Water Management District (SWFWMD) Cooperative Funding Initiative

Partnerships/Collaboration

Levy County will work and collaborate with other agencies as needed to implement the program. In particular, Levy County anticipates coordinating closely with the Suwannee River Water Management District on water quality monitoring activities.

CITRUS COUNTY

NW Quadrant Force Main Project



PROJECT NO. 13-1

Project Description

OVERVIEW AND LOCATION

This project involves the extension of a wastewater force main to areas in Citrus County that are currently served primarily by septic systems and private wastewater treatment package plants. The wastewater will be routed to a regional wastewater treatment plant to produce reclaimed water, and then distributed to a local golf course for beneficial reuse as irrigation supply. The force main will be located along U.S. Highway 19 in the northwest quadrant of Citrus County (**Figure 13-1A**).

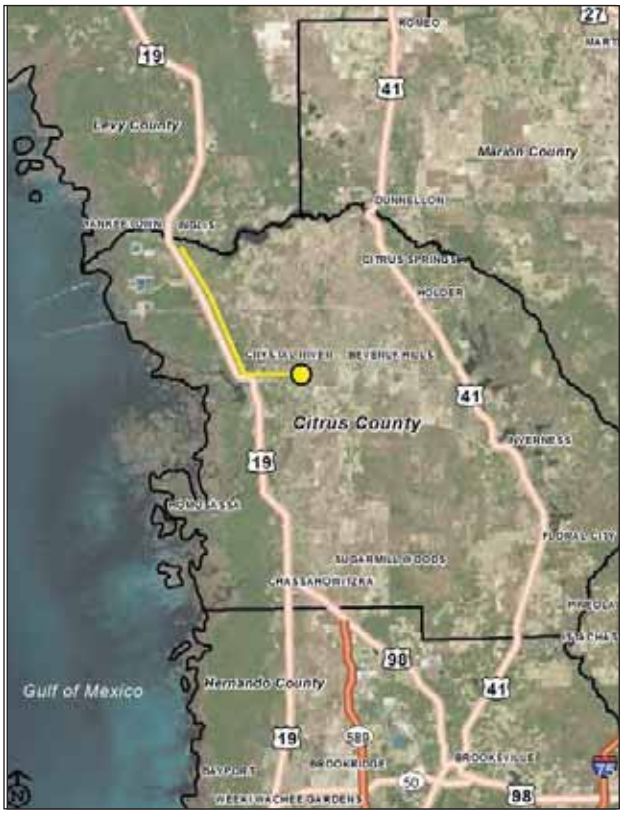


Figure 13-1A. Location of the NW quadrant sewer force main in Citrus County.

NEED AND JUSTIFICATION

Crystal River/Kings Bay is the second-largest springs group in Florida, with more than 70 springs scattered within the 600-acre bay. The springs are the headwaters of Crystal River, which is a short, tidal river that flows 7 miles from the headsprings to where it meets the Gulf of Mexico at Crystal Bay in Citrus County, Florida. The Crystal River/Kings Bay springshed, which contributes groundwater to Crystal River/Kings Bay springs, is approximately 250 square miles of urbanized and agricultural lands, forested uplands, and wetlands. This springshed covers much of Citrus County.

In recent decades, the Crystal River/Kings Bay system has been impacted by reduced water clarity, an altered submerged aquatic vegetation community, and elevated nutrients in the related spring systems. The Florida Department of Environmental Protection (FDEP) determined that nutrients contribute to the degraded condition of Kings Bay and some associated springs, and therefore set a

total maximum daily load (TMDL) for nutrients, establishing a nutrient threshold to use as a restoration target (FDEP, 2014). The FDEP reported the following in their Crystal River/Kings Bay Basin Management Action Plan (BMAP):

> *"The Florida Aquifer and Springs Protection Act specifies that if, during the development of a BMAP for an Outstanding Florida Spring (OFS), FDEP identifies on site treatment and disposal systems (OSTDS) as contributors of at least 20% of nonpoint source nitrogen pollution in a primary focus area (PFA) or if DEP determines remediation is necessary to achieve the total minimum daily limits (TMDLs), the BMAP shall include an OSTDS remediation plan. Based on the Crystal River/ Kings Bay Nitrogen Source Inventory and Loading Tool (NSILT) results, septic systems contribute approximately 40% pollutant in the PFA."*

Removing septic system impacts has been identified as a priority water quality management action for the Crystal River/Kings Bay systems by the Southwest Florida Water Management District (SWFWMD) (2015). Water quality management plans for restoring impaired spring systems to a healthy condition focus on reducing anthropogenic nutrient inputs to those systems. With respect to nutrient inputs from septic systems, this is especially critical in areas underlain by karst features with a thin overburden. This project will decrease nutrient loads to the Crystal River and Kings Bay by removing impacts of existing septic systems and by preventing the installation of additional systems in areas with karst features and thin overburden.

PURPOSE AND OBJECTIVES

The purpose of this project is to take off-line existing septic systems and private package plants that are a significant source of water pollution in Crystal River/Kings Bay, and to retrofit the affected areas with new central sewer collection and conveyance facilities. The objectives of the project are to: (1) reduce legacy water pollution from old and failing septic systems; (2) improve local water quality in Crystal River/Kings Bay, with a focus on nutrient and bacterial load reductions; and (3) offset the use of potable water for irrigation with reclaimed water from the treated effluent.

PROJECT COMPONENTS

This project involves the construction of a new 5.6-mile wastewater force main along U.S. Highway 19, from the Crystal River to Power Line Station Road, as well as associated lift stations and hook-ups. Installation of the force main will allow for the abandonment of existing septic systems and the decommissioning of two private wastewater treatment package plants. Wastewater flows resulting from this project will be treated at Citrus County's Meadowcrest regional wastewater treatment plant and then routed to a local golf course for beneficial reuse as irrigation supply. This project will generate approximately 2 million gallons per day of highly treated reclaimed water.

This project is in the concept phase only, and a feasibility study is currently being conducted using other funding. The total number of septic systems to be taken off-line has not yet been fully assessed due to the need for the construction of additional lateral collectors. Construction of the force main is the first step in providing centralized sewer service for the entire northwest quadrant of Citrus County.

Figure 13-1B. Kayakers on Kings Bay.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

Crystal River and Kings Bay are renowned for their clear, warm waters, and are visited by the thousands of tourists each year. These waterbodies provide the largest winter refuge for the West Indian manatee on the Florida Gulf Coast. Accordingly, this system is a national wildlife refuge, and an Outstanding Florida Water (OFW) as designated by the State of Florida, and a priority Surface Water Improvement and Management (SWIM) waterbody as designated by SWFWMD. **Figure 13-1B** shows a photograph of kayakers on Kings Bay.

The Crystal River/Kings Bay system discharges into the Gulf of Mexico near the middle of the Springs Coast of Florida. The Springs Coast supports a variety of important coastal habitats, including seagrass beds, oyster bars, mangroves, and salt marshes that are dependent on good water quality and can be negatively impacted by high nutrient inputs. This project will improve water quality and the ecological balance in the system by reducing nitrogen loads to the Kings Bay springshed. The FDEP has estimated that replacing septic systems with central sewer facilities in the springshed could reduce total nitrogen loads to the Crystal River/Kings Bay springshed by approximately 87,791 pounds per year (FDEP, 2017). This is a very substantial pollutant load reduction to a nutrient-sensitive watershed. Potential pollutant load reduction estimates will be revised upon completion of the preliminary design phase.

This project will also contribute to economic growth in Citrus County, including growth in the ecotourism industry. The force main expansion will increase property values for the parcels it will ultimately serve, and sewer availability will encourage development to currently unimproved parcels in the project area. This will, in turn, grow Citrus County's tax base. The proposed project will also increase workforce development and job creation in both the public and private sectors.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

Citrus County will be the sole implementing entity and grant sub-recipient responsible for the feasibility study, design, permitting, construction, operation and maintenance, and monitoring of this project.

Best Available Science and Feasibility Assessment

Water quality issues related to nutrients in the Crystal River/Kings Bay and associated springs are described in the following reports (and references cited therein):

- *FDEP, 2014. Nutrient TMDL for Kings Bay (water body identifier [WBID] 1341), Hunter Spring (WBID 1341C), House Spring (WBID 1341D), Idiot's Delight Spring (WBID 1341F), Tarpon Spring (WBID 1341G), and Black Spring (WBID 1341H).*
- *FDEP, 2014. Basin Management Action Plans (BMAP): Springs Coast Basin; Rainbow Springs; Kings Bay and Crystal River.*
- *FDEP, 2017. Projects to Restore Aripeka, Weeki Wachee, Kings Bay, Crystal and Rainbow Springs Receive Funding from the Fighting for Florida's Future Budget. FDEP press release, August, 2017.*

This project is consistent with the goals and objectives of the following natural resource management plan:

- *SWFWMD, 2015. Crystal River/Kings Bay Surface Water Improvement (SWIM) Plan: A Comprehensive Conservation and Management Plan. Version 9.209.*

This project is considered to be feasible with respect to the ability to: (1) obtain necessary permits, (2) construct the project within the proposed budget, and (3) effectively operate and maintain the project components over the long term. It should be noted, however, that the final budget could change based on the results of the feasibility study.

Risks and Uncertainties

The project is in the conceptual phase. Project risks and uncertainties will be identified during the feasibility study, design, and permitting phases. However, in the evaluation of this project concept, no significant risks or uncertainties have been identified other than the total cost.

Success Criteria and Monitoring

This project will affect water quality in adjacent freshwater and estuarine systems. Specific success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for the following changes:

- Number of septic systems taken off-line
- Number of private package plants taken off-line
- Estimated total nitrogen load reductions to the springshed.

In the program grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Citrus County is committed to implementing the necessary monitoring program and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 6 years. The project is expected to begin in 2018 and end in 2023. Implementation of this project has been divided into 3 milestones, as shown in the chart below. A feasibility study is currently being conducted using other funding. The project will be ready to begin final design and permitting in 2018.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

The project cost has been estimated at $6,500,000 based on the best available information. Citrus County is committed to allocating $3,500,000 of its share of the Florida Spill Impact Component to this project. In addition, during the 2017–18 fiscal year, FDEP and SWFWMD are providing a total of $3,000,000 in collaborative funding toward the project. Citrus County will also be seeking other leveraged funding sources if needed to complete the project. A summary of the project budget and funding sources is provided in the following table.

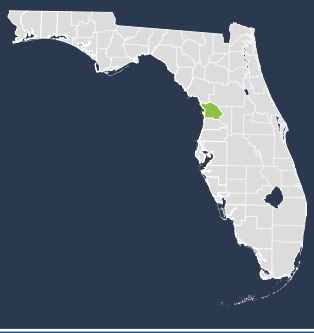
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Final design and permitting	$550,000	$285,000
Construction	$5,930,000	$3,215,000
Implementation Subtotal	**$6,480,000**	**$3,500,000**
Monitoring	$20,000	$0
Total Cost	**$6,500,000**	**$3,500,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$3,500,000
Direct Component		$0
Other grants or co-funding - FDEP/SWFWMD collaborative Springs funding		$3,000,000
Other County funds		$0
Total Committed Funding		**$6,500,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
F.07 Water and Waste Disposal Systems for Rural Communities		
F.11 Community Facilities Direct Loan and Grant Program in Florida		
F.12 Community Facilities Technical Assistance and Training Grant		
F.15 Rural Economic Development Loan and Grant Program in Florida		
F.17 Grant Program to Establish a Fund for Financing Water and Wastewater Projects		
O.22 Florida Rural Water Association Loan Program		
O.40 Southeast Rural Community Assistance Project (SERCAP) Loan Fund Program		
O.46 Water/Wastewater Loans		
S.13 Florida Job Growth Grant Fund		
S.14 Small Cities Community Development Block Grant (CBDG) Program		
S.15 Small Cities CBDG Section 108 Loan Guarantees		
S.18 Clean Water State Revolving Fund (CWSRF)		
S.21 CWSRF Small Community Wastewater Construction Grants		
S.36 Water Projects		

Partnerships/Collaboration

Citrus County will continue to work closely with the Florida Department of Environmental Protection and Southwest Florida Water Management District to accomplish the goals of this project. The County is also collaborating with the City of Crystal River.

CITRUS COUNTY

Cross Florida Barge Canal Boat Ramp



PROJECT NO. 13-2

Project Description

OVERVIEW AND LOCATION

This project involves the construction of a new public boat ramp on the north side of the Cross Florida Barge Canal (CFBC) in northern Citrus County. **Figure 13-2A** shows the location of the proposed boat ramp.

Figure 13-2A. Location of the proposed boat ramp on the Cross Florida Barge Canal.

NEED AND JUSTIFICATION

The CFBC was authorized by Congress in 1942 as a national defense project to facilitate ship and barge traffic across northern Florida. The project was originally designed with dams and locks to protect the underground water supply. Support for the project from Congress was sporadic, and funds were never allocated to the U.S. Army Corps of Engineers (USACE) to actually start construction. Planning was once again given the go-ahead in 1963 with support from President John F. Kennedy, who allocated $1 million to the project, and construction was started in 1964. It was hoped that the CFBC, along with the St. Johns-Indian River Barge Canal, would provide a quicker and safer route across Florida by 1971. Opponents subsequently campaigned against the canal on environmental grounds, and the project was halted again in 1971 by President Richard Nixon's signing of an executive order. Approximately $74 million had been spent on the project up until the 1971 cessation of activities. It was officially canceled in 1991. In 1998, the right-of-way was turned over to the State of Florida and became the Marjorie Harris Carr Cross Florida Greenway, named in honor of Marjorie Harris Carr, who had led opposition to the canal. The Greenway is managed by the Florida Department of Environmental Protection (FDEP).

Since the closure of the project, the state and local governments have sought to use completed portions of the CFBC to provide recreational opportunities and improve public access to waterways. The western portion of the CFBC was completed from the Gulf of Mexico to Lake Rousseau. This segment of the CFBC is dredged to an approximate depth of -10 feet Mean Low Water, providing safe, and high-volume, deep-water boating access to the Gulf.

Currently there are a limited number of public boat ramps in Citrus County. During the summer scallop season, existing boat ramp facilities on the Homosassa River and Crystal River are well over capacity, and demand is increasing. In addition, the federally protected West Indian manatee uses spring discharges at the headwaters of these rivers extensively for feeding, calving, and winter refuge. Heavy boat traffic in the Homosassa River and Crystal River is incompatible with the protection of this species. Shifting some of this boat traffic to the CFBC will meet growing public demand for Gulf access without putting additional pressure on manatee populations.

PURPOSE AND OBJECTIVES

The purpose of this project is to provide safe, and high-volume, deep-water boating access to the Gulf of Mexico for residents and visitors without incurring new environmental impacts. Project objectives include: (1) relieve boat traffic at existing public boat ramps facilities on the Homosassa and Crystal River and (2) reduce potential boating impacts on the local West Indian manatee population.

PROJECT COMPONENTS

Citrus County has completed a feasibility study, preliminary design, and regulatory permitting of a major boat ramp facility, to be constructed just west of U.S. Highway 19 on the north side of the CFBC. The project includes a 10-lane boat ramp with 61 parking spaces for vehicles with boat trailers, and 10 non-trailer parking spots on an 8-acre parcel of property currently owned by the Florida State Park Service as part of the Marjorie Harris Carr Cross Florida Greenway. There is also the potential for future expansion of the park to the north to accommodate more trailer parking. **Figure 13-2B** shows a plan view of the project, while **Figure 13-2C** shows a cross section of the boat ramp.

Phase I will include a 4-lane boat ramp with two finger piers consisting of a concrete landing, aluminum gangways, and floating courtesy docks. These finger piers will be Americans with Disabilities Act compliant, with approved sloping, landings, and railings. Phase II will construct the additional six boat ramps and add three finger piers. The boat ramp basin will be dredged to -5 feet MLW, removing approximately 7,300 cubic yards of dredged material. The parking lot area will be used for staging of construction equipment and dewatering of dredged material from the boat ramp construction. Once the ramp construction is complete, the parking lot will be graded and will include dry retention ponds for stormwater treatment. Park amenities will include picnic tables and restrooms. This project is consistent with the Citrus County Manatee Protection Plan and the FDEP Marjorie Harris Carr Cross Florida Greenway Management Plan. Citrus County has coordinate with the Florida Park Service in the planning and permitting of the project.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will provide safe, high-volume, deep-water boating access to the Gulf of Mexico for residents and visitors without incurring new environmental impacts. In addition, this project will relieve boat traffic at existing public boat ramp facilities on the Homosassa and Crystal River, thus reducing potential boating impacts on the local West Indian manatee population. Finally, the new facility will support the expansion of already robust recreational, charter, and commercial fishing industries in Citrus County.

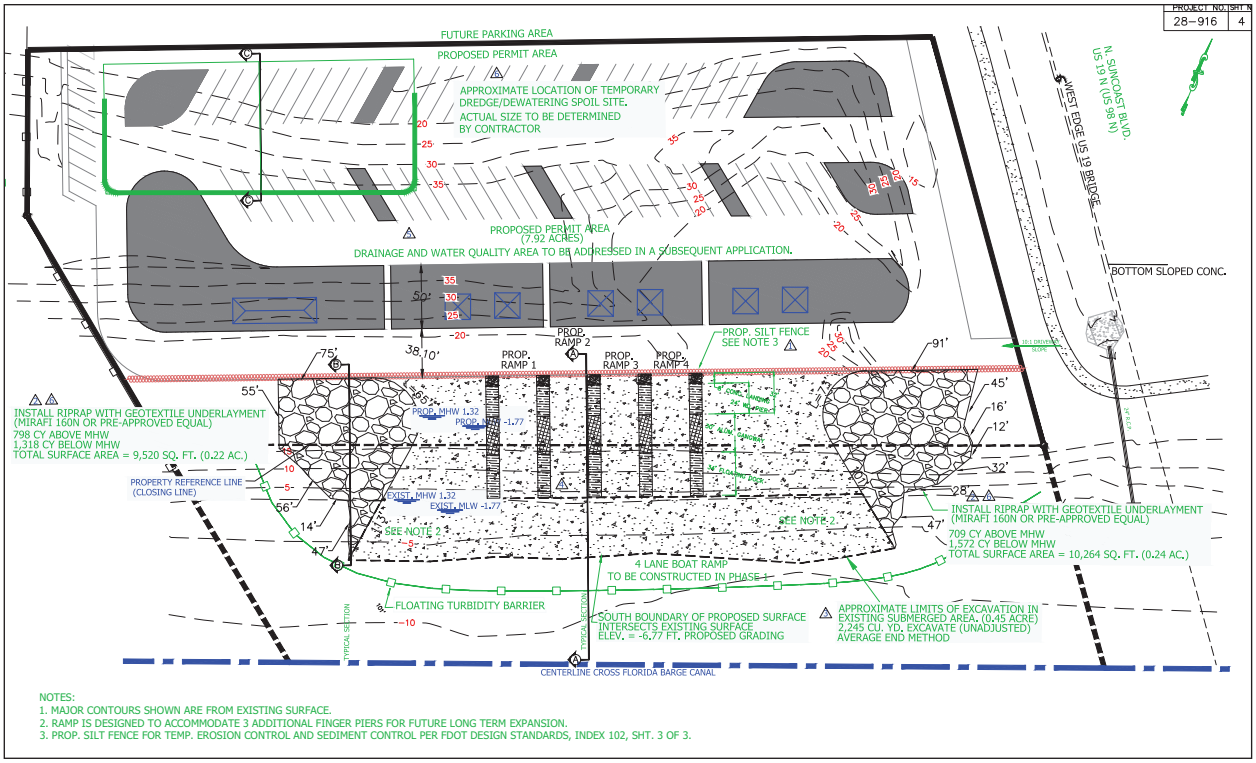


Figure 13-2B. Plan view of the proposed boat ramp facility.

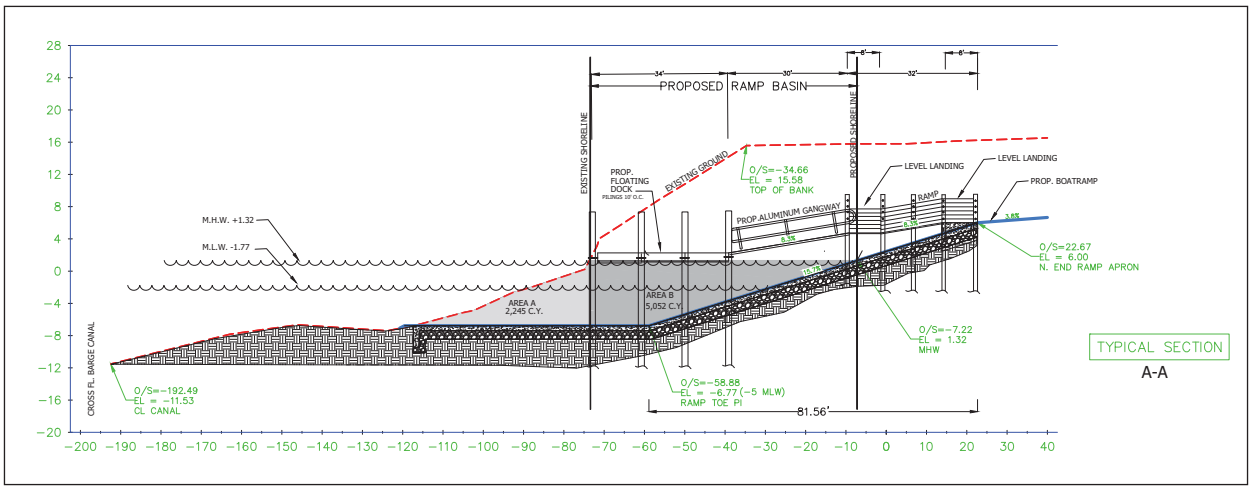


Figure 13-2C. Cross section of the proposed boat ramp facility.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of Tourism in the Gulf Coast Region, including recreational fishing.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objective:

- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Citrus County will be the sole implementing entity and grant sub-recipient responsible for the design, construction, and success monitoring of the program.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The primary focus of this project is public recreational access and tourism promotion; therefore, BAS does not apply.

Regulatory permitting will address potential impacts to marine habitats and living resources, and cultural resources, as appropriate. Citrus County has successfully obtained a 404/10 permit from the USACE, and a conceptual Environmental Resource Permit (ERP) from the Southwest Florida Water Management District (SWFWMD). As part of the USACE permitting process, a biological Survey for listed species was completed in 2011. This program is considered to be feasible with respect to the ability to: (1) lease or acquire the subject property; (2) obtain necessary permits; (3) construct recreational amenities; and (4) effectively operate and maintain recreational amenities in perpetuity.

Risks and Uncertainties

Preliminary design and regulatory permitting activities have been completed. In the evaluation of this program, no significant risks or uncertainties have been identified that would preclude project construction.

Success Criteria and Monitoring

This project addresses improvement of boater access to the Gulf. It is anticipated that quantitative success criteria will be developed for:

- Recreational amenities constructed
- Public recreational use.

In the project grant request, a detailed monitoring program will be described that addresses data collection and assessment methodologies for the above-listed criteria. Citrus County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 7 years. The expected start date is 2019, and the end date is 2025. Implementation of this project has been divided into three milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL											
	1	2	3	4	5	6	7	8	9	10	11	12
Final design												
Construction												
Success monitoring												

Budget and Funding Sources

Citrus County has developed a total cost estimate of $5,312,603 for the project. Citrus County is committed to allocating $3,958,000 of its share of the Florida Spill Impact Component to this program, but will also be seeking other leveraged funding sources to supplement these monies. A summary of the project budget and funding sources is provided in the table below.

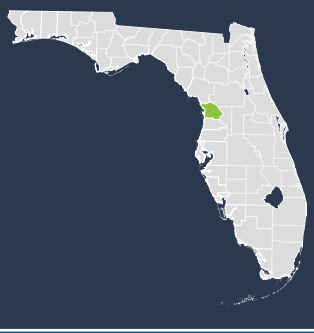
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study (completed)	$0	$0
Preliminary design (completed)	$0	$0
Planning Subtotal	**$0**	**$0**
Final design and permitting	$1,328,151	$664,076
Construction	$3,924,452	$3,293,924
Implementation Subtotal	**$5,252,603**	**$3,958,000**
Monitoring	$60,000	$0
Total Cost	**$5,312,603**	**$3,958,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$3,958,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$1,354,603
Total Committed Funding		**$5,312,603**
Budget Shortfall		**$0**

POTENTIAL LEVERAGED FUNDING SOURCES
Natural Resource Damage Assessment
F.01 Strategic Economic and Community Development
F.02 Rural Business Development Grants
F.30 Planning and Local Technical Assistance Program
F.32 Fisheries Finance Program
S.10 Community Planning Technical Assistance Grants
S.11 Competitive Florida Economic Development Project Grant
S.12 Competitive Florida Partnership Grant
S.13 Florida Job Growth Grant Fund
S.14 Small Cities Community Development Block Grant (CBDG) Program
S.20 Coastal Partnership Initiative - Florida Coastal Management Program
S.45 Florida Boating Improvement Program (FBIP)
S.49 Sport Fish Restoration Program

Partnerships/Collaboration

Citrus County will partner with the FDEP Florida Park Service (the land owner) and the FWC through the Florida Boating Improvement Fund to acquire additional grant funding for this project for up to 10 percent of the project cost. Other partners for the project include:

- Levy County
- Alachua County
- Town of Inglis
- Town of Yankeetown
- City of Dunnellon
- Withlacoochee Aquatic Restoration
- U.S. Army Corps of Engineers
- Southwest Florida Water Management District.



CITRUS COUNTY

Artificial Reef Program

PROJECT NO. 13-3

Project Description

OVERVIEW AND LOCATION

This project will add existing stockpiled materials, primarily processed concrete construction debris from the demolition of the old U.S. Route 19 bridge, to existing permitted artificial reef sites in3B). Citrus County offshore waters. **Figure 13-3A** shows the general of location of the artificial reef sites in Citrus County.

Figure 13-3A. Location of artificial reef sites in Citrus County.

NEED AND JUSTIFICATION

The Citrus County artificial reef program was established in 1985. Since its inception, the program has established 10 permitted artificial reefs to meet increasing recreational demand for offshore bottom fishing and scuba diving opportunities. Materials have primarily included concrete rubble from bridge and culvert demolition.

There is a continuing need to augment existing permitted artificial reef sites—and to create new sites—to support the demand of recreational fishing and diving enthusiasts, both residents and tourists. In addition to enhancing recreational opportunities and associated economic benefits, artificial reefs can also provide ecological benefits. Hard substrate and vertical structure are limited habitats in the Gulf of Mexico (Fikes, 2013), and artificial reef habitats can provide: (1) hard substrate to support encrusting and colonial benthic organisms such as sponges and corals; (2) niche space for small marine invertebrates; and (3) shelter for larval and juvenile fishes. The project is justified by the demonstrated benefits of artificial reefs, such as increased economic activity (e.g., expenditures, incomes, and jobs) (Adams et al., 2011).

PURPOSE AND OBJECTIVES

The purpose of the proposed project is to add to and improve the network of artificial reefs in coastal waters of Citrus County to provide greater recreational and economic opportunities for residents and tourists, and to reduce fishing and diving pressure on natural reefs. Specific objectives of the proposed project include: (1) increase recreational fishing opportunities, (2) increase structure for snorkeling, scuba, and marine life viewing, and (3) potentially increase fish productivity by providing habitat structure. These objectives are consistent with those of the Florida Fish and Wildlife Conservation Commission's (FWC's) artificial reef program, which are:

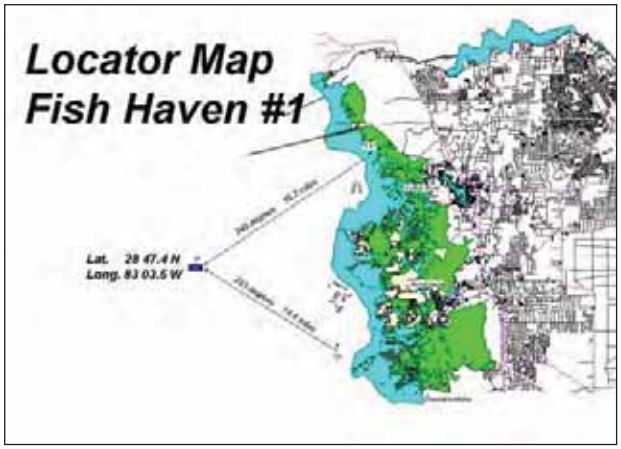


Figure 13-3B. Location of existing the Fish Haven #1 artificial reef site.

1. Enhance private recreational and charter fishing and diving opportunities
2. Provide a socio-economic benefit to local coastal communities
3. Increase reef fish habitat
4. Reduce user conflicts
5. Facilitate reef related research
6. Do no harm to fishery resources, essential fish habitat (EFH), or human health.

PROJECT COMPONENTS

The artificial reef projects will be completed in phases over a 4-year period. Project components include:

- Deployment of artificial reef materials to the Fish Haven #1
- Selection of additional artificial reef locations
- Pre- and post- monitoring and data collection.

The initial focus of this project will be on the augmentation of the permitted Fish Haven #1 artificial reef site, the location of which is shown in detail in **Figure 13-3B**.

Citrus County has developed a detailed reef augmentation plan for Fish Haven #1. Processed concrete construction debris (e.g., pressure washed; removal of metal rebar) will be barged to the site and deployed at five locations within the permitted artificial reef boundary. **Figure 13-3C** shows the detailed augmentation plan.

In addition to the augmentation of Fish Haven #1, the project also involves the augmentation of other permitted artificial reef sites in the future, and the selection of potential new artificial reef sites.

The coordinates of all the artificial reef sites will be published, and all of the sites will be available for public use for recreational fishing and diving. The is part of a larger network of county artificial reef programs along the Nature Coast and Springs Coast of Florida developed to ensure that residents and visitors have access to fishing and diving opportunities regardless of county boundaries.

In adding material to artificial reef sites, the project also includes post-construction monitoring conducted to ensure the deployment of this material produced high-quality habitat that supports important reef fish species (e.g., grouper, snapper).

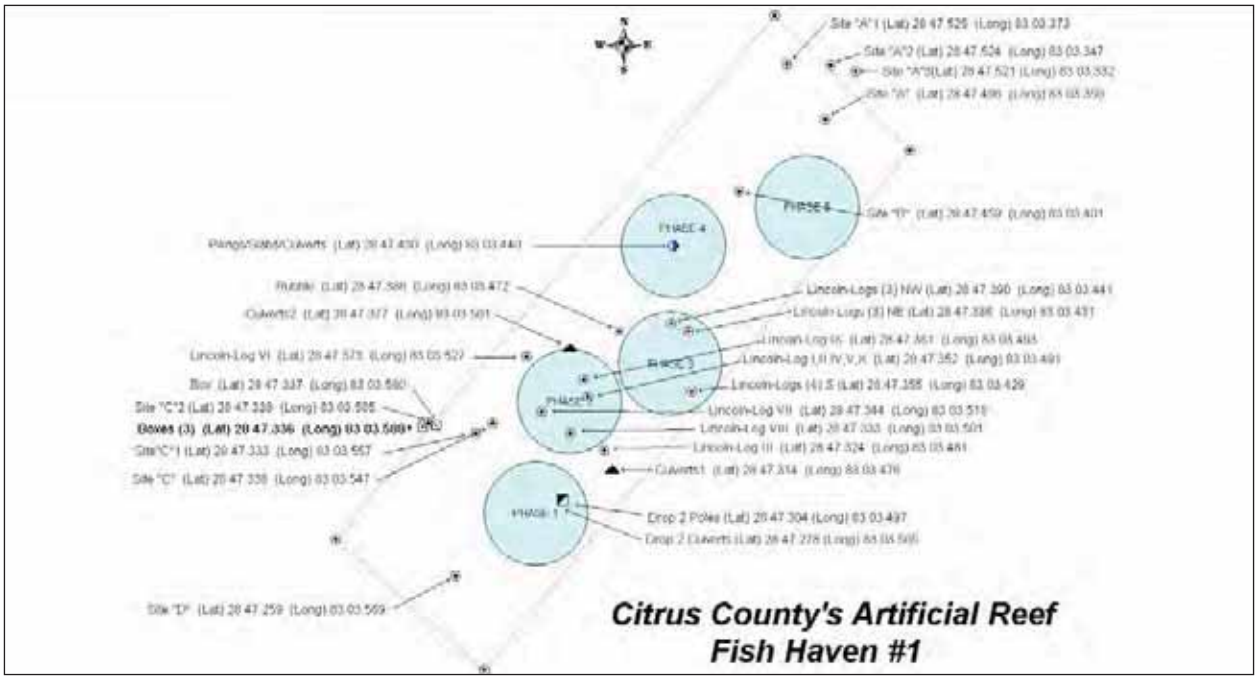


Figure 13-3C. Detailed reef augmentation plan for Fish Haven #1.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

The proposed project will enhance the local recreation and tourism-related economy. The proposed project will support snorkeling, diving, fishing, kayaking, and numerous other recreational water activities that in turn provide economic support to Citrus County. This project will: (1) support the increasing recreational demand for offshore reef fishing and scuba diving opportunities by both residents and tourists; and (2) enhance the abundance, distribution, and structural diversity of hardbottom habitat in Citrus County offshore waters.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of tourism in the Gulf Coast region, including recreational fishing.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objective:

- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Citrus County will be the sole implementing entity and grant sub-recipient responsible for the design, construction, and success monitoring of the program.

Best Available Science and Feasibility Assessment

Artificial reefs in the Gulf of Mexico have been extensively studied with regard to the habitat and economic benefits they provide. The scientific literature on the ecological benefits is somewhat controversial (Lindberg et al., 2014, Fikes, 2013; Bortone et al., 1994; etc.). Some experts argue that artificial reefs are functionally comparable to natural reefs, and that they augment fish populations by providing habitat that is otherwise naturally limited in the Gulf of Mexico. Others argue that artificial reefs simply attract and aggregate existing fish populations and do not enhance fish stocks. While those assertions may be debatable, the economic benefits of artificial reefs are not. Artificial reefs provide significant recreational opportunities and associated benefits along the Florida Gulf Coast (Swett et al., 2011; Adams et al., 2011). In addition, research has produced best practices guidance on site selection, design features, and construction methods, which are now part of the FWC permitting regulations. Ongoing research in the Big Bend and Springs Coast waters (Lindberg et al., 2014) will further inform artificial reef efforts. Key literature forming the basis for Citrus County's Artificial Reef Program are cited below.

- *Adams, C., et al., 2011. The economic benefits associated with Florida's artificial reefs. EDIS document FE649 (2011): 1-6.*
- *Bortone, S.A., et al., 1994. Factors affecting fish assemblage development on a modular artificial reef in a northern Gulf of Mexico estuary. Bull. Mar. Sci. 55 (2-3), 319-332.*
- *Fikes, R., 2013. Artificial Reefs of the Gulf of Mexico: A Review of Gulf State Programs & Key Considerations. National Wildlife Federation.*
- *Lindberg, W.J., et al., 2014. Rationale and Evaluation of an Artificial Reef System Designed for Enhanced Growth and Survival of Juvenile Gag, Mycteroperca microlepis. Proc.66th Gulf and Caribbean Fisheries Institute November 4 – 8. Corpus Christi, TX. Pages 320-325.*
- *Gulf States Marine Fisheries Commission, 2004. Guidelines for Artificial Reef Materials.*

This project is feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term. Furthermore, this project is consistent with the National Artificial Reef Plan published in 1985 and the Florida Artificial Reef Strategic Plan (FWC, 2003).

Risks and Uncertainties

No significant risks or uncertainties were identified during the evaluation of this project that would preclude project implementation. Citrus County will ensure design to limit damage from tropical storms. Controls for lionfish and other nuisance/exotic species may be required. Regulatory constraints will address issues such as spatial boundaries for navigation, channels, marine habitat resources, historic areas, sand borrow areas, existing structures and leases, etc. Success monitoring is critical in a fisheries management context given that these reefs have not previously been used as fisheries management tools.

Success Criteria and Monitoring

This and all artificial reef projects involve the placement of hard substrate to: (1) support recreational demand for offshore reef fishing and scuba diving opportunities and (2) enhance the abundance, distribution, and structural diversity of hard bottom habitat in the affected waters. Therefore, a range of applicable success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Increase in the areal extent of new artificial reef habitat
- Increase in recreational usage.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies. Citrus County's Aquatic Division already has an operational plan that includes the monitoring of their reefs; therefore, no additional funds for monitoring are required.

Milestones and Schedule

The total estimated time horizon of this project is approximately 4 years. The project will begin in June 2025 with preconstruction monitoring, final design, and permitting. There are six sites secured for placement, and one site will be constructed during each phase. The first five phases of construction will start in 2025 and the completion of deployment is anticipated in 2026, followed by 2 years of success monitoring through 2028, that will be completed by County staff. Implementation of this project has been divided into four milestones, as shown in the chart below.

MILESTONE	YEARS TO COMPLETE															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Final design and permitting																
Construction – Phases 1–5																
Construction – Phase 6																
Success Monitoring																

Budget and Funding Sources

The total estimated cost of the proposed project is approximately $850,000. Citrus County is committed to allocating $850,000 of its share of the Florida Spill Impact Component to this program, as well as $50,000 in other County funds (in-kind services) to cover monitoring, but will also be seeking other leveraged funding sources to supplement these monies. A summary of the project budget and funding sources is provided in the following table.

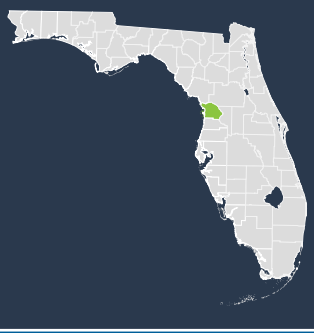
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Final design and permitting	$170,000	$170,000
Construction	$680,000	$680,000
Implementation Subtotal	**$850,000**	**$850,000**
Monitoring	**$50,000**	$0
Total Cost	**$900,000**	**$850,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$850,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds – Aquatic Division monitoring		$50,000
Total Committed Funding		**$900,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
O.18 FishAmerica Foundation		
S.41 Artificial Reef Construction and Monitoring		
S.49 Sport Fish Restoration Program		

Partnerships/Collaboration

The Citrus County Artificial Reef Program routinely collaborates with the Florida Artificial Reef Program managed by the Florida Fish and Wildlife Conservation Commission. This collaboration includes representatives from nearly all coastal counties in Florida and assists with material collection resources, technical construction assistance, artificial reef construction best practices, and outreach. Citrus County will also partner with the neighboring Counties of Hernando and Pasco to implement a cooperative regional artificial reef program to ensure coordination of monitoring, design, and permitting efforts and better inform future reef projects.

CITRUS COUNTY

Springshed Stormwater Improvement Program



PROJECT NO. 13-4

Project Description

OVERVIEW AND LOCATION

This program involves the construction and management of several regional facilities in the springshed of the Crystal River/Kings Bay system. The headwaters of this surface water are fed by several major artesian springs, the springshed of which covers large portions of northwest and central Citrus County. The proposed regional facilities will provide treatment of runoff from roadways as well as urban and agricultural land uses, and will facilitate infiltration and aquifer recharge in the headwaters of this springshed. The general locations of the proposed treatment facilities are shown in **Figure 13-4A**.

Figure 13-4A. General location of proposed regional stormwater treatment facilities in Citrus County.

NEED AND JUSTIFICATION

Crystal River/Kings Bay is the second-largest springs group in Florida, with more than 70 springs scattered within the 600-acre bay. The springs are the headwaters of Crystal River, which is a short, tidal river that flows 7 miles from the headsprings to where it meets the Gulf of Mexico at Crystal Bay in Citrus County, Florida. The Crystal River/Kings Bay springshed, which contributes groundwater from the Floridan aquifer to Crystal River/Kings Bay Springs, is approximately 250 square miles of urbanized and agricultural lands, forested uplands, and wetlands. This springshed covers much of northwest and central Citrus County.

In recent decades, the Crystal River/Kings Bay system has been impacted by reduced water clarity, an altered submerged aquatic vegetation community, and elevated nutrients in the related spring systems. The Florida Department of Environmental Protection (FDEP) determined that nutrients contribute to the degraded condition of

Kings Bay and some associated springs, and therefore set a total maximum daily load for nutrients, establishing a nutrient threshold to use as a restoration target (FDEP, 2014).

Figure 13-4B. Regional stormwater treatment facility in Citrus County.

Reducing nutrient loads to the Floridan aquifer has been identified as a priority water quality management action for the Crystal River/Kings Bay systems by the Southwest Florida Water Management District (SWFWMD) (2015). Water quality management plans for restoring impaired spring systems to a healthy condition focus on reducing anthropogenic nutrient inputs to those systems. With respect to nitrogen inputs, this is especially critical in areas underlain by karst features with a thin confining overburden. This program will decrease nutrient loads to the Crystal River/Kings Bay system by reducing the impacts of untreated stormwater runoff from roadways as well as urban and agricultural land uses in the springshed. In addition, the program will enhance the recharge of the Floridan aquifer by capturing and treating runoff, and then infiltrating it back to the groundwater system rather than discharging it directly to surface waters.

PURPOSE AND OBJECTIVES

The purpose of this project is to provide regional stormwater treatment in the Crystal River/Kings Bay springshed and headwaters. The objectives of the project are to: (1) reduce legacy water pollution from untreated stormwater runoff from roadways as well as urban and agricultural land uses; (2) minimize future pollution from these sources resulting from increasing urbanization; (3) improve local water quality in Crystal River/Kings Bay, with a focus on nutrient load reductions; and (4) enhance the recharge of the Floridan aquifer in the headwaters of the Crystal River/Kings Bay springshed.

PROJECT COMPONENTS

Citrus County has designated several key properties to develop regional stormwater facilities that will capture and treat runoff and allow it to slowly infiltrate back into the aquifer. To date, two facilities have been constructed and are operational, and this program will add six new regional stormwater facilities. The hydrogeology of Citrus County is characterized by karst limestone with a thin confining layer; therefore, regional stormwater treatment ponds in this area infiltrate runoff rapidly into the aquifer, and are dry much of the time. A photograph of a regional stormwater treatment facility in Citrus County is shown in **Figure 13-4B**.

Citrus County has selected the sites and started design for three of the stormwater facilities, and plans to perform feasibility assessments on the remaining three sites. Property assessments, design, permitting, and monitoring will all be paid for through Citrus County funds. Citrus County is seeking to use Pot 3 funds for construction only.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 2: Restore Water Quality and Quantity.

This project is consistent with, and addresses, the following Comprehensive Plan Objective:

- Objective 2: Restore, Improve, and Protect Water Resources.

Implementing Entities

Citrus County will be the sole implementing entity and grant sub-recipient responsible for the design, construction, and success monitoring of the program.

Best Available Science and Feasibility Assessment

Water quality issues related to nutrients in the Crystal River/Kings Bay and associated springs are described in the following reports (and references cited therein):

- *FDEP, 2014. Nutrient TMDL for Kings Bay (water body identifier [WBID] 1341), Hunter Spring (WBID 1341C), House Spring (WBID 1341D), Idiot's Delight Spring (WBID 1341F), Tarpon Spring (WBID 1341G), and Black Spring (WBID 1341H).*
- *FDEP, 2014. Basin Management Action Plans (BMAP): Springs Coast Basin; Rainbow Springs; Kings Bay and Crystal River.*

This project is also consistent with the goals and objectives of the following natural resource management plan:

- *SWFWMD, 2015. Crystal River/Kings Bay Surface Water Improvement (SWIM) Plan: A Comprehensive Conservation and Management Plan. Version 9.209.*

The type of regional stormwater treatment facilities proposed in this program are commonly permitted and implemented in Florida. This project is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term.

Risks and Uncertainties

In the evaluation of this program, no significant risks or uncertainties have been identified.

Success Criteria and Monitoring

This project will affect water quality in adjacent freshwater and estuarine systems. Specific success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for the following changes:

- Number of acres treated
- Volume of runoff treated and recharged to the Floridan aquifer
- Estimated total nitrogen load reductions to the springshed.

In the project grant request, a detailed monitoring program design would be described that addresses data collection and assessment methodologies for the above-listed criteria. Citrus County is committed to implementing the necessary monitoring program and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this program is approximately 8 years. It is expected to begin in 2026 and end in 2033. Implementation of this program has been divided into several milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study and preliminary design									■							
Final design and permitting									■							
Construction – Site 1									■	■						
Construction – Site 2										■	■					
Construction – Site 3											■	■				
Construction – Site 4												■	■			
Construction – Site 5													■	■		
Construction – Site 6															■	■
Success monitoring											■	■	■	■	■	■

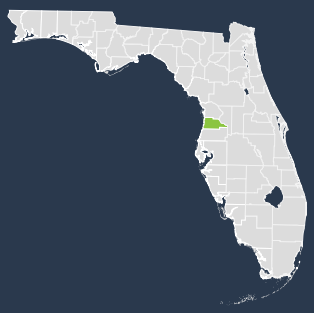
Budget and Funding Sources

The program cost has been estimated at $4,352,000 based upon the best available information, and Citrus County is committed to allocating $4,352,000 of its share of the Florida Spill Impact Component, and $20,000 of in kind services for monitoring, to cover its program costs. Additional funding will be sought from SWFWMD and the Florida Department of Transportation to potentially expand the extent of the program. A summary of the project budget and funding sources is provided in the following table.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$652,800	$652,800
Preliminary design	$870,400	$870,400
Planning Subtotal	**$1,523,200**	**$1,523,200**
Final design and permitting	$870,400	$870,400
Construction	$1,958,400	$1,958,400
Implementation Subtotal	**$2,828,800**	**$2,828,800**
Monitoring	$20,000	$0
Total Cost	**$4,372,000**	**$4,352,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$4,352,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds – in kind services for monitoring		$20,000
Total Committed Funding		**$4,372,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
F.03 Rural Community Development Initiative Grants		
F.06 SEARCH - Special Evaluation Assistance for Rural Communities and Households		
F.07 Water and Waste Disposal Systems for Rural Communities		
F.11 Community Facilities Direct Loan and Grant Program in Florida		
F.12 Community Facilities Technical Assistance and Training Grant		
F.15 Rural Economic Development Loan & Grant Program in Florida		
F.17 Grant Program to Establish a Fund for Financing Water and Wastewater Projects		
F.21 Watershed Protection and Flood Prevention		
O.22 Florida Rural Water Association Loan Program		
O.40 SERCAP Loan Fund Program		
O.43 Southeast Aquatics		
O.46 Water/Wastewater Loans		
S.01 Agricultural Nonpoint Sources Best Management Practices Implementation		
S.13 Florida Job Growth Grant Fund		
S.13 Florida Job Growth Grant Fund		
S.14 Small Cities Community Development Block Grant (CBDG) Program		
S.15 Small Cities Community Development Block Grants (CBDG) Section 108 Loan Guarantees		
S.18 Clean Water State Revolving Fund (CWSRF)		
S.21 CWSRF Small Community Wastewater Construction Grants		
S.25 Innovative Nutrient and Sediment Reduction and Conservation Pilot Project Program		
S.27 Nonpoint Source Management Program (NPSM) - Section 319		
S.32 Springs Restoration		
S.36 Water Projects		
S.52 SWFWMD Cooperative Funding Initiative		

Partnerships/Collaboration

Citrus County will continue to work closely with Southwest Florida Water Management District and Florida Department of Transportation on the implementation and monitoring of these regional stormwater facilities.



HERNANDO COUNTY

Artificial Reef Program

PROJECT NO. 14-1

Project Description

OVERVIEW AND LOCATION

This program involves the installation of 10 artificial reefs at selected locations to expand upon the existing permitted artificial reefs in Hernando County's nearshore and offshore waters. **Figure 14-1A** shows the general location of the artificial reef sites offshore of Hernando County.

Figure 14-1A. Location of artificial reef sites offshore of Hernando County.

NEED AND JUSTIFICATION

Hernando County first implemented its artificial reef program in 1977, and the program presently includes four offshore reefs. Additional nearshore artificial reefs are needed to meet the increasing demand for snorkeling, diving, and marine life viewing opportunities. Nearshore locations will be accessible by smaller boats, and thus more residents and tourists. In addition to enhancing recreational opportunities and associated economic benefits, artificial reefs can also provide ecological benefits. Hard substrate and vertical structure are limited habitats in the Gulf of Mexico (Fikes, 2013), and artificial reef habitats provide: (1) hard substrate to support encrusting and colonial benthic organisms such as sponges and corals; (2) niche space for small marine invertebrates; and (3) shelter for larval and juvenile fishes. The project is justified by the demonstrated benefits of artificial reefs, including increased economic activity (Adams et al. 2011).

PURPOSE AND OBJECTIVES

The purpose of this project is to augment Hernando County's existing permitted artificial reef network with clean concrete and other suitable materials, as well as manufactured artificial reef balls. The objectives of the project

are to: (1) support the increasing recreational demand for offshore reef fishing and scuba diving opportunities and (2) enhance the abundance, distribution, and structural diversity of hardbottom habitat in the county's coastal waters. Objectives are consistent with those outlined by the Florida Fish and Wildlife Conservation Commission's (FWC's) artificial reef program, listed below:

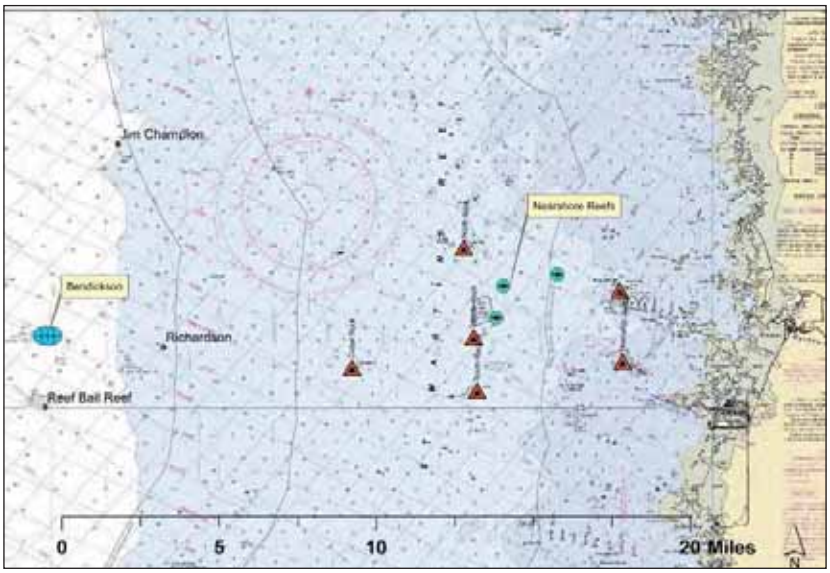


Figure 14-1B. Detailed location map of existing and planned Hernando County artificial reefs.

1. Enhance private recreational and charter fishing and diving opportunities
2. Provide a socio-economic benefit to local coastal communities
3. Increase reef fish habitat
4. Reduce user conflicts
5. Facilitate reef related research
6. Do no harm to fishery resources, essential fish habitat (EFH), or human health.

PROJECT COMPONENTS

A total of 10 artificial reefs will be deployed over 12 years (see **Figure 14-1B**). Project components are listed below:

- Site surveys and site selection for artificial reef locations
- Acquisition and storage of reef structures and other appropriate material
- Deployment of artificial reef material by boats and barges at years 2–4 and 9–10
- Pre- and post- monitoring and data collection.

The reef locations will be available for public use for recreational fishing and diving as part of a larger network of artificial reef programs along the Nature Coast to ensure residents and visitors have access regardless of county boundaries. Post construction monitoring will also be conducted to ensure that the deployment of this material produced high-quality habitat that supports important reef fish species (e.g., grouper, snapper). Additional planning assistance will be required for permitting, design, and implementation of the proposed project.

Hernando County will also develop a research plan in support of the artificial reef program. This plan will be in addition to the monitoring data for the specific reef sites and will be applicable to the entire region, benefitting Citrus and Pasco Counties as well. Hernando County will collect baseline data, which may include taxonomic surveys of natural hardbottom, mapping of critical habitat (deepwater corals, etc.), side scan and acoustic tagging for fisheries, and sea turtle surveys. In addition to biological research studies, Hernando County will conduct an economic analysis of the artificial reef program's impact on the local economy. Information gathered in these studies will help staff make informed decisions about later phases and future funding of the program.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

Hernando County has become a destination for ecotourism focused on scuba diving and recreational fishing. This project will: (1) support the increasing recreational demand for offshore reef fishing and scuba diving opportunities by both residents and tourists and (2) enhance the abundance, distribution, and structural diversity of hardbottom habitat in coastal waters of Hernando County.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of tourism in the Gulf Coast region, including recreational fishing.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objective:

- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Hernando County will be the main implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of the program. SeaGrant, FWC, and the University of Florida could be additional sub-recipients as Hernando County looks to cooperatively pool resources for research and monitoring efforts.

Best Available Science and Feasibility Assessment

Artificial reefs in the Gulf of Mexico have been extensively studied with regard to the habitat and economic benefits they provide. The scientific literature on the ecological benefits is somewhat controversial (Lindberg et al., 2014; Fikes, 2013; Bortone et al. 1994; others). Some experts argue that artificial reefs are functionally comparable to natural reefs, and that they augment fish populations by providing habitat that is naturally limited in the Gulf of Mexico. Others argue that artificial reefs simply attract and aggregate existing fish populations, but do not enhance overall fish stocks. While those arguments may be debatable, the economic benefits of artificial reefs are not. Artificial reefs provide significant recreational opportunities and associated benefits along the Gulf Coast of Florida (Swett et al., 2011; Adams et al., 2011). In addition, research has produced best practices guidance on site selection, design features, and construction methods, criteria that are now part of the FWC regulations for permitting. Key literature that forms the basis for the Hernando County Artificial Reef Program are cited below:

- *Adams, C., et al., 2011. The economic benefits associated with Florida's artificial reefs. EDIS document FE649 (2011): 1-6.*

- *Bortone, S.A., et al., 1994. Factors affecting fish assemblage development on a modular artificial reef in a northern Gulf of Mexico estuary. Bull. Mar. Sci. 55 (2-3), 319-332.*
- *Fikes, R., 2013. Artificial Reefs of the Gulf of Mexico: A Review of Gulf State Programs & Key Considerations. National Wildlife Federation.*
- *Lindberg, W.J., et al., 2014. Rationale and Evaluation of an Artificial Reef System Designed for Enhanced Growth and Survival of Juvenile Gag, Mycteroperca microlepis. Proc.66th Gulf and Caribbean Fisheries Institute November 4–8. Corpus Christi, TX. Pages 320-325.*

This project is feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term. Furthermore, this project is consistent with the National Artificial Reef Plan published in 1985 and the Florida Artificial Reef Strategic Plan (FWC, 2003).

Risks and Uncertainties

No significant risks or uncertainties were identified during the evaluation of this project that would preclude project implementation. Hernando County will ensure design to limit damage from tropical storms. Controls for lionfish and other nuisance/exotic species may be required. Regulatory constraints will address issues such as spatial boundaries for navigation, channels, marine habitat resources, historic areas, sand borrow areas, existing structures and leases, etc. Success monitoring is critical in a fisheries management context given that these reefs have not previously been used as fisheries management tools.

Success Criteria and Monitoring

This and all artificial reef projects involve the placement of hard substrate to: support recreational demand for offshore reef fishing and scuba diving opportunities and enhance the abundance, distribution, and structural diversity of hardbottom habitat in the affected waters. Therefore, a range of success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Increase in the areal extent of new artificial reef habitat
- Metrics on the recruitment of benthic encrusting organisms and fish
- Increase in recreational usage.

The proposed project will be constructed consistent with the Gulf States Marine Fisheries Commission's *Guidelines for Artificial Reef Materials* (2004). In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Hernando County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 12 years. It is expected to start in 2018 and to end in 2029. Implementation of this project has been divided into eight milestones as shown in the following chart.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study																
Preliminary design																
Baseline data																
Final design and permitting																
Construction– Phase 1 (3 sites)																
Construction – Phase 2 (3 sites)																
Construction – Phase 3 (4 sites)																
Success monitoring																

Budget and Funding Sources

Hernando County has estimated the total cost of this project to be approximately $2,350,000, and is committed to allocating $2,350,000 of its share of the Florida Spill Impact Component to this project. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$100,000	$100,000
Preliminary design	$100,000	$100,000
Baseline data	$450,000	$450,000
Planning Subtotal	**$650,000**	**$650,000**
Final design and permitting	$100,000	$100,000
Phase 1 reef construction (3 sites)	$400,000	$400,000
Phase 2 reef construction (3 sites)	$400,000	$400,000
Phase 3 reef construction (4 sites)	$450,000	$450,000
Implementation Subtotal	**$1,350,000**	**$1,350,000**
Monitoring	$350,000	$350,000
Total Cost	**$2,350,000**	**$2,350,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$2,350,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$2,350,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
F.40 Coastal and Marine Habitat Restoration Grants		
O.18 FishAmerica Foundation		
S.41 Artificial Reef Construction and Monitoring		
S.49 Sport Fish Restoration Program		

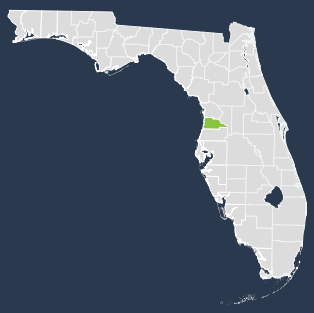
Partnerships/Collaboration

Hernando County plans to partner with neighboring Citrus County and Pasco County to implement a Regional Artificial Reef Program to ensure coordination of monitoring, design, and permitting efforts and to better inform future artificial reef projects. Collaboration with the Florida Artificial Reef Program as well as representatives of material collection resources, technical construction assistance, artificial reef construction best practices, and outreach is anticipated. Coordination with the following agencies is anticipated:

- Southwest Florida Water Management District
- Florida Fish and Wildlife Conservation Commission
- Florida Department of Environmental Protection
- National Marine Fisheries Service
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service.

HERNANDO COUNTY

Coastal Habitat Enhancement Program



PROJECT NO. 14-2

Project Description

OVERVIEW AND LOCATION

This program involves the restoration of nearshore coastal habitats, including the enhancement of existing oyster bars and the creation of living shorelines, in the Jenkins Creek and Hernando Beach areas of Hernando County. The general location of the program components is shown in **Figure 14-2A**.

NEED AND JUSTIFICATION

Portions of coastal Hernando County have been substantially altered and impacted by historical dredge and fill activities for residential development. The Hernando Beach community (see **Figure 14-2B**), which began construction in the 1950s, is an example of coastal development that occurred prior to the passage of laws and regulations limiting impacts to wetlands and submerged habitats. Although regulations are now in place to prevent future impacts of this magnitude, physical restoration is needed to partially offset historic coastal habitat losses and to enhance existing coastal habitats. In addition to enhanced habitat functions, this project will also provide for improved water quality and shoreline stabilization in areas prone to erosion from boat wakes and sea-level rise.

Figure 14-2A. Nearshore coastal habitat restoration sites in Hernando County.

PURPOSE AND OBJECTIVES

The purpose of this program is to restore, create, and enhance nearshore coastal habitats to address multiple objectives, including: (1) enhance fish and wildlife habitat; (2) stabilize shoreline erosion in vulnerable areas; (3) improve water quality; and (4) support and augment public recreational uses. The project will also include an educational component with plans to engage students and residents in assisting with the installation of oyster shells and planting of marsh grasses, and to incorporate project monitoring into coastal and marine curriculums at local high schools and colleges.

Figure 14-2B. Proposed Hernando County living shoreline and oyster reef project sites.

PROJECT COMPONENTS

Hernando County has identified eight nearshore oyster reef sites (see **Figure 14-2B**) where coastal habitat enhancement will be achieved by creating new oyster reefs or expanding upon small areas of existing oyster reef. Available salinity data indicate that natural recruitment of oyster larvae and growth in these areas will be favorable. In addition to nearshore oyster habitat, the County plans to construct living shorelines at three sites where shoreline erosion has occurred. These sites are located near Jenkins Creek, along shorelines in Linda Pedersen County Park, and along the Hernando Beach channel spoil islands.

Both the oyster reef and living shoreline project components will provide the unique opportunity to involve citizens through a shell-recycling program and placement of oyster bags and/or oyster settlement sites, growing and planting marsh grass, and constructing and deploying shallow water reef modules. At least one site will be selected that will be easily accessible to the public for use as an educational amenity.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will enhance nearshore fish and wildlife habitat, stabilize shoreline erosion in vulnerable areas, improve water quality, and augment public recreational uses. The construction and enhancement of nearshore oyster reefs and living shorelines will provide a number of ecological benefits, including the provision of substrate for oyster spat settlement and new oyster larvae production, as well as micro-benthic habitats for numerous small organisms such as amphipods, isopods, burrowing shrimp, crabs, and oyster dwelling fish. These organisms in turn support recreationally important fish species, including redfish, snapper, sheepshead, and black drum.

As mentioned above, the program will also include an educational component with plans to engage students and residents in assisting with the installation of oyster shells and planting of marsh grasses, and to incorporate project monitoring into coastal and marine curricula at local high schools and colleges. The program is also expected to provide economic benefits to Hernando County in the form of increased ecotourism. Coastal Hernando County has become a destination for kayak and stand-up paddleboard tours of the Weeki Wachee River, activities that are expanding throughout the coastal areas of the county. This program will enhance ecotourism opportunities and associated economic activity.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 3: Replenish and Protect Living Coastal and Marine Resources (primary)
- Goal 1: Restore and Conserve Habitat.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 3: Protect and Restore Living Coastal and Marine Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
  Objective 4: Restore and Enhance Natural Processes and Shorelines
- Objective 6: Promote Natural Resource Stewardship and Environmental Education.

Implementing Entities

Hernando County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of the program. Hernando County has coordinated extensively with the Florida Sea Grant program in the planning, feasibility analysis, and design of the program components.

Best Available Science and Feasibility Assessment

Oyster reef restoration and living shoreline construction have been well studied, and a range of best siting practices and successful construction methods have been developed. This program has been informed by key literature in this field, including the following references:

- *Baggett, L.P., S.P. Powers, R. Brumbaugh, L.D. Coen, B. DeAngelis, J. Greene, B. Hancock, and S. Morlock, 2014. Oyster Habitat Restoration Monitoring and Assessment Handbook. The Nature Conservancy, Arlington, VA, USA., 96pp.*
- *Barnes T.K., A.K. Volety, K. Chartier, F.J. Mazzotti, and L. Pearlstine, 2007. A habitat suitability index model for the eastern oyster (Crassostrea virginica), a tool for restoration of the Caloosahatchee Estuary, Florida. Journal of Shellfish Research 26 (4):949-959. doi:10.2983/0730-8000 (2007) 26 [949:ahsimf] 2.0.co;2.*
- *La Peyre M., J. Furlong, L.A. Brown, B.P. Piazza, K. Brown, 2014. Oyster reef restoration in the northern Gulf of Mexico: Extent, methods and outcomes. Ocean & Coastal Management 89:20-28. doi:10.1016/j.ocecoaman.2013.12.002.*
- *Seavey J.R., W.E. Pine, P. Frederick, L. Sturmer, and M. Berrigan, 2011. Decadal changes in oyster reefs in the Big Bend of Florida's Gulf Coast. Ecosphere 2 (10). doi:10.1890/es11-00205.1.*
- *Scyphers S.B., S.P. Powers, K.L. Heck, and D. Byron, 2011. Oyster Reefs as Natural Breakwaters Mitigate Shoreline Loss and Facilitate Fisheries. Plos One 6 (8). doi:10.1371/journal.pone.0022396.*
- *Allen M., T. Ankerson, E. Pistole, S. Sanders, and A. Barshel, 2017. Hernando County Marine Area Plan Interim Report. Levin College of Law amd Nature Coast Biological Station, University of Florida. Gainesville, Florida.*

The proposed restoration methods are also consistent with those developed for coastal habitat and oyster restoration in the Gulf of Mexico by the National Oceanic and Atmospheric Administration (2016) as part of the *Final Programmatic Damage Assessment and Restoration Plan* and *Final Programmatic Environmental Impact Statement.*

This program is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term.

Risks and Uncertainties

In the evaluation of this program, no significant risks have been identified that would preclude implementation. There is some risk that constructed oyster reefs and living shorelines could be damaged during tropical storm events; however, potential damage from storm surge and high waves will be factored into the siting and construction methods. This project is ready to begin design and permitting.

Success Criteria and Monitoring

Oyster reef and living shoreline sites will be monitored bi-annually as they are installed, with a yearly monitoring report. Pre- and post-construction monitoring of the oyster reefs and living shorelines will be completed to evaluate the ecological benefits and ecosystem services gained from these projects, and to provide recommendations for future similar projects. Site footprints will be surveyed, and at each of the eight reef locations and the three

living shorelines sites, bi-annual and quantitative sampling will be conducted along predetermined transects with high-definition video. It is anticipated that success criteria will include the following:

- Linear and square feet of living shoreline created
- Linear and square feet of oyster habitat created
- Fish and wildlife utilization of the created habitats.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Hernando County is committed to conducting the monitoring necessary to quantify project benefits using in-house staff.

Milestones and Schedule

The total estimated time horizon of this project, from design and permitting through success monitoring, is approximately 6 years. It is expected to start in 2018 and end in 2023. Permitting, implementation, and monitoring will be completed for half the sites within the first 3 years, with the remaining sites to be completed during the subsequent 3 years.

Hernando County will use an adaptive management approach to project design and implementation, which will entail ongoing monitoring from constructed sites to inform the design of future implementation activities. Implementation of this project has been divided into eight milestones/phases, as shown in the milestone chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Oyster Reef Project																
Feasibility study and preliminary design																
Construction – Phase 1 (2 Sites)																
Construction – Phase 2 (2 Sites)																
Success monitoring																
Living Shoreline Project																
Feasibility study and preliminary design																
Construction – Phase 1 (3 Sites)																
Construction – Phase 2 (3 Sites)																
Success monitoring																

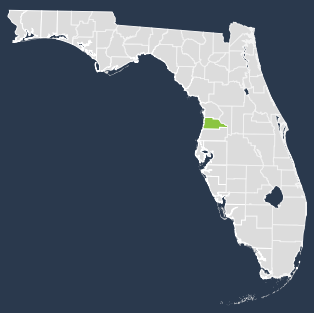
Budget and Funding Sources

A preliminary total cost estimate of $900,000 has been developed for this program using available information from comparable projects and certain assumptions. Hernando County is committed to allocating $750,000 of its share of the Florida Spill Impact Component to this program, and $150,000 of other County funds and in-kind services, but will also be seeking other leveraged funding sources to supplement these monies. If additional leveraged funds are secured, they will be used to expand the extent of the program to include additional restoration sites. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Oyster Reef Project		
Feasibility study and preliminary design	$150,000	$75,000
Planning Subtotal	**$150,000**	**$75,000**
Construction - Phase 1 Oyster Reef	$110,000	$110,000
Construction - Phase 2 Oyster Reef	$110,000	$110,000
Implementation Subtotal	**$220,000**	**$220,000**
Total	**$370,000**	**$295,000**
Living Shoreline Project		
Feasibility study and preliminary design	$150,000	$75,000
Planning Subtotal	**$150,000**	**$75,000**
Construction – Phase 1 Living Shoreline	$110,000	$110,000
Construction – Phase 2 Living Shoreline	$110,000	$110,000
Implementation Subtotal	**$220,000**	**$220,000**
Total	**$370,000**	**$295,000**
Monitoring	$160,000	$160,000
Total Cost	**$900,000**	**$750,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$750,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds – in kind services		$150,000
Total Committed Funding		**$900,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
F.32 Fisheries Finance Program		
F.33 Sea Grant National Marine Aquaculture Initiative - Integrated Projects to Increase Aquaculture Production		
F.34 Sea Grant National Marine Aquaculture Initiative - Addressing Impediments to Aquaculture Opportunities		
F.40 Coastal and Marine Habitat Restoration Grants		
F.47 Estuary Habitat Restoration Program		
F.54 Southeast Region Coastal Program		
O.24 Gulf of Mexico Oyster Aquaculture Small Grants		
O.42 Shell Marine Habitat Program		

Partnerships/Collaboration

Hernando County and the University of Florida have recently created a partnership to develop a marine resource management plan (Allen *et al.,* 2017) to help guide science-based planning of the County's enhancement projects, create research opportunities, and foster marine and coastal stewardship through creating education programs incorporated within specific enhancement projects. As discussed above, an education component is planned as part of the oyster reef and living shoreline projects. Hernando County has hired a full-time Sea Grant agent who will assist with developing education component of the program. Partnerships have also been developed with restaurants for oyster shell recycling and also the Coastal Conservation Association. The Coastal Conservation Association has also offered community support during deployment of shells and marsh grass planting. The County's Aquatic Services Manager will provide project management and oversight of the projects, and four waterways technicians will assist with reef deployment. It is expected that the staff time can be used as a partial in-kind match.



HERNANDO COUNTY

Coastal Public Access Program

PROJECT NO. 14-3

Project Description

OVERVIEW AND LOCATION

This program involves improvements and enhancements to existing coastal parks and boat ramps in Hernando County to increase public access to nearshore waters and the Gulf of Mexico. Improvements include shoreline protection and enhancement, and the elevation and expansion of boat ramps, docks, and parking facilities. In addition, channel maintenance dredging is needed at Pine Island, Hernando Beach, and Bayport. **Figure 14-3A** shows the general of proposed improvements in coastal Hernando County.

Figure 14-3A. General locations of proposed waterway improvements in coastal Hernando County.

NEED AND JUSTIFICATION

The coastline of Hernando County is characterized by naturally shallow waters, extensive salt marshes and mangroves, and low-lying pine forests, resulting in limited public access to nearshore waters and the Gulf of Mexico. Existing older boat ramps and coastal park facilities are now frequently inundated during "king-tides" and storm events, rendering them inaccessible and increasing county maintenance costs. In addition, a few existing navigational channels were dredged prior to current environmental regulations, and are now in need of maintenance dredging. Improvements to existing coastal parks and boat ramps, and maintenance dredging of existing navigational channels, are needed to improve both public access and community resilience in coastal Hernando County.

PURPOSE AND OBJECTIVES

The purpose of this program is to improve and enhance facilities at existing public parks, boat ramps, and navigation channels. The objectives of the program include: (1) improve public access to nearshore waters and the Gulf of Mexico for residents and visitors; (2) improve local nearshore fishing and water quality conditions; and (3) enhance the community resilience of coastal Hernando County.

Figure 14-3B. Proposed Amenities at Linda Pedersen Park.

Figure 14-3C. Proposed Amenities at Jenkins Creek Park.

PROJECT COMPONENTS

The key components of this program include: (1) facility improvements and enhancements at Linda Pedersen Park, Jenkins Creek Park, and Pine Island Beach Park, and (2) limited maintenance dredging of existing navigation channels at Pine Island, Hernando Beach, and Bayport.

At the coastal parks, facility improvements and enhancements will include the following elements:

- Footbridge replacement
- Fishing pier improvements
- Access road improvements
- Seawall and boardwalk replacement
- Parking area expansion and elevation
- Construction of canoe/kayak launch
- Posting of paddling trail signage and educational kiosks
- Culvert replacement to increase circulation and flushing
- Shoreline structural habitat enhancements for improved fishing
- Construction of living shorelines for erosion protection and habitat enhancement.

These program elements will improve public access for pedestrians as well as motorized and non-motorized vessels. Seawalls, docks, and fixed hardscape elements will be raised to account for sea-level rise and storm surge, thus

reducing future maintenance costs and improving the resiliency of county assets. Where possible, floating docks will be used to account for seasonal and storm-induced fluctuations in water levels. **Figures 14-3B** and **14-3C** show proposed improvements to Linda Pedersen Park and Jenkins Creek Park, respectively.

Navigational channel maintenance dredging is an ongoing activity in Hernando County due to naturally shallow water depths. The primary navigational access to the open waters of the Gulf of Mexico is via the existing Hernando Beach channel, which is a federally authorized channel maintained by the U.S. Army Corps of Engineers. This program will address minor channel maintenance and improvements in the Hernando Beach channel as well as smaller channels adjacent to the county park facilities and in Bayport.

Hernando County will work to use a combination of in-house staff, Sea Grant staff, and local consultants to complete feasibility studies, conduct engineering design, obtain permits, and monitor the projects. As part of the planning and feasibility process for the maintenance dredging projects, bathymetric surveys and sediment sampling will be performed to delineate project areas and quantities. In addition, potential hazards to navigation will be mapped during the process and designated for removal. Finally, dredged spoil material will be used beneficially wherever feasible for fill material and habitat creation.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will improve public access to nearshore waters and the Gulf of Mexico for residents and visitors, improve local nearshore fishing and water quality conditions, and enhance community resilience. Coastal Hernando County is largely natural with very limited public access to coastal waters. For this reason, there is increasing demand for nature-based recreational opportunities, including kayaking, fishing, and bird watching. The improved amenities will increase daily and seasonal usage, and will relieve pressure on other coastal parks in the region that may be over capacity during peak usage days. The program will also be linked to Hernando County's living shorelines and oyster restoration projects (see Project 14-2), presenting the opportunity for environmental education and nonprofit organization sponsored events.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of Tourism in the Gulf Coast region, including recreational fishing.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 5: Restore and Revitalize the Gulf Economy (primary)
- Goal 1: Restore and Conserve Habitat.

This project is consistent with and addresses the following Comprehensive Plan Objectives:

- Consortium Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects (primary)
- Objective 1: Restore, Enhance, and Protect Habitats.

Implementing Entities

Hernando County will be the sole implementing entity and grant sub-recipient responsible for the design, permitting, construction, operation and maintenance, and monitoring of this program.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The primary focus of this program is public recreational access and tourism promotion; therefore, BAS does not apply.

This program is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct recreational amenities; and (3) effectively operate and maintain recreational amenities in perpetuity. Regulatory permitting will address potential impacts to marine habitats and living resources, and cultural resources, as appropriate.

Risks and Uncertainties

No significant risks or uncertainties were identified during the evaluation of this program that would preclude project implementation. Hernando County will ensure the designs to limit damage from tropical storms and accommodate sea-level rise. Regulatory permitting will address issues such as spatial boundaries for navigational channel dredging, affected marine habitats and living resources, historic areas, sand borrow areas and spoil disposal areas, existing structures and leases, etc.

Success Criteria and Monitoring

This program addresses the improvement of public access to the Gulf. It is anticipated that quantitative success criteria will be developed for:

Recreational amenities completed

- Linear feet and square feet of living shoreline and habitat improvements constructed
- Linear feet of channel maintenance dredged
- Increase in recreational use.

In the project grant request, a detailed monitoring program will be described that addresses data collection and assessment methodologies for the above-listed criteria. Hernando County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this program is approximately 13 years. It is expected to start in 2021 and end in 2033. Implementation of this program has been divided into six milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study and preliminary design				■												
Final design and permitting					■											
Boat ramp/park amenities construction							■	■	■	■						
Channel improvements construction											■	■	■	■		
Paddling trail construction													■			
Success monitoring						■				■	■	■			■	■

Budget and Funding Sources

Hernando County has estimated the cost of this program to be approximately $4,660,000, based on a preliminary needs assessment as well as the cost of other completed County projects. Hernando County is committed to allocating $4,560,000 of its share of the Florida Spill Impact Component to this program and $100,000 of other County funds, but will also be seeking other leveraged funding sources to supplement these monies. If additional leveraged funds are secured, they would be used to expand the extent of the program to include additional restoration sites. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study and preliminary design	$80,000	$80,000
Planning Subtotal	**$80,000**	**$80,000**
Final design and permitting	$185,000	$85,000
Boat ramp/park amenities construction	$1,000,000	$1,000,000
Channel improvements construction	$3,000,000	$3,000,000
Paddling trail construction	$260,000	$260,000
Implementation Subtotal	**$4,445,000**	**$4,345,000**
Monitoring	$135,000	$135,000
Total Cost	**$4,660,000**	**$4,560,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$4,560,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds – in kind services		$100,000
Total Committed Funding		**$4,660,000**
Budget Shortfall		**$0**

POTENTIAL LEVERAGED FUNDING SOURCES
Natural Resource Damage Assessment
S.10 Community Planning Technical Assistance Grants
S.19 Coastal and Estuarine Land Conservation Program (CELCP)
S.20 Coastal Partnership Initiative - Florida Coastal Management Program
S.23 Florida Recreation Development Assistance Program (FRDAP)
S.26 Land and Water Conservation Fund (LWCF)
S.45 Florida Boating Improvement Program (FBIP)
S.49 Sport Fish Restoration Program

Partnerships/Collaboration

Hernando County will continue to work with Florida Sea Grant as well as the Southwest Florida Water Management District and the Florida Fish and Wildlife Conservation Commission in the implementation of this program.

HERNANDO COUNTY

Weeki Watchee Springshed Septic to Sewer Conversion Program

PROJECT NO. 14-4

Project Description

OVERVIEW AND LOCATION

This program is a septic-to-sewer conversion in the springshed of Weeki Watchee Springs complex. The program is a long-term commitment by Hernando County to provide centralized sewer collection, treatment, and disposal services to approximately 30,000 lots in older residential portions of the county. In accordance with the overall program, District A is the first area where the septic-to-sewer conversion will take place. Existing septic systems will be removed from 717 lots and sewer hookups will be provided to all 899 lots in District A. **Figure 14-4A** shows the location of the project in southeast Hernando County.

Figure 14-4A. Location of the District A septic-to-sewer conversion project.

NEED AND JUSTIFICATION

The Weeki Wachee River is a 7.5-mile spring-fed river that flows to the Gulf of Mexico. The majority of flows in the Weeki Wachee River originate from the Weeki Wachee Springs complex, a first-magnitude spring that has an average discharge of 172 cubic feet per second (111 million gallons per day). Several smaller springs also add to the river's flow. Over the past several decades, Weeki Wachee Springs and the Weeki Wachee River have experienced significant water quality degradation and associated ecological shifts. The Florida Department of Environmental Protection (FDEP) has determined that increases in nitrate in spring discharges is the primary cause of the observed ecological imbalances, which are characterized by excessive algal growth in Weeki Wachee Springs. Accordingly, the FDEP has established a total maximum daily load (TMDL) for nitrate nitrogen in the system.

Weeki Wachee Springs is fed from a large reservoir of the Floridan aquifer under approximately 260 square miles of urbanized areas, agricultural lands, and forested uplands. This springshed underlies portions of Hernando and Pasco Counties. Nitrogen enrichment, particularly in the inorganic form nitrate, is an issue because nitrate is

mobile and conservative once it reaches the groundwater. Nitrate concentrations have been increasing in the water discharging from Weeki Wachee Springs from 0.1 milligram per liter (mg/L) or less historically (SWFWMD, 2017) to 0.9 mg/L in 2015 (see **Figure 14-4B**). Development of a Basin Management Action Plan (BMAP) for reducing nutrient loads and restoring these impaired waterbodies is currently under way.

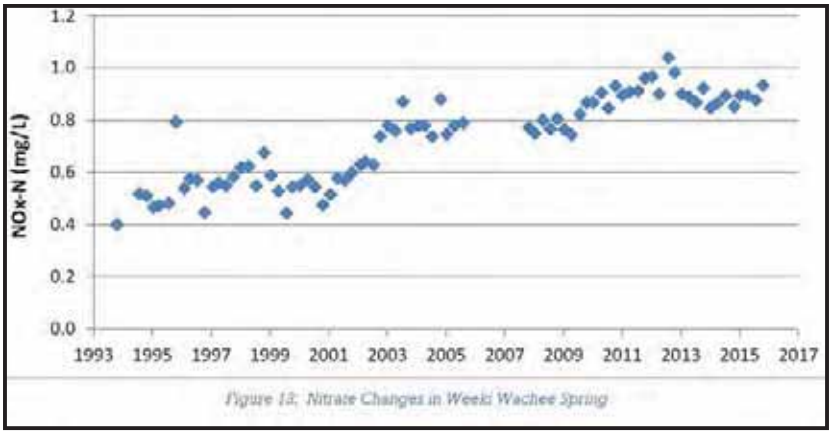


Figure 14-4B. Nitrate concentrations in Weeki Wachee Springs, 1993–2016.

Portions of the Weeki Wachee Springs springshed have a discontinuous confining layer, making it particularly vulnerable to nutrient discharges from septic systems. Groundwater flow velocities in the aquifer have been estimated at 2 feet per day based upon on hydraulic conditions. Nitrate discharged from the septic systems in District A (see **Figure 14-4C**) have the shortest travel time to reach Weeki Wachee Springs (about 5 years). Hernando County has prioritized the septic-to-sewer program based on the proximity of the septic systems to the springs, the shortest travel times, and the nitrogen load contribution. The District A project will remove the septic systems nearest Weeki Wachee Springs, resulting in an estimated nitrogen load reduction of about 11,000 pounds per year. This program, and the first projects aimed at District A, are critical to the ecological restoration of the Weeki Wachee River.

PURPOSE AND OBJECTIVES

The purpose of this project is to remove the highest-density septic systems in areas most proximal Weeki Wachee Springs and replace them with centralized sewer facilities. The objectives of the project are to: (1) reduce nitrogen loads to Weeki Wachee Springs and (2) restore water quality and ecological conditions in the Weeki Wachee River.

PROJECT COMPONENTS

The overall septic-to-sewer conversion program has been divided into a large 30,000-parcel area encompassing the springshed of Weeki Wachee Springs complex into 19 districts (designated A to S), as shown in **Figure 14-4C**.

In accordance with the overall program, District A is the first area where the septic-to-sewer converion will take place due to its proximity to the spring system. The project involves the removal of existing septic systems from 717 lots and construction of centralized sewer facilities to serve all 899 lots in District A. This project will provide conventional gravity sewer to District A. The existing wastewater infrastructure was modeled to determine whether existing force mains and pump stations could handle additional flows from new sewer connections, and modeling results indicated that they could. The conversion in District A will take place in two phases.

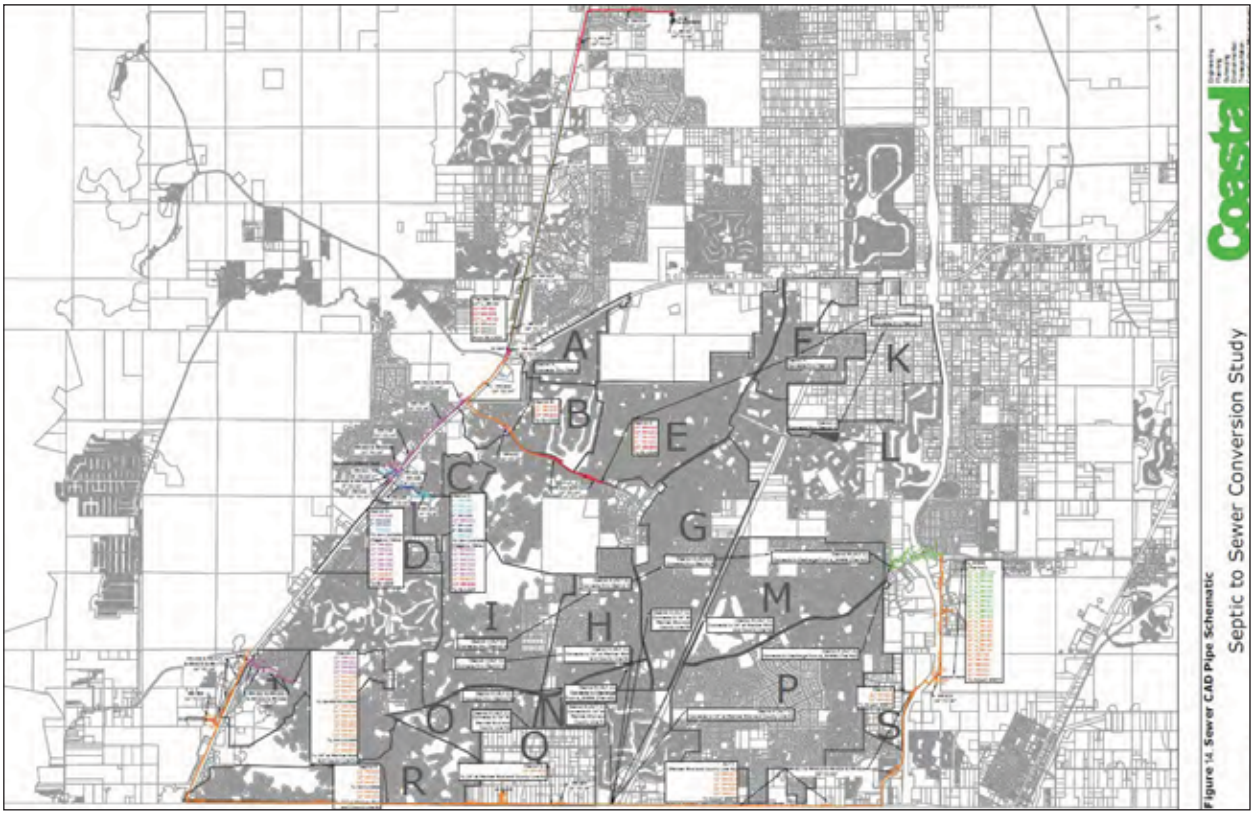


Figure 14-4C. Septic-to-sewer conversion Districts A-S with location of Weeki Wachee Springs.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

Nitrogen enrichment is an ongoing management issue in Weeki Wachee Springs and the Weeki Wachee River, resulting in the stimulation of excessive filamentous algal growth in the spring system, and phytoplankton growth in the river. Excessive algal growth has in turn decreased water clarity and light penetration, contributing to the loss of native submerged aquatic vegetation (SWFWMD, 2017). Reduction of nitrogen loads is the primary focus of water quality management actions for the Weeki Wachee River. The District A project is the first step in a long-term comprehensive septic-to-sewer conversion program aimed at retrofitting centralized sewer services into the highly vulnerable Weeki Wachee springshed. The District A project alone is expected to reduce nitrogen loads to the springshed by approximately 11,000 pounds per year (Coastal Engineering Associates, 2016).

Weeki Wachee Springs and the Weeki Wachee River are priority Surface Water Improvement and Management (SWIM) waterbodies, as designated by the Southwest Florida Water Management District (SWFWMD). These systems support a diverse ecological community of aquatic vegetation, fish, and wildlife, and are important economic resources for Hernando County and the Springs Coast region. Weeki Wachee Springs was first developed as a water park tourist attraction in 1947, and today the spring system is a state park managed by the Florida Park Service. The Weeki Wachee River is a scenic and popular recreational resource highly used by kayakers. Accordingly, restoration of degraded water quality and ecological conditions in the springs and river will clearly benefit the local ecotourism economy of Hernando County. In addition, the expansion of the sewer system will increase property values for the parcels it will ultimately serve, and sewer availability will encourage development on currently unimproved parcels in the project area. This will, in turn, grow Hernando County's tax base. The proposed project components will also increase workforce development and job creation in both the public and private sectors.

Eligibility and Statutory Requirements

This program is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This program is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This program is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

The Hernando County Public Utilities Department will be the sole implementing entity and grant sub-recipient responsible for the design, permitting, construction, operation and maintenance, and monitoring of this project. Hernando County Public Utilities Department has coordinated with FDEP and numerous other agencies in the development of the wastewater management plan, and may collaborate with other entities in the implementation of the project through leveraging and other cooperative funding agreements.

Best Available Science and Feasibility Assessment

The relationship between septic systems and water quality in Weeki Wachee Springs and potential pollutant load reductions associated with septic-to-sewer conversions in this area have been well studied. Key references are cited below.

- *Coastal Engineering Associates and Legette Brashears & Graham, 2016. Septic to Sewer Conversion Study. Final report prepared for the Hernando County Utility Department.*

- *FDEP, 2014. Nutrient TMDLs for Weeki Wachee Spring and Weeki Wachee River (WBIDs 1382B and 1382F). Final TMDL Report.*

This project is consistent with the goals and objectives of the following natural resource management plan:

- *SWFWMD, 2017. Weeki Wachee River Surface Water Improvement and Management (SWIM) Plan, A Comprehensive Conservation and Management Plan.*

Based on Hernando County's master planning efforts, this project is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget, and (3) effectively operate and maintain the project components over the long term.

Risks and Uncertainties

In the development of the Hernando County Sewer Master Plan, no significant risks or uncertainties have been identified that would preclude implementation of the District A project discussed above. This is the first project associated with a much larger program, and long-term funding of the overall program may be a challenge.

Success Criteria and Monitoring

This project will affect the surface waters and living resources of Weeki Wachee Springs and the Weeki Wachee River. Therefore, a range of success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Number of septic systems taken off-line
- Estimated reduction in nutrient and bacteria loads attributable to the wastewater improvements
- Changes in ambient water quality (nutrients, bacteria, chlorophyll-a) in Weeki Watchee Springs, and the Weeki Watchee River in the vicinity of wastewater improvements.

In the project grant request, a detailed monitoring program will be described that addresses data collection and assessment methodologies for the above-listed criteria. Hernando County in collaboration with SWFWMD is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon for the District A septic-to-sewer conversion project is approximately 9 years. It is expected to start in 2019 and end in 2027. Master planning is complete, and this project is ready to begin engineering design. The project will be constructed in two phases using a design-build approach. The time to implement each phase includes an 18- to 24-month period for lift station site land acquisition. Water quality monitoring is expected to continue in perpetuity through spring and river monitoring will be conducted by SWFWMD. Implementation of this project has been divided into five milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Design Criteria Package (Phase 1)																
Design-Build Phase (Phase 1)																
Design Criteria Package (Phase 2)																
Design-Build Phase (Phase 2)																
Success monitoring																

Budget and Funding Sources

The cost estimate for the District A project is $22,950,000, which is the first project in the overall $690 million program. Hernando County is committed to allocating $2,600,000 of its share of the Florida Spill Impact Component to this project for design services and early construction, and will also be seeking other leveraged funding sources such as FDEP State Revolving Fund loans. Hernando County is committed to providing additional county funding, as may be needed; however, the program elements are scalable and can be implemented incrementally as funding allows. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study (Completed 2016)	$0	$0
Design Criteria Package (Phase 1)	$250,000	$250,000
Design Criteria Package (Phase 2)	$250,000	$250,000
Planning Subtotal	**$500,000**	**$500,000**
Design-Build (Phase 1)	$11,100,000	$925,000
Design-Build (Phase 2)	$11,100,000	$925,000
Implementation Subtotal	**$22,200,000**	**$1,850,000**
Monitoring	$250,000	$250,000
Total Cost	**$22,950,000**	**$2,600,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$2,600,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$2,600,000**
Budget Shortfall		**$20,350,000**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
F.03 Rural Community Development Initiative Grants		
F.07 Water and Waste Disposal Systems for Rural Communities		
F.08 Water and Waste Disposal Technical Assistance and Training Grants		
F.11 Community Facilities Direct Loan and Grant Program in Florida		
F.13 Community Facilities Guaranteed Loan Program		
F.17 Grant Program to Establish a Fund for Financing Water and Wastewater Projects		
O.22 Florida Rural Water Association Loan Program		
O.40 Southeast Rural Community Assistance Project, Inc. (SERCAP) Loan Fund Program		
O.43 Southeast Aquatics		
O.46 Water/Wastewater Loans		
S.14 Small Cities Community Development Block Grant (CBDG) Program		
S.15 Small Cities CBDG Section 108 Loan Guarantees		
S.18 Clean Water State Revolving Fund (CWSRF)		
S.21 CWSRF Small Community Wastewater Construction Grants		
S.27 Nonpoint Source Management Program (NPSM): Section 319		
S.34 TMDL Water Quality Restoration Grants		
S.52 SWFWMD Cooperative Funding Initiative		

Partnerships/Collaboration

The septic-to-sewer conversion study was conducted with financial assistance provided by the Fish and Wildlife Foundation of Florida, Inc., through the Protect Florida Springs program. Hernando County will continue to collaborate with the Florida Department of Environmental Protection and the Southwest Florida Water Management District with regard to water quality improvement and associated success monitoring.

HERNANDO COUNTY

Coastal Stormwater Improvement – Calienta Street

PROJECT NO. 14-5

Project Description

OVERVIEW AND LOCATION

This project involves drainage infrastructure improvements and the construction of stormwater treatment systems along Calienta Street adjacent to the Hernando Beach canal system to reduce flooding and improve water quality. The general location of the project is shown in **Figure 14-5A**. Although this project addresses water quality improvement, the primary focus of the project is on coastal flood protection. For this reason, this project is classified as infrastructure with respect to the 25 percent infrastructure limitation.

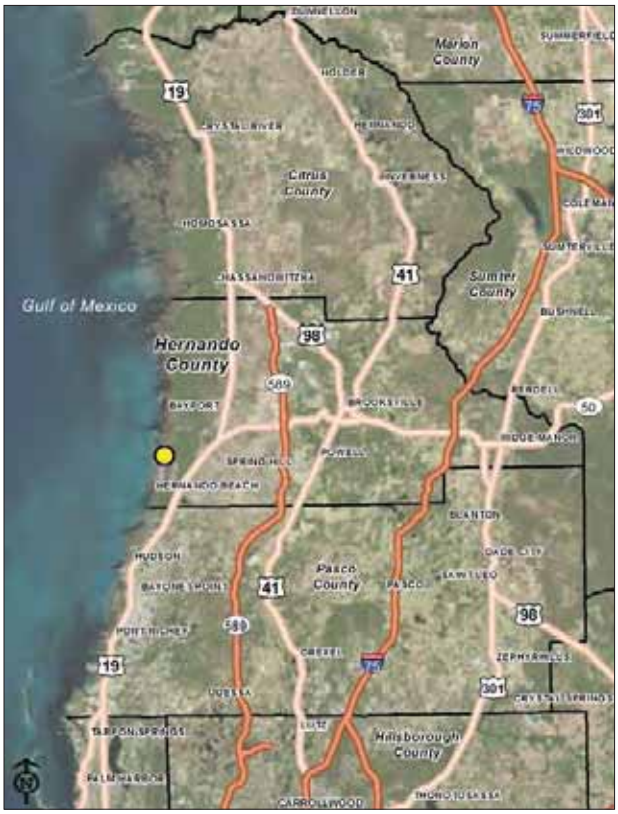


Figure 14-5A. Location of the Hernando Beach Calienta Street stormwater improvement project.

NEED AND JUSTIFICATION

The Hernando Beach community is an older residential area on the coast of Hernando County that was mostly developed prior to the enactment of current state stormwater treatment regulations. Calienta Street is a major roadway located on the eastern edge of Hernando Beach that provides access to a highly used public boat ramp, a marina, numerous commercial establishments, and dockage for commercial and recreational fishing vessels. Hernando County has identified that an approximately 1-mile-long segment of this roadway, from Shoal Line Boulevard north to Maplewood Drive, is in need of substantial drainage infrastructure improvements. This roadway segment is characterized by dense commercial and industrial use, which entails an almost entirely impervious surface lacking any stormwater detention or water quality treatment facilities. In addition, because of increased use of the public boat ramp associated with recent improvements to the Hernando Beach navigational channel, the roadway surface is cracking and eroding, resulting in sedimentation in the adjacent channel system. Finally, this segment of roadway is low-lying and subject to coastal flooding and storm surge. This project is needed to improve and upgrade failing drainage infrastructure along the proposed roadway corridor. **Figure 14-5B** shows the project limits.

PURPOSE AND OBJECTIVES

The purpose of this project is to rehabilitate and upgrade failing drainage infrastructure along a densely developed segment of Calienta Street in the Hernando Beach coastal community. The objectives of the project include: (1) reduce sediment and contaminant loadings to the adjacent channel system from untreated stormwater runoff; (2) improve water quality and habitat conditions in receiving waters; (3) mitigate the severity of coastal flood events; and (4) improve the resilience of the Hernando Beach coastal community.

Figure 14-5B. Project limits of the Calienta Street stormwater improvements.

PROJECT COMPONENTS

This project is only in the conceptual planning phase; however, Hernando County has conducted a needs assessment and has explored various means of addressing the project objectives. Project components are likely to include:

- Replacement of failing drainage pipes and outfall structures
- Stabilization of failing and eroding seawalls
- Construction of backflow preventers to limit seawater flooding of the roadway during king tides and storm events
- Construction of roadside swales, underdrains, exfiltration boxes, and/or centrifugal treatment systems (e.g., Stormceptor) to removes sediment and contaminants from runoff prior to surface water discharge to the canal system.

Additionally, Hernando County is looking at structural improvements and biosorption facilities, or similar, to provide water quality treatment for the residential areas of Hernando Beach abutting the canal system; and parking lot improvements at Jenkins Creek Park to reduce sediment and nutrient loading to the receiving waters. It is expected that this program will develop a range of cost-effective stormwater best management practices (BMPs) that can be feasibly retrofitted into older coastal developments like Hernando Beach.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will improve local water quality conditions and alleviate flooding along a densely developed segment of Hernando Beach, an older coastal development lacking modern drainage infrastructure with water quality treatment BMPs. The project will focus on reducing sediment and contaminant loads to the adjacent canal system, as well as mitigating roadway flooding. These infrastructure improvements will in turn improve the local economy of Hernando Beach in the form of increased commercial and recreational fishing opportunities. The roadway currently provides access to a major recreational boat ramp and a seafood-packing operation.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 7: Coastal flood protection and related infrastructure.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 4: Enhance Community Resilience
- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 5: Promote Community Resilience
- Consortium Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Hernando County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of the program.

Best Available Science and Feasibility Assessment

The pollutant removal effectiveness of various stormwater BMPs implemented in Florida, including wetland treatment systems, has been evaluated, and designs continue to be improved. The design of the proposed stormwater improvements will consider the following reference documents:

- *Harper, H. and D. Baker, 2007. Evaluation of Current Stormwater Design Criteria Within the State of Florida. Final report prepared for the Florida Department of Environmental Protection (contract SO108) by Environment Research & Design, Inc., Orlando, FL.*
- *Florida Department of Transportation (FDOT) Drainage Handbook, 2012. Office of Design, Drainage Section.*

Based on extensive precedents for stormwater rehabilitation in southwest Florida, this project is considered to be feasible in terms of the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term.

Risks and Uncertainties

In the evaluation of this project, no significant risks or uncertainties were identified. A wide range of BMPs for the treatment of urban stormwater runoff are frequently permitted and constructed in Florida. However, this project will be constrained by the limited amount of surface area potentially available for the installation of BMPs.

Success Criteria and Monitoring

This project will reduce flooding and surface water pollutant loads from untreated urban stormwater runoff. In addition, the project will also improve water quality conditions in adjacent receiving waters. Therefore, a range of success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Surface area retrofitted with BMPs
- Reduction in the frequency and severity of flood events
- Reduction in local sediment and contaminant loadings to adjacent surface waters.

In the project grant request, a detailed monitoring program will be designed that addresses data collection and assessment methodologies for the above-listed criteria. Hernando County is committed to implementing the necessary monitoring program and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 7 years. It is expected to start in 2018 and end in 2024. Implementation of this project has been divided into five milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study																
Preliminary design																
Final design and permitting																
Construction																
Monitoring																

Budget and Funding Sources

Hernando County has estimated the cost of this program to be approximately $4,900,000, based on a preliminary needs assessment as well as the cost of other completed County projects. Hernando County is committed to allocating $2,400,000 of its share of the Florida Spill Impact Component to this project, and will also be seeking other leveraged funding sources to supplement these monies. Hernando County is also committed to providing additional county funding, as may be needed; however, the program elements are scalable and can be implemented incrementally as funding allows. A summary of the project budget and funding sources is provided in the following table.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$75,000	$75,000
Preliminary design	$75,000	$75,000
Planning Subtotal	**$150,000**	**$150,000**
Final design and permitting	$250,000	$250,000
Construction	$4,400,000	$1,900,000
Implementation Subtotal	**$4,650,000**	**$2,150,000**
Monitoring	$100,000	$100,000
Total Cost	**$4,900,000**	**$2,400,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$2,400,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$2,400,000**
Budget Shortfall		**$2,500,000**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
F.63 Water Infrastructure Finance and Innovation Act (WIFIA)		
S.27 Nonpoint Source Management Program (NPSM): Section 319		
S.34 Total Maximum Daily Load (TMDL) Water Quality Restoration Grants		
S.50 Water Projects Priorities Database		
S.52 SWFWMD Cooperative Funding Initiative		

Partnerships/Collaboration

Hernando County has partnered with the Southwest Florida Water Management District in the past to complete similar stormwater retrofit projects. Hernando County plans to submit a funding request through Southwest Florida Water Management District's cooperative funding program once the design plans are completed for this project.

PASCO COUNTY

Port Richey Watershed Stormwater Management Project

PROJECT NO. 15-1

Project Description

OVERVIEW AND LOCATION

This project involves major upgrades to old and inadequate drainage infrastructure in the Port Richey watershed. Project components include converting the former Magnolia Valley Golf Course to a wetland storage and treatment system and restoring natural slough conveyances, to reduce flooding and improve water quality. The general location of the Port Richey watershed is shown in **Figure 15-1A**. Although this project addresses water quality improvement, the primary focus of the project is on coastal flood protection. For this reason, this project is classified as infrastructure with respect to the 25 percent infrastructure limitation.

Figure 15-1A. Location of the Port Richey Watershed in Pasco County.

NEED AND JUSTIFICATION

The Port Richey watershed is approximately 5.9 square miles in size and is characterized by dense resi-dential development. The headwaters are located on the coastal ridge, and the basin drains westward to the Gulf of Mexico. **Figure 15-1B** shows a detailed delineation of the Port Richey watershed.

The stormwater management system in this part of Pasco County is relatively old and mostly predates current stormwater management design guidelines and regulations enforced by the Florida Department of Environmental Protection (FDEP) and the Southwest Florida Water Management District (SWFWMD). Residential areas in this basin are frequently inundated with floodwaters during even mi-nor rain events because of the loss of natural hydrologic storage, as well as old and failing drainage infrastructure. In addition, water quality in the watershed has been degraded by untreated urban stormwater runoff. Salt Springs (Water Body ID 1439), the primary receiving water for the project area, is impaired for

nutrients. Stormwater management infrastructure improvements are needed to ad-dress flooding and water quality problems in this watershed, as well as to improve habitat conditions in the watershed and receiving coastal waters.

Figure 15-1B. Location and basin delineation of the Port Richey watershed in Pasco County.

PURPOSE AND OBJECTIVES

The purpose of this project is to rehabilitate failing segments of an aging stormwater management system in the Port Richey watershed and restore hydrologic storage in the headwaters of the basin. The objectives of the project include: (1) reduce the frequency of flood events; (2) reduce nutrient, bacteria, and sediment loadings from stormwater runoff; and (3) improve water quality and habitat conditions in receiving waters.

PROJECT COMPONENTS

Proposed drainages infrastructure improvements in the Port Richey watershed are extensive; however, the focus of this project will be on the enhancement of hydrologic storage in the headwaters of the basin and the restoration of the channelized sloughs that drain the watershed. Toward these ends, Pasco County has purchased the old Magnolia Valley Golf Course property in the headwaters and plans to use this land to construct a large wetland storage and treatment system. In addition, the project involves restoration of Port Richey Slough and Salt Springs Slough, the two primary tributaries in the watershed that have been channelized and hardened. These improvements will increase hydrologic storage and restore more natural flow patterns in the watershed, resulting in reduced flooding and improved water quality. **Figure 15-1C** shows a schematic of the proposed wetland enhancement areas and slough restorations.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will contribute to the reduction of coastal and rain event flooding and to the improvement of surface water quality in Salt Springs and the nearshore Gulf of Mexico. Proposed stormwater management system improvements will reduce pollutant loadings of nutrients, bacteria, and sediments to surface waters. In addition, the program will restore habitats and promote the recovery of seagrass and oyster communities in tidal waters effected by excess nonpoint source pollutant loads. Reductions in residential flooding will increase property values, and improvements to surface water quality and estuarine habitats and living resources will enhance aesthetics and recreational opportunities for both residents and visitors. Both of these attributes will in turn contribute to the sustainability of the Pasco County economy.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activities:

- Eligible Activity 7: Coastal flood protection and related infrastructure (primary)
- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches and coastal wetlands of the Gulf Coast region.

Figure 15-1C. Schematic of wetland enhancement and slough restoration areas in the Port Richey watershed.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 4: Enhance Community Resilience (primary)
- Goal 2: Restore Water Quality and Quantity.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 5: Promote Community Resilience (primary)
- Objective 2: Restore, Improve and Protect Water Resources.

Implementing Entities

Pasco County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of the project.

Best Available Science and Feasibility Assessment

The pollutant removal effectiveness of various stormwater best management practices implemented in Florida, including wetland treatment systems, has been evaluated, and designs continue to be improved. The design of the proposed stormwater improvements will consider the following reference documents:

- *Harper, H. and D. Baker, 2007. Evaluation of Current Stormwater Design Criteria Within the State of Florida. Final report prepared for the Florida Department of Environmental Protection (contract SO108) by Environment Research & Design, Inc., Orlando, FL.*
- *Florida Department of Transportation (FDOT) Drainage Handbook. Office of Design, Drainage Section, 2012.*

Based on extensive precedents for watershed rehabilitation in southwest Florida, this project is considered to be feasible in terms of the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term.

Risks and Uncertainties

In the evaluation of this project, no significant risks or uncertainties were identified. Created wetland systems for the storage and treatment of urban stormwater runoff are frequently permitted and constructed in Florida. As part of the engineering design and permitting of this project, it is likely that hydraulic modeling will be required to calculate maximum inflow velocities and to design the project to prevent scouring and erosion of the restored areas.

Success Criteria and Monitoring

This project will reduce coastal flooding and surface water pollutant loads from urban stormwater runoff. In addition, the project will also improve water quality and habitat conditions in downstream receiving waters. Therefore, a range of success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Reduction in the frequency and severity of flood events
- Linear feet of stream/slough restored
- Change in hydrologic storage pre- and post-restoration
- Change in pollutant loadings pre- and post-restoration.

In the project grant request, a detailed monitoring program will be designed that addresses data collection and assessment methodologies for the above-listed criteria. Pasco County is committed to implementing the necessary monitoring program and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately six years, including three years for success monitoring. It is expected to start in 2018 and end in 2023. Implementation of this project has been divided into five milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study (complete)																
Preliminary design																
Final design/permitting																
Construction																
Success monitoring																

Budget and Funding Sources

This project is in the conceptual design stage, and Pasco County has estimated the total cost of this project to be approximately $10,600,000. Pasco County is committed to allocating $5,000,000 of its share of the Florida Spill Impact Component to this project. Pasco County is in discussions with the SWFWMD for additional funding, and cooperative funding is anticipated. A summary of the project budget and funding sources is provided in the table below.

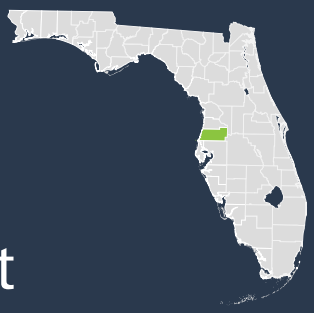
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study (complete)	$0	$0
Preliminary design	$600,000	$300,000
Planning Subtotal	**$600,000**	**$300,000**
Final design and permitting	$750,000	$750,000
Construction	$9,190,000	$3,890,000
Implementation Subtotal	**$9,940,000**	**$4,640,000**
Monitoring	$60,000	$60,000
Total cost	**$10,600,000**	**$5,000,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$5,000,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$5,000,000**
Budget Shortfall		**$5,600,000**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
F.03 Rural Community Development Initiative Grants		
F.12 Community Facilities Technical Assistance and Training Grant		
F.21 Watershed Protection and Flood Prevention		
S.08 Hazard Mitigation Grant Program		
S.18 Clean Water State Revolving Fund (CWSRF)		
S.21 CWSRF Small Community Wastewater Construction Grants		
S.25 Innovative Nutrient and Sediment Reduction and Conservation Pilot Project Program		
S.27 Nonpoint Source Management Program (NPSM): Section 319		
S.34 Total Maximum Daily Load (TMDL) Water Quality Restoration Grants		
S.52 SWFWMD Cooperative Funding Initiative		

Partnerships/Collaboration

Pasco County will continue to collaborate with the Southwest Florida Water Management District in the design, permitting, and implementation of this project.

PASCO COUNTY

Hammock Creek / Sea Pines Watershed Stormwater Management Project



PROJECT NO. 15-2

Project Description

OVERVIEW AND LOCATION

This project involves drainage infrastructure improvements and the creation of wet detention stormwater treatment systems in the Hammock Creek/ Sea Pines watershed to reduce flooding and improve water quality. The general location of the project is shown in **Figure 15-2A**. Although this project addresses water quality improvement, the primary focus of the project is on coastal flood protection. For this reason, this project is classified as infrastructure with respect to the 25 percent infrastructure limitation.

Figure 15-2A. Location of the Port Richey Watershed in Pasco County.

NEED AND JUSTIFICATION

The Hammock Creek–Sea Pines watershed is a small (~1 square mile) low-lying basin that is characterized by dense residential development. The watershed lies just west of Old Dixie Highway and discharges directly to Hammock Creek, a tidal tributary to the Gulf of Mexico.

The stormwater management system in this part of Pasco County is relatively old and mostly predates current stormwater management design guidelines and regulations enforced by the Florida Department of Environmental Protection (FDEP) and the Southwest Florida Water Management District (SWFWMD). Residential areas in this basin are frequently inundated with floodwaters from both coastal storm surge and heavy rains because of the low topography, loss of natural hydrologic storage, and old and failing drainage infrastructure. In addition, water quality in the watershed has been degraded by untreated urban stormwater runoff. Stormwater management infrastructure improvements are needed to address flooding and water quality problems in this watershed, as well as to improve habitat conditions in the receiving coastal waters.

PURPOSE AND OBJECTIVES

The purpose of this project is to rehabilitate failing segments of an aging stormwater management sys-tem in the Hammock Creek–Sea Pines watershed and increase hydrologic storage and water quality treatment in the basin. The objectives of the project include: (1) reduce the frequency of flood events; (2) reduce nutrient, bacteria, and sediment loadings from stormwater runoff; (3) improve wa-ter quality and habitat conditions in receiving waters; and (4) make the Sea Pines community more re-silient to storm events and sea-level rise.

PROJECT COMPONENTS

The project components include the enhancement of stormwater conveyance (ditches, inlets, ponds, and culverts) across Old Dixie Highway, and the construction of new and expanded man-made wet detention ponds. These improvements will reduce flood levels and the risk of structural and roadway flooding, as well as provide for water quality treatment prior to discharge to Hammock Creek and the Gulf of Mexico. **Figure 15-2B** shows a detailed schematic of the proposed drainage infrastructure improvements.

Figure 15-2B. Detailed schematic of the proposed drainage infrastructure improvements in the Hammock Creek–Sea Pines watershed.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will contribute to the reduction of coastal and rain event flooding, and to the improve-ment of surface water quality in Hammock Creek and the nearshore Gulf of Mexico. Proposed storm-water management system improvements will reduce pollutant loadings of nutrients, bacteria, and sediments to surface waters. In addition, the program will restore habitats and promote the recovery of seagrass and oyster communities in tidal waters effected by excess nonpoint source pollutant loads. Reductions in residential flooding will increase property values, and improvements to surface water quality and estuarine habitats and living resources will enhance aesthetics and recreational opportuni-ties for both residents and visitors. Both of these attributes will in turn contribute to the sustainability of the Pasco County economy.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activities:

- Eligible Activity 7: Coastal flood protection and related infrastructure (primary)
- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 4: Enhance Community Resilience (primary)
- Goal 2: Restore Water Quality and Quantity.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 5: Promote Community Resilience (primary)
- Objective 2: Restore, Improve and Protect Water Resources.

Implementing Entities

Pasco County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of the project.

Best Available Science and Feasibility Assessment

The pollutant removal effectiveness of various stormwater best management practices implemented in Florida, including wetland treatment systems, has been evaluated, and designs continue to be improved. The design of the proposed stormwater improvements will consider the following reference document:

- *Harper, H. and D. Baker, 2007. Evaluation of Current Stormwater Design Criteria Within the State of Florida. Final report prepared for the Florida Department of Environmental Protection (contract SO108) by Environment Research & Design, Inc., Orlando, FL.*
- *Florida Department of Transportation (FDOT) Drainage Handbook. Office of Design, Drainage Section, 2012.*

Based on extensive precedents for watershed rehabilitation in southwest Florida, this project is considered to be feasible in terms of the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term.

Risks and Uncertainties

In the evaluation of this project, no significant risks or uncertainties were identified. Created wetland systems for the storage and treatment of urban stormwater runoff are frequently permitted and constructed in Florida. As part of the engineering design and permitting of this project, it is likely that hydraulic modeling will be required to calculate maximum inflow velocities and to design the project to prevent scouring and erosion of the restored areas.

Success Criteria and Monitoring

This project will reduce coastal flooding and surface water pollutant loads from urban stormwater runoff. In addition, the project will also improve water quality and habitat conditions in downstream receiving waters. Therefore, a range of success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Reduction in the frequency and severity of flood events
- Change in hydrologic storage pre- and post-construction
- Change in pollutant loadings pre- and post-construction.

In the project grant request, a detailed monitoring program will be designed that addresses data collection and assessment methodologies for the above-listed criteria. Pasco County is committed to implementing the necessary monitoring program and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately six years, including three years for success monitoring. It is expected to start in 2023 and expected to end in 2028. Implementation of this project has been divided into five milestones, as shown in the chart below.

MILESTONE	YEARS TO COMPLETE											
	1	2	3	4	5	6	7	8	9	10	11	12
Feasibility study (complete)												
Preliminary design						■	■					
Final design/permitting							■	■				
Construction								■	■			
Success monitoring							■			■	■	

Budget and Funding Sources

This project is in the conceptual design stage, and Pasco County has estimated the total cost of this project to be approximately $3,800,000. Pasco County is committed to allocating $2,014,600 of its share of the Florida Spill Impact Component to this project. Pasco County is in discussions with the SWFMWD for additional funding, and cooperative funding is anticipated. A summary of the project budget and funding sources is provided in the following table.

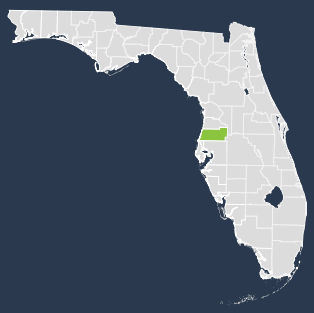
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study (complete)	$0	$0
Preliminary design	$150,000	$0
Planning Subtotal	**$0**	**$0**
Final design and permitting	$300,000	$300,000
Construction	$3,300,000	$1,674,600
Implementation Subtotal	**$3,600,000**	**$1,974,600**
Monitoring	$50,000	$50,000
Total Cost	**$3,800,000**	**$2,024,600**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$2,024,600
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$2,024,600**
Budget Shortfall		**$1,775,400**
POTENTIAL LEVERAGED FUNDING SOURCES		
F.03 Rural Community Development Initiative Grants		
F.12 Community Facilities Technical Assistance and Training Grant		
F.21 Watershed Protection and Flood Prevention		
S.08 Hazard Mitigation Grant Program		
S.18 Clean Water State Revolving Fund (CWSRF)		
S.21 CWSRF Small Community Wastewater Construction Grants		
S.25 Innovative Nutrient and Sediment Reduction and Conservation Pilot Project Program		
S.27 Nonpoint Source Management Program (NPSM): Section 319		
S.34 Total Maximum Daily Load (TMDL) Water Quality Restoration Grants		
S.36 Water Projects; Natural Resource Damage Assessment		
S.52 SWFWMD Cooperative Funding Initiative		

Partnerships/Collaboration

Pasco County will continue to collaborate with the Southwest Florida Water Management District in the design, permitting, and implementation of this project.

PASCO COUNTY

Inshore Artificial Reef – Pithlachascotee River



PROJECT NO. 15-3

Project Description

OVERVIEW AND LOCATION

This project involves the creation of an inshore artificial reef and snorkeling trail near the mouth of the Pithlachascotee River in coastal Pasco County. The location of this project is shown in **Figure 15-3A**.

Figure 15-3A. Regional artificial reef location map.

NEED AND JUSTIFICATION

The Pithlachascotee River channel is one of only a few maintained dredged channels in Pasco County for access to the Gulf of Mexico, and the nearshore areas south of the channel are extremely popular with local boaters and fisherman. Durney Key is a spoil disposal island that is heavily used by boaters for picnicking and swimming. Public surveys have indicated a demand for additional recreational opportunities, as well as improved boating safety, in this area.

PURPOSE AND OBJECTIVES

The purpose of this project is to create a nearshore artificial reef, with the objectives of: (1) improving recreational fishing, swimming, and snorkeling opportunities and (2) enhancing nearshore hardbottom habitats. Associated with the creation of the nearshore artificial reef is the establishment of a boater exclusion and no-wake zones to improve public safety and protect sensitive seagrass habitats.

PROJECT COMPONENTS

This project involves the following components: (1) site assessments and bottom surveys to determine the best location and potential extent of the reef; (2) regulatory permitting of the reef; (3) preparation and staging of reef building materials and substrates; (4) reef installation; and (5) monitoring and assessment. It is anticipated that

pre-fabricated hollow concrete reef balls will be used rather than construction debris to improve the aesthetics, public safety, and habitat complexity of the reef. Given the shallow depths in this area, the reef modules are anticipated to have a low vertical profile (< 3 feet).

Another component of this project will be the establishment of appropriate and enforceable boating restrictions, including exclusion and no-wake zones, to improve public safety and protect seagrass. In addition, this project will also include installation of signage and educational kiosks to support the project objectives. The approximate locations and extent of the anticipated artificial reef, snorkeling trail, and boater restriction zone are shown in **Figure 15-3B**.

Figure 15-3B. Approximate locations and extent of the anticipated artificial reef, snorkeling trail, and boater restriction zone.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will enhance public recreational fishing, swimming, and snorkeling opportunities; create new inshore hard bottom habitats; and protect sensitive seagrass habitats from boat propeller damage. In addition, the project will promote local ecotourism and contribute to improved public environmental education.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activities:

- Eligible Activity 10: Promotion of tourism in the Gulf Coast region, including recreational fishing (primary)
- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 3: Replenish and Protect Living Coastal and Marine Resources (primary)
- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 3: Protect and Restore Living Coastal and Marine Resources (primary)
- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects
- Objective 6: Promote Natural Resource Stewardship and Environmental Education.

Implementing Entities

Pasco County will be the sole implementing entity and grant sub-recipient responsible for the design, permitting, construction, and success monitoring of this project.

Best Available Science and Feasibility Assessment

This project is somewhat of a hybrid between an offshore artificial reef and an inshore living shoreline. The objectives of the project are to create complex hardbottom habitat primarily to attract fish, but not necessarily to build natural oyster bars. Therefore, the project has more in common with offshore artificial reefs, and the Best Available Science review should be similar to offshore artificial reef projects. Key literature citations applicable to this project include:

- *Adams, C., et al., 2011. The economic benefits associated with Florida's artificial reefs. EDIS document FE649 (2011): 1-6.*
- *Bortone, S.A., Martin, T., Bundrick, C.M., 1994. Factors affecting fish assemblage development on a modular artificial reef in a northern Gulf of Mexico estuary. Bull. Mar. Sci. 55 (2-3), 319-332.*
- *Fikes, R., 2013. Artificial Reefs of the Gulf of Mexico: A Review of Gulf State Programs & Key Considerations. National Wildlife Federation.*
- *Lindberg, W.J., et al., 2014. Rationale and Evaluation of an Artificial Reef System Designed for Enhanced Growth and Survival of Juvenile Gag, Mycteroperca microlepis. Proc.66th Gulf and Caribbean Fisheries Institute November 4 – 8. Corpus Christi, TX. Pages 320-325.*
- *Swett et al., 2011. Economic Impacts of Artificial Reefs for Six Southwest Florida Counties. Florida Sea Grant.*

This project is considered to be feasible with respect to the ability to: (1) secure necessary property agreements and permits; (2) construct the proposed habitats; and (3) operate and maintain the improved recreational area and habitats over the long term.

Risks and Uncertainties

In the evaluation of this project, no significant risks have been identified that would preclude implementation. There is some risk of damage to the artificial reef modules and the potential for them to move during tropical storm events; however, potential damage from storm surge and high waves will be factored into the siting and construction methods. There are also some uncertainties regarding the ability to obtain permits to place fill material in and around seagrass; however, the proposed boating restriction zone should adequately offset any resource impact concerns.

Success Criteria and Monitoring

This project involves the placement of hard substrate to support recreational demand for offshore reef fishing and scuba diving opportunities and to enhance the abundance, distribution, and structural diversity of hardbottom habitat in the affected waters. Therefore, a range of success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Increase in the coverage of new artificial reef habitat
- Increase in recreational use.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Pasco County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately five years. It is expected to start in 2021 and to end in 2025. Implementation of this project has been divided into four milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Preliminary design																
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

Pasco County has developed a preliminary total cost estimate of $510,000 for this project, based on experience with their offshore artificial reef program. Pasco County is committed to allocating $510,000 of its share of the Florida Spill Impact Component to cover the entire cost of this project. A summary of the project budget and funding sources is provided in the table below.

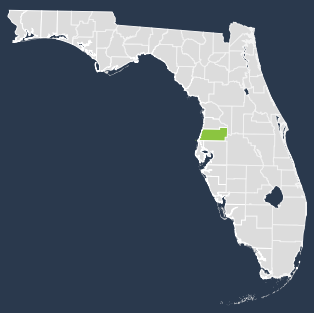
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Preliminary design	$10,000	$10,000
Planning Subtotal	**$10,000**	**$10,000**
Final design and permitting	$30,000	$30,000
Construction	$450,000	$450,000
Implementation Subtotal	**$480,000**	**$480,000**
Monitoring	$20,000	$20,000
Total Cost	**$510,000**	**$510,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$510,000
Direct Component		$0
Other Grants or co-funding		$0
Other County funds		$0
	Total Committed Funding	**$510,000**
	Budget Shortfall	**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
O.18 FishAmerica Foundation		
S.41 Artificial Reef Construction and Monitoring		
S.49 Sport Fish Restoration Program		

Partnerships/Collaboration

Pasco County will collaborate with the Florida Artificial Reef Program managed by the Florida Fish and Wildlife Conservation Commission. This collaboration includes representatives from nearly all coastal counties in Florida and assists with material collection resources, technical construction assistance, artificial reef construction best practices, and outreach.

PASCO COUNTY

Coastal Environmental Research Network (CERN)



PROJECT NO. 15-4

Project Description

OVERVIEW AND LOCATION

This project involves the establishment of an environmental education and research program within the Pasco County School Board, titled the Pasco Institute for Environmental Research and Education, as well as the construction of a new welcome center and environmental research and education facility at Werner Boyce State Park. The location of Werner Boyce State Park is shown in **Figure 15-4A**. This project is classified as infrastructure with respect to the 25 percent infrastructure limitation.

Figure 15-4A. Location of the proposed Coastal Environmental Research Network (CERN) facility at Werner Boyce State Park.

NEED AND JUSTIFICATION

The long-term sustainability of coastal natural resources along the Florida Gulf Coast is dependent on a populace that is knowledgeable and respectful of the environment, which starts with public education. Environmental education at the local school board level is focused on standard curricula, which lack a focus on the unique ecology of the Gulf Coast. Enhanced public education on Florida's coastal resources, and the challenges they face from pollution, development, overfishing, and sea-level rise and climate change is needed throughout the state.

PURPOSE AND OBJECTIVES

The purpose of this program is to establish an environmental education and research program within the Pasco County School Board, and to set an example for other local school boards to do the same to create a network of programs along the Florida Gulf Coast. The objectives of the program include: (1) rehabilitate existing teaching facilities and construct new welcome center at Werner Boyce State Park; (2) enhance coastal environmental education at the 9–14 grade levels; (3) build partnerships with other coastal environmental research programs throughout Florida to establish a Coastal Environmental Research

Network; and (4) promote the long-term sustainability of coastal natural resources through enhanced public education.

PROJECT COMPONENTS

This program involves both capital expenses for the purchase, improvement, and development of welcome center and environmental education facilities, as well as the professional services of the Pasco County School Board staff and affiliated teaching professionals. Spill Impact Component funds will be used primarily for capital improvements, which include:

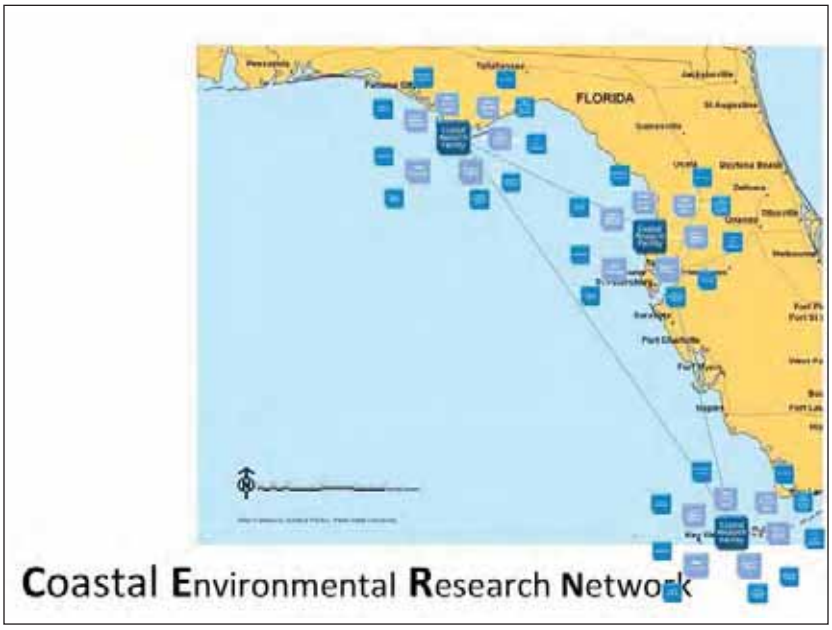


Figure 15-4B. Potential Coastal Environmental Research Network along the Florida Gulf Coast.

- Phase 1: Acquisition of a pontoon research vessel and boat lift
- Phase 2: Renovation of the existing Pasco County Energy and Marine Center (EMC) teaching facility
- Phase 3: Construction of a new welcome center on Werner Boyce State Park.

A future phase 4 of the program will include the construction of a Pasco Institute for Environmental Research and Education research facility at Werner Boyce State Park.

A key goal of the program is to engage high school and community college students in hands-on environmental monitoring and habitat restoration activities in Werner Boyce State Park, and elsewhere along the Pasco County coastline. These activities will enhance public education and awareness of coastal natural resources and will support ongoing monitoring and restoration activities being conducted by the Florida Department of Environmental Protection. The hands-on experience gained by students is expected to lead to local job force creation in various environmental fields.

The long-term goal of the program is to establish an example for school boards in other Florida Gulf coast counties to follow, thus establishing a network of similar resources. Efforts are under way to establish affiliated programs in the Florida Keys and the Florida panhandle. **Figure 15-4B** shows the potential Coastal Environmental Research Network along the Florida Gulf Coast.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will contribute to the promotion and enhancement of natural resource stewardship efforts that include formal and informal educational opportunities, professional development and training, communication, and other actions for all ages. The activities of engaged students will also contribute environmental data collection and hands-on habitat restoration in Pasco County. Finally, this program is expected to contribute to local job force creation in a range of environmental professions.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activities:

- Eligible Activity 6: Infrastructure projects benefiting the economy or ecological resources, including port infrastructure (primary)
- Eligible Activity 4: Workforce development and job creation.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 4: Enhance Community Resilience.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 6: Promote Natural Resource Stewardship and Environmental Education (primary)
- Objective 5: Promote Community Resilience.

Implementing Entities

The Pasco County School Board will be the sole implementing entity and grant sub-recipient responsible for the design, permitting, construction, and success monitoring of the program.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The primary focus of this program is natural resource stewardship and environmental education; therefore, BAS does not apply.

This program is considered to be feasible with respect to the ability to: (1) secure necessary property agreements and permits; (2) rehabilitate and construct the proposed facilities; and (3) operate and maintain the improved facilities over the long term.

Risks and Uncertainties

The proposed facilities are not in the current approved Werner Boyce Park Unit Management Plan and an amendment to this plan will be required for the project to proceed. However, Pasco County is in discussions with the Florida Park Service regarding a use agreement for constructing and operating the proposed facilities on the park premises, and it is anticipated that an agreement will be in place prior to securing grant funding. There is also uncertainty with regard to the ability to expand the Coastal Environmental Research Network (CERN) concept to other Florida Gulf Coast counties,and to maintain and grow this network over time. No other Consortium member counties have proposed similar programs for inclusion in the State Expenditure Plan.

Success Criteria and Monitoring

This project will improve public environmental education, engage students in local coastal monitoring and habitat restoration activities, and potentially create local jobs in various environmental fields. Therefore, a range of appropriate success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Number of students annually enrolled in the program
- Number of local environmental jobs created.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Pasco County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately four years. It is expected to start in 2030 and to end in 2033. Implementation of this project has been divided into four milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Purchase pontoon research vessel																
EMC renovations																
Construct welcome center and research facility																
Success monitoring																

Budget and Funding Sources

Pasco County has developed a preliminary total cost estimate of $2,225,000 for phases 1–3 of the program. Professional services and costs associated with curricula development and teaching will be provided by the Pasco County School Board as in-kind services. Pasco County is committed to allocating $2,100,000 of its share of the Florida Spill Impact Component, and $125,000 of its Direct Component funding, to this project. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Purchase pontoon research vessel	$125,000	$0
Construct EMC renovations	$1,000,000	$1,000,000
Construct welcome center and research facility	$1,000,000	$1,000,000
Implementation Subtotal	**$2,125,000**	**$2,000,000**
Monitoring	$100,000	$100,000
Total Cost	**$2,225,000**	**$2,100,000**

COMMITTED FUNDING SOURCES	
Spill Impact Component	$2,100,000
Direct Component – MYIP Treasury grant submitted	$125,000
Other grants or co-funding	$0
Other County funds	$0
Total Committed Funding	**$2,225,000**
Budget Shortfall	**$0**
POTENTIAL LEVERAGED FUNDING SOURCES	
F.28 Gulf of Mexico Bay-Watershed Education and Training (B-WET) Program	
O.09 Caterpillar Foundation	
O.20 North American Partnership for Environmental Community Action (NAPECA)	
O.21 Five Star and Urban Waters Restoration Grant Program	
O.37 Sea Turtle Grants Program	
S.49 Sport Fish Restoration Program	

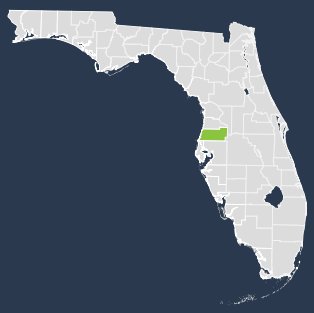
Partnerships/Collaboration

The Pasco County School Board proposes to partner and collaborate with a number of local and regional education institutions, including, but not limited to:

- Pasco Hernando State College
- St. Leo University
- St. Petersburg College
- Tallahassee Community College-Wakulla Environmental Institute
- Florida State University Marine Lab at Turkey Point
- University of South Florida-Florida Institute of Oceanography
- University of West Florida.

PASCO COUNTY

Artificial Reef Program - Hudson Reef



PROJECT NO. 15-5

Project Description

OVERVIEW AND LOCATION

This project involves stockpiling clean concrete material and transporting it to existing permitted Pasco County artificial reef sites in coastal waters. The focus of this project is to re-permit and augment the Hudson Reef. The general location of the Pasco County artificial reefs is shown in **Figure 15-5A**.

Figure 15-5A. Location of the Hudson Reef sites offshore of Pasco County.

NEED AND JUSTIFICATION

Pasco County is in the nation's top 100 fastest growing counties and, to meet the recreational demand for offshore bottom fishing and scuba diving opportunities, Pasco County has deployed four artificial reefs, beginning with its first in 1981. Pasco County has a continuing need to augment existing permitted artificial reef sites, and to create new sites, to support the demand of recreational fishing and diving enthusiasts, both residents and tourists. In addition to enhancing recreational opportunities and associated economic benefits, artificial reefs can also provide ecological benefits. Hard substrate and vertical structure are limited habitats in the Gulf of Mexico (Fikes, 2013) and artificial reef habitats can provide: (1) hard substrate to support encrusting and colonial benthic organisms such as sponges and corals; (2) niche space for small marine invertebrates; and (3) shelter for larval and juvenile fishes. The project is justified by the demonstrated benefits of artificial reefs (Adams et al., 2011).

PURPOSE AND OBJECTIVES

The purpose of this project is to augment existing permitted Pasco County artificial reef sites with clean concrete and other suitable construction materials, as well as sunken vessels and manufactured artificial reef balls. The objectives of the project are to: (1) support the increasing recreational demand for offshore reef fishing and scuba

diving opportunities and (2) enhance the abundance, distribution, and structural diversity of hardbottom habitat in the county's coastal waters. Objectives are consistent with those of the Florida Fish and Wildlife Conservation Commission's (FWC's) artificial reef program, listed below.

1. Enhance private recreational and charter fishing and diving opportunities
2. Provide a socio-economic benefit to local coastal communities
3. Increase reef fish habitat
4. Reduce user conflicts
5. Facilitate reef related research
6. Do no harm to fishery resources, essential fish habitat (EFH), or human health.

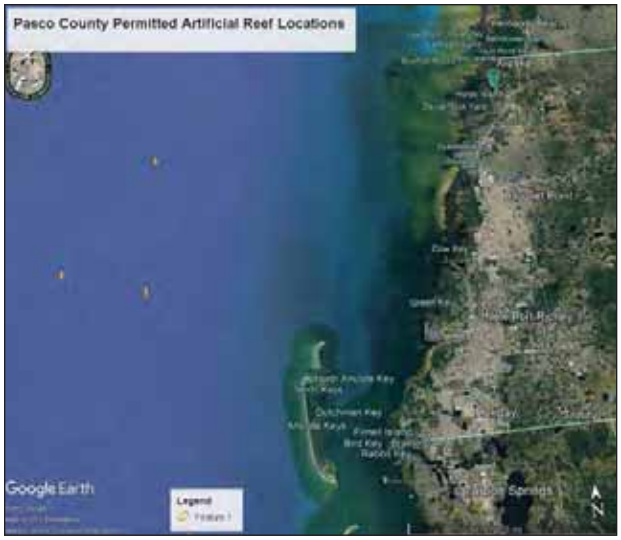


Figure 15-5B. Location of existing permitted artificial reef sites in Pasco County.

PROJECT COMPONENTS

Pasco already has all necessary permit approvals for the project. The first component is to identify and acquire a sufficient amount of appropriate material, such as waste stream recovered second-use concrete, available vessels, manufactured artificial reef modules, or combinations of these; and prepare (e.g., remove rebar) and stockpile this material at a Pasco County staging area. The second component is transport of the materials to currently permitted artificial reef locations off the coast of Pasco County via a barge, and to strategically deploy the materials to create high-quality fish habitat. The reef locations will be published to the public and will remain available for public use for recreational fishing and diving. Post-construction monitoring will also be conducted to ensure that the deployment of this material produced high-quality habitat that supports important reef fish species (e.g., grouper, snapper).

Pasco County currently manages three permitted artificial reef sites, shown in **Figure 15-5B**, and described below:

- Site 1 is approximately 11 nautical miles (nm) west of the Gulf Harbors Channel and contains steel barges, cylindrical containers, concrete culverts, and four sunken vessels.
- Site 2 is approximately 14 nm west of the Pithlachascotee River and contains steel barge, concrete culverts, and army tanks.
- Site 4 (Site 3 has been discontinued) is approximately 10.5 nm west of Hudson Beach and contains concrete culverts and steel pipe.

Although material acquired through this project could be distributed to all three sites, the immediate priority is renewing the state and federal permits for Site 4—Hudson Reef—and augmenting that site with new clean material. Additional planning assistance will be required for permitting, design, and implementation of the proposed project. This site was originally deployed in 1998, and material was placed there through 2008. A 2016 assessment of this site showed that greater than 95 percent of the materials placed there had 2 inches or more of encrusting growth in addition to large concentrations of game and bait fish.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will: (1) support the increasing recreational demand for offshore reef fishing and scuba diving opportunities by both residents and tourists and (2) enhance the abundance, distribution, and structural diversity of hardbottom habitat in Pasco County offshore waters.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of tourism in the Gulf Coast region, including recreational fishing.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objective:

- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Pasco County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of the program.

Best Available Science and Feasibility Assessment

Artificial reefs in the Gulf of Mexico have been extensively studied with regard to the habitat and economic benefits they provide. The scientific literature on the ecological benefits is somewhat controversial (Lindberg et al., 2014; Fikes, 2013; Bortone et al., 1994; others). Some experts argue that artificial reefs are functionally comparable to natural reefs, and that they augment fish populations by providing habitat that is naturally limited in the Gulf of Mexico. Others argue that artificial reefs simply attract and aggregate existing fish populations, but do not enhance overall fish stocks. While those conclusions may be debatable, the economic benefits of artificial reefs are not. Artificial reefs provide significant recreational opportunities and economic benefits along the Gulf Coast of Florida (Adams et al., 2011). In addition, research has produced best practices guidance on site selection, design features, and construction methods, criteria that are now part of the Florida Fish and Wildlife Conservation Commission (FWC) regulations for permitting. Key literature that forms the basis for the Pasco County Regional Artificial Reef Program are cited below:

- *Adams, C., et al., 2011. The economic benefits associated with Florida's artificial reefs. EDIS document FE649 (2011): 1-6.*
- *Bortone, S.A., Martin, T., Bundrick, C.M. 1994. Factors affecting fish assemblage development on a modular artificial reef in a northern Gulf of Mexico estuary. Bull. Mar. Sci. 55 (2-3), 319-332.*

- *Fikes, R., 2013. Artificial Reefs of the Gulf of Mexico: A Review of Gulf State Programs & Key Considerations. National Wildlife Federation.*
- *Lindberg, W.J., et al., 2014. Rationale and Evaluation of an Artificial Reef System Designed for Enhanced Growth and Survival of Juvenile Gag, Mycteroperca microlepis. Proc. 66th Gulf and Caribbean Fisheries Institute November 4–8. Corpus Christi, TX. Pages 320-325.*
- *Swett et al., 2011. Economic Impacts of Artificial Reefs for Six Southwest Florida Counties. Florida Sea Grant.*
- *Gulf States Marine Fisheries Commission, 2004. Guidelines for Artificial Reef Materials.*

This project is feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term. The permitting of Pasco County offshore artificial reef sites has been facilitated through Nationwide U.S. Army Corps of Engineers (USACE) permits and through the FWC for site-specific state criteria. Furthermore, this project is consistent with the National Artificial Reef Plan published in 1985, and the Florida Artificial Reef Strategic Plan (FWC, 2003).

Risks and Uncertainties

No significant risks or uncertainties were identified during the evaluation of this project that would preclude project implementation. Pasco County will ensure design to limit damage from tropical storms. Controls for lionfish and other nuisance/exotic species may be required. Regulatory constraints will address issues such as spatial boundaries for navigation, channels, marine habitat resources, historic areas, sand borrow areas, existing structures and leases, etc. Success monitoring is critical in a fisheries management context given these reefs have not previously been used as fisheries management tools.

Success Criteria and Monitoring

This artificial reef project involves the placement of hard substrate to: support recreational demand for offshore reef fishing and scuba diving opportunities; and enhance the abundance, distribution, and structural diversity of hardbottom habitat in the affected waters. Therefore, a range of success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Increase in the coverage of new artificial reef habitat
- Increase in recreational usage.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Pasco County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately three years. It is expected to start in 2019 and end in 2021. Implementation of this project has been divided into three milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Collect, prepare, and stage reef materials																
Transport material to permitted reef sites																
Success Monitoring																

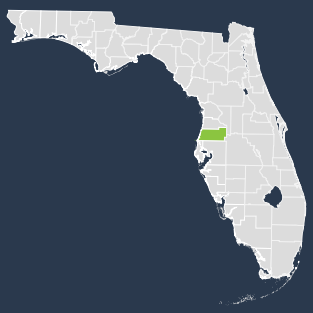
Budget and Funding Sources

Pasco County has developed a preliminary total cost estimate of $115,000 for this project, based on experience with their offshore artificial reef program. Pasco County is committed to allocating $100,000 of its share of the Florida Spill Impact Component, and $15,000 of other county funds to this project. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Collect, prepare, and stage reef materials	$5,000	$0
Transport and place material at permitted sites	$105,000	$100,000
Implementation Subtotal	**$110,000**	**$100,000**
Monitoring	$5,000	$0
Total Cost	**$115,000**	**$100,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$100,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$15,000
Total Committed Funding		**$115,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
O.18 FishAmerica Foundation		
S.41 Artificial Reef Construction and Monitoring		
S.49 Sport Fish Restoration Program		

Partnerships/Collaboration

The Pasco County Artificial Reef Program routinely collaborates with the Florida Artificial Reef Program managed by the Florida Fish and Wildlife Conservation Commission. This collaboration includes representatives from nearly all coastal counties in Florida and assists with material collection resources, technical construction assistance, artificial reef construction best practices, and outreach.



PASCO COUNTY

Madison Street and Gulf Drive Stormwater Retrofit Project

PROJECT NO. 15-6

Project Description

OVERVIEW AND LOCATION

This project involves improving stormwater conveyances and adding water quality best management practices (BMPs) in the Madison Street and Gulf Drive area of the City of New Port Richey in Pasco County. The general location of the project is on the west-central coast of Pasco County, as shown in **Figure 15-6A**. Although this project addresses water quality improvement, the primary focus of the project is on coastal flood protection. For this reason, this project is classified as infrastructure with respect to the 25 percent infrastructure limitation.

Figure 15-6A. Location of Madison Street and Gulf Drive Stormwater project areas.

NEED AND JUSTIFICATION

The roadways in this project area experience repetitive flooding regularly during minor rain events, impacting traffic flow. These streets are part of one of the main evacuation routes from the coast, thus evacuation efforts are also negatively impacted when needed most. Additionally, stormwater currently flows, untreated, to the Pithlachascotee River. As determined in the 2015 River Basin Study conducted by the City of New Port Richey, there are several pollutants that continue to impact the already impaired downstream waterbody, including nutrients and heavy metals such as copper and zinc. Stormwater management infrastructure improvements are needed to address flooding and water quality problems in this watershed, as well as to improve habitat conditions in the receiving coastal waters.

This project will alleviate the flooding by increasing stormwater pipe sizes and will provide for enhanced water quality through installation of specific BMPs for proper treatment of urban runoff (see **Figure 15-6B**).

PURPOSE AND OBJECTIVES

The purpose of this project is to rehabilitate failing segments of an aging stormwater management system in the city of New Port Richey. The objectives of the project include: (1) reduce the frequency of flood events; (2) reduce nutrient and heavy metal loadings from urban stormwater runoff; and (3) improve water quality and habitat conditions in the receiving waters of the Pithlachascotee River.

Figure 15-6B. Project Location indicating Phases 1 and 2. The Pithlachascotee River is indicated in blue.

PROJECT COMPONENTS

This project consists of two phases. In Phase I, eight stormwater drain inlets will be replaced and upgraded, and an 18-inch-diameter storm sewer will be installed within the basin to bring runoff to the replaced/upgraded 54-inch-diameter main storm sewer pipe that leads to the Pithlachascotee River. Additionally, two 36-inch-diameter outfalls will be replaced at the downstream/discharge end of the basin to alleviate flooding in this area. In Phase II, 16 stormwater drain inlets will be replaced and upgraded, and an 18-inch-diameter storm sewer would be installed within the basin, which would connect to a new 36-inch and 42-inch-diameter storm main that would then connect into the Phase I storm sewer and be conveyed to the Pithlachascotee River. At the outfalls, wet detention stormwater treatment ponds will be constructed to provide water quality treatment of runoff prior to discharge to the Pithlachascotee River. **Figure 15-6C** shows the locations of the Phase I and Phase II improvements.

Figure 15-6C. Locations of Phases I and II improvements (Pithlachascotee River is indicated in dark blue).

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will contribute to the reduction of local rain event flooding in the city of New Port Richey, as well as the improvement of surface water quality in the Pithlachascotee River and the nearshore Gulf of Mexico. Proposed stormwater management system improvements will eliminate existing street flooding and reduce pollutant loadings of nutrients and heavy metals to surface waters. In addition, the program will restore habitats and promote the recovery of seagrass and oyster communities in tidal waters effected by excess nonpoint source pollutant loads. Reductions in street flooding will improve traffic safety and hurricane evacuation, and will increase property values. Improvements to surface water quality, estuarine habitats, and living resources will enhance aesthetics and recreational opportunities for both residents and visitors. Both of these attributes will in turn contribute to the sustainability of the Pasco County economy.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activities:

- Eligible Activity 7: Coastal flood protection and related infrastructure (primary)
- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 4: Enhance Community Resilience (primary)
- Goal 2: Restore Water Quality and Quantity.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 5: Promote Community Resilience (primary)
- Objective 2: Restore, Improve and Protect Water Resources.

Implementing Entities

Pasco County will be the project grant sub-recipient, and will pass through grant funds to the City of New Port Richey per an interlocal agreement. The City would be the sole implementing entity responsible for the permitting, construction, and success monitoring of the project.

Best Available Science and Feasibility Assessment

Roadway BMPs have been well studied and described in the following Florida Department of Transportation report (and references cited within), and the stormwater issues that this project will address have been addressed in a project-specific basin study:

- *FDOT, 2012. Florida Department of Transportation Drainage Handbook. Office of Design, Drainage Section, Tallahassee, FL.*
- *GHS Environmental, Inc., 2016. City of New Port Richey River Basin Study: Review of Stormwater Discharge to the Pithlachascotee River.*

Conceptual design has been completed for this project. Based on initial reviews this project is determined to be feasible and permittable.

Risks and Uncertainties

In the evaluation of this project, no significant risks or uncertainties have been identified. Retrofitting of urban roadways for water quantity and quality improvements is feasible and these activities are frequently implemented.

Success Criteria and Monitoring

This project will reduce flooding and surface water pollutant loads from urban stormwater runoff. In addition, the project will also improve water quality and habitat conditions in downstream receiving waters. Therefore, a range of success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Reduction in the frequency and severity of flood events
- Change in hydrologic storage pre- and post-construction
- Change in pollutant loadings pre- and post-construction.

In the project grant request, a detailed monitoring program will be designed that addresses data collection and assessment methodologies for the above-listed criteria.The City of New Port Richey, in coordination with Pasco County, is committed to implementing the necessary monitoring program and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately four years, including three years for success monitoring. It is expected to start in 2026 and to end in 2030. Implementation of this project has been divided into four milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Preliminary design																
Final design/permitting (Phases I and II)																
Construction (Phases I and II)																
Success monitoring																

Budget and Funding Sources

This project is in the conceptual design stage, and the City of New Port Richey has estimated the total cost of this project to be $1,321,600. Pasco County is committed to allocating $1,025,400 of its share of the Florida Spill Impact Component to this project, and the City of New Port Richey will commit an additional $296,200. Pasco County and the City of New Port Richey are in discussions with the Southwest Florida Water Management District (SWFMWD) for additional funding, and cooperative funding is anticipated. A summary of the project budget and funding sources is provided in the following table.

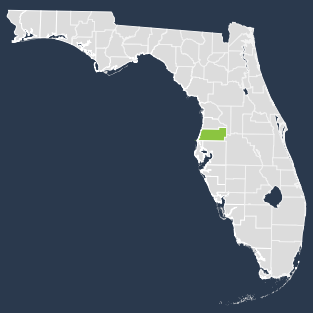
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Preliminary design	$56,250	$56,250
Planning Subtotal	**$56,250**	**$56,250**
Final design and permitting (Phases I & II)	$84,390	$84,390
Construction (Phases I & II)	$1,141,260	$884,760
Implementation Subtotal	**$1,225,650**	**$969,150**
Monitoring	$39,700	$0
Total Cost	**$1,321,600**	**$1,025,400**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$1,025,400
Direct Component		$0
Other grants or co-funding – City of New Port Richey		$296,200
Other County funds		$0
Total Committed Funding		**$1,321,600**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Pennies for Pasco		
Natural Resource Damage Assessment		
F.03 Rural Community Development Initiative Grants		
F.12 Community Facilities Technical Assistance and Training Grant		
F.21 Watershed Protection and Flood Prevention		
S.08 Hazard Mitigation Grant Program		
S.18 Clean Water State Revolving Fund (CWSRF)		
S.21 CWSRF Small Community Wastewater Construction Grants		
S.25 Innovative Nutrient and Sediment Reduction and Conservation Pilot Project Program		
S.27 Nonpoint Source Management Program (NPSM) - Section 319		
S.34 TMDL Water Quality Restoration Grants		
S.36 Water Projects		
S.52 SWFWMD Cooperative Funding Initiative		

Partnerships/Collaboration

Pasco County will continue to collaborate with the City of New Port Richey and the Southwest Florida Water Management District in the design and implementation of this project.

PASCO COUNTY

Crews Lake Hydrologic Restoration



PROJECT NO. 15-7

Project Description

OVERVIEW AND LOCATION

This project involves the diversion of highly treated reclaimed water to Crews Lake to restore the hydrology and ecology in the lake, and to augment aquifer recharge in the headwaters of the Anclote River, which flows to the Gulf of Mexico. The location of Crews Lake is shown in **Figure 15-7A**.

NEED AND JUSTIFICATION

Crews Lakes is the primary natural feature of the county-owned Crews Lake Wilderness Park. The park is adjacent to the Cross Bar Ranch Wellfield that withdraws 15–20 million gallons of groundwater daily. In addition, Crews Lake and adjacent wetlands have been hydrologically impacted by agricultural drainage alterations, resulting in excessively and chronically low lake water levels. Crews Lake is impacted to the point that it no longer fits the definition of a lake, and the fishing pier, boat ramp, and canoe launch are rendered useless at Crews Lake Wilderness Park (see **Figure 15-7B**). Engineering evaluations have indicated that Crews Lake is not expected to recover without mitigation.

Figure 15-7A. Location of Crews Lake in Pasco County.

Figure 15-7B. Aerial photograph showing the dewatered condition of Crews Lake.

Crews Lake is in the upper reaches of the Anclote River watershed, which flows westward to the Gulf of Mexico. This area has been substantially affected by many decades of excess wellfield drawdowns, and regional groundwater levels have not recovered after more than a decade of enforced pumping restrictions. Many lakes and wetlands in the area have been dewatered, resulting in significant environmental impacts to aquatic habitats and fish and wildlife. Projects to augment aquifer recharge in this region have been explored by Tampa Bay Water, the regional water authority, and member local governments such as Pasco County. This project will both mitigate local ecological degradation in Crews Lake and contribute significantly to aquifer recharge in the headwaters of the Anclote River.

PURPOSE AND OBJECTIVES

The purpose of this project is to divert highly treated reclaimed water from a County-owned regional wastewater treatment plant to Crews Lake. Project objectives include: (1) restoration of a more natural hydrology and aquatic ecology in Crews Lakes; and (2) augmentation of regional aquifer recharge in the headwaters of the Anclote River, which flows to the Gulf of Mexico.

PROJECT COMPONENTS

The Pasco County Utilities Services Branch (PCUSB) has investigated the feasibility of using reclaimed water to restore the hydrology and aquatic biological communities in Crews Lake. Approximately 4 million gallons per day of highly treated domestic wastewater effluent from the Pasco County Master Reuse System will be diverted and discharged into the north end of Crews Lake. The use of treated effluent to augment wetland hydrology is allowed under the Wetlands Application Rule (Chapter 62-611, Florida Administrative Code).

The wetland restoration area layout consists of an application area constructed using existing onsite berms and adding two constructed berms. **Figure 15-7C** shows a schematic of the wetland rehydration engineering plan. The application area will be created by constructing a raised berm (Berm 2) that starts from the existing western berm and extends around the western perimeter of the site, enclosing a total of 135 acres. An additional small berm (Berm1) will be constructed within the application area to prevent short-circuiting from the inlet of the wetland

system directly to the south. Within the application area, a 4-acre mitigation wetland marsh will be created to account for the wetland impacts related to the construction of the two berms.

The wetland restoration area connects to the existing berms of the receiving wetland downstream of the application area and the natural Crews Lake bed perimeter. This area encloses an additional 90 acres and extends southwest from the existing southwestern berm to the Pasco County property line. The total footprint of the wetland restoration area is approximately 225 acres.

Figure 15-7C. Crews Lake schematic of wetland rehydration engineering plan.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will restore the hydrology and ecology of Crews Lake, the primary natural feature of the Pasco County–owned Crews Lake Wilderness Park. The hydrologic and ecological restoration will recreate approximately 225 acres of historic lake bed and associated aquatic and riparian wetland habitats in the park. Restoration of the Crews Lake natural systems will significantly enhance the recreational uses and aesthetics of the park for Pasco County residents and visitors. In addition to the restoration of Crews Lake natural systems, this project will contribute significantly to regional aquifer recharge, and surface water flows, to the headwaters of the Anclote River, which flows to the Gulf of Mexico. Regional hydrology in this area has been significantly affected by many decades of excessive groundwater pumping. This project will help mitigate those impacts.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats.

Implementing Entities

Pasco County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of the project.

Best Available Science and Feasibility Assessment

A feasibility study has been conducted for this project, including predictions of hydrologic, ecological, and water quality benefits, as cited below:

- *CH2M Hill, 2011. Crews Lake Natural Systems Restoration Feasibility Study, Final Report. Prepared for PCUSB, March 2011. 146 pp.*

This project is consistent with the goals and objectives of the following natural resource management plan:

- *Southwest Florida Water Management District (SWFWMD), 2001. Springs Coast Comprehensive Watershed Management Plan.*

This project is currently in the conceptual design stage and is being independently reviewed for feasibility, permitability, and cost estimates. Based on initial reviews, this project is determined to be feasible with respect to permitability and ability to maintain the system over the long term.

Risks and Uncertainties

In the evaluation of this project, no significant risks or uncertainties have been identified. The discharge of treated wastewater effluent to augment wetland hydrology and to improve downstream water quality is allowable under state rules. Risks related to an adjacent sinkhole are present, though geotechnical investigations and subsequent solutions are being incorporated into the design to mitigate those risks.

Success Criteria and Monitoring

Specific success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for the following:

- Wetland restoration (acres restored)
- Changes in water levels and flows in Crews Lake
- Changes in concentrations of reclaimed-water-associated nutrient pollutants in Crews Lake.

In the project grant request, a detailed monitoring program will be designed that addresses data collection and assessment methodologies for the above-listed criteria. Pasco County is committed to implementing the necessary monitoring program and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 12 years, including five years for success monitoring. It is expected to start in 2018 and end in 2029. Feasibility and preliminary design were started in 2016 and are undergoing peer review at this time. Implementation of this project has been divided into five milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study (complete)																
Preliminary design																
Final design/permitting																
Construction																
Success monitoring																

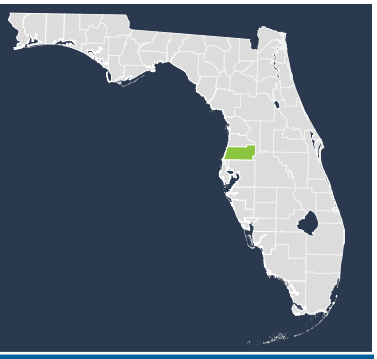
Budget and Funding Sources

This project is in the conceptual design stage and Pasco County has estimated the total cost of the project to be $8,922,720 Pasco County is committed to allocating $1,400,000 of its share of the Florida Spill Impact Component to this project. Pasco County is also in discussions SWFMWD for cooperative funding, and will also be seeking other sources of leveraged funds. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study (complete)	$0	$0
Preliminary design	$246,000	$246,000
Planning Subtotal	**$246,000**	**$246,000**
Final design and permitting (Phases 1 & 2)	$790,720	$790,720
Construction (Phases 1 & 2)	$7,766,000	$363,280
Implementation Subtotal	**$8,556,720**	**$1,154,000**
Monitoring	$120,000	$0
Total Cost	**$8,922,720**	**$1,400,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$1,400,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$1,400,000**
Budget Shortfall		**$7,522,720**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
F.19 Conservation Technical Assistance		
F.21 Watershed Protection and Flood Prevention		
F.27 Regional Conservation Partnership Program (RCPP)		
F.52 North American Wetlands Conservation Act (NAWCA): Small Grants		
F.53 NAWCA: Standard Grant		
Five Star and Urban Waters Restoration Grant Program		
O.43 Southeast Aquatics		
S.07 Flood Mitigation Assistance Program		
S.09 Pre-Disaster Mitigation Program		
S.36 Water Projects		
S.52 SWFWMD Cooperative Funding Initiative		

Partnerships/Collaboration

Pasco County will continue to collaborate with Southwest Florida Water Management District in the design and implementation of this project.



PASCO COUNTY

Ranch Road Infrastructure Improvements

PROJECT NO. 15-8

Project Description

OVERVIEW AND LOCATION

This project involves the acquisition of two parcels currently owned by a private utility, the integration of these parcels into a new Pasco County–owned park, the construction of a linear wet detention pond to reduce local flooding and treat roadway runoff, and the construction of a county sewer force main interconnect. The project is located on Ranch Road just east of U.S. Highway 19 in the Jasmine Estates/Embassy District of Pasco County. The general location of the project is shown in **Figure 15-8A**. Although this project addresses water quality improvement, the primary focus of the project is on coastal flood protection. For this reason, this project is classified as infrastructure with respect to the 25 percent infrastructure limitation.

Figure 15-8A. General location of the Ranch Road water quality improvement project.

NEED AND JUSTIFICATION

The Jasmine Lakes/Palm Terrace area of Pasco County is characterized by dense residential development with old and failing drainage and wastewater infrastructure. In addition, there are limited recreational park facilities in this area. There is an opportunity to improve all of these conditions through the acquisition of parcels currently owned by the Florida Governmental Utility Authority (FGUA), a private utility; the consolidation of these parcels with existing Pasco County–owned land; and the development of a new Pasco County–owned park served by upgraded county stormwater and wastewater facilities. The project area and subject parcels are shown in **Figure 15-8B**.

PURPOSE AND OBJECTIVES

The purpose of this project is to acquire two parcels currently owned by a private utility, and to integrate these parcels into a new County-owned park served by upgraded county stormwater and wastewater facilities. Project objectives include: (1) reduce local street and residential flooding; (2) improve treatment of roadway runoff; (3) interconnect local neighborhoods with county wastewater utilities; and (4) develop a new neighborhood park.

Figure 15-8B. Ranch Road project parcels.

PROJECT COMPONENTS

This project will involve the following components:

- Acquire parcels and associated treatment facilities from FGUA
- Demolish FGUA treatment facilities
- Construct a wastewater force main to serve local neighborhoods
- Construct linear wet detention ponds to reduce local flooding and treat roadway runoff
- Construct a recreational park facility.

Figure 15-8C. Conceptual Ranch Road park plan.

The park will have open greenspace for a variety of activities, including a dog park, a playground, and sports courts (basketball, volleyball, etc.). **Figure 15-8C** shows a conceptual plan for the Ranch Road park.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will contribute to the reduction of local flooding in the Jasmine Lakes/Palm Terrace area of Pasco County, as well as improve wastewater and stormwater treatment in the affected neighborhoods. The project will convert several hundred residences from package plant to centralized sewer service, and will provide stormwater treatment facilities that meet current design guidelines. In addition, the project will add greenspace and recreational amenities in a densely populated area with limited area for stormwater treatment and aquifer recharge. These attributes will in turn contribute to the sustainability of the Pasco County economy.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 7: Coastal flood protection and related infrastructure (primary)

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 4: Enhance Community Resilience.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve and Protect Water Resources (primary)
- Objective 5: Promote Community Resilience.

Implementing Entities

Pasco County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of the project.

Best Available Science and Feasibility Assessment

The pollutant removal effectiveness of various stormwater best management practices implemented in Florida, including wetland treatment systems, has been evaluated, and designs continue to be improved. The design of the proposed stormwater improvements will consider the following reference documents:

- *Harper, H. and D. Baker, 2007. Evaluation of Current Stormwater Design Criteria Within the State of Florida. Final report prepared for the Florida Department of Environmental Protection (contract SO108) by Environment Research & Design, Inc., Orlando, FL.*

- *Florida Department of Transportation (FDOT) Drainage Handbook. Office of Design, Drainage Section, 2012.*

Based on extensive precedents for watershed rehabilitation in southwest Florida, this project is considered to be feasible in terms of the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term.

Risks and Uncertainties

In the evaluation of this project, no significant risks or uncertainties have been identified. Retrofitting of urban roadways for water quantity and quality improvements is feasible and these activities are frequently implemented. In addition, FGUA is a willing seller of the subject properties.

Success Criteria and Monitoring

This project will reduce flooding and surface water pollutant loads from urban stormwater runoff. In addition, the project will also improve water quality in downstream receiving waters. Therefore, a range of success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Reduction in the frequency and severity of flood events
- Change in pollutant loadings pre- and post-construction.

In the project grant request, a detailed monitoring program will be designed that addresses data collection and assessment methodologies for the above-listed criteria. Pasco County is committed to implementing the necessary monitoring program and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately five years. It is expected to start in 2029 and end in 2033. Implementation of this project has been broken down into five milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Preliminary design												■				
Property assessment												■				
Property acquisition													■			
Final design and permitting													■	■		
Construction														■	■	
Success monitoring															■	■

Budget and Funding Sources

This project is in the conceptual design stage, but Pasco County has developed a preliminary cost estimate of $2,800,000, including property acquisition. Pasco County is committed to allocating $500,000 of its share of the Florida Spill Impact Component to this project, and will be pursuing several other sources of leveraged funding including cooperative funding with the Southwest Florida Water Management District (SWFWMD). A summary of the project budget and funding sources is provided in the following table.

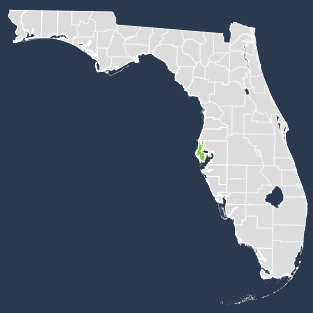
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Preliminary design	$40,000	$30,000
Property assessments	$40,000	$40,000
Planning Subtotal	**$80,000**	**$70,000**
Property acquisition	$2,000,000	$0
Final design and permitting	$60,000	$0
Construction	$650,000	$420,000
Implementation Subtotal	**$2,710,000**	**$420,000**
Monitoring	$10,000	$10,000
Total Cost	**$2,800,000**	**$500,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$500,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$500,000**
Budget Shortfall		**$2,300,000**
POTENTIAL LEVERAGED FUNDING SOURCES		
Pennies for Pasco		
Natural Resource Damage Assessment		
F.03 Rural Community Development Initiative Grants		
F.12 Community Facilities Technical Assistance and Training Grant		
F.21 Watershed Protection and Flood Prevention		
S.08 Hazard Mitigation Grant Program		
S.18 Clean Water State Revolving Fund (CWSRF)		
S.25 Innovative Nutrient and Sediment Reduction and Conservation Pilot Project Program		
S.27 Nonpoint Source Management Program (NPSM) - Section 319		
S.34 TMDL Water Quality Restoration Grants		
S.36 Water Projects		
S.52 SWFWMD Cooperative Funding Initiative		

Partnerships/Collaboration

Pasco County anticipates collaborating with the Southwest Florida Water Management District in the design and implementation of this project.

PINELLAS COUNTY

Lake Seminole Sediment Removal



PROJECT NO. 16-1

Project Description

OVERVIEW AND LOCATION

The Lake Seminole Sediment Removal project involves the dredging of nutrient-enriched organic sediments from an impounded coastal lake to: (1) improve water quality and ecological conditions in the lake; and (2) reduce downstream nutrient loads to Boca Ciega Bay, a segment of the Tampa Bay estuarine system. Lake Seminole is located in west central Pinellas County (see **Figure 16-1A**).

Figure 16-1A. Lake Seminole location map.

NEED AND JUSTIFICATION

Lake Seminole was created in the mid-1940s by the impoundment of the upper, brackish water portion of Long Bayou, an historic segment of Boca Ciega Bay. The lake was originally created in part to provide irrigation water for adjacent citrus groves, but over time the citrus groves were replaced by dense urban residential and commercial land uses. In 1967, Lake Seminole County Park was developed on the east side of the lake to provide public recreational access. Since that time, the ecological conditions have steadily declined as a result of untreated agricultural and urban stormwater runoff, increased hydrologic residence time, and accumulation of organic sediments. Beginning in the early 1990s, water quality degraded significantly, primarily because of frequent and severe blue-green algae blooms. In addition, sport fish stocks declined and nuisance aquatic vegetation proliferated.

In partnership with state and regional agencies, Pinellas County developed and adopted the Lake Seminole Watershed Management Plan (LSWMP) in 2004. The LSWMP recommended six structural projects to restore lake water quality, habitats, and fish wildlife populations. Most of these projects involved retrofitting advanced stormwater treatment systems into older urban development, as well as the eradication of exotic aquatic vegetation followed

by the replanting of desirable native species. After combined public expenditures of more than $10,000,000, all but one of the structural projects recommended in the LSWMP have been completed, and ecological conditions have improved. However, high nutrient concentrations problems still persist and are attributable to the reservoir of nutrient-enriched sediments that have accumulated on the lake bottom.

Sediment resuspension and nutrient recycling continue to fuel algae blooms in the lake, and because blue-green algae can pull nitrogen from the atmosphere, nitrogen loads contained in Lake Seminole waters discharged to Boca Ciega Bay are significantly increased by degraded lake water quality. The dredging of organic sediments from Lake Seminole was a top ranked project recommended in the LSWMP to address water quality; however, it is the last project to be implemented because of its cost and complexity. The availability of RESTORE Act monies, and other leveraged funds, now make this project possible.

Figure 16-1B. Location of Lake Seminole dredge areas, lake impoundment and outfall, and the DMMA.

PURPOSE AND OBJECTIVES

The purpose of this project is to remove approximately 1,000,000 cubic yards of organic and nutrient enriched sediments from the bottom of Lake Seminole. The objectives of the project are to: (1) reduce nutrient concentrations and improve water quality in Lake Seminole; (2) reduce nutrient loads discharged from Lake Seminole to Long Bayou and Boca Ciega Bay, a segment of the Tampa Bay estuarine system; and (3) increase seagrass coverage in Long Bayou and Boca Ciega Bay by improving estuarine water clarity.

PROJECT COMPONENTS

Lake sediment removal will be accomplished using a hydraulic dredge, with the dredged spoil material being pumped to a Pinellas County–owned upland dredged material management area (DMMA) along the east side of the lake (see **Figure 16-1B**). Dredging will be conducted in stages over approximately 5 years to allow for managed on-site spoil dewatering and stockpiling. The dewatered spoil will be retained on-site. Post-project, the area will be considered for multi-use recreational fields or other public uses.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will improve water quality conditions in both Lake Seminole—an economically important coastal lake—and in Boca Ciega Bay, a segment of the Tampa Bay estuarine system. Based on sediment and dredge feasibility studies, the project will remove approximately 416 tons of nitrogen and 77 tons of phosphorus from Lake Seminole, and will reduce current nitrogen loadings from Lake Seminole to Boca Ciega Bay by approximately 56 percent. Boca Ciega Bay is nitrogen limited; therefore, nitrogen load reductions are predicted to improve water clarity and increase seagrass acreage in the bay.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

Pinellas County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of this project. Pinellas County has coordinated extensively with the Southwest Florida Water Management District (SWFWMD) in the planning, feasibility analysis, design, and permitting of the project.

Feasibility Assessment and Best Available Science

This project has been well studied, including a watershed management plan, a sediment removal feasibility study, conceptual design and permitting, preparation of bid documents, and the review of multiple bids. Pinellas County has received state and federal permits as well as an approved bid for project construction. The basis for design and the assessment of sediment nutrient concentrations have been described in the following report:

- *AMEC-BCI, 2011. Lake Seminole Sediment Removal Project Preliminary Design Report. Final Report submitted to Pinellas County.*

In the approved bid for project construction, the contractor proposed modifications for handling of spoil material, and negotiated these modifications with Pinellas County. Accordingly, the state and federal permits need to be amended to reflect the modified approach.

Risks and Uncertainties

In the evaluation of this project, no significant risks or uncertainties have been identified that would preclude implementation. This project is ready to begin permit modification and construction.

Success Criteria and Monitoring

This project will affect water quality in a coastal lake, and water quality and submerged aquatic vegetation in an adjacent estuarine system. Therefore, a range of success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Changes in water clarity and nutrient concentrations in Lake Seminole
- Changes in nitrogen loads delivered from Lake Seminole to Long Bayou
- Changes in water clarity in Long Bayou and nearby Boca Ciega Bay.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Pinellas County implements an ambient water quality monitoring program in county surface waters, and is committed to conducting the monitoring necessary to quantify project benefits.

Project Milestones and Schedule

The total estimated time horizon of this project—from permit modification through success monitoring—is approximately six years. It is expected to start in 2018 and end in 2023. Implementation of this project has been divided into four phases, as shown in the milestone chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DMMA design																
Modification of permits																
Construction																
Success monitoring																

Budget/Funding and Leveraged Resources

The estimated project cost of $18,860,000 has been determined through an open bid process, and includes both planning and implementation activities. Planning costs are estimated at $600,000 and involve the design of the DMMA as well as modification of state and federal permits. Construction costs are estimated at $18,100,000, including contingencies. Pinellas County is committed to allocating $1,160,000 of its share of Florida's Spill Impact Component to this project. Another $9.5 million in project costs will be funded through a $1.5 million state legislative appropriation (approved in 2018), and an $8 million cooperative funding agreement from SWFWMD. The remaining project costs of $8.2 million will be funded by other County funds committed as a match to the SWFWMD cooperative funding agreement. A summary of the funding sources for this project is provided in the table below.

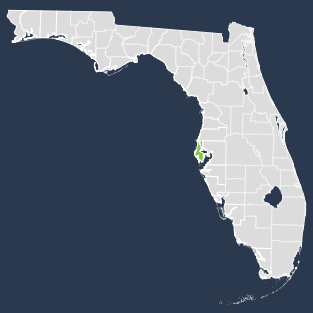
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
DMMA design and permit modifications	$600,000	$0
Planning Subtotal	**$600,000**	**$0**
Construction	18,100,000	$1,000,000
Implementation Subtotal	**$18,100,000**	**$1,000,000**
Success monitoring	$160,000	$160,000
Total Cost	**$18,860,000**	**$1,160,000**
SECURED FUNDING SOURCES		
Spill Impact Component		$1,160,000
Direct Component		$0
Other grants and co-funding - SWFWMD cooperative funding		$8,000,000
Other grants and co-funding - state legislative appropriation		$1,500,000
Other County funds		$8,200,000
Total Secured Funding		**$18,860,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
F.19 Conservation Technical Assistance		
F.21 Watershed Protection and Flood Prevention		
F.59 Urban Waters Small Grants		
O.18 Fish America Foundation		
O.43 Southeast Aquatics		
O17 Environmental Solutions for Communities		
S.34 TMDL Water Quality Restoration		
S.36 Water Projects		
S.49 Sport Fish Restoration Program		
S.52 SWFWMD Cooperative Funding Initiative		

Partnerships/Collaboration

Pinellas County has partnered with the Southwest Florida Water Management District in the development of the Lake Seminole Watershed Management Plan as well as the implementation of projects specified in that document. The Southwest Florida Water Management District has committed to co-funding the implementation of this project.

PINELLAS COUNTY

Wastewater Collection System Improvements



PROJECT NO. 16-2

Project Description

OVERVIEW AND LOCATION

This program involves assessing the existing condition of the wastewater collection systems, and evaluating the rain-derived inflow and infiltration (I&I), in resident-owned mobile home parks around Lake Seminole and the Lealman unincorporated areas of Pinellas County. From the I&I evaluation study, design and construction solutions will be determined to cost-effectively reduce the rain-derived I&I and sanitary sewer overflows (SSOs), and thus lessen impacts to local waterbodies. The general location of the project is shown in **Figure 16-2A**.

Figure 16-2A. General location of the Pinellas County Wastewater Collection System Improvements project.

NEED AND JUSTIFICATION

Development patterns in Lealman and Lake Seminole areas of Pinellas County are characterized by dense older residential areas with many resident-owned mobile home parks (MHPs). Many of the wastewater collection and conveyance systems in these MHPs are aging and failing, and are known to be contributing to periodic sanitary sewer overflows (SSOs) in this portion of Pinellas County. The primary receiving waters in this area include Joes Creek and Lake Seminole. Both of these waterbodies have been determined by the Florida Department of Environmental Protection (FDEP) as impaired for nutrients and dissolved oxygen, and Joes Creek is also impaired for bacteria. This project will improve water quality by reducing I&I, which is a source of SSOs and increased flows to the South Cross Bayou Wastewater Reclamation Facility, which discharges treated effluent to Joes Creek.

PURPOSE AND OBJECTIVES

The purpose of this program is to identify the sources of, and reduce, domestic wastewater I&I in the unincorporated Lake Seminole and Lealman areas of the Pinellas County. The objectives of the project are to: (1) reduce or eliminate

I&I in the affected areas; (2) reduce the frequency and severity of SSOs; (3) reduce nutrient and bacteria loads to receiving surface waters of Joes Creek, Lake Seminole, and Boca Ciega Bay resulting from SSOs.

PROJECT COMPONENTS

The program addresses aging and/or failing wastewater infrastructure in some of the oldest developed areas in unincorporated Pinellas County, and will include several different projects. The concept is for Pinellas County to identify resident owned MHPs with failing wastewater infrastructure based on system wide studies currently being performed by the County. When funding becomes available, the County will approach a MHP and offer to acquire the private sanitary sewer collection systems at no cost to the County. Once the County takes ownership and the sanitary sewer system becomes a public asset, a thorough video inspection will be completed using closed-circuit TV cameras owned and operated by the County. During the video process, an inspection report will be generated using the NASSCO (National Association of Sewer Service Companies) ratings for pipelines and manholes. Based on these ratings, a project will be identified and completed for the MHP using various County contracts.

The number of projects will be determined by how many MHPs will request to participate in the program and how much Spill Impact Component grant funding will be available. Once the proposed grant funding is exhausted, new sources of grant funding will be explored to continue the program for all eligible MHPs. It is anticipated that most eligible MHPs will want to participate in this program since the alternative will require the MHP to complete the investigation and repairs with the full cost borne by the residents who are typically elderly and on fixed incomes. In addition, the legal implications for acquiring the wastewater infrastructure are expected to be marginal since the County typically owns and operates the water systems in the MHP, and there are existing easements that allow the County the right to enter the complex to provide maintenance and repairs.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will replace aging and/or failing wastewater infrastructure in some of the oldest developed areas in unincorporated Pinellas County, thus reducing or eliminating documented I&I and SSO problems in this area. The proposed wastewater system improvements are expected to improve water quality conditions in the nearby receiving waters of Joes Creek, Lake Seminole, and Boca Ciega Bay by reducing nutrient and bacteria loads from SSOs. Reduced nutrient loads are in turn expected to improve water clarity and conditions for seagrass recovery in Boca Ciega Bay, a defined segment of the Tampa Bay estuarine system.

Eligibility and Statutory Requirements

This program is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This program is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This program is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

Pinellas County will be the sole implementing entity and grant sub-recipient responsible for the feasibility studies, design, permitting, construction, operation and maintenance, and monitoring of this project.

Best Available Science and Feasibility Assessment

Sanitary sewer overflows from aging and failing wastewater infrastructure in Tampa Bay is a problem recognized by the Tampa Bay Estuary Program (TBEP), as well as the FDEP and Florida Fish and Wildlife Conservation Commission. Prioritizing and upgrading aging and failing wastewater infrastructure to reduce the frequency and severity of SSOs is water quality improvement strategy identified by the TBEP in the following docu*ment.*

- *Tampa Bay Estuary Program, 2017. Charting the Course: The Comprehensive Conservation and Management Plan (CCMP) for Tampa Bay (August 2017 Revision).*

This program is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the projects, and (3) effectively operate and maintain the project components over the long term. The total cost of the program can be refined following the completion of feasibility studies and preliminary designs for some of the early projects.

Risks and Uncertainties

No significant risks or uncertainties have been identified by Pinellas County that would preclude implementation of the program discussed above. The total number of participating MHPs is not known at this time, but the county has identified up to 16 MHPs that will be targeted. There is some risk that MHPs will choose not to participate in the program; however, this is a minimal risk as the financial incentives to participate are significant.

Success Criteria and Monitoring

This project will improve sewer infrastructure, reduce SSOs, and affect surface waters and living marine resources in Joes Creek and Boca Ciega Bay adjacent to the sewer improvement areas. Therefore, a range of success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Linear feet of sewer conveyance lines replaced
- Reduction in SSO frequency and severity
- Estimated reduction in nutrient and bacteria loads attributable to the wastewater improvements
- Changes in ambient water quality (nutrients, bacteria, chlorophyll-a) in Joes Creek and Boca Ciega Bay in the vicinity of wastewater improvements.

In the project grant request, a detailed monitoring program will be described that addresses data collection and assessment methodologies for the above-listed criteria. Pinellas County is committed to an adaptive management approach to the project, and to conducting the monitoring necessary to support this approach and to quantify project benefits. Water quality monitoring will be coordinated with state and regional entities including the FDEP and the TBEP, as appropriate.

Milestones and Schedule

The total estimated time horizon of this program from feasibility study through construction and subsequent success monitoring, is approximately eight years. It is expected to start in 2020 and end in 2028. Implementation of this project has been divided into five phases, as shown in the milestone chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study			■													
Preliminary design				■												
Final design and permitting						■	■									
Construction								■	■							
Success monitoring							■			■	■					

Budget and Funding Sources

Pinellas County has estimated the total cost of this program to be approximately $18,000,000, and is committed to allocating $6,460,000 of its share of the Florida Spill Impact Component to this program. This program will be scaled to the available funding. As noted above, the number of projects will be determined by how many MHPs request to participate in the program, and how much Spill Impact Component grant funding will be available. Once the proposed grant funding is exhausted, new sources of grant funding will be explored to continue the program for all eligible MHPs. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$75,000	$75,000
Preliminary design	$50,000	$50,000
Planning Subtotal	**$125,000**	**$125,000**
Final design and permitting	$650,000	$650,000
Construction	$17,100,000	$5,560,000
Implementation Subtotal	**$17,750,000**	**$6,210,000**
Monitoring	$125,000	$125,000
Total Cost	**$18,000,000**	**$6,460,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$6,460,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$6,460,000**
Budget Shortfall		**$11,540,000**

POTENTIAL LEVERAGED FUNDING SOURCES
Natural Resource Damage Assessment
F.19 Conservation Technical Assistance
F.21 Watershed Protection and Flood Prevention
F.48 Community Development Block Grants (CDBGs): Entitlement Grants
F.49 CDBGs: Entitlement Grants—Section 108 Loan Guarantees
F.59 Urban Waters Small Grants
F.63 Water Infrastructure Finance and Innovation Act (WIFIA)
O.43 Southeast Aquatics
S.10 Community Planning Technical Assistance Grants
S.13 Florida Job Growth Grant Fund
S.18 Clean Water State Revolving Fund (CWSRF)
S.25 Innovative Nutrient and Sediment Reduction and Conservation Pilot Project Program
S.27 Nonpoint Source Management Program (NPSM): Section 319
S.35 Water Pollution Control
S.36 Water Projects
S.52 Southwest Florida Water Management District (SWFWMD) Cooperative Funding Initiative

Partnerships/Collaboration

This project will require collaboration between Pinellas County Public Works and Utilities Departments, and the Florida Department of Health. It is anticipated that there will also be opportunities to partner with the adjacent municipalities of the City of St. Petersburg and the City of Seminole, by either expanding the program beyond the unincorporated boundaries or sharing the program structure and materials for municipal implementation. Pinellas County has also been a major partner working in collaboration with the Tampa Bay Estuary Program, and the Pinellas County actively participates in the Tampa Bay Nitrogen Management Consortium. This collaboration to improve water quality in Tampa Bay will continue.

PINELLAS COUNTY

Land Acquisition for Floodplain Restoration and Resiliency

PROJECT NO. 16-3

Project Description

OVERVIEW AND LOCATION

This program involves the prioritization and Pinellas County acquisition of severe repetitive loss properties in the coastal flood zone. Targeted properties include those that also have failing wastewater and/or drainage infrastructure, and are thus sources of coastal pollution. Acquired properties will be razed and restored in the future to provide natural habitats and floodplain storage. Properties acquired under this program will be permanently designated as publicly owned conservation areas. Targeted properties have been identified in the Brooker Creek, Cross Bayou, Smith Bayou, Stevenson's Creek, and Curlew Creek watershed, which are shown in **Figure 16-3A**.

Figure 16-3A. Restoration property acquisition location map.

NEED AND JUSTIFICATION

Pinellas County is the most densely populated county in Florida, and much of the early post–World War II development occurred in low-lying coastal areas with inadequate wastewater and drainage infrastructure. Pinellas County has identified approximately 35 severe repetitive loss (SRL) residential and commercial properties in low-lying coastal areas. These properties not only experience frequent nuisance flooding, but also generate pollutants from failing wastewater (e.g., septic tanks) and inadequate stormwater treatment infrastructure. The costs associated with remediating flood damage and maintaining the development on these SRL properties are not sustainable over the long term. In addition, the Brooker Creek, Cross Bayou, Smith Bayou, Stevenson's Creek, and Curlew Creek watersheds all have documented water quality impairments.

PURPOSE AND OBJECTIVES

The purpose of this program is to publicly acquire priority SRL residential and commercial properties in low-lying coastal areas, raze the existing development, and restore the properties back to natural systems that provide both habitat and floodplain storage functions. The objectives of the program are to: (1) improve coastal resiliency by eliminating unsustainable residential and commercial SRL properties; (2) remove existing failing infrastructure and eliminate on-site pollutant sources; (3) improve ambient water quality; (4) restore native fish and wildlife habitats; and (5) provide for increased coastal floodplain storage.

PROJECT COMPONENTS

This program involves three components: (1) property acquisition; (2) demolition and the removal of existing development and failing infrastructure; and (3) restoration of natural systems and coastal floodplain storage. Spill Impact Component funds will be used only to acquire priority properties and to remove existing pollutant sources. Other Pinellas County funds will be used for future restoration of natural systems.

Figure 16-3B. Example SRL property in the Cross Bayou watershed of Pinellas County.

Acquired properties will be maintained in Pinellas County ownership in perpetuity for conservation and floodplain storage functions. **Figure 16-3B** shows one of the priority properties. This property and is a densely populated mobile home park located on Cross Bayou, a tidal slough that connects Old Tampa Bay to Boca Ciega Bay. The mobile home park is frequently flooded, and the only wastewater treatment facilities are septic tanks. Under this program, the property will be acquired and razed, including the removal of all existing septic tanks. Using future Pinellas County funds, the property will be graded, planted, and integrated into adjacent native habitats, which include mangroves and oligohaline marshes. Similar conditions exist at the other identified priority SRL properties.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will improve coastal resiliency in Pinellas County by eliminating unsustainable residential and commercial SRL properties and converting them to public ownership for later restoration of native habitats and coastal floodplain storage. In addition, the project is expected to improve ambient water quality in several impaired waterbodies by removing failing wastewater and stormwater treatment infrastructure.

Implementing Entities

Pinellas County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of this project.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 5: Promote Community Resilience.

Feasibility Assessment and Best Available Science

This program is considered to be feasible with respect to the ability to: (1) acquire priority properties; (2) obtain necessary permits; (3) raze existing infrastructure and restore native habitats and coastal floodplain storage; and (4) effectively maintain the restored natural systems in perpetuity. The program is also consistent with the following adopted natural resource management plan:

- *Janicki Environmental et al., 2011. Comprehensive Conservation and Management Plan (CCMP) for Clearwater Harbor and St. Joseph Sound. Final report prepared for the Pinellas County Department of Environmental and Infrastructure and the Southwest Florida Water Management District.*

Risks and Uncertainties

Land acquisition activities are always at risk with respect to securing a willing seller and negotiating reasonable terms. Pinellas County has identified priority properties with willing sellers and is ready to proceed with property acquisitions.

Success Criteria and Monitoring

This program will involve property acquisition and restoration, and is also expected to improve adjacent water quality via the removal of existing pollutant sources. Specific success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Acres of SRL properties acquired
- Acres of acquired properties restored
- Changes in ambient water quality in the vicinity of the improvements.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above listed criteria. Pinellas County implements an ambient water quality monitoring program in County surface waters, and is committed to conducting the monitoring necessary to quantify project benefits.

Project Milestones and Schedule

The total estimated time horizon of this project is approximately eight years. It is expected to start in 2018 and end in 2025. Implementation of this project has been divided into six milestones, as shown in the milestone chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility Study																
Site assessments																
Property acquisition																
Final Design & Permitting																
Construction																
Success monitoring																

Budget/Funding and Leveraged Resources

Pinellas County has estimated the total cost to acquire, appraise and secure the identified priority SRL properties to be approximately $10,000,000. Pinellas County is proposing to use $3,450,000 of their Spill Impact Component allocation for property acquisition and demolition, with the remainder of the project costs to made up with other Pinellas County funds. A summary of the project budget and funding sources for this program is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$200,000	$0
Site assessments and appraisals	$250,000	$0
Planning Subtotal	**$450,000**	**$0**
Property acquisition and demolition	$9,400,000	$3,450,000
Final design and permitting for restoration	$100,000	$0
Implementation Subtotal	**$9,500,000**	**$3,450,000**
Monitoring	$50,000	$0
Total Cost	**$10,000,000**	**$3,450,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$3,450,000
Direct Component		$0
Other County funds		$6,550,000
Total Committed Funding		**$10,000,000**
Budget Shortfall		**$0**

POTENTIAL LEVERAGED FUNDING SOURCES
Natural Resource Damage Assessment
F.19 Conservation Technical Assistance
F.21 Watershed Protection and Flood Prevention
F.40 Coastal and Marine Habitat Restoration Grants
F.51 National Coastal Wetlands Grants
O.42 Shell Marine Habitat Program
O.43 Southeast Aquatics
S.07 Flood Mitigation Assistance Program
S.47 Florida's State Wildlife Grants Program (Florida's Wildlife Legacy Initiative)
S.52 SWFWMD Cooperative Funding Initiative

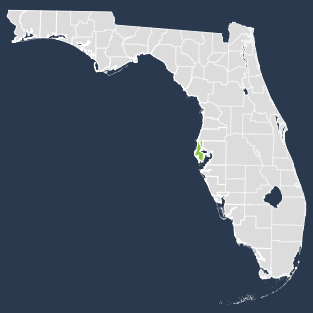
Should additional leveraged funds become available, they will be used to conduct habitat restoration on the acquired properties.

Partnerships/Collaboration

Pinellas County anticipates partnering with the Southwest Florida Water Management District, and will seek cooperative funding for restoration of the acquired properties in the future.

PINELLAS COUNTY

Coastal Public Access Program



PROJECT NO. 16-4

Project Description

OVERVIEW AND LOCATION

This program involves the assessment and pubic acquisition of priority waterfront properties and the construction of boat ramps and other recreational amenities to augment public access to coastal waterways. The general location is coastal Pinellas County (see **Figure 16-4A**).

NEED AND JUSTIFICATION

Pinellas County is the most densely populated county in Florida, and there is tremendous public demand for boat ramps and increased access to coastal waterways. Providing public access to coastal waters has been identified in public surveys as an important service that Pinellas County government offers to its residents and visitors. Pinellas County currently owns and manages six coastal public boat ramps and 11 saltwater fishing piers, but there is a need to increase those numbers, especially in high-use areas such as Clearwater Harbor and Boca Ciega Bay. **Figure 16-4B** shows the location of the existing county-owned boat ramps and the proximity of sensitive marine resources.

Figure 16-4A. Public Waterways location map.

PURPOSE AND OBJECTIVES

The purpose of this program is to acquire priority waterfront sites to augment public access to coastal waterways within the county. The objectives of the program are to: (1) increase public access to coastal waters and (2) enhance coastal zone recreational opportunities for residents and visitors.

PROJECT COMPONENTS

This program involves two components: (1) property acquisition of strategically located waterfront parcels that can provide public access to coastal waters and (2) the construction and operation of recreational amenities. Pinellas

County will seek to acquire properties only from willing sellers. Depending on the sites involved, amenities could include: boat ramps, fishing piers, transient docks, and kayak launches, as well as supporting infrastructure such as parking lots, bathroom facilities, fish cleaning areas, and interpretive public educational kiosks.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will improve public access to the coastal waters of Pinellas County and enhance public recreational opportunities. In addition, this program will contribute to the local economy through increased local resident expenditures for recreational activities, as well as increased spending by visiting tourists.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of tourism in the Gulf Coast region, including recreational fishing.

Figure 16-4B. Location of existing boat ramps and sensitive marine resources in central Pinellas County.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Gulf Consortium Objective:

- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Pinellas County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of projects completed under this program.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The primary focus of this program is public recreational access and tourism promotion; therefore, BAS does not apply.

This program is considered to be feasible with respect to the ability to: (1) acquire priority properties; (2) obtain necessary permits; (3) construct recreational amenities; and (4) effectively operate and maintain recreational amenities in perpetuity. Regulatory permitting will address potential impacts to marine habitats and living resources, and cultural resources, as appropriate.

Risks and Uncertainties

Land acquisition activities are always at risk with respect to securing a willing seller and negotiating reasonable terms. Coastal park and recreational amenities are also at risk for damage by tropical storms and sea-level rise. However, the proposed recreational improvements will factor coastal storm hazards and sea-level rise into the design, as appropriate. Pinellas County has identified priority properties and is ready to proceed with property acquisitions and improvements.

Success Criteria and Monitoring

This program involves property acquisition and the construction of boat ramps and other recreational amenities. Specific success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Acres of coastal access properties acquired
- New boat ramps constructed
- Increase in recreational use.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Pinellas County is committed to conducting the monitoring necessary to quantify project benefits.

Project Milestones and Schedule

The total estimated time horizon of this program is approximately six years. It is expected to start in 2028 and end in 2033. The project milestone chart is shown below.

MILESTONE	YEARS TO COMPLETE															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study																
Property assessments																
Property acquisition																
Design and permitting																
Construction																
Success monitoring																

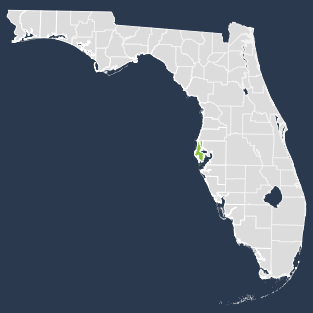
Budget/Funding and Leveraged Resources

Pinellas County has estimated the total cost to acquire and improve identified priority waterfront properties to be approximately $2,000,000. Pinellas County is proposing to use $1,150,000 of their Spill Impact Component allocation to implement this program, and will cover any budget shortfalls with other Pinellas County funds. A summary of the cost and funding sources for this program is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$100,000	$0
Property assessments	$150,000	$0
Planning Subtotal	**$250,000**	**$0**
Property acquisition	$700,000	$150,000
Design and permitting	$100,000	$100,000
Construction	$900,000	$900,000
Implementation Subtotal	**$1,700,000**	**$1,150,000**
Monitoring	$50,000	$0
Total Cost	**$2,000,000**	**$1,150,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$1,150,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$850,000
Total Committed Funding		**$2,000,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
S.20 Coastal Partnership Initiative – Florida Coastal Management Program		
S.23 Florida Recreation Development Assistance Program (FRDAP)		
S.26 Land and Water Conservation Fund (LWCF)		
S.28 Parks and Open Space Florida Forever Grant Program		
S.45 Florida Boating Improvement Program (FBIP)		
S.49 Sport Fish Restoration Program		

Partnerships/Collaboration

Pinellas County may partner with incorporated cities within the county, as appropriate at certain sites.



PINELLAS COUNTY

Artificial Reef Program

PROJECT NO. 16-5

Project Description

OVERVIEW AND LOCATION

This project involves stockpiling clean concrete material and transporting it to existing permitted Pinellas County artificial reef sites. The general location of the Pinellas County artificial reefs is shown in **Figure 16-5A.**

Figure 16-5A. Artificial reef location map.

NEED AND JUSTIFICATION

Natural hardbottom habitats in Pinellas County offshore waters are relatively rare and sparsely distributed. To meet the increasing recreational demand for offshore bottom fishing and scuba diving opportunities, Pinellas County started their artificial reef program in 1975. There is a continuing need to augment existing permitted artificial reef sites and to create new sites to support the demand of recreational fishing and diving enthusiasts, both residents and tourists. In addition to enhancing recreational opportunities and associated economic benefits, artificial reefs can also provide ecological benefits. Hard substrate and vertical structure are limited habitats in the Gulf of Mexico (Fikes, 2013) and artificial reef habitats can provide: (1) hard substrate to support encrusting and colonial benthic organisms such as sponges and corals; (2) niche space for small marine invertebrates; and (3) shelter for larval and juvenile fishes. The project is justified by the demonstrated benefits of artificial reefs, such as increased economic activity (e.g., expenditures, incomes, and jobs) (Adams et al., 2011).

PURPOSE AND OBJECTIVES

The purpose of this project is to augment existing permitted Pinellas County artificial reef sites with clean concrete and other suitable construction materials, as well as manufactured artificial reef materials. The objectives of the project are to: (1) support the increasing recreational demand for offshore reef fishing and scuba diving opportunities

and (2) enhance the abundance, distribution, and structural diversity of hardbottom habitat in the county's coastal waters. Objectives are consistent with those of the Florida Fish and Wildlife Conservation Commission's (FWC's) artificial reef program outlined below:

1. Enhance private recreational and charter fishing and diving opportunities
2. Provide a socio-economic benefit to local coastal communities
3. Increase reef fish habitat
4. Reduce user conflicts
5. Facilitate reef related research
6. Do no harm to fishery resources, essential fish habitat (EFH), or human health.

Figure 16-5B. Location of existing permitted artificial reef sites in Pinellas County.

PROJECT COMPONENTS

This project involves two primary components. The first component is to identify and acquire a sufficient amount of clean concrete material, either waste-stream-re-covered, second-use concrete or manufactured artificial reef modules, or both, and then to prepare (e.g., removal of rebar) and stockpile this material at the existing Pinellas County Artificial Reef Program staging area. The second component is to transport these materials to currently permitted artificial reef locations off the coast of Pinellas County via a barge, and then to strategically deploy the materials to create high-quality fish habitat. The locations will be published to the public and will remain available for public use for recreational fishing and diving. Post-construction monitoring will also be conducted to ensure that the deployment of this material produced high-quality habitat that supports important reef fish species (e.g., grouper, snapper).

Pinellas County currently manages 13 permitted artificial reef sites, as shown in **Figure 16-5B**. It is anticipated that material acquired through this project will be distributed on the following 6 of the 13 permitted sites, although other sites may also require material:

- Pinellas South Reef
- Indian Shores Reef
- Veteran's Reef
- Rube Allyn Reef
- Treasure Island II Reef
- Kings Artificial Reef.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

Pinellas County is the most densely populated county in Florida, and the beaches and aquatic resources of the county support an enormous tourism industry. This project will: (1) support the increasing recreational demand for offshore reef fishing and scuba diving opportunities by both residents and tourists and (2) enhance the abundance, distribution, and structural diversity of hardbottom habitat in Pinellas County offshore waters.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of tourism in the Gulf Coast region, including recreational fishing.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objective:

- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Pinellas County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of the program.

Best Available Science and Feasibility Assessment

Artificial reefs in the Gulf of Mexico have been extensively studied with regard to the habitat and economic benefits they provide. The scientific literature on the ecological benefits is somewhat controversial (Lindberg et al., 2014; Fikes, 2013; Bortone et al. 1994; others). Some experts argue that artificial reefs are functionally comparable to natural reefs, and that they augment fish populations by providing habitat that is naturally limited in the Gulf of Mexico. Others argue that artificial reefs simply attract and aggregate existing fish populations, but do not enhance overall fish stocks. While those arguments may be debatable, the economic benefits of artificial reefs are not. Artificial reefs provide significant recreational opportunities and associated benefits along the Gulf Coast of Florida (Adams et al. 2011). In addition, research has produced best practices guidance on site selection, design features, and construction methods, criteria that are now part of the FWC regulations for permitting. Key literature that forms the basis for the Pinellas County Artificial Reef Program are cited below:

- *Adams, C., et al., 2011. The economic benefits associated with Florida's artificial reefs. EDIS document FE649 (2011): 1-6.*
- *Bortone, S.A., Martin, T., Bundrick, C.M., 1994. Factors affecting fish assemblage development on a modular artificial reef in a northern Gulf of Mexico estuary. Bull. Mar. Sci. 55 (2-3), 319-332.*
- *Fikes, R., 2013. Artificial Reefs of the Gulf of Mexico: A Review of Gulf State Programs & Key Considerations. National Wildlife Federation.*

- *Lindberg, W.J., et al., 2014. Rationale and Evaluation of an Artificial Reef System Designed for Enhanced Growth and Survival of Juvenile Gag, Mycteroperca microlepis. Proc.66th Gulf and Caribbean Fisheries Institute November 4–8. Corpus Christi, TX. Pages 320-325.*
- *Swett et al., 2011. Economic Impacts of Artificial Reefs for Six Southwest Florida Counties. Florida Sea Grant.*

This project is feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term. The permitting of Pinellas County offshore artificial reef sites has been facilitated through Nationwide U.S. Army Corps of Engineers permits and through the FWC for site-specific state criteria. Furthermore, this project is consistent with the National Artificial Reef Plan published in 1985, the Florida Artificial Reef Strategic Plan (FWC, 2003), and the Pinellas County Artificial Reef Management Plan update (Pinellas County, 2013). Additional planning assistance will be required for permitting, design, and implementation of the proposed project.

Risks and Uncertainties

No significant risks or uncertainties were identified during the evaluation of this project that would preclude project implementation. Pinellas County will ensure design to limit damage from tropical storms. Regulatory constraints will address issues such as spatial boundaries for navigation, channels, marine habitat resources, historic areas, sand borrow areas, existing structures and leases, etc. Success monitoring is critical in a fisheries management context given these reefs have not previously been used as fisheries management tools.

Success Criteria and Monitoring

This artificial reef project involves the placement of hard substrate to support recreational demand for offshore reef fishing and scuba diving opportunities and enhance the abundance, distribution, and structural diversity of hardbottom habitat in the affected waters. Therefore, a range of success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Increase in the coverage of new artificial reef habitat
- Increase in recreational use.

The proposed project will be constructed consistent with the Gulf States Marine Fisheries Commission's *Guidelines for Artificial Reef Materials* (2004). In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Pinellas County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately four years. It is expected to start in 2029 and end in 2032. The anticipated project milestones and schedule are shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Transport material to permitted reef sites													■			
Success monitoring												■		■	■	

Budget and Funding Sources

Pinellas County has estimated the total cost of this project to be approximately $490,000. Pinellas County is proposing to use $440,000 of their Spill Impact Component allocation to implement this program, and will cover any budget shortfalls with other Pinellas County funds. A summary of the cost and funding sources for this program is provided in the table below.

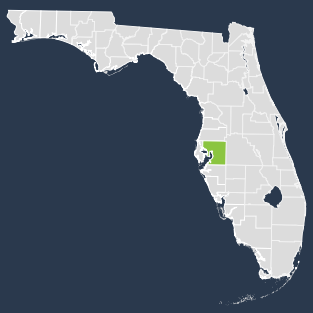
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Construction	$440,000	$440,000
Implementation Subtotal	**$440,000**	**$440,000**
Monitoring	$50,000	$0
Total Cost	**$490,000**	**$440,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$440,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$50,000
Total Committed Funding		**$490,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
O.18 FishAmerica Foundation		
S.11 Competitive Florida Economic Development Project Grant		
S.12 Competitive Florida Partnership Grant		
S.13 Florida Job Growth Grant Fund		
S.41 Artificial Reef Construction and Monitoring		
S.49 Sport Fish Restoration Program		

Partnerships/Collaboration

The Pinellas County Artificial Reef Program routinely collaborates with the Florida Artificial Reef Program managed by the Florida Fish and Wildlife Conservation Commission. This collaboration includes representatives from nearly all coastal counties in Florida and assists with material collection resources, technical construction assistance, artificial reef construction best practices, and outreach.

HILLSBOROUGH COUNTY

Cockroach Bay Aquatic Preserve Land Acquisition and Ecosystem Restoration



PROJECT NO. 17-1

Project Description

OVERVIEW AND LOCATION

This project involves public acquisition of privately owned agricultural parcels in the watershed of the Cockroach Bay Aquatic Preserve, followed by habitat restoration on the acquired parcels. The location of the Cockroach Bay Aquatic Preserve is shown in **Figure 17-1A**.

NEED AND JUSTIFICATION

The Cockroach Bay Aquatic Preserve, located along the southeastern reaches of Tampa Bay, was officially designated as an aquatic preserve by the State of Florida in 1976. In the 1990s, a modification of that lease expanded the offshore boundary of the Aquatic Preserve and added the Little Manatee River up to U.S. Highway 301, for a total of nearly 5,000 acres of aquatic resources that are protected today. Since the expansion of the preserve, Hillsborough County, in partnership with the Southwest Florida Water Management District (SWFWMD) and the Florida Department of Environmental Protection (FDEP), has been acquiring and consolidating privately owned parcels in the preserve watershed and conducting habitat restoration projects on the acquired parcels.

Figure 17-1A. Location of the Cockroach Bay Aquatic Preserve on Tampa Bay.

The Cockroach and Piney Point Creek Ecosystem Restoration Project is the largest coastal restoration project ever performed in Tampa Bay. The project is located on 2,531 acres of preserved lands known as the Cockroach Bay and Piney Point Creek Preserve. The preserve was jointly acquired by the Hillsborough County Environmental Lands Acquisition and Protection Program (ELAPP) and SWFWMD in 2003 and is adjacent to, and in the watershed of, the Cockroach Bay Aquatic Preserve. Prior to public acquisition, conversion of the upland areas and some wetland areas to agricultural uses (e.g., row crops) and rock mining resulted in the loss of native habitats and alteration of the natural hydrology in these areas. The Phase

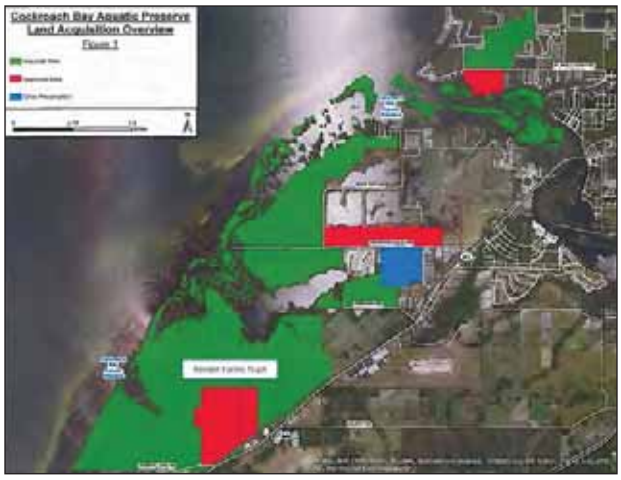


Figure 17-1B. Acquired sites and sites approved for acquisition in the Cockroach Bay Aquatic Preserve watershed.

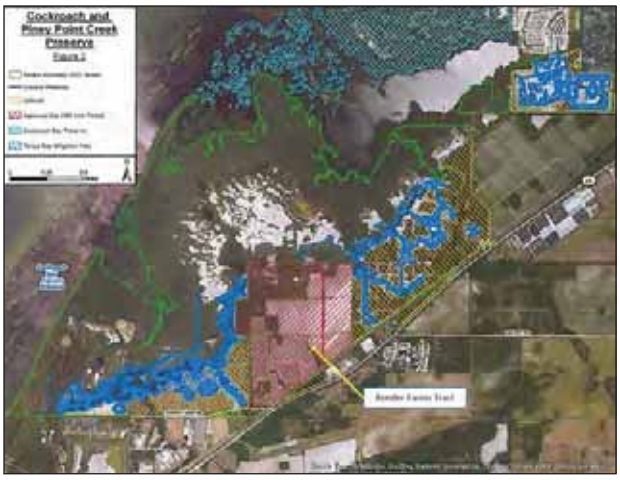


Figure 17-1C. Location of the Reeder Farms tract in relation to other restored public lands in the Cockroach and Piney Pont Creek Preserve.

I restoration project was completed in 2015 and involved the reestablishment of native coastal pine flatwoods, hardwood hammocks, and various estuarine and freshwater habitats, as well as the restoration of more natural drainage patterns and hydrology, on 1,043 acres (1.6 square miles) of disturbed lands.

Spill Impact Component funding is being requested to implement Phase II of the Cockroach and Piney Point Creek Ecosystem Restoration Project. Phase II consists of the acquisition and restoration of a 388-acre parcel known as the Reeder Farms tract. A majority of this parcel is currently under row crop cultivation, with agricultural runoff flowing directly into the adjacent Cockroach Bay Aquatic Preserve. Restoration of the Reeder Farms parcel will tie in seamlessly with the completed Phase I improvements. Benefits of acquiring and restoring the Reeder Farms parcel include the removal of a direct pollution source to the Cockroach Bay Aquatic Preserve, restoration of estuarine and freshwater wetland habitats, restoration of coastal uplands, and improved wildlife habitat for a variety of wading birds, fish, invertebrates, and mammals. In addition, public acquisition and restoration/conservation of this parcel will prevent future commercial and residential development within the watershed of the Cockroach Bay Aquatic Preserve, and will create buffer areas to accommodate future sea-level rise.

PURPOSE AND OBJECTIVES

The purpose of this project is to publicly acquire and restore habitats and hydrology on privately owned agricultural or otherwise disturbed lands within the watershed of the Cockroach Bay Aquatic Preserve. Project objectives include: (1) restore coastal uplands, freshwater wetlands, and estuarine wetlands; (2) eliminate agricultural runoff pollutant discharges to the Aquatic Preserve; and (3) enhance habitats for fish and wildlife populations.

PROJECT COMPONENTS

The components of this project are: (1) public acquisition; (2) design and permitting of restoration activities; (3) implementation of restoration activities; and (4) success monitoring. **Figure 17-1B** shows the location of the Reeder Farms tract and other parcels approved by ELAPP for acquisition relative to the Cockroach Bay Aquatic Preserve.

Figure 17-1C shows the Reeder Farms tract's location within the boundaries of the Cockroach and Piney Point Creek Preserve, as well as adjacent restored coastal uplands and created wetlands. From this figure, it can clearly be seen that the Reeder Farms tract is a critical central piece in the restoration of the preserve. Spill Impact Component

funds are being requested to acquire the Reeder Farms tract. Restoration design and construction costs will be shared between Hillsborough County and the SWFWMD.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will result in the restoration of native habitats, hydrology, and water quality in a critical portion of Tampa Bay. The project builds upon the extensive public acquisition and restoration activities completed under Phase I of the Cockroach and Piney Point Creek Ecosystem Restoration Project.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 1: Restore and Conserve Habitat (primary)
- Goal 2: Restore Water Quality and Quantity
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives

- Objective 1: Restore, Enhance, and Protect Habitats (primary)
- Objective 2: Restore, Improve, and Protect Water Resources
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

Hillsborough County will be the sole implementing entity and grant sub-recipient responsible for public acquisition of the Reeder Farms tract. Hillsborough County will coordinate extensively with the SWFWMD in the design, permitting, construction, and monitoring of the restoration activities on the parcel.

Best Available Science and Feasibility Assessment

As stated above, the Cockroach and Piney Point Creek Ecosystem Restoration Project Phase I is the largest coastal restoration project ever performed in Tampa Bay. The project has been highly lauded in the Tampa Bay area, and has won numerous national awards. Furthermore, continued public acquisition, consolidation, and restoration of agricultural lands within the watershed of the Cockroach Bay Aquatic Preserve have been recommended as projects in the following documents:

- *Tampa Bay Estuary Program, 2017. Charting the Course: The Comprehensive Conservation and Management Plan for Tampa – August 2017 Revision.*

- *Tampa Bay Estuary Program, 2010. Tampa Bay Estuary Program Habitat Master Plan Update. TBEP Technical Report #06-09. Final report prepared by PBS&J.*

Risks and Uncertainties

The most significant risk or uncertainty associated with this project is the ability to publicly acquire the Reeder Farms tract. The Hillsborough County ELAPP has evaluated and approved the site for acquisition, and Hillsborough County has been in negotiations with the property owners. However, the property owners are in mediation to resolve internal conflicts related to their disposition of the property. Should the sale of the Reeder Farms property fall through, Hillsborough County will use Spill Impact Component funds to acquire and/or restore other approved or acquired parcels within or near the Cockroach Bay Aquatic Preserve (identified in **Figure 17-1B**). Hillsborough County will only negotiate with willing sellers.

Success Criteria and Monitoring

This project involves the public acquisition of privately owned agricultural parcels, and habitat restoration on the acquired parcels. Therefore, a range of success criteria will be developed and described in the implementation grant request. It is anticipated that quantitative success criteria will be developed for:

- Acres of privately-owned agricultural lands acquired for conservation and restoration
- Acres of impacted agricultural lands restored to functional native habitats
- Changes in surface water quality discharged to the Cockroach Bay Aquatic Preserve.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Hillsborough County is committed to coordinating the necessary monitoring to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately eight years. It is expected to start in 2018 and end in 2025. The anticipated project milestones and schedule are shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Property appraisal																
Property acquisition																
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

The Hillsborough County ELAPP has estimated the parcel acquisition cost to be approximately $3.5 million. The cost to restore this parcel is estimated at $3,000,000 to $4,000,000, depending on the complexity of the restoration design and construction. With monitoring, the total project cost is estimated to be $7,100,000. Hillsborough County is committed to allocating $5,000,000 of its share of the Florida Spill Impact Component to this project. Hillsborough County has the financial capacity to make up project funding shortfalls with other Hillsborough County funds, but will also be seeking other leveraged funding sources. A summary of the project budget and funding sources is provided in the following table.

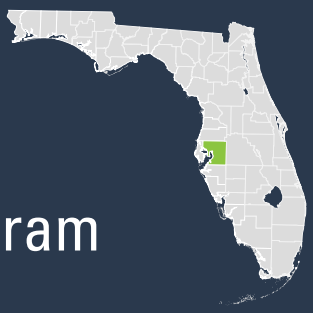
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Property appraisal	$100,000	$100,000
Planning Subtotal	**$100,000**	**$100,000**
Property acquisition	$3,500,000	$3,500,000
Final design and permitting	$150,000	$150,000
Construction	$3,350,000	$1,150,000
Implementation Subtotal	**$7,000,000**	**$4,800,000**
Monitoring	$100,000	$100,000
Total Cost	**$7,200,000**	**$5,000,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$5,000,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$5,000,000**
Budget Shortfall		**$2,200,000**
POTENTIAL LEVERAGED FUNDING SOURCES		
Southwest Florida Water Management District Cooperative Funding Program		
F.19 Conservation Technical Assistance		
F.40 Coastal and Marine Habitat Restoration Grants		
F.47 Estuary Habitat Restoration Program		
F.51 National Coastal Wetlands Grants		
F.52 North American Wetlands Conservation Act (NAWCA) - Small Grants		
F.53 North American Wetlands Conservation Act (NAWCA) - Standard Grant		
F.54 Southeast Region Coastal Program		
O.10 Climate Adaptation Fund		

Partnerships/Collaboration

Hillsborough County has collaborated with the Southwest Florida Water Management District on previous restoration activities conducted on the Cockroach and Piney Point Creek Preserve, where SWFWMD provided funding for the restoration design, permitting, and construction. The County will continue to work with SWFWMD to secure the necessary funding for all unfunded restoration elements associated with this project, and will continue to coordinate with the Tampa Bay Estuary Program.

HILLSBOROUGH COUNTY

Delaney Creek / Palm River Septic to Sewer Conversion Program



PROJECT NO. 17-2

Project Description

OVERVIEW AND LOCATION

This program will reduce nutrient loads to McKay and Hillsborough Bays by taking up to 1,750 on-site sewage treatment and disposal systems (septic systems) off-line and preventing the installation of more septic systems as parcels in this older neighborhood are built out. It will address and eliminate nonpoint pollution sources by expanding wastewater infrastructure to a portion of Hillsborough County that is currently served only by septic systems. The project is located in west central Hillsborough County on the eastern side of McKay Bay between the Palm River and Delaney Creek; these watersheds drain to Tampa Bay (see **Figure 17-2A**).

Figure 17-2A. Location of the Delaney Creek/Palm River Heights Septic to Sewer Conversion project.

NEED AND JUSTIFICATION

McKay Bay, East Bay, Delaney Creek, and the Palm River are currently listed by the Florida Department of Environmental Protection (FDEP) as impaired waterbodies for nutrients and nutrient response variables under Section 303(d) of the federal Clean Water Act. In addition, the tidal portion of Delaney Creek is listed as impaired for fecal coliform bacteria. Septic systems are contributing sources of nutrients and bacteria and Hillsborough County has identified the need to reduce nonpoint source contributions for nutrients and bacteria from septic systems in these watersheds. Local groundwater flows in this area are thought to be primarily to the south, potentially affecting Delaney Creek surface waters. It is not known exactly how many septic systems exist in the project area, but Hillsborough County is adding water service to 700 parcels of land in the Palm River Utilities Service Area that are currently on private shallow wells, so they estimate that at least 700 septic systems exist.

No centralized wastewater infrastructure exists in this portion of the Palm River and Delaney Creek watersheds, which is currently served only by septic systems. A large percentage of these septic systems are old, failing, and/or do not meet the current standard for construction. As discussed above, some of the project area parcels are also currently served by private shallow wells. The well owners desire better water quality because they are currently dealing with relatively high sulfide concentrations. If the septic systems stay in place and new ones are added to the area because of a lack of sewer infrastructure, drinking water safety could be compromised at these wells.

Figure 17-2B. Palm River Utilities service area to be converted to central sewer service.

PURPOSE AND OBJECTIVES

Older septic systems are contributing sources of water pollution to the environment, impacting health and safety of humans and marine life habitat. The purpose of the project is to install central wastewater infrastructure needed to abandon existing septic systems in the Palm River Utilities Service Area. The objectives of this project are to: (1) reduce nutrient and fecal coliform bacteria concentrations and improve water quality in the Palm River and Delaney Creek; (2) reduce nutrient and fecal coliform bacteria concentrations in local groundwater in the vicinity of private potable wells; and (3) reduce nutrient and fecal coliform bacterial loads discharged from the Palm River and Delaney Creek to McKay Bay and East Bay, which are segments of the Tampa Bay estuary.

PROJECT COMPONENTS

The Delaney Creek/Palm River Heights Septic to Sewer Conversion project consists of the following three components:

- Conduct a feasibility study to determine how many units are involved, as well as various engineering alternatives.
- Extend Hillsborough County's existing wastewater infrastructure to the Delaney Creek/Palm River area to provide centralized sanitary sewer service.
- Provide connections to the sewer system, including new lines and lift/pumping stations as needed.

Hillsborough County plans to expand its existing wastewater infrastructure into the Palm River Utilities Service Area and remove the existing septic systems there. Hillsborough County will provide this service using traditional gravity sewer, low-pressure sewer, vacuum sewer, or a hybrid of these collection-system types. The exact requirements will not be known until a feasibility study, alternative analysis, and preliminary design of the collection system(s) are complete. **Figure 17-2B** shows the location and extent of the Palm River Utilities Service Area to be retrofitted with central sewer service.

Hillsborough County has an adequate wastewater collection and conveyance system, wastewater treatment, and effluent disposal capacity to provide service to the Palm River area at the Falkenburg Wastewater Treatment Plant (WWTP), which has a 12-million-gallon-per-day (mgd) annual average daily flow. The Falkenburg WWTP provides advanced wastewater treatment for its reclaimed water customers, and has a permitted surface discharge to the Palm River for wet-weather effluent disposal.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will improve water quality conditions in waterbodies that contribute to Tampa Bay, the largest estuary in Florida. This project will help to improve water quality in Delaney Creek and the Palm River, as well as downstream in East Bay, by moving wastewater from aging septic systems to an advanced wastewater treatment facility, thereby reducing nutrient and bacteria loads to groundwater and surface waters.

The extension of a centralized sewer system into this economically depressed area will also increase property values and encourage redevelopment of currently unimproved parcels in the project area. This will, in turn, revitalize the local economy and grow Hillsborough County's tax base. The proposed project will also increase local workforce development and job creation.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

Hillsborough County will be the sole implementing entity and grant sub-recipient responsible for the feasibility studies, design, permitting, construction, operation and maintenance, and monitoring of this project.

Best Available Science and Feasibility Assessment

The relationship between old and failing septic systems and water quality problems in Delaney Creek, and potential pollutant load reductions associated with septic-to-sewer conversions in this area, can be reasonably inferred. Nitrogen load reduction in Tampa Bay is a major focus of the Tampa Bay Estuary Program (TBEP) and its partners, and this project is consistent with the goals set forth in the following document:

- *TBEP, 2017. Charting the Course: The Comprehensive Conservation and Management Plan for Tampa – August 2017 Revision.*

Risks and Uncertainties

This project is conceptual at this time, as a feasibility study and alternatives analysis has not yet been conducted. However, this type of project can be engineered for the types of conditions present in this locale. Finally, right-of-way is available for the new sanitary sewer system and Hillsborough County owns a parcel of land that can be used for a proposed sanitary sewer pumping (lift) station. Risks and uncertainties will be identified during the feasibility and preliminary design phases.

Success Criteria and Monitoring

This project will affect water quality in adjacent freshwater and estuarine systems. Specific success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for the following:

- Number of septic systems taken off-line
- Changes in ambient water quality (nutrient, bacteria and chlorophyll-a concentrations) in Delaney Creek.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Hillsborough County currently implements a comprehensive water quality monitoring program throughout Hillsborough County and Tampa Bay, and is committed to conducting the necessary monitoring and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 15 years. It is expected to start in 2018 and end in 2032. Implementation of this project has been divided into five phases, as shown in the milestone chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study																
Preliminary design																
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

Hillsborough County has estimated the cost of extending central sewer service to the project area to be approximately $20,000 per connection for up to 1,750 units, yielding a maximum project cost of $35 million. Hillsborough County is committed to allocating $7,660,000 of its share of the Florida Spill Impact Component to this project. Hillsborough County has the financial capacity to make up project funding shortfalls with other Hillsborough County funds, but will also be seeking other leveraged funding sources. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$50,000	$50,000
Preliminary design	$50,000	$50,000
Planning Subtotal	**$100,000**	**$100,000**
Final design and permitting	$1,000,000	$1,000,000
Construction	$33,150,000	$6,410,000
Implementation Subtotal	**$34,150,000**	**$7,410,000**
Monitoring	$150,000	$150,000
Total Cost	**$34,400,000**	**$7,660,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$7,660,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$7,660,000**
Budget Shortfall		**$26,740,000**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
F.19 Conservation Technical Assistance		
F.48 Community Development Block Grants (CDBGs): Entitlement Grants		
F.49 CDBGs: Entitlement Grants—Section 108 Loan Guarantees		
F.59 Urban Waters Small Grants		
F.63 Water Infrastructure Finance and Innovation Act (WIFIA)		
O.43 Southeast Aquatics		
S.10 Community Planning Technical Assistance Grants		
S.13 Florida Job Growth Grant Fund		
S.18 Clean Water State Revolving Fund (CWSRF)		
S.27 Nonpoint Source Management Program (NPSM): Section 319		
S.35 Water Pollution Control		
S.36 Water Projects		
S.52 SWFWMD Cooperative Funding Initiative		

Partnerships/Collaboration

Hillsborough County has been a major partner working in collaboration with the Tampa Bay Estuary Program, and Hillsborough County actively participates in the Tampa Bay Nitrogen Management Consortium. This collaboration to improve water quality in Tampa Bay will continue.

MANATEE COUNTY

Manatee River Oyster Restoration

PROJECT NO. 18-1

Project Description

OVERVIEW AND LOCATION

The project involves the placement of cultch (natural shell and/or other suitable material) in estuarine portions of the Manatee River, from Fort Hamer Road Bridge to Tampa Bay, including the Braden River, Wares Creek, and Warner's and McLewis Bayous. The project will restore productive oyster reefs lost or degraded primarily from combined stresses of reduced freshwater flows, water quality declines, historic dredging for construction materials, and associated disease and predation. **Figure 18-1A** shows the location of proposed areas in the Manatee River.

Figure 18-1A. Location of proposed oyster restoration in the Manatee River.

NEED AND JUSTIFICATION

The project is needed to restore lost and degraded oyster reefs in the estuarine (lower) portions of the Manatee River and its tributaries in lower Tampa Bay. The Manatee River was known as the Oyster River as late as the 1800s (Williams, 1837); however, oysters and oyster reefs are now limited in both extent and distribution in the lower river. Oyster losses in southwest Florida have been attributed to water quality declines associated with agricultural and urban development, as well as changes in natural salinity regimes due to watershed hydrologic alterations.

The Manatee River was impounded in the mid-1960s to develop a reservoir for public water supply. Since then, salinity patterns in the Manatee River have been altered from historic conditions. In addition, oyster bars in the Manatee River were heavily dredged beginning in the late 1800s to provide structural material for roads and buildings. Finally, urban and agricultural development and associated point and nonpoint source pollution resulted in water quality degradation, leading to the regulatory closure of the Manatee River for shellfish harvesting.

Figure 18-1B. Potential oyster restoration sites in the Manatee River (highlighted in red).

Water quality in the Manatee River has improved since the mid-1980s as a result of wastewater system upgrades and more stringent stormwater treatment regulations. It may be feasible in the near future to reopen the Manatee River to shellfish harvesting because of improved water quality conditions. Reestablishment of historic oyster reefs and the construction of new reefs offers the possibility of restoring a sustainable oyster fishery in the Manatee River.

PURPOSE AND OBJECTIVES

The purpose of this project is to restore oyster reef habitat and associated ecological functions for estuarine-dependent species in support of ecological and economic sustainability in the Manatee River using a combination of proven restoration techniques to reestablish reef infrastructure. Objectives of the proposed project are to: (1) provide suitable habitat for oyster settlement and reef building; (2) provide three-dimensional structural habitat for oysters and associated species; (3) recover and support a sustainable oyster fishery; and (4) contribute to the economic revitalization of the shellfish industry in Manatee County. These objectives, and the proposed approach for restoration, are consistent with those developed for oyster restoration in the Gulf of Mexico by the National Oceanic and Atmospheric Administration (NOAA) (2016) as part of the *Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement*.

PROJECT COMPONENTS

The proposed project includes nearshore oyster reef restoration that, combined with other oyster restoration projects along Florida's Gulf Coast, will have regional benefits. Cultch (i.e., suitable material such as shell, rock, and/or concrete) will be placed at locations where natural oyster reproduction is present, as well as degraded historic reef substrate. Reefs will be reseeded with juvenile stocks to: (1) create reef infrastructure, (2) stimulate spat setting, (3) enhance ecological function, and (4) accelerate oyster recovery. The project has five primary components, listed below:

- Feasibility study to determine restoration and donor sites
- Cultch material placement on degraded oyster reefs (recipient sites) to appropriate depths
- Transplant/relay of live of oysters from donor sites to recipient sites
- Repopulation of reefs with hatchery-reared seed where reproductive potential is low
- Pre- and post-monitoring and data collection to inform site selection, cultch volumes, and monitoring

Approximately 26,500 cubic yards (cy) of suitable oyster reef substrate will be placed in appropriate locations along the lower Manatee River. Tentative locations have been selected (see **Figures 18-1B**) and will be confirmed and/or revised upon completion of a feasibility study.

Data for in situ water quality and bottom characteristics will be collected to inform site selection, cultch volumes, and monitoring. A typical nearshore site for oyster restoration is shown in **Figure 18-1C.** The proposed project will include a public participation and education component with plans to engage the local community in the installation of oyster shells and other parts of the proposed project that may be appropriate.

Figure 18-1C. A typical nearshore site for oyster restoration in the Manatee River.

The proposed project is consistent with Gulf-wide objectives and restoration techniques outlined in the science-based *Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement*, which presents detailed information supporting the value of oyster reef restoration (NOAA, 2016). Project implementation will be consistent with Best Management Practices, as outlined by the Florida Department of Agricultural and Consumer Services (FDACS).

Contributions to the Overall Economic and Ecological Recovery of the Gulf

The proposed project will contribute to the recovery of the oyster reefs and the ecological sustainability of the Manatee River and lower Tampa Bay. The potential benefits of this and other oyster restoration projects are summarized below.

Oysters are an ecological keystone species that contribute to the integrity and healthy function of the nearshore ecosystem (NOAA, 2016). Healthy, interconnected oyster populations form reefs that provide the hard substrate needed for oyster larvae to settle, grow, and sustain the population. In addition to providing habitat for oysters, the reefs: (1) are habitat for a diversity of marine organisms, from small invertebrates to large recreationally and commercially important species such as stone crab, blue crab, red drum, and black drum; (2) provide structural integrity that reduces shoreline erosion; and (3) improve water quality and help recycle nutrients by filtering large quantities of water (Grabowski et al., 2012). Restored reefs will also provide wintering habitat for oystercatchers (designated as threatened in Florida), which roost on high-tide sandbars and oyster reefs. .

The proposed project will serve as a de facto oyster sanctuary and nursery for future oyster recruitment because shellfish harvesting within the proposed project site is currently prohibited by the Florida Department of Agriculture and Consumer Services (FDACS) due to water quality conditions. Water quality improvements and reduced shoreline erosion may also be anticipated as beneficial consequences of the proposed project, and with other water quality improvements it may be feasible to plan for the reopening of shellfish harvesting in the Manatee River in the future.

Economically, oyster reef habitats, associated fisheries, and ocean resources in general are also important to sustained tourism and the economic vitality of Manatee County. Tourism is the largest producing industry in the Manatee/Sarasota area, and the coastal zone of these two counties is responsible for more than 10 percent of the gross regional product from ocean resources along Florida's Gulf Coast (Florida Ocean Alliance, 2013).

Eligibility and Statutory Requirements

The proposed project is consistent with, and addresses, the following RESTORE Act eligible activities:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region (primary)
- Eligible Activity 2: Mitigation of damage to fish, wildlife, and natural resources.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 3: Replenish and Protect Living Coastal and Marine Resources (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 4: Enhance Community Resilience
- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 3: Protect and Restore Living Coastal and Marine Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 5: Promote Community Resilience
- Consortium Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Manatee County will be the implementing entity and grant sub-recipient responsible for the design, permitting, construction, operation and maintenance, and monitoring for the proposed project.

Best Available Science and Feasibility Assessment

Oysters along Florida's southwest coast differ from those farther north and may occur as extensive nearshore reefs, isolated clusters, or form the basis of reef/mangrove islands due to sediment accumulation at low tide. Benefits of oysters and oyster reef restoration are well documented and include enhanced estuarine habitats, shoreline stabilization, reduced storm surge and erosion, water quality improvements, and shelter for more than 300 species that in turn are consumed by recreationally and commercially important finfish and crustaceans (NOAA, 2016). Water quality benefits are also well documented (Grabowski et al., 2012), and there are reports of a single oyster filtering up to 50 gallons/day, although more recent estimates report smaller volumes (less than 25 gallons/day) and conclude that the volume filtered depends on the species, size, temperature, sediment load, and salinity (zu Ermgassen et al., 2013).

The proposed project approach is justified by the use of traditional cultching of degraded reefs as a management technique allowing resource managers "to mitigate resource losses, increase oyster production, and contribute direct economic benefit to fisheries-dependent communities," used previously in Apalachicola Bay (Arnold and Berrigan, 2002). Local Tampa Bay projects demonstrating successful reef restoration in terms of increased oyster size include the McKay Bay (3,170 linear feet of oyster reef) and MacDill Air Force Base (137 tons of oyster shell) projects, and the

Figure 18-1D. Restored nearshore oyster reefs in Robinson Preserve near the mouth of the Manatee River.

Robinson Preserve at the mouth of the Manatee River (7,500 square feet of oyster beds) (see **Figure 18-1D**).

Based on preliminary information from regulating agencies such as the Florida Fish and Wildlife Conservation Commission (FWC) and FDACS, construction costs for similar projects, and operation and maintenance of other projects, the proposed project is considered to feasible with respect to: (1) obtaining necessary permits; (2) construction within the proposed budget. Key literature reviewed in the evaluation of this project includes the following:

- *Arnold, W. and M. Berrigan, 2002. A summary of the oyster (Crassostrea virginica) fishery in Florida. A Report to the Division of Marine Fisheries, Florida Fish and Wildlife Commission, St. Petersburg, Florida, USA.*
- *Baggett, L. P. et al., 2015. Guidelines for evaluating performance of oyster habitat restoration. Restoration Ecology 23: 737–745. doi:10.1111/rec.12262.*
- *Grabowski, J.H. et al., 2012. Economic valuation of ecosystem services provided by oyster reefs. BioScience 62: 900–909.*
- *NOAA. 2016. Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement. http://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.*
- *Whitfield, W., 1975. Mining of submerged shell deposits: history and status of regulation and production of the Florida industry. Florida Marine Research Publications Number 11. 55 pages.*
- *Harding, J.M., et al., 2012. Comparison of Crassostrea virginica (eastern oyster) recruitment on constructed reefs and adjacent natural oyster bars over decadal time scales. Northeastern Naturalist 19(4):627-646.*
- *Volety, A.K., et al., 2009. Eastern oysters (Crassostrea virginica) as an indicator for restoration of everglades ecosystems. Ecological Indicators 9S:S120- S136.*
- *zu Ermgassen, P. et al., 2013. Quantifying the Loss of a Marine Ecosystem Service: Filtration by the Eastern Oyster in US Estuaries. Estuaries and Coasts (2013) 36: 36.*

Risks and Uncertainties

Establishing monitoring goals and success criteria are critical to reducing and managing risk and uncertainty for the proposed project. The proposed project is downstream from a regulated dam and heavily developed watersheds, making continued surface water monitoring critical to success of the placement, survival and recruitment of oysters at the shelled locations. Shellfish harvesting is currently prohibited in the project area, which will improve the potential for success of the project and provide a de facto sanctuary and nursery for future recruitment. The need for continued reef replenishment to maintain restored reefs, based on a decline in recruitment 7 years after restoration (Harding et al., 2012) is also a consideration. Monitoring data will be used to assess the effects of restoration methods and are critical to managing project risks and uncertainties.

Success Criteria and Monitoring

This project will restore oysters in areas where natural oyster reefs and populations have been degraded. Therefore, a range of success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Increases in areal extent of oyster reefs
- Increases in average reef height
- Increases in oyster density
- Oyster size-frequency distribution representative of a sustainable oyster population.

More specific quantitative criteria will be developed within planning and monitoring frameworks developed for oyster reef restoration or enhancement in the Gulf (NOAA, 2016). Criteria for three environmental variables (water temperature, salinity, and dissolved oxygen) are also recommended (Baggett et al., 2014). Well-defined goals and objectives, statistically sufficient monitoring designs, and project documentation are absent from many restoration projects (NAS, 2017) but are critical to the success of the proposed project.

The project grant request will include a detailed monitoring program design that addresses goals, objectives, data collection, and data assessment and evaluation for these success criteria. Monitoring data will be used to inform phased construction implemented using an adaptive management approach. Manatee County is committed to implementing the necessary monitoring program and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project, from planning through success monitoring, is approximately 16 years. It is expected to start in 2018 and end in 2033. Construction will be in three phases with completion within 12 years following planning, design, and permitting. Monitoring is planned to inform and support this and future restoration projects and will continue for 2 years after each construction phase. Implementation of this project has been divided into four milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Preliminary design	■															
Final design & permitting		■	■													
Restoration/barge shelling				■	■	■			■	■						
Success monitoring			■				■	■			■	■		■	■	

Budget and Funding Sources

The project budget was developed based on previous oyster restorations specific to Florida's west coast, with estimates ranging from about $75 to $120/cy of material and $15,000 to $25,000/acre of material placed. Manatee County is committed to allocating $2,628,090 of its share of the Florida Spill Impact Component to this project, but will also be seeking other leveraged funding sources to supplement these monies. If additional leveraged funds become available, they would be applied to the areal expansion of the reef restoration project as well as the development of a shellfish hatchery to provide a source of oyster larvae to local oyster reefs and others along the Gulf Coast. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Preliminary design	$100,000	$100,000
Planning Subtotal	**$100,000**	**$100,000**
Final design and permitting	$200,000	$200,000
Construction (restoration/barge shelling)	$2,128,090	$2,128,090
Implementation Subtotal	**$2,328,090**	**$2,328,090**
Monitoring	$200,000	$200,000
Total Cost	**$2,628,090**	**$2,628,090**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$2,628,090
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$2,628,090**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
F.32 Fisheries Finance Program		
F.33 Sea Grant National Marine Aquaculture Initiative - Integrated Projects to Increase Aquaculture Production		
F.34 Sea Grant National Marine Aquaculture Initiative - Addressing Impediments to Aquaculture Opportunities		
F.40 Coastal and Marine Habitat Restoration Grants		
F.41 Habitat Conservation		
F.54 Southeast Region Coastal Program		

Partnerships/Collaboration

Potential project partners include:

- University of Florida/Institute of Food and Agricultural Sciences
- Florida Fish and Wildlife Conservation Commission
- Tampa Bay Estuary Program
- Sarasota Bay Estuary Program
- Tampa and Sarasota Bay Watch programs
- Gulf of Mexico Shellfish Initiative
- Gulf Shellfish Institute
- Mote Marine Lab
- The Nature Conservancy.

Coordination with the following agencies is anticipated:

- Florida Department of Agricultural and Consumer Services
- Florida Fish and Wildlife Conservation Commission
- Florida Department of Environmental Protection
- Southwest Florida Water Management District
- National Marine Fisheries Service
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service.

MANATEE COUNTY

Portosueno Park Living Shoreline

PROJECT NO. 18-2

Project Description

OVERVIEW AND LOCATION

This project involves the construction of a living shoreline along an existing vertical seawall at Portosueno Park, on the east side of Palma Sola Bay. The general location of the park is shown in **Figure 18-2A**.

NEED AND JUSTIFICATION

Portosueno Park is a small embayment on the east side of Palma Sola Bay. The park was developed originally by dredging the basin and filling the adjacent areas for residential development. Vertical seawalls were constructed along the entire perimeter of the park. There is no functional intertidal habitat in the park, and water quality is impacted by residential runoff. **Figure 18-2B** shows an aerial photograph of the existing park.

This project will replace the seawall with a linear living shoreline, as well as marsh plantings on the east end of the basin, to improve both habitat quality and diversity, as well as water quality. Palma Sola Bay is a designated Outstanding Florida Water (OFW) under the management purview of the Sarasota Bay Estuary Program. Pursuant to Florida law, pollutant discharges that cause a degradation in water quality in an OFW are prohibited. Therefore, restoring the natural habitats and associated water quality treatment functions in the park are justified to protect the estuarine receiving waters.

Figure 18-2A. Location of Portosueno Park in Manatee County.

PURPOSE AND OBJECTIVES

The purpose of this project is to partially restore natural intertidal wetland habitats in Portosueno Park. The objectives of the project are to: (1) restore fish and wildlife habitat functions; (2) reduce pollutant loadings to Palma Sola Bay by treating stormwater runoff from adjacent residential areas; and (3) improve fishing and aesthetics for park users.

Figure 18-2B. Aerial photograph of Portosueno Park.

PROJECT COMPONENTS

The project involves: (1) modifications to, or replacement of, the existing seawall; (2) backfilling with clean sand and natural lime rock rip-rap; and (3) planting with native species, including both mangroves and salt marsh species. A conceptual restoration plan for Portosueno Park is shown in **Figure 18-2C** below.

Figure 18-2C. Portosueno conceptual living shoreline and restoration plan.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will partially restore natural intertidal habitats in a dredged and hardened urban basin, and will enhance water quality treatment of surface waters to reduce pollutant loads to Palma Sola Bay.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 1: Restore and Conserve Habitat (primary)
- Goal 2: Restore Water Quality and Quantity.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 1: Restore, Enhance, and Protect Habitats (primary)
- Objective 2: Restore, Improve, and Protect Water Resources.

Implementing Entities

Manatee County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of the project.

Best Available Science and Feasibility Assessment

The benefits of living shoreline applications along hardened urban shorelines are well documented. A key document used as the basis for this project is cited below:

- *NOAA, 2015. Guidance for Considering the Use of Living Shoreline. National Oceanic and Atmospheric Administration Living Shorelines Workgroup.*

Based on local precedents, this project is considered to be feasible in terms of the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term.

Risks and Uncertainties

In the evaluation of this project, no significant risks or uncertainties were identified. As part of the engineering design and permitting of this project, it is likely that hydraulic modeling will be required to calculate maximum inflow velocities and to design the project to prevent scouring and erosion of the restored areas.

Success Criteria and Monitoring

This project will affect habitat quality, marine living resources, and water quality in the vicinity of Portosueno Park. Therefore, a range of appropriate success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Linear feet of living shoreline constructed
- Linear feet of shoreline stabilized
- Changes in ambient surface water quality in the park basin.

In the project grant request, a detailed monitoring program will be designed that addresses data collection and assessment methodologies for the above-listed criteria. Manatee County is committed to implementing the necessary monitoring program and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately five years. It is expected to start in 2018 and end in 2022 Implementation of this project has been divided into three milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Preliminary design																
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

Manatee County has developed a preliminary total cost estimate of $1,300,000 for this project, and is committed to allocating $1,300,000 of its share of the Florida Spill Impact Component to this project. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Preliminary design	$30,000	$30,000
Planning Subtotal	**$30,000**	**$30,000**
Final design and permitting	$90,000	$90,000
Construction	1,160,000	$1,160,000
Implementation Subtotal	**$1,250,000**	**$1,250,000**
Monitoring	$20,000	$20,000
Total Cost	**$1,300,000**	**$1,300,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$1,300,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$1,300,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
O.42 Shell Marine Habitat Program		
S.20 Coastal Partnership Initiative - Florida Coastal Management Program		
S.35 Water Pollution Control		
S.52 SWFWMD Cooperative Funding Initiative		

Partnerships/Collaboration

Manatee County may partner with the Southwest Florida Water Management District for additional funding through the District's cooperative funding program, as well as with the Sarasota Bay National Estuary Program.

MANATEE COUNTY

Preserve Management Plans

PROJECT NO. 18-3

Project Description

OVERVIEW AND LOCATION

This project involves the development of natural resource management plans for preservation lands owned and managed by Manatee County. The locations of the County-owned preserve lands to be addressed by this project are shown in **Figure 18-3A**.

NEED AND JUSTIFICATION

Manatee County has acquired more than 27,000 acres of natural areas under the management responsibility of a county land management team. However, several sites are operating under older management plans that require significant updates in order to take into account advancements in the science of conservation lands management as well as the ever-evolving needs of its diverse user groups. The largest site to be addressed under this project is the Duette Preserve, which is a 21,000–acre tract in the headwaters of the Manatee River, a major tributary to Tampa Bay. In addition, the Rye Preserve, located in the tidal Manatee River, will also be addressed. **Figure 18-3B** shows the size and boundaries of these two preserves in Manatee County.

Figure 18-3A. General locations of County-owned Preserves in Manatee County.

PURPOSE AND OBJECTIVES

The purpose of this project is to develop updated natural resource management plans for preservation lands owned and operated by Manatee County. The objectives of the project are to restore and/or protect habitat quality and resource management in County-owned preserve lands in the headwaters of coastal tributaries.

PROJECT COMPONENTS

For each preserve site, a comprehensive management plan with the following components will be produced: (1) inventory of natural and cultural resources; (2) the development of natural resource management strategies; and (3) stakeholder input (including public and peer review of draft plans). These plans will consider land management activities that restore: native habitat quality and diversity (e.g., prescribed burns), including invasive exotic species management; fish and wildlife resources; and hydrology and water quality (e.g., ditch blocks). In addition, the plans will include measures to improve public access for appropriate passive recreational activities.

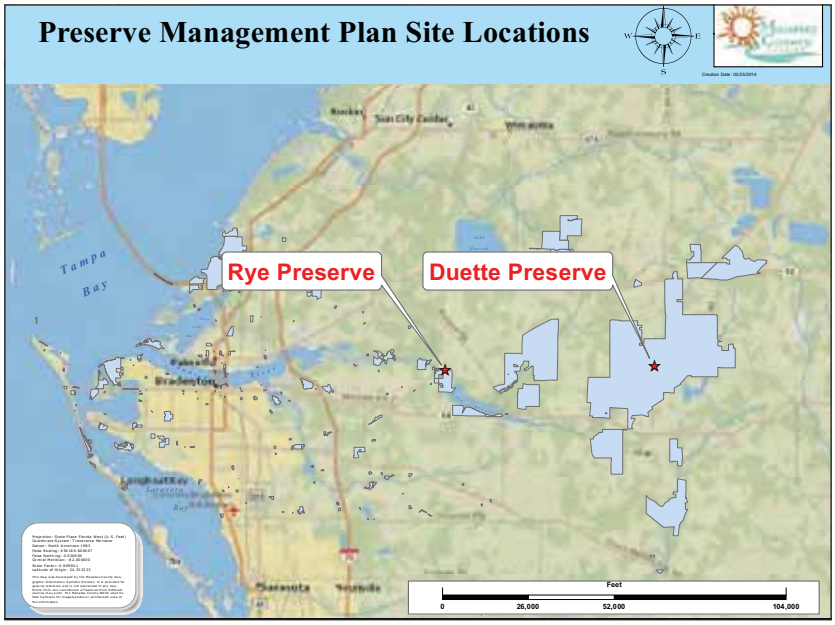


Figure 18-3B. Rye and Duette Preserves.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will restore, preserve, and protect native habitats, fish and wildlife resources, and natural hydrology and water quality in the headwaters of coastal watersheds in Manatee County.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 1: Restore and Conserve Habitat (primary)
- Goal 2: Restore Water Quality and Quantity.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 1: Restore, Enhance, and Protect Habitats (primary)
- Objective 2: Restore, Improve, and Protect Water Resources.

Implementing Entities

Manatee County will be the sole implementing entity and grant sub-recipient responsible for the implementation and success monitoring of this project.

Best Available Science and Feasibility Assessment

The development of preserve management plans will be informed by the most current literature on Florida invasive exotic species management, prescribed burning, imperiled species management, hydrologic restoration, and sustainable forestry practices. Where applicable, experts from state resource management agencies, including the Florida Forest Service and the Florida Fish and Wildlife Conservation Commission will be consulted in a peer review process. A preserve management plan developed for the Brooker Creek Preserve in neighboring Pinellas County will be used as a model for the Manatee County preserve management plans. This document is cited below:

- *Pinellas County Department of Environmental Management, 2008. Brooker Creek Preserve Management Plan Update 2008.*

This project is considered to be feasible in terms of the ability to: (1) complete the project components within the proposed budget and (2) execute the preserve management plans.

Risks and Uncertainties

In the evaluation of this project, no significant risks or uncertainties were identified.

Success Criteria and Monitoring

This project will generate updated natural resources management plans which, upon plan execution, are expected to improve or enhance natural resources in priority preserves. Therefore, a range of success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Number of County-owned preserve management plans completed
- Acres of County-owned preserve lands addressed by updated management plans.

In the project grant request, a detailed monitoring program will be designed that addresses data collection and assessment methodologies for the above-listed criteria. Manatee County is committed to implementing the necessary monitoring program and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 13 years. It is expected to start in 2018 and end in 2030. Implementation of this project has been divided into four milestones, as shown in the chart below.

MILESTONE	YEARS TO COMPLETE															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Resource assessments																
Stakeholder input																
Preparation of management plans																
Success monitoring																

Budget and Funding Sources

Manatee County has developed a preliminary total cost estimate of $280,000 for this project, and is committed to allocating $280,000 of its share of the Florida Spill Impact Component to this project. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Resource assessments	$100,000	$100,000
Planning Subtotal	**$100,000**	**$100,000**
Stakeholder input	$10,000	$10,000
Preparation of management plans	$150,000	$150,000
Implementation Subtotal	**$160,000**	**$160,000**
Monitoring	$20,000	$20,000
Total Cost	**$280,000**	**$280,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$280,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$280,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
F.19 Conservation Technical Assistance		
O.12 Conservation Partners Program		
S.10 Community Planning Technical Assistance Grants		

Partnerships/Collaboration

Manatee County may partner with the Southwest Florida Water Management District for additional funding through the District's cooperative funding program.

MANATEE COUNTY

Artificial Reef Program–Borden Reef

PROJECT NO. 18-4

Project Description

OVERVIEW AND LOCATION

This project involves the acquisition, transport, and deployment of natural limestone boulders into an existing permitted Manatee County artificial reef site located approximately seven nautical miles offshore (see **Figure 18-4A**).

Figure 18-4A. Location of the Larry Borden Artificial Reef site offshore of Manatee County.

NEED AND JUSTIFICATION

Manatee County has a need to expand its existing artificial reef program in response to the increasing recreational demand for offshore bottom fishing and scuba diving opportunities in its coastal waters. On a daily basis, an average of more than 540 persons in Manatee County—residents and visitors included—use artificial reefs (Adams, 2011). Manatee County's artificial reef program began in the 1960s and has deployed a total of 11 artificial reefs, focusing on activities such as fishing and diving with resource conservation. Hard substrate and vertical structure are limited habitats in the Gulf of Mexico (Fikes, 2013) and artificial reef habitats can provide: (1) hard substrate to support encrusting and colonial benthic organisms such as sponges and corals; (2) niche space for small marine invertebrates; and (3) shelter for larval and juvenile fishes. The project is justified by the demonstrated economic benefits of artificial reefs (Adams et al., 2011).

PURPOSE AND OBJECTIVES

The purpose of this project is to augment existing permitted Pinellas County artificial reef sites with clean concrete and other suitable construction materials, as well as manufactured artificial reef materials. The objectives of the project are to: (1) support the increasing recreational demand for offshore reef fishing and scuba diving opportunities

and (2) enhance the abundance, distribution, and structural diversity of hardbottom habitat in the county's coastal waters. Objectives are consistent with those of the Florida Fish and Wildlife Conservation Commission's (FWC's) artificial reef program outlined below:

1. Enhance private recreational and charter fishing and diving opportunities
2. Provide a socio-economic benefit to local coastal communities
3. Increase reef fish habitat
4. Reduce user conflicts
5. Facilitate reef related research
6. Do no harm to fishery resources, essential fish habitat (EFH), or human health.

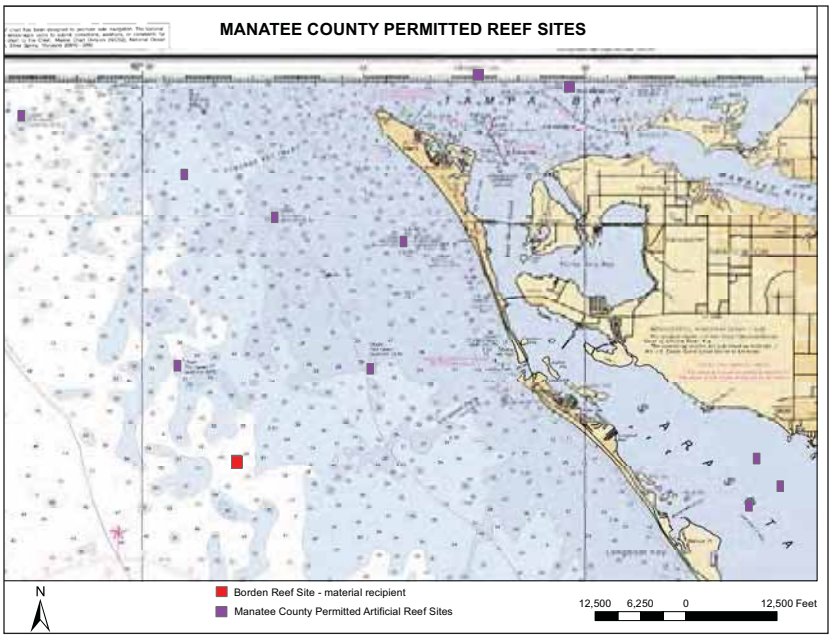


Figure 18-4B. Location of existing permitted artificial reef sites in Manatee County.

PROJECT COMPONENTS

This project involves two primary components. The first component is to identify and acquire a sufficient amount of natural limestone boulders, and then to prepare and stockpile this material at an existing staging area. The second component is to transport these materials to the currently permitted artificial reef location off the coast of Manatee County via a barge and deploy the materials to create high-quality fish habitat. The locations will be published to the public and will remain available for public use for recreational fishing and diving. Post-construction monitoring will also be conducted to ensure the deployment of this material produced high-quality habitat that supports important reef fish species (e.g., grouper, snapper).

Manatee County currently manages 11 permitted artificial reef sites, as shown in **Figure 18-4B**. Material acquired through this project will be distributed at the Borden Reef site, with its center point located at the latitude/longitude coordinates: 27.407883° / -82.797383°. Additional planning assistance will be required for permitting, design, and implementation of the proposed project.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

Manatee County's beaches and coastal waters support an enormous tourism industry. This project will: (1) support the increasing recreational demand for offshore reef fishing and scuba diving opportunities by both residents and tourists and (2) enhance the abundance, distribution, and structural diversity of hardbottom habitat in offshore waters of Manatee County.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of tourism in the Gulf Coast region, including recreational fishing.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objective:

- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Manatee County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of the program.

Best Available Science and Feasibility Assessment

Artificial reefs in the Gulf of Mexico have been extensively studied with regard to the habitat and economic benefits they provide. The scientific literature on the ecological benefits is somewhat controversial (Lindberg et al., 2014; Fikes, 2013; Bortone et al., 1994; others). Some experts argue that artificial reefs are functionally comparable to natural reefs and they augment fish populations by providing habitat that is naturally limiting in the Gulf of Mexico. Others argue that artificial reefs simply attract and aggregate existing fish populations, but do not enhance overall fish stocks. While those conclusions may be debatable, the economic benefits of artificial reefs are not. Artificial reefs provide significant recreational opportunities and associated benefits along the Gulf Coast of Florida, including annual expenditures associated with reefs of Manatee County (**Figure 18-4C**) of more than $23,000,000 (Adams et al., 2011; Swett et al., 2011).

Research has produced best practices guidance on site selection, design features, and construction methods; criteria that are now part of the FWC permitting regulations. Key literature that forms the basis for the Manatee County Artificial Reef Program are cited below.

- *Adams, C., et al., 2011. The economic benefits associated with Florida's artificial reefs. EDIS document FE649 (2011): 1-6.*
- *Bortone, S.A., Martin, T., Bundrick, C.M., 1994. Factors affecting fish assemblage development on a modular artificial reef in a northern Gulf of Mexico estuary. Bull. Mar. Sci. 55 (2-3), 319-332.*
- *Fikes, R., 2013. Artificial Reefs of the Gulf of Mexico: A Review of Gulf State Programs & Key Considerations. National Wildlife Federation.*

- *Lindberg, W.J., et al., 2014. Rationale and Evaluation of an Artificial Reef System Designed for Enhanced Growth and Survival of Juvenile Gag, Mycteroperca microlepis. Proc.66th Gulf and Caribbean Fisheries Institute November 4 – 8. Corpus Christi, TX. Pages 320-325.*
- *Swett et al., 2011. Economic Impacts of Artificial Reefs for Six Southwest Florida Counties. Flori*da Sea Grant.

Figure 18-4C. Manatee County artificial reef site (source: Manatee County Artificial Reef Program).

This project is feasible with respect to the ability to: (1) use currently open permits; (2) construct the project within the proposed budget; (3) effectively operate and maintain the project components over the long term. The permitting of the offshore artificial reef sites has been facilitated through nationwide U.S. Army Corps of Engineers permits and through the FWC for site-specific state criteria. Furthermore, this project is consistent with the National Artificial Reef Plan published in 1985, and the Florida Artificial Reef Strategic Plan (FWC, 2003).

Risks and Uncertainties

No significant risks or uncertainties were identified during the evaluation of this project that would preclude project implementation. Manatee County will ensure design to limit damage from tropical storms. Controls for lionfish and other nuisance/exotic species may be required. Regulatory constraints will address issues such as spatial boundaries for navigation, channels, marine habitat resources, historical areas, sand borrow areas, existing structures and leases, etc. Success monitoring is critical in a fisheries management context given that these reefs have not previously been used as fisheries management tools.

Success Criteria and Monitoring

This artificial reef project involves the placement of hard substrate to support recreational demand for offshore reef fishing and scuba diving opportunities and enhance the abundance, distribution, and structural diversity of hardbottom habitat in the affected waters. Therefore, a range of success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Increase in the coverage of new artificial reef habitat
- Increase in recreational use.

The proposed project will be constructed consistent with the Gulf States Marine Fisheries Commission's *Guidelines for Artificial Reef Materials (2004*). In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Manatee County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 4 years. It is expected to start in 2018 and end in 2021. Implementation of this project has been divided into three milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Collect, prepare, and stage reef materials																
Transport material to permitted reef sites																
Success monitoring																

Budget and Funding Sources

Manatee County has estimated the total cost of this project to be approximately $1,320,000, and is committed to allocating $1,320,000 of its share of the Florida Spill Impact Component to this project. A summary of the project budget and funding sources is provided in the table below.

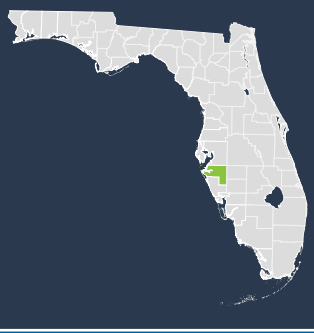
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Collect, prepare, and stage reef materials	$150,000	$150,000
Transport and place reef materials at permitted sites	$1,120,000	$1,120,000
Implementation Subtotal	**$1,270,000**	**$1,270,000**
Monitoring	$50,000	$50,000
Total Cost	**$1,320,000**	**$1,320,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$1,320,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$1,320,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
O.18 FishAmerica Foundation		
S.41 Artificial Reef Construction and Monitoring		
S.49 Sport Fish Restoration Program		

Partnerships/Collaboration

The Manatee County Artificial Reef Program routinely collaborates with the Florida Artificial Reef Program managed by the Florida Fish and Wildlife Conservation Commission. This collaboration includes representatives from nearly all coastal counties in Florida and assists with material collection resources, technical construction assistance, artificial reef construction best practices, and outreach.

MANATEE COUNTY

Palmetto Greene Bridge Fishing Pier Replacement



PROJECT NO. 18-5

Project Description

OVERVIEW AND LOCATION

This project involves the demolition and replacement of an old concrete highway bridge, which is functioning as a public fishing pier, with a new wooden fishing pier. The project is located in the Manatee River, between the cities of Palmetto and Bradenton. The Manatee River is a major tributary to Tampa Bay. The project location is shown in **Figure 18-5A**.

Figure 18-5A. Palmetto Greene Pier Location Map.

NEED AND JUSTIFICATION

The original Greene Bridge was constructed in the 1940s as a two-lane highway crossing the Manatee River, connecting the cities of Palmetto and Bradenton. The bridge was replaced in 1986 with a new four-lane span. The southern half of the original bridge was demolished while the northern half of the bride was retained and retrofitted to serve as a public fishing pier. It is a popular local fishing amenity; however, the old concrete bridge is no longer structurally sound. Because of liability concerns, the bridge needs to be decommissioned and demolished by 2022. **Figure 18-5B** shows an aerial photograph of the old bridge, immediately west of the new bridge, while **Figure 18-5C** shows a ground-level photograph of the existing concrete fishing pier.

PURPOSE AND OBJECTIVES

The purpose of this project is to replace the old concrete bridge with a new wooden structure designed specifically to serve as a public fishing pier, with supporting amenities. The objective of the project is to improve recreational fishing opportunities on the Manatee River.

PROJECT COMPONENTS

Project components include: (1) permitting and demolition of the old bridge; (2) design, permitting, and construction of the new fishing pier and amenities; and (3) monitoring of public usage of the pier. Manatee County manages an artificial reef program (see Project 18-4) and intends to utilize debris from the demolition of the old bridge on permitted offshore artificial reef sites. This project may also include additional habitat enhancement features such as a living shoreline.

Figure 18-5B. Aerial photograph of the old bridge, immediately west of the new bridge.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will contribute to improved public recreation and enhanced fishing opportunities in a densely urbanized area. The project is also expected to have a positive economic impact on Manatee County measured in terms of increased fishing trips and related tourism and recreational revenues.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of tourism in the Gulf Coast region, including recreational fishing.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Gulf Consortium Objective:

- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Manatee County will be the sole implementing entity and grant sub-recipient responsible for the engineering design, permitting, construction, operation and maintenance, and success monitoring of this project.

Figure 18-5C. Ground level photograph of the existing concrete fishing pier.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The primary focus of this program is public recreational access and tourism promotion; therefore, BAS does not apply.

This project is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the pier within the proposed budget; and (3) effectively operate and maintain the pier over the long term.

Risks and Uncertainties

In the evaluation of this project, no significant risks have been identified that would preclude implementation. The project design will consider sea-level rise and sustainability. This project is ready to begin planning, design, and permitting.

Success Criteria and Monitoring

This project addresses improvement of fishermen access to the tidal Manatee River. It is anticipated that quantitative success criteria will be developed for:

- Recreational amenities completed
- Public recreational use.

In the project grant request, a detailed monitoring program will be described that addresses data collection and assessment methodologies for the above-listed criteria. Manatee County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project, from planning through success monitoring, is approximately six years. It is expected to start in 2020 and end in 2025. Manatee County will operate and maintain the facility in perpetuity. Implementation of this project has been divided into five milestones, as shown in the milestone chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Planning and conceptual design																
Engineering and permitting																
Demolition of the old bridge																
Construction of the new fishing pier																
Success monitoring																

Budget and Funding Sources

Manatee County has estimated the cost of this project to be approximately $5,000,000, based on comparable projects. The project will be appropriately sized and designed to fit within the proposed budget. Manatee County is committed to allocating $3,000,000 of its share of the Florida Spill Impact Component to this project, but will also be seeking other leveraged funding sources to supplement these monies. If additional leveraged funds become available, they will be applied to the construction of habitat restoration components (e.g., salt marsh plantings, oyster restoration) near the fishing pier. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Planning and conceptual design	$200,000	$200,000
Planning Subtotal	**$200,000**	**$200,000**
Engineering and permitting	$300,000	$300,000
Demolition of old bridge	$1,400,000	$1,400,000
Construction of new fishing pier	$3,000,000	$1,000,000
Implementation Subtotal	**$4,700,000**	**$2,700,000**
Monitoring	$100,000	$100,000
Total Cost	**$5,000,000**	**$3,000,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$3,000,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Secured Funding		**$3,000,000**
Budget Shortfall		**$2,000,000**

POTENTIAL LEVERAGED FUNDING SOURCES
SWFWMD Cooperative Funding
Natural Resource Damage Assessment
S.23 Florida Recreation Development Assistance Program (FRDAP)
S.40 Transportation Alternatives Program - Set-Aside
S.49 Sport Fish Restoration Program
S.52 SWFWMD Cooperative Funding Initiative

Partnerships/Collaboration

It is anticipated that Manatee County will coordinate closely with the Florida Department of Transportation, as well as the Cities of Palmetto and Bradenton. In addition, habitat enhancement components may be co-funded by the Southwest Florida Water Management District.

MANATEE COUNTY

Applied Research for Shellfish Aquaculture

PROJECT NO. 18-6

Project Description

OVERVIEW AND LOCATION

This project will provide funding to the Gulf Shellfish Institute, Inc. (GSI), a non-profit organization, to conduct an applied research program to increase the production and availability of locally grown and sustainably produced shellfish for local markets. The focus of this project will be on approved shellfish harvesting areas in Manatee County (see **Figure 18-6A**).

Figure 18-6A. Location of approved shellfish harvesting areas in Manatee County that could be leased for shellfish aquaculture.

NEED AND JUSTIFICATION

The United States imports 91 percent of its seafood from other countries, resulting in an annual seafood trade deficit of over $11 billion, and yet the nation currently ranks 15th in aquaculture production in the world (NMFS, 2016). Increased development of the aquaculture industry in the United States will have several economic benefits, including a reduction of the trade deficit, the establishment of new businesses, the creation of new jobs, and the revitalization of working waterfronts and coastal economies. This will be spurred by the need for more hatcheries, more processing facilities, and more equipment manufacturers and suppliers of goods and equipment for working on and in the water. According to Rubino (2008), if U.S. aquaculture production were doubled, 50,000 additional jobs and $1 billion in additional farm-gate revenue will be produced. An added advantage of greater local production will be the knowledge of where and how seafood is being produced and processed, information that is often lacking for imported seafood products. We will be able to ensure that locally grown seafood products are safe, fresh, and sustainably produced.

In spite of this tremendous economic opportunity, aquaculture in the United States has not realized its potential for a number of reasons. First, aquaculture is seen as a threat to traditional users of the coastal zone, where most marine aquaculture would occur. This includes both commercial harvest fisheries and recreational uses. In addition, the regulatory climate in the United States does not favor aquaculture development. Most coastal states have mechanisms for acquiring leases, but there are also numerous local, state, and federal agencies to comply with. Most important, funding for research and development of aquaculture in this country has been inadequate for effectively stimulating its growth.

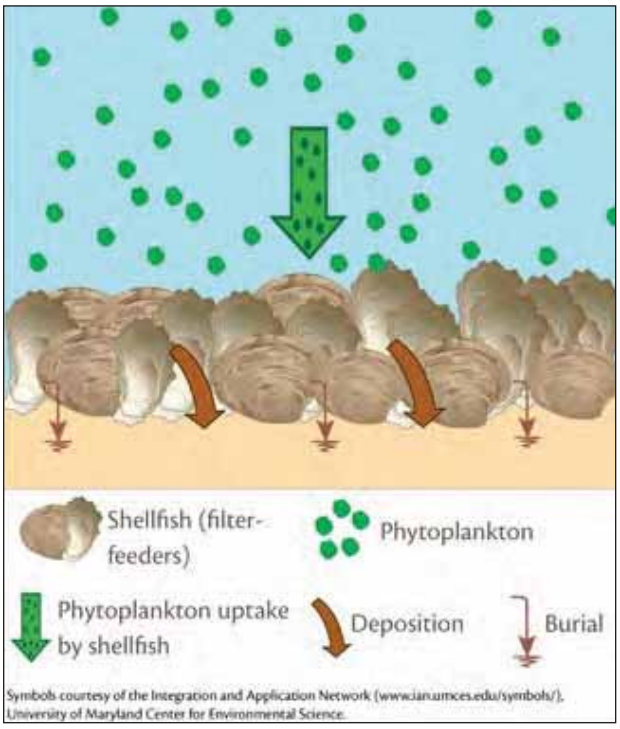


Figure 18-6B. Illustration of benthic-pelagic coupling and its positive effect on water quality.

Increased funding for research can help the industry become more efficient, productive, and profitable. To date, however, federal funding for aquaculture research since 1990 has totaled only $1 billion compared to the U.S. Department of Agriculture expenditure on research (for agriculture) of $41 billion (Love et al., 2017). In spite of the small amount of funding devoted to aquaculture research, it has resulted in increased production. Since 2000, federal funding for aquaculture research has had a 37-fold return on investment (Love et al., 2017). A related study examining policy options for expanding oyster aquaculture in Virginia found that research focusing on increasing growth rates, reducing mortality rates, and reducing the cost of seed will significantly increase returns to oyster aquaculture (Bosch et al., 2010). This has been proven true by the rapid expansion of oyster aquaculture in Virginia.

Florida ranks sixth in aquaculture production in the United States, with total sales of $77,900,00 in 2013 (USDA, 2014). The largest segment of the Florida aquaculture industry is ornamental fish ($26,000,000); however, hard clams (*Mercenaria mercenaria*) are the most important food item produced ($11,600,000). Production of shellfish, especially marine bivalves, is one area where Florida could significantly expand. In addition to the hard clam, there is considerable potential for expanding the production of oysters (*Crassostrea virginica*), given the decline of natural populations in Apalachicola Bay (and throughout the United States). Adding new species, such as the sunray venus (*Macrocallista nimbosa*) will help diversify the industry. The bay scallop (*Argopecten irradians*) is an important recreational fishery along the central west coast of Florida. Hatchery production of this species has also been used to enhance natural stocks.

There are several factors that make expansion of the shellfish (clams, oysters, scallops) aquaculture industry in Florida desirable. For one thing, the advantage of growing shellfish instead of finfish is that nothing is added to the water. They obtain their food (phytoplankton) from the natural environment. Thus, the culture of shellfish is truly sustainable. In fact, their feeding activity actually helps clean the water by removing suspended particulate organic matter (phytoplankton, detritus) and making it available to the benthos (see **Figure 18-6B**).

A review of the ecological services provided by filter-feeding bivalves, along with estimates of economic value, was provided by Northern Economics, Inc. (2009). Another attractive aspect of expanding shellfish aquaculture industry is since shellfish live on the bottom, shellfish farms are not visible from the surface. In addition, there is an abundance of optimal habitat in Florida, especially on the shallow west coast (including Manatee County), where three estuaries have been designated as part of the National Estuary Program. This means that Tampa Bay, Sarasota Bay, and Charlotte Harbor all have Comprehensive Conservation Management Plans to address water quality and living resource issues. Thus, it makes sense to encourage the expansion of shellfish farming for both economic and ecological reasons.

At present, however, Florida is only using a small proportion of available habitat. There are 280,000 acres of approved shellfish harvesting waters, but at present there are only 2,250 acres of leased bottom being used for shellfish culture (S. Rocco, FDACS, Pers. Comm.), or less than 1 percent of available submerged land. From this standpoint alone, current shellfish aquaculture production could be increased one hundred-fold over current levels to help meet local demand and reduce the domestic seafood trade deficit.

PURPOSE AND OBJECTIVES

The purpose of this research program is to increase the production and availability of locally grown, sustainably produced shellfish for local markets. The objectives of the program include: (1) increased availability of fresh, high-quality seafood; (2) improved local seafood-based economy; and (3) a healthier coastal environment. These project objectives will be accomplished through applied research objectives that address current bottlenecks or limitations in the commercial production cycle. These potentially include aspects of:

- Hatchery production of seed organisms
  - Conditioning and spawning of broodstock
  - Microalgal production
  - Larval rearing
  - Probiotics
  - Nursery production
- Growout and harvesting
- Genetic selection and polyploids
- Predation and disease
- Environmental threats
  - Harmful algal blooms
  - Climate change

PROJECT COMPONENTS

GSI is a non-profit organization whose mission is to facilitate, support, and encourage increased production of shellfish in Florida and the Gulf region for both economic and environmental benefit through cooperative, industry-driven research and outreach. Although GSI's mission is regional, it will use RESTORE funds to focus on increasing the production of sustainably produced shellfish (oysters, clams, and scallops) in Manatee County. In turn, this will strengthen the coastal economy as well as improve nearshore water quality and habitats in southwest Florida through the ecological services provided by shellfish.

Phase 1 of this program will be initiated with a Department of Treasury planning grant, funded with Manatee County Direct Component monies. GSI will solicit input from the shellfish industry to determine the most critical technical issues that currently limit shellfish production in Florida. These issues will be prioritized, and an approach for addressing the issues through applied research will be developed. Phase 2 will involve collecting preliminary data and applying for research funding to local, state, and federal funding agencies. Spill Impact Component funds will be used as match (where appropriate) to conduct research when other funding is not available. Phase 3 will involve conducting the research (in collaboration with industry partners); synthesizing data; and transferring information directly to the industry. Application for research funding will be an ongoing process. Spill Impact Component monies will be used directly for research and as match for external grant applications throughout the life of the program.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will contribute to the expansion of shellfish aquaculture investment and operations in southwest Florida, which in turn will contribute to the reduction in the U.S. seafood trade deficit. In addition, the project will increase local employment in the seafood industry and support working waterfronts in Manatee County. Finally, expansion of shellfish aquaculture in southwest Florida will improve local water quality and clarity conditions through the filter-feeding ecosystem services provided by bivalves, which in turn will support the expansion of submerged aquatic vegetation.

Eligibility and Statutory Requirements

This proposed program is consistent with, and addresses, the following RESTORE Act eligible activities:

- Eligible Activity 11: Promotion of the consumption of seafood harvested from the Gulf Coast region (primary)
- Activity 4: Workforce development and job creation.

Comprehensive Plan Goals and Objectives

This program is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 5: Restore and revitalize the Gulf economy (primary)
- Goal 3: Replenish and protect living coastal marine resources.

This program is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Consortium Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects (primary)
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

Manatee County will be the implementing entity, while GSI will be the sub-recipient responsible for the planning, design, implementation, and delivery of the proposed research program.

Best Available Science and Feasibility Assessment

The importance of shellfish to both the economy and ecological health of coastal regions has been well established, as summarized above. Key literature citations include the following:

- *Adams, C., L. Sturmer and A. Hodges, 2014. Tracking the Economic Benefits Generated by the hard clam Aquaculture Industry in Florida. IFAS/University of Florida EDIS Document No. FE961, 6 pp.*
- *Bosch, D., N Kuminoff, K. Stephenson, A. Miller, J. Pope and A. Harris, 2010. Evaluation of policy options for expanding oyster aquaculture in Virginia. Aquaculture Economics & Management 14: 145-163.*
- *Doering, P.H., J.R. Kelly, C.A. Oviatt and T. Sowers, 1987. Effect of the hard clam Mercenaria on benthic fluxes of inorganic nutrients and gases. Marine Biology 94: 377-383.*
- *Love, D.C., I. Gorski and J.P. Fry, 2017. An analysis of nearly one billion dollars of aquaculture grants made by the US federal government from 1990 to 2015. Journal of the World Aquaculture Society, doi: 10.1111/jwas.12425.*
- *NMFS 2016. Fisheries of the United States 2015. A. Lowther and M. Liddel (editors), National Marine Fisheries Service, Office of Science and Technology, Silver Spring, MD, 135 pp.*
- *Northern Economics, Inc., 2009. Valuation of Ecosystem Services from Shellfish Restoration, Enhancement and Management: A Review of the Literature. Prepared for the Pacific Shellfish Institute, 58 pp.*
- *Peterson, C.H., 1986. Enhancement of Mercenaria densities in seagrass beds: Is pattern fixed during settlement season or altered by subsequent differential survival? Limnology and Oceanography 31: 200-205.*
- *Riisgard, H.U., 1988. Efficiency of particle retention and filtration rate in 6 species of Northeast American bivalves. Marine Ecology Progress Series 45: 217-223.*
- *Rubino, Michael (editor). 2008. Offshore Aquaculture in the United States: Economic Considerations, Implications & Opportunities. U.S. Department of Commerce, Silver Spring, MD. NOAA Technical Memorandum NMFS F/SPO-103, 263 pp.*
- *USDA, 2014. 2012 Census of Agriculture. National Agricultural Statistics Service. Volume 3, Special Studies, Part 2. AC-12-SS-2.*

This research program is considered to be feasible. GSI is an established organization with a board of directors and proper financial controls.

Risks and Uncertainties

By definition, the outcome of research is uncertain; preconceived notions are not a part of the scientific method. The reason that research is conducted is to gain a greater understanding of an unknown process or to answer a specific question. Future sources of research funding for shellfish aquaculture are uncertain. Funding agencies alter their priorities over time. The total amount of funding available for research varies from year to year depending on state and federal budgeting processes. Therefore, this project is anticipated to reduce funding uncertainties and support locally-focused applied research, which will contribute to the expansion of shellfish aquaculture investment and operations in southwest Florida.

Success Criteria and Monitoring

The success of this research program will be monitored and quantified as:

- The number of research projects initiated
- The amount of external funding acquired
- The increase in submerged land leased for shellfish farming
- The increase in shellfish farmers (jobs)
- The increase in the value of shellfish produced (economic value).

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria.

Milestones and Schedule

The total estimated time horizon of this project is approximately five years. It is expected to start in 2019 and end in 2023. Implementation of this project has been divided into five milestones, or phases, as shown in the milestone chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Planning and research priorities																
Design experiments																
Collect and analyze data																
Technology transfer																
Success monitoring																

Budget and Funding Sources

The total cost for this research program is $400,000. Manatee County is committed to allocating $300,000 of its share of the Florida Spill Impact Component and $100,000 of its Direct Component funds to this project. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Planning and research priorities	$100,000	$0
Planning Subtotal	**$100,000**	**$0**
Design experiments	$100,000	$100,000
Collect and analyze data	$100,000	$100,000
Technology transfer	$50,000	$50,000
Implementation Subtotal	**$250,000**	**$250,000**
Monitoring	$50,000	$50,000
Total Cost	**$400,000**	**$300,000**

COMMITTED FUNDING SOURCES	
Spill Impact Component	$300,000
Direct Component	$100,000
Other grants or co-funding	$0
Other County funds	$0
Total Committed Funding	**$400,000**
Budget Shortfall	**$0**
POTENTIAL LEVERAGED FUNDING SOURCES	
Natural Resource Damage Assessment	
F.32 Fisheries Finance Program	
F.33 Sea Grant National Marine Aquaculture Initiative - Integrated Projects to Increase Aquaculture Production	
F.34 Sea Grant National Marine Aquaculture Initiative - Addressing Impediments to Aquaculture Opportunities	
O.19 Fisheries Innovation Fund	
O.24 Gulf of Mexico Oyster Aquaculture Small Grants	
S.13 Florida Job Growth Grant Fund	

Partnerships/Collaboration

Manatee County and the Gulf Shellfish Institute, Inc., will continue to work with the following agencies and partners in the implementation of this research program:

- Federal Agencies
  - Southeast Regional Aquaculture Center (USDA)
  - NOAA Southeast Regional Office
- State Agencies
  - Aquaculture Review Council, Florida Division of Aquaculture
  - Florida Marine Research Institute (Florida Wildlife Commission)
- Local Agencies
  - County Governments
  - County Cooperative Extension Service
  - Tampa Bay Estuary Program
  - Sarasota Bay Estuary Program
  - Charlotte Harbor Estuary Program
- Associations
  - Florida Aquaculture Association
  - Cedar Key Shellfish Association
  - Southwest Florida Shellfish Association
- Research Entities
  - University of Florida/Sea Grant/IFAS
  - University of South Florida
  - Mote Marine Laboratory
  - Stanford Research Institute
  - Eckerd College.

MANATEE COUNTY

Coastal Preserve Trail and Boardwalk Enhancements

PROJECT NO. 18-7

Project Description

OVERVIEW AND LOCATION

This project involves the construction of trails and boardwalks at three County-owned coastal preserves. The general location of the preserve lands addressed by this project is shown in **Figure 18-7A**.

NEED AND JUSTIFICATION

Manatee County has acquired significant coastal land holdings for conservation and recreation. Some of the most consistently praised elements of the recreational amenities that have been installed at these preserves are the trails, boardwalks, and observation decks, which facilitate access across interior waterbodies and through mangrove swamps etc. They are some of the major draws to the preserves, which receive over 800,000 visitors annually. In addition, where feasible, Manatee County is hoping to connect coastal preserves with pedestrian and/or bicycle trails to enhance the visitor experience. There is a need to expand these features in three Manatee County–owned coastal preserves, including:

- Perico Preserve/Robinson Preserve Connector Trail
- Ungarelli Preserve Boardwalks
- Hidden Harbor Preserve Trails and Boardwalks.

Figure 18-7A. Location of County-owned coastal preserves.

The location of these preserves are shown in **Figure 18-7A** above.

PURPOSE AND OBJECTIVES

The purpose of this project is to construct trails and boardwalks on three Manatee County–owned coastal preserves.

The objectives of the project are to: (1) enhance public access to the coastal zone in existing preserves and (2) promote ecotourism in Manatee County.

PROJECT COMPONENTS

The project involves two primary components: (1) engineering design and permitting and (2) construction. Manatee County has developed conceptual plans and routes for the proposed trails and boardwalks, as well as design standards for these features. An existing boardwalk at the Robinson Preserve is shown as an example in **Figure 18-7B**.

Figure 18-7B. Existing boardwalk in Robinson Preserve.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will enhance public access to the coastal zone in existing Manatee County–owned preserves and promote ecotourism in Manatee County. In addition, the project will protect living coastal marine resources and habitats from pedestrian impacts.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of Tourism in the Gulf Coast region, including recreational fishing.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objective:

- Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Manatee County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of the project.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The primary focus of this program is public recreational access and tourism promotion; therefore, BAS does not apply. However, this project will be informed by guidelines developed by the State of Florida for the design and construction of elevated walkovers for dunes and other coastal habitats. Key literature citations include:

- *Beach/Dune Walkover Guidelines, the Florida Bureau of Beaches and Coastal Systems, Florida Department of Environmental Protection, Revised January 1998.*
- *Beach/Dune Walkover Structures, SUSF-SG-76 by Todd L. Walton, Jr., and Thomas C. Skinner. Published by the Marine Advisory Program of the Florida Cooperative Extension Service and the Florida Sea Grant, March, 1983.*

This project is considered to be feasible in terms of the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the constructed facilities over the long term.

Risks and Uncertainties

In the evaluation of this project, no significant risks or uncertainties were identified.

Success Criteria and Monitoring

This project will enhance public access to the coastal zone in existing Manatee County–owned preserves and promote ecotourism in Manatee County. Therefore, a range of success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Linear feet of new trails and boardwalks constructed
- Increases in public use of Manatee County coastal preserves

In the project grant request, a detailed monitoring program will be designed that addresses data collection and assessment methodologies for the above-listed criteria. Manatee County is committed to implementing the necessary monitoring program and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 16 years. It is expected to start in 2018 and end in 2033. Project implementation will be phased based on available funding. Manatee County will operate and maintain the facilities in perpetuity. The estimated schedule for the project components have been divided into three milestones, as shown in the following chart.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Preliminary design																
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

Manatee County has developed a preliminary total cost estimate of $2,000,000 for this project, based on available unit costs for similar projects in the area. Manatee County is committed to allocating $956,667 of its share of the Florida Spill Impact Component to this project, but will also be seeking other leveraged funding sources to supplement these monies. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Preliminary design	$60,000	$60,000
Planning Subtotal	**$60,000**	**$60,000**
Final design and permitting	$100,000	$100,000
Construction	$1,800,000	$756,667
Implementation Subtotal	**$1,900,000**	**$856,667**
Monitoring	$40,000	$40,000
Total Cost	**$2,000,000**	**$956,667**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$956,667
Other Grants or Co-Funding		$0
Other County Funds		$0
Other County funds		$0
Total Secured Funding		**$956,667**
Budget Shortfall		**$1,043,333**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
O.15 Doppelt Family Trail Development Fund		
S.24 Greenways and Trails Program		
S.29 Recreational Trails Program		
S.40 Transportation Alternatives Program - Set-Aside		
S.49 Sport Fish Restoration Program		

Partnerships/Collaboration

Manatee County may partner with the Southwest Florida Water Management District for additional funding through District's cooperative funding program, as well as with the Tampa Bay Estuary Program and Sarasota Bay Estuary Program.

MANATEE COUNTY

Coastal Watershed Management Plans

PROJECT NO. 18-8

Project Description

OVERVIEW AND LOCATION

This program involves the development of Watershed Management Plans (WMPs) for priority tributaries and their watersheds in coastal Manatee County. The general location of the priority watersheds in Manatee County is shown in **Figure 18-8A**.

Figure 18-8A. General location of priority watersheds in Manatee County.

NEED AND JUSTIFICATION

Manatee County has been cooperating with the Southwest Florida Water Management District (SWFWMD) in a multi-year program to study the hydrology, hydraulics, and water quality of small, coastal tidal tributary watersheds. These studies apply a structured WMP template developed by SWFWMD aligned with agency responsibilities to protect water quality, improve flood protection, and enhance natural systems. These studies provide data, modeling, and best management practice (BMP) engineering evaluations and project prescriptions needed to improve surface water management—both quality and quantity—in densely urbanized coastal watersheds. Projects are typically co-funded by SWFWMD and local governments as a 50/50 match split. Spill Impact Component funding will be used to provide Manatee County matching funds to support development of WMPs in priority coastal watersheds. Priority watersheds identified by Manatee County all drain to receiving coastal waterbodies that are part of the Tampa Bay Estuary Program and the Sarasota Bay National Estuary Program.

PURPOSE AND OBJECTIVES

The purpose of this program is to complete WMPs for priority coastal tributary watersheds in Manatee County. The objectives of the program are to identify projects in the priority watershed that will: (1) improve water quality; (2) provide increased flood control; and (3) enhance natural systems.

Figure 18-8B. Priority Manatee County watersheds for WMP development.

PROJECT COMPONENTS

Manatee County has identified 11 priority coastal tidal creeks that are in need of WMP development, many characterized by older urban development without modern stormwater management systems. Many of these waterbodies have significant water quality problems, with designated impairments for nutrients, dissolved oxygen, and/or bacteria. Two WMPs are currently in preparation, Pearce Drain and Bowlees Creek, while another, Mill Creek, is projected to start in 2019. Other priority watersheds are shown in **Figure 18-8B**.

The studies use SWFWMD's formulaic WMP approach (drainage/flood protection and water quality), which Manatee County augments with more thorough water quality assessments and enhanced water quality treatment BMPs where feasible. The deliverable products from these studies include for each watershed: (1) completed hydrologic/hydraulic models; (2) inventory of existing stormwater infrastructure; and (3) project prescriptions to address identified flooding and water quality problems. Manatee County anticipates incorporating "green infrastructure" solutions to these problems to the greatest extent feasible.

Typical planning costs are $45,000 per square mile for a WMP plus $6,000 per square mile for water quality data collection and assessments. Manatee County Parks and Natural Resources Department will provide water quality data to support this phase of the project. The SWFWMD has historically provided 50 percent match on these projects, and this co-funding level is expected to continue into the future. As the budget allows through co-funding or leveraging, design studies will be completed based on priority projects identified in each of the WMPs.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will contribute to improved water quality and flood control in priority coastal watersheds in Manatee County. All of the identified priority watersheds drain to receiving coastal waterbodies that are part of the Tampa Bay Estuary Program and the Sarasota Bay National Estuary Program.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 8: Planning assistance.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goal:

- Goal 2: Restore Water Quality and Quantity.

This project is consistent with, and addresses, the following Comprehensive Plan Objective:

- Objective 2: Restore, Improve, and Protect Water Resources.

Implementing Entities

Manatee County will be the sole implementing entity and grant sub-recipient responsible for conducting the WMPs (in collaboration with the SWFWMD) and monitoring the success of the program.

Best Available Science and Feasibility Assessment

A Best Available Science (BAS) review is required for programs and projects that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast. The primary focus of this program is on planning assistance; therefore, BAS does not apply.

This program is considered to be feasible in terms of the ability to: (1) obtain matching funding from the SWFWMD and (2) complete WMPs for priority waterbodies. Funding for the implementation of projects described in the WMP's will come from other County funds and SWFWMD co-operative funding.

Risks and Uncertainties

In the evaluation of this program, no significant risks or uncertainties were identified. The SWFWMD WMP development process is well established and has resulted in substantial improvements in regional water resources.

Success Criteria and Monitoring

This program will support watershed management planning efforts in priority watersheds of Manatee County. Therefore, a range of success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Number of completed watershed management plans for priority watersheds
- Acres of priority watersheds address by watershed management plans.

In the program grant request, a monitoring program will be designed that addresses data collection and assessment methodologies for the above-listed criteria. Manatee County is committed to conducting the monitoring necessary to document project benefits.

Milestones and Schedule

The total estimated time horizon of this program is approximately 15 years. It is expected to start in 2018 and end in 2032. Implementation of this program has been divided into four milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WQ data collection																
Prepare WMPs																
Initial design studies																
Success monitoring																

Budget and Funding Sources

Manatee County has developed a preliminary total cost estimate of $3,000,000 for this program. The County is committed to allocating $1,275,243 of its share of the Florida Spill Impact Component to the program, and is anticipating a 50 percent match from SWFWMD. A summary of the program budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Water quality data collection	$100,000	$100,000
Prepare watershed management plans	$210,000	$210,000
Initial design studies	$2,590,000	$865,243
Implementation Subtotal	**$2,900,000**	**$1,175,243**
Monitoring	$100,000	$100,000
Total Cost	**$3,000,000**	**$1,275,243**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$1,275,243
Direct Component		$0
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$1,275,243**
Budget Shortfall		**$1,724,757**
POTENTIAL LEVERAGED FUNDING SOURCES		
F.19 Conservation Technical Assistance		
F.21 Watershed Protection and Flood Prevention		
F.51 National Coastal Wetlands Grants		
O.43 Southeast Aquatics		
S.10 Community Planning Technical Assistance Grants		
S.52 SWFWMD Cooperative Funding Initiative		

Partnerships/Collaboration

Manatee County will partner with the Southwest Florida Water Management District for match funding through the District's cooperative funding program. Funding for the implementation of projects contained in the WMPs will come from other County funds and co-operative funding.

MANATEE COUNTY

Urban Park Stormwater Improvements – GT Bray Park

PROJECT NO. 18-9

Project Description

OVERVIEW AND LOCATION

This project involves improvements to the surface water management system at GT Bray Park, the intent of which is to partially restore the natural hydrologic storage, water quality treatment, and habitat functions that existed on this site prior to development. The park is located at 2905 West 59th Street in Bradenton, Florida. The general location of the park is shown in **Figure 18-9A.**

Figure 18-9A. Location of GT Bray Park in Manatee County.

NEED AND JUSTIFICATION

At about 140 acres, GT Bray Park is the largest urban park in Manatee County. Historic aerial photographs dating back to 1940 show that this site was historically a freshwater herbaceous wetland slough, then named Cedar Hammock Creek. Sometime between 1973 and 1978, the site was excavated to enhance drainage and filled to create more developable area. The natural hydrologic storage and water quality treatment functions were compromised by these alterations.

In addition, natural habitats were severely degraded. Major changes to the system included the loss of native vegetation and dense infestations of nuisance and exotic species. This has led to decreased native wildlife use and an increase in nuisance "urban" species. For example, there have been issues with fecal coliform contamination of surface waters due to overuse of the area by Muscovy ducks.

The site is located in the West Cedar Hammock Drain Water Body identification number, which flows to Palma Sola Bay, which is a designated Outstanding Florida Water (OFW) under the management purview of the Sarasota Bay National Estuary Program. Pursuant to Florida law, pollutant discharges that cause a degradation in water quality in an

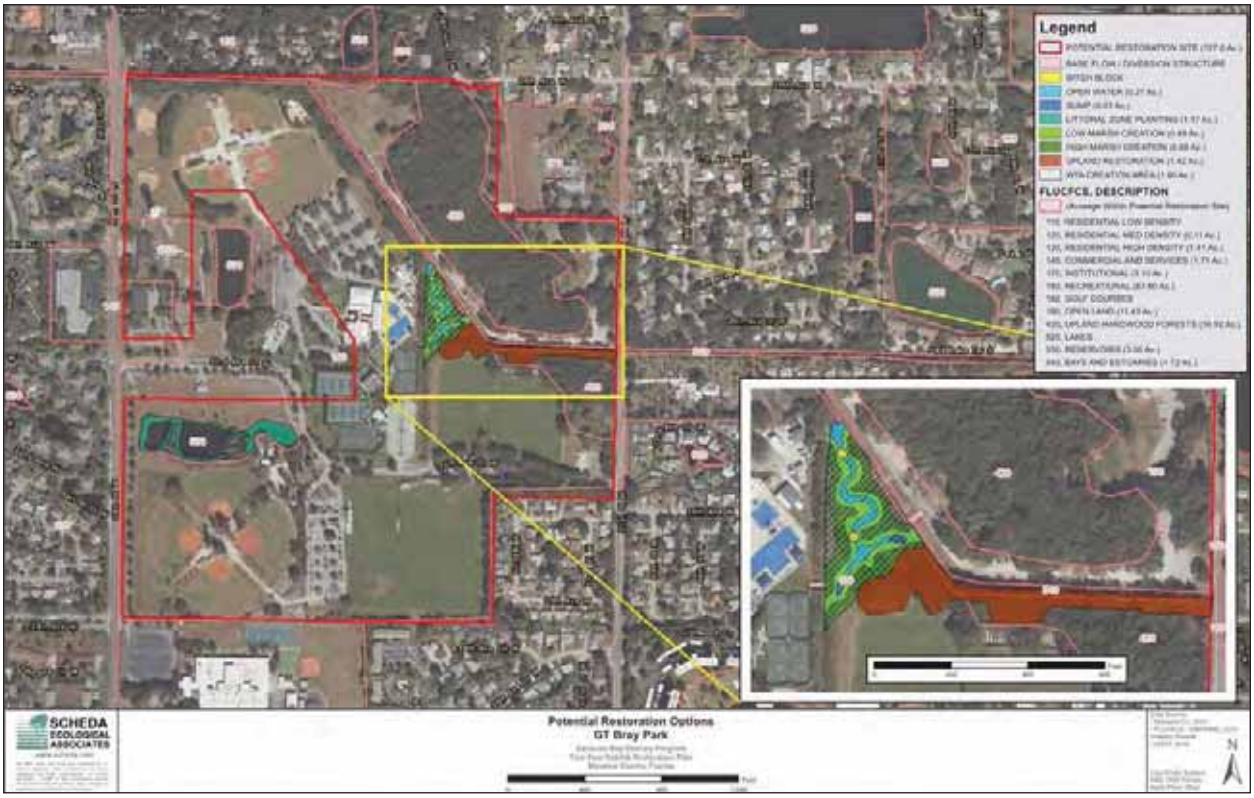


Figure 18-9B. GT Bray Park conceptual restoration plan.

OFW are prohibited. Therefore, restoring the natural hydrologic and water quality treatment functions in West Cedar Hammock Drain are justified to protect the estuarine receiving waters.

Today, the park has about 20 acres of impervious surface area for roads, parking lots, tennis/basketball courts, and buildings. The remainder of the site is pervious area used for grassed athletic fields, open space, drainage ditches, and wetlands. There are excellent opportunities for improvements to the existing surface water management systems to provide for greater hydrologic storage, enhanced water quality treatment, and native habitat restoration without taking too much terrain away from park purposes. Manatee County is proposing to design and implement a "green infrastructure" system to at least partially restore the natural functions of this site, and to use the lessons learned from this project by applying a similar approach to other urban park sites in the county.

PURPOSE AND OBJECTIVES

The purpose of this project is to partially restore the natural wetland slough that historically flowed through the GT Bray Park site. The objectives of the project are to: (1) restore a more natural hydrologic regime and surface water storage capacity; (2) enhance water quality treatment of surface waters and reduce pollutant loads to Palma Sola Bay; and (3) restore native vegetation communities and wildlife use on the site.

PROJECT COMPONENTS

The project involves two main components: (1) regrading and interconnecting drainage ditches on the site and (2) excavation and planting of a wetland treatment area. A third potential component is exotic species control in upland forested areas.

The first component will include regrading of drainage ditch slopes to shallower grades to allow for wetland plantings, as well as the interconnection of minor ditches/swales and isolated drainage ponds, and to create an integrated surface water management system. Native aquatic species will be planted along the regraded slopes.

The second component will involve the excavation of a ~5-acre wetland treatment area at the confluence of the two main drainage ditches on the eastern side of the site. The wetland treatment area will be excavated to a level lower than the existing ditch bottoms. Proposed baseflow diversion structures would divert water into the wetland treatment area, where there would be a series of low and high marshes, open water, and pools. **Figure 18-9B** shows a conceptual design of the wetland treatment area. Hydrologic modeling will be required to develop a final design based on actual flow records (e.g., wetland size and volume); however, the resulting design will demonstrably improve downstream water quality.

Finally, the nearby forested uplands that abut the main drainage ditch to the north are infested with nuisance and exotic species, primarily Brazilian pepper (*Schinus terebinthifolia*). As part of this project, nuisance and exotic species will be removed and replanted with native vegetation, where feasible. Combined, the projects will improve the quality of water that reaches Palma Sola Bay, provide habitat for fish and wildlife within the park, reduce the nuisance and exotic seed source, and enhance a popular recreational amenity for the community.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will restore a more natural hydrologic regime and surface water storage capacity on an urban park, and enhance water quality treatment of surface waters to reduce pollutant loads to Palma Sola Bay. In addition, the project will restore native aquatic and upland vegetation communities and wildlife use of the site.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats.

Implementing Entities

Manatee County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of the project.

Best Available Science and Feasibility Assessment

The pollutant removal effectiveness of various stormwater BMPs implemented in Florida has been evaluated, and designs continue to be improved. The design of the proposed stormwater improvements will consider the following reference document:

- *Harper, H. and D. Baker, 2007. Evaluation of Current Stormwater Design Criteria Within the State of Florida. Final report prepared for the Florida Department of Environmental Protection (contract SO108) by Environment Research & Design, Inc., Orlando, FL.*

Based on extensive precedents for watershed rehabilitation in southwest Florida, this project is considered to be feasible in terms of the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term.

Risks and Uncertainties

In the evaluation of this project, no significant risks or uncertainties were identified. As part of the engineering design and permitting of this project, it is likely that hydraulic modeling will be required to calculate maximum inflow velocities, and to design the project to prevent scouring and erosion of the restored areas.

Success Criteria and Monitoring

This project will affect surface water pollutant (e.g., nutrients, sediment, metals) loads leaving the site as well as on-site water and habitat quality. Therefore, a range of success criteria will be developed in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Change in pollutant loadings pre- and post-construction
- Change is percent cover of nuisance and exotic species.

In the project grant request, a detailed monitoring program will be designed that addresses data collection and assessment methodologies for the above-listed criteria. Manatee County is committed to implementing the necessary monitoring program and coordinating with other regional water quality monitoring entities to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 4 years. It is expected to start in 2029 and end in 2032. Implementation of this project has been divided into four milestones, as shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study and preliminary design																
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

Manatee County has developed a preliminary total cost estimate of $2,030,000 for this program. The County is committed to allocating $1,600,000 of its share of the Florida Spill Impact Component to the program, and is anticipating a $430,000 matching grant from SWFWMD. A summary of the program budget and funding sources is provided in the table below.

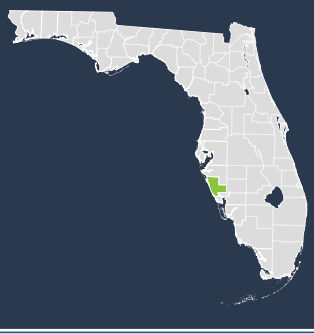
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study and preliminary design	$200,000	$200,000
Planning Subtotal	**$200,000**	**$200,000**
Final design and permitting	$180,000	$180,000
Construction	$1,620,000	$1,220,000
Implementation Subtotal	**$1,800,000**	**$1,400,000**
Monitoring	$30,000	$0
Total Cost	**$2,030,000**	**$1,600,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$1,600,000
Direct Component		$0
Other grants or co-funding – SWFWMD Cooperative Funding Grant		$430,000
Other County funds		$0
Total Committed Funding		**$2,030,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
SWFWMD Cooperative Funding		
Natural Resource Damage Assessment		
F.21 Watershed Protection and Flood Prevention		
S.10 Community Planning Technical Assistance Grants		
S.18 Clean Water State Revolving Fund (CWSRF)		
S.25 Innovative Nutrient and Sediment Reduction and Conservation Pilot Project Program		
S.27 Nonpoint Source Management Program (NPSM) - Section 319		
S.34 TMDL Water Quality Restoration Grants		
S.52 SWFWMD Cooperative Funding Initiative		

Partnerships/Collaboration

Manatee County will continue to partner with the Southwest Florida Water Management District for additional funding through District's cooperative funding program.

SARASOTA COUNTY

Dona Bay Hydrologic Restoration Program



PROJECT NO. 19-1

Project Description

OVERVIEW AND LOCATION

This program involves the reconstruction of portions of the Cow Pen Canal, the construction of a 380-acre surface water storage and treatment facility, and a number of other hydrologic modifications designed to reduce excessive freshwater inflows into Dona Bay, and ti restore more natural salinity patterns and living resource distributions in this embayment. The overall program involves multiple sequential phases. Phase I has been completed and Phase II has been designed and permitted. Spill Impact Component funds are being requested for future Phases III through VI. The project is located in Sarasota County, in the Dona Bay watershed (see **Figure 19-1A**).

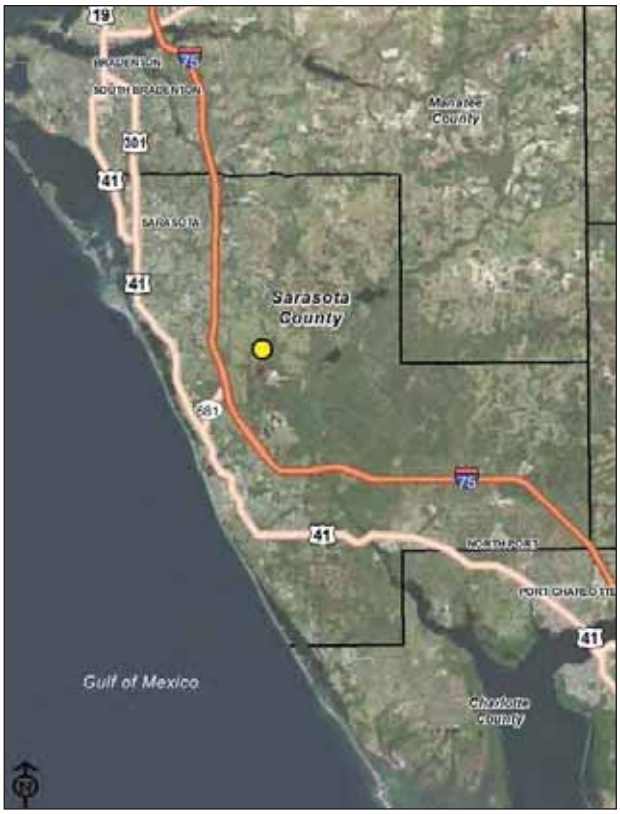


Figure 19-1A. Dona Bay Location Map.

NEED AND JUSTIFICATION

The Cow Pen Canal was constructed in the late 1960s with the purpose of improving drainage for agriculture and residential development. Construction of the canal had the effect of diverting freshwater out of the Myakka River watershed and shunting it westward to Dona Bay, historically a small tidal creek estuary that discharges to the Gulf via Venice Inlet. Construction of the Cow Pen Canal resulted in the expansion of the Dona Bay watershed from 15 square miles to approximately 75 square miles, a 500 percent increase in surface drainage area (see **Figure 19-1B**).

As a result of these hydrologic modifications, the amount of freshwater inflow to Dona Bay is far in excess of what has occurred historically. The excess freshwater inflow has been accompanied by an increase in nutrient loads to levels far greater than the waters of Dona Bay can effectively assimilate. In addition, salinity in Dona Bay is lower and much more variable than it was historically. Nutrient loads to the bay are sufficiently elevated such that levels of

dissolved oxygen in the bay are frequently lower than they were prior to the construction of the Cow Pen Canal. The percent of healthy oysters is much lower in Dona Bay than in adjacent estuaries without similar hydrologic alterations in their watershed, and seagrass coverage is lower than in the adjacent systems of Lyons Bay and Roberts Bay.

Figure 19-1B. Expanded Dona Bay watershed resulting from the construction of the Cow Pen Canal (source: Sarasota County).

PURPOSE AND OBJECTIVES

The primary purpose of the Dona Bay Restoration Program is to restore the natural volume and timing of freshwater inflows to Dona Bay, as well as to provide other water resource benefits. Sarasota County has identified the following five program objectives: (1) provide a more natural freshwater/saltwater regime in the tidal portions of Dona Bay; (2) provide a more natural freshwater flow regime pattern for the Dona Bay watershed; (3) protect existing and future property owners from flood damage; (4) protect existing water quality; and (5) develop potential alternative surface water supply options that are consistent with, and support, other program objectives.

PROJECT COMPONENTS

The overall Dona Bay Hydrologic Restoration Program is described in the 2007 *Dona Bay Watershed Management Plan* (Kimley-Horn & Associates, 2007) co-funded by Sarasota County and the Southwest Florida Water Management District (SWFWMD). The program involves multiple sequential phases. Phase I has been completed, Phase II construction is scheduled to start in the summer of 2018. Spill Impact Component funds are being requested for future Phases III through VI.

Phase I components involved modifications to the watershed that diverted flows out of Cow Pen Canal into a series of channels and open water features, and that created wetlands to treat freshwater inflows and reduce nutrient and total suspended solids loads to Dona Bay. However, Phase I efforts were not designed to substantially reduce the excessive freshwater inflows to Dona Bay, but rather to treat those excessive flows to reduce nutrient and sediment loads.

Phase II components involve the reduction of excessive freshwater flows to Dona Bay by diverting approximately 3 million gallons per day from the Dona Bay watershed back toward the historical destination of the Myakka River. The surface water storage facility is designed to retain freshwater inflows from Cow Pen Canal after they have been treated through the extensive wetland features that were created in Phase I. The storage facility will accommodate excess freshwater inflows from the upper reaches of the artificially expanded Dona Bay watershed, and then release flows over a period of time (in excess of the period of inflow) back to the Myakka River. Flows will be released from the storage facility through a shallow spreader canal. Water will then sheet flow across an extensive natural

floodplain prior to reaching the historical destination of these flows, the Myakka River. **Figure 19-1C** shows a schematic of the Phase I and II program components.

Phase III components will augment the storage and beneficial use of excess freshwater diversions. These components include: (1) an aquifer recharge well; (2) a surface water storage reservoir; and (3) augmentation of the reclaimed water system supply. Phase IV will be a replacement of the weir on Cow Pen Canal where the canal discharges into the estuarine waters. The weir was constructed in 1960s, is antiquated, and needs to be replaced. The new weir will enhance Sarasota County's ability to control the rate of discharge from the canal to the estuary. Phase V further examines freshwater flow into the estuary through weir modifications at the historic watershed boundary in the Blackburn Canal system. This canal currently flows between the Myakka River, Curry Creek, and Roberts Bay. Phase VI of the program includes living resources restoration components in Dona and Roberts Bays, which includes wetland enhancements, oyster reef restoration, and seagrass and saltmarsh restoration.

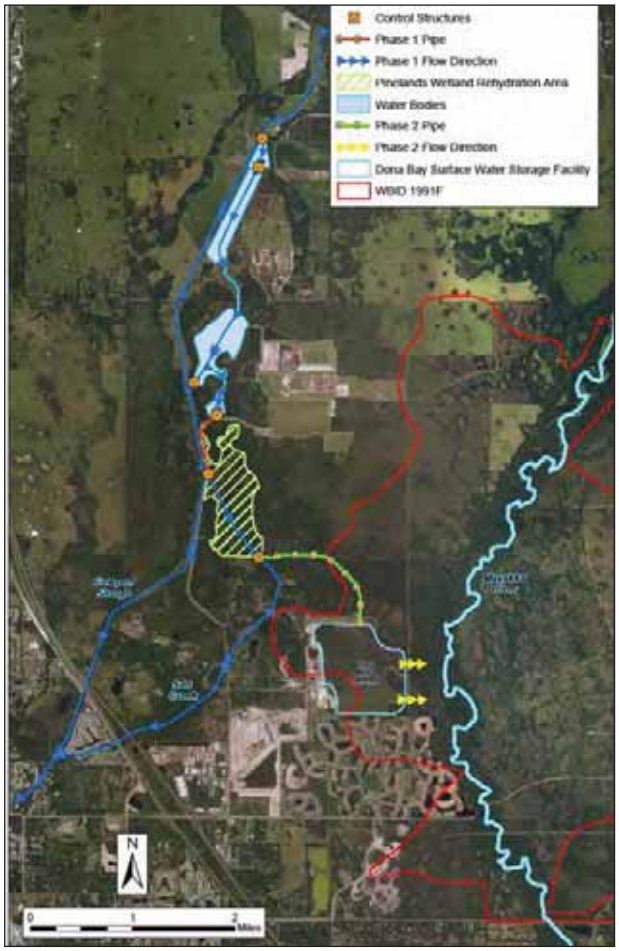


Figure 19-1C. Schematic of Phase I and II program components (source: Kimley-Horn & Associates, 2007).

Contributions to the Overall Economic and Ecological Recovery of the Gulf

Extensive hydrologic and water quality monitoring and modeling work has concluded that Phase II components are likely to improve the salinity regime in Dona Bay over an area of approximately 77 acres. These 77 acres represent the area for which the project is expected to moderate the current water quality conditions, wherein salinities are both too low and too variable to allow for the development and/or persistence of healthy oyster reefs in the upper reaches of Dona Bay. Furthermore, freshwater will be redirected from the Cow Pen Canal to historical watershed storage areas that were drained by the canal, many of which have now been acquired by Sarasota County. As a result, 80 percent or more of the excess freshwater is expected to flow through the historical flow path and storage areas. Subsequent phases propose to increase and enhance the storage capacity of the historical watershed even more.

In addition to hydrologic restoration, Phase II components are expected to reduce nutrient loads to Dona Bay by approximately 940 pounds per year, which should improve water clarity by decreasing phytoplankton growth, and allow for the expansion of seagrass meadows in downstream waters. At the same time, extensive modeling and the collection and analysis of water quality data sets have led to the prediction that the diversion of 3 million gallons per day back to the Myakka River would not be expected to have an adverse impact on the receiving water quality, as the added nutrient load is less than one-half of 1 percent of the Myakka River's existing nutrient loads to downstream waters. In addition, the extensive wetland treatment processes included in both Phase I and Phase II projects

are expected to reduce nutrient concentrations in flows entering the Myakka River to less than ambient nutrient concentrations in the receiving waters.

As noted above, Spill Impact Component funds will be used for Phases III through VI of this program. Phase III components will further reduce excess freshwater discharge to the Dona Bay system as well as help decrease saltwater intrusion into underlying aquifers by installing an aquifer recharge system. This system will aid in restoring natural salinity regimes by removing excess water from the surface water storage facility constructed in Phase II. Phase IV will allow the County to have better control of the timing and volume of excess freshwater discharged into the Dona Bay estuary through the construction of a new weir. Located at the primary discharge of freshwater from Cow Pen Canal enters the estuarine waters of Dona Bay, this phase will further reduce nutrient laden stormwater runoff into the estuarine and Gulf of Mexico waters. Phase V will analyze the historic ridgeline separating the Dona Bay and Myakka River watersheds to identify improvements to the hydrology. The Blackburn Canal currently discharges excess freshwater from the Myakka River watershed to the estuarine waters of the Dona Bay which flows to the Gulf of Mexico through the Venice Inlet. There will be an evaluation of installing a weir in Backburn Canal at the historic ridgeline to further reduce excess freshwater, sediment, and nutrients from entering Dona Bay.

Over time it is anticipated that implementing Phases I – V of this restoration program will result in improved water resources in the estuarine habitat of Dona Bay. The salinity is expected to increase and be less variable, resulting in habitat more suitable for keystone communities of oysters and seagrass. Phase VI will involve the implementation of habitat restoration projects aimed at increasing the coverage of oysters and seagrass in the bays. These systems will enhance the function offishery habitat by providing both nursery grounds and foraging areas.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

Sarasota County will be the prime implementing entity and grant sub-recipient responsible for the engineering design, permitting, construction, operation and maintenance, and success monitoring for this program. Sarasota County has coordinated extensively with the SWFWMD and other agencies in the design and permitting for the program to date, and will continue to do so in future phases.

Best Available Science and Feasibility Assessment

Assessments of the ecological problems in Dona Bay date back more than 40 years. Several studies and conceptual restoration plans have been developed for Dona Bay by various local, regional, and state agencies, and there is broad-based consensus that the restoration of Dona Bay is dependent on a substantial reduction in the excess freshwater inflows caused by historical hydrologic alteration. Documents that include either conceptual restoration plans for Dona Bay or more detailed assessments of the project components of this effort include the following:

- *Mote Marine Lab, 1975. The Ecological Status of Dona and Roberts Bays and its Relationship to Cow Pen Slough and Other Possible Perturbations.*
- *SWFWMD, 2000. Charlotte Harbor Surface Water Improvement and Management (SWIM) Plan.*
- *Kimley-Horn & Associates, 2007. Dona Bay Watershed Management Plan.*
- *Charlotte Harbor National Estuary Program, 2008. Comprehensive Conservation and Management Plan for the Greater Charlotte Harbor Watershed.*

As part of these efforts, various flow diversion scenarios were proposed and modeled, and the conceptual designs of both Phase I and Phase II projects were conducted. In addition, the benefits and possible impacts (to the Myakka River) of Phase II project components have been reviewed by permitting agencies, and permits were received for Phase II from the SWFWMD. Phases III and IV to be funded by Spill Impact Component funds build upon Phases I and II, and are consistent with the overall project goals and conceptual design previously addressed in the Dona Bay Watershed Management Plan cited above.

This project is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term.

Risks and Uncertainties

No significant risks or uncertainties have been identified that would preclude project implementation. The issue of the impact of diverted volumes to the Myakka River on receiving water quality has been investigated and resolved to the satisfaction of the regulatory staff of the SWFWMD.

Success Criteria and Monitoring

This project will benefit the Dona Bay estuary as well as watershed freshwater wetlands that have been excessively drained by the Cow Pen Canal. Success criteria will be developed and described in the project grant request, and it is anticipated that quantitative criteria will be developed for:

- Changes in salinity and water clarity in Dona Bay
- Changes in the distribution and persistence of healthy oyster reefs in Dona Bay
- Changes in the distribution and persistence of seagrass beds in Dona Bay
- Changes in the distribution of native wetland species in restored watershed storage areas.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Sarasota County is committed to an adaptive management approach to the project, and to conducting the monitoring necessary to support this approach and to quantify project benefits.

Milestones and Schedule

As discussed above, Sarasota County has already completed implementation of Phase I, and Phase II construction is scheduled to start in the summer of 2018. Spill Impact Component funds are being requested for future Phases III through VI.

The total estimated time horizon of this project is approximately 16 years. It is expected to start in 2018 and end in 2033. Implementation of this project has been divided into 13 milestones, as shown in the chart below. This project is ready to begin Phase III planning activities, which include a feasibility study and preliminary design.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Phase III Planning	■	■														
Phase III Engineering and Permitting			■													
Phase III Construction					■	■	■									
Phase IV Planning	■	■														
Phase IV Engineering and Permitting				■												
Phase IV Construction								■	■							
Phase V Planning	■	■														
Phase V Engineering and Permitting							■									
Phase V Construction									■							
Phase VI Planning		■														
Phase VI Engineering and Permitting												■				
Phase VI Construction														■		
Success Monitoring				■	■	■	■	■	■	■	■	■	■	■	■	■

Budget and Funding Sources

As part of the Dona Bay Watershed Management Plan of the Dona Bay Watershed Management Plan (Kimley-Horn & Associates, 2007), and follow-up analysis conducted by Sarasota County, preliminary cost estimates for the various phases and components of the project have been developed. The total project cost for the remaining phases is estimated to be $13,204,832.

Sarasota County is committed to allocating its entire $12,660,000 share of the Florida Spill Impact Component to this project. Sarasota County has the financial capacity to make up project funding shortfalls with other County funds, but will also be seeking other leveraged funding sources. Previous phases have received SWFWMD cooperative funding support, and it is anticipated that SWFWMD will continue to provide funding support going forward. A summary of the project budget and funding sources is provided in the following table.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Phase III – Recharge, Storage & Use		
Feasibility study	$220,000	$0
Preliminary design	$0	$0
Planning Subtotal	**$220,000**	**$0**
Final design and permitting	$440,000	$440,000
Construction	$6,220,000	$6,220,000
Implementation Subtotal	**$6,660,000**	**$6,660,000**
Total	**$6,880,000**	**$6,660,000**
Phase IV – Kingsgate Weir		
Feasibility study	$55,000	$0
Preliminary design	$55,000	$0
Planning Subtotal	**$110,000**	**$0**
Final design and permitting	$200,000	$200,000
Construction	$1,800,000	$1,800,000
Implementation Subtotal	**$2,000,000**	**$2,000,000**
Total	**$2,110,000**	**$2,000,000**
Phase V – Blackburn Canal		
Feasibility study	$55,000	$0
Preliminary design	$55,000	$0
Planning Subtotal	**$110,000**	**$0**
Final design and permitting	$200,000	$200,000
Construction	$1,800,000	$1,800,000
Implementation Subtotal	**$2,000,000**	**$2,000,000**
Total	**$2,110,000**	**$2,000,000**
Phase VI – Habitat Monitoring & Restoration		
Feasibility study	$55,000	$55,000
Preliminary design	$55,000	$55,000
Planning Subtotal	**$110,000**	**$110,000**
Final design and permitting	$200,000	$200,000
Construction	$1,690,000	$1,690,000
Implementation Subtotal	**$1,890,000**	**$1,890,000**
Total	**$2,000,000**	**$2,000,000**
Monitoring	$104,832	$0
Total Cost	**$13,204,832**	**$12,660,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$12,660,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds (monitoring)		$544,832
Total Committed Funding		**$13,204,832**
Budget Shortfall		**$0**

POTENTIAL LEVERAGED FUNDING SOURCES
Natural Resource Damage Assessment
F.19 Conservation Technical Assistance
F.21 Watershed Protection and Flood Prevention
F.27 Regional Conservation Partnership Program (RCPP)
F.51 National Coastal Wetlands Grants
F.52 North American Wetlands Conservation Act (NAWCA) - Small Grants
F.53 North American Wetlands Conservation Act (NAWCA) - Standard Grant
F.54 Southeast Region Coastal Program
O.10 Climate Adaptation Fund
O.13 Conserve Wildlife Projects
O.25 Gulf Star
O.26 Healthy Watersheds Consortium Grant Program
O.34 Resilient Communities Program
O.43 Southeast Aquatics
S.46 Florida ESA Section 6
S.47 Florida's State Wildlife Grants Program (Florida's Wildlife Legacy Initiative)
S.52 SWFWMD Cooperative Funding Initiative
S.54 Waterway Development Program

Partnerships/Collaboration

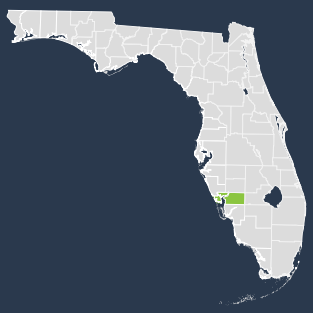
Efforts to quantify and reduce the adverse impacts of excessive freshwater inflows on Dona Bay have included extensive hydrologic and water quality monitoring and modeling, and the development of conceptual projects designs to address those impacts. These efforts have involved many local, regional, state, and federal agencies, including:

- Southwest Florida Water Management District
- Florida Department of Environmental Protection
- Charlotte Harbor National Estuary Program
- U.S. Environmental Protection Agency
- Mote Marine Laboratory.

Sarasota County will continue to coordinate with these partners throughout the implementation of the project.

CHARLOTTE COUNTY

Charlotte Harbor Septic to Sewer Conversion Program



PROJECT NO. 20-1

Project Description

OVERVIEW AND LOCATION

This program is a continuation of an ongoing effort by Charlotte County to remove an estimated 27,000 on-site septic systems (also known as on-site sewage treatment and disposal systems). This project is the first phase of a 15-year program to retrofit central sewer collection and conveyance facilities in areas draining to Charlotte Harbor. The program will also involve the removal of existing septic systems, as well as the improvement of existing sanitary sewer conveyance, wastewater treatment, and effluent disposal facilities to accommodate the increased flows. It will address and eliminate non-point pollution sources by installing the central sewer infrastructure needed to abandon 4,008 existing septic systems and prevent the installation of 1,920 new septic systems on vacant parcels in this densely developed area of northwest Charlotte County. **Figure 20-1A** shows the area to be improved by the proposed sewer improvements.

Figure 20-1A. General location of proposed sewer improvements in Charlotte County.

NEED AND JUSTIFICATION

Charlotte Harbor is the second-largest estuary in the state of Florida, with vital seagrass resources that support numerous fish and invertebrate species, including many of commercial importance. Although it is generally considered to be a healthy estuary, there are segments of upper Charlotte Harbor, the Myakka River, and the Peace River that have been determined by the U.S. Environmental Protection Agency and the Florida Department of Environmental Protection (FDEP) as impaired for bacteria, nutrients, and dissolved oxygen. These portions of the Charlotte Harbor watershed are characterized by older (post–World War II), high-density residential and commercial development with drainage and wastewater infrastructure that pre-date current water quality regulatory requirements.

Figure 20-1B. Overall septic-to-sewer plan environmental scoring and first 5-year interval (Mid and West County).

Old and failing septic systems, in conjunction with stormwater drainage systems with no water quality treatment, have been identified as the major contributing sources of water pollution to Charlotte Harbor, impacting the health and safety of humans as well and marine life (Lapointe et al., 2016). Septic systems have been specifically identified as significant contributors of nutrient and bacterial pollution of surface water and groundwater in this locale. Increases in Charlotte County's human population correlate strongly with rising concentrations of nitrogen, phosphorus, and chlorophyll-a (an indicator of algae blooms) in surface waters. The human wastewater source of the nutrient pollution was confirmed by sampling for stable isotopes of nitrogen ($\Delta^{15}N$) and the chemical tracer, sucralose. In addition, high concentrations of total nitrogen, nitrate, ammonia, biochemical oxygen demand, and enteric bacteria were consistently found down-gradient of septic systems in this area. The limited vertical separation between ground surface and the seasonal high water table in these areas means that maintaining the required wet-season distance (greater than 2 feet) between septic systems and groundwater is not possible.

PURPOSE AND OBJECTIVES

The purpose of this program is to remove existing septic systems that are known to be a significant source of water pollution in Charlotte Harbor, and to retrofit the affected area with new central sewer collection and conveyance facilities. The objectives of the project are to: (1) eliminate legacy water pollution from old and failing septic systems; and (2) improve local water quality in adjacent Charlotte Harbor, with a focus on nutrient and bacterial load reductions.

PROJECT COMPONENTS

This program is a comprehensive, multi-year partnership designed to restore, improve, and protect the waters of Charlotte County (including Charlotte Harbor, the second-largest estuary in the state of Florida) by reducing nutrient and bacterial pollutant loading from old and failing septic systems; constructing new centralized sewers; abandoning, crushing, and backfilling existing septic systems; and implementing other water quality best management practices. The total cost of the overall septic-to-sewer conversion program is estimated to exceed $300 million; therefore, RESTORE Act funds available to Charlotte County are being proposed to fund a portion of the Mid-County project, a subset of the overall program.

The Mid-County project selection was based on project prioritization scoring developed in the Charlotte County Sewer Master Plan (JEA, 2017), which was based on environmental criteria, economic factors, and project sequencing considerations. The environmental scoring process used proximity to surface waters, age of septic systems, and nitrogen loading (see **Figure 20-1B**). Based on these criteria, a series of 5-year plans were developed

for the Mid, West, and South County Service Areas. The first 5-year interval for the plan is shown in **Figure 20-1B**. The Mid-County project will connect 4,008 existing developed units out of 5,928 total parcels in the project area to a new central sewer collection. The project also involves modifications to the existing sewer system by adding new force mains and lift stations to accommodate increased flows from the septic system areas (see **Figure 20-1C**). Additional capacity would be added at the East Port Wastewater Reclamation Facility (WRF) to accommodate the additional flows from removal of the septic systems in the Mid-County area.

Figure 20-1C. Mid-County 5-year septic-to-sewer and related sewer improvements plan.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This program will reduce nutrient and bacterial loads from old and failing septic systems throughout the Charlotte Harbor watershed. It is estimated that the Mid-County project alone would reduce total nitrogen loads by 92,000 pounds per year (JEA, 2017). Lower nutrient loads to the surface waters of upper Charlotte Harbor will result in decreased algal growth and less-frequent algal blooms, and should lead to improved water clarity and light penetration through the water column. Consequently, more light would be available to seagrasses, and thus seagrass coverage should increase over time. This program is also part of an ongoing regional partnership effort to improve and protect water quality in Charlotte Harbor and addresses goals and objectives that are consistent with components of other complementary natural resource management plans, including:

- *Charlotte Harbor National Estuary Program (CHNEP), 2013. Comprehensive Conservation and Management Plan.*
- *Southwest Florida Water Management District (SWFWMD), 2000. Charlotte Harbor Surface Water Improvement and Management (SWIM) Plan.*

The proposed extensive sanitary sewer expansion will involve labor-intensive construction over many years. Therefore, this program is also expected to contribute to growth of the local economy through increased local job creation. These jobs will grow the tax base and foster development of new businesses and employment opportunities.

Eligibility and Statutory Requirements

This program is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This program is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This program is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

The Charlotte County Utilities Department (CCUD) will be the sole implementing entity and grant sub-recipient responsible for the design, permitting, construction, operation and maintenance, and monitoring of this project. CCUD has coordinated with the FDEP and numerous other agencies in the development of the Charlotte County Sewer Master Plan, and may collaborate with other entities in the implementation of the project through leveraging and other cooperative funding agreements.

Best Available Science and Feasibility Assessment

The relationship between septic systems and water quality in Charlotte Harbor, and potential pollutant load reductions associated with septic to sewer conversions in this area, have been well studied. Key references are cited below.

- *LaPointe et al., 2016. Charlotte County Water Quality Assessment, Phase I: Data Analysis and Recommendations for Long-Term Monitoring. Final report prepared for the Charlotte County Board of County Commissioners.*

- *Jones Edmunds Associates (JEA), 2017. Charlotte County Sewer Master Plan. Draft report prepared for the Charlotte County Utility Department.*

This program is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget, and (3) effectively operate and maintain the project components over the long term.

Risks and Uncertainties

In the development of the Charlotte County Sewer Master Plan, no significant risks or uncertainties have been identified that would preclude implementation of the Mid-County program discussed above.

Success Criteria and Monitoring

This project will affect surface waters and living marine resources in nearshore Charlotte Harbor adjacent to the sewer improvement areas. Therefore, a range of success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Number of septic systems taken off-line
- Estimated reduction in nutrient and bacteria loads attributable to the wastewater improvements
- Changes in ambient water quality (nutrients, bacteria, chlorophyll-a) in the Charlotte Harbor in the vicinity of wastewater improvements.

In the project grant request, a detailed monitoring program will be described that addresses data collection and assessment methodologies for the above-listed criteria. Charlotte County is committed to an adaptive management approach to the project, and to conducting the monitoring necessary to support this approach and to quantify project benefits. Water quality monitoring will be coordinated with state and regional entities including the FDEP, SWFWMD, and CHNEP.

Milestones and Schedule

The total estimated time horizon for the Mid-County septic-to-sewer conversion project is approximately nine years. It is expected to start in 2018 and end in 2025, including two years of success monitoring. Implementation of this project has been divided into five milestones, as shown in the chart below. Master planning iscomplete, and this project is ready to begin feasibility study and preliminary design.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study																
Preliminary design																
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

The Mid-County project will connect 4,008 existing developed units out of 5,928 total parcels in the project area to a new central sewer collection. The annual project costs during the forecasted period is estimated at $17.8 million, for a 5-year total cost of $89 million, or an average cost per parcel of $15,013. These estimated project costs include the removal or decommissioning of existing septic systems on individual parcels.

Charlotte County is committed to allocating its entire $12,660,000 share of the Florida Spill Impact Component to this project. In addition, Charlotte County has the financial capacity to make up project funding shortfalls with other County funds, but will also be seeking other leveraged funding sources. Other major sources of funding for this project may include: Utility Capital Improvements Program (CIP); Municipal Service Benefit Units assessments; other Charlotte County funding; and FDEP State Revolving Fund loans. A summary of the project budget and funding sources is provided in the following table.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$325,000	$325,000
Preliminary design	$325,000	$325,000
Planning Subtotal	**$650,000**	**$650,000**
Final design and permitting	$3,000,000	$3,000,000
Construction	$86,000,000	$8,950,000
Implementation Subtotal	**$89,000,000**	**$11,950,000**
Monitoring	$60,000	$60,000
Total Cost	**$89,710,000**	**$12,660,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$12,660,000
Direct Component		$0
Other grants or co-funding – 319 grant; legislative appropriate (in process)		$6,164,000
Other County funds – Utility CIP funds		$70,886,000
Total Committed Funding		**$89,710,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Council-Selected Restoration Component		
Centers of Excellence Research funding		
Natural Resource Damage Assessment		
F.19 Conservation Technical Assistance		
F.48 Community Development Block Grants (CDBGs): Entitlement Grants		
F.49 CDBGs: Entitlement Grants—Section 108 Loan Guarantees		
F.59 Urban Waters Small Grants		
F.63 Water Infrastructure Finance and Innovation Act (WIFIA)		
S.10 Community Planning Technical Assistance Grants		
S.13 Florida Job Growth Grant Fund		
S.18 Clean Water State Revolving Fund (CWSRF)		
S.27 Nonpoint Source Management Program (NPSM): Section 319		
S.34 Total Maximum Daily Load (TMDL) Water Quality Restoration Grants		
S.35 Water Pollution Control		
S.36 Water Projects		
S.51 SFWMD Cooperative Funding Program		
S.52 SWFWMD Cooperative Funding Initiative		

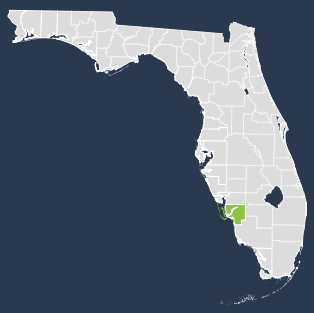
Partnerships/Collaboration

This program will build upon other regional efforts to reduce pollutant loads to Charlotte Harbor and adjacent surface waters. Charlotte County will continue its ongoing partnerships with a wide range of federal, state, and regional agencies, universities, non-governmental organizations, and related interest groups. Some of the key partners are listed below:

- Charlotte Harbor National Estuary Program
- Southwest Florida Water Management District
- Florida Department of Environmental Protection
- Florida Department of Health
- Charlotte Harbor Environmental Center, Inc.
- Florida Atlantic University
- University of Western Michigan.

LEE COUNTY

North East Caloosahatchee Tributaries Restoration Project



PROJECT NO. 21-1

Project Description

OVERVIEW AND LOCATION

The North East Caloosahatchee Tributaries Restoration Project is a hydrologic and ecosystem restoration initiative to be conducted primarily on a large County-owned parcel referred to as the Bob Janes Preserve, but will also involve the coordinated management of adjacent preserve lands. The project will improve water and habitat quality and enhance natural water storage within several disturbed watersheds in northeastern Lee County (see **Figure 21-1A**).

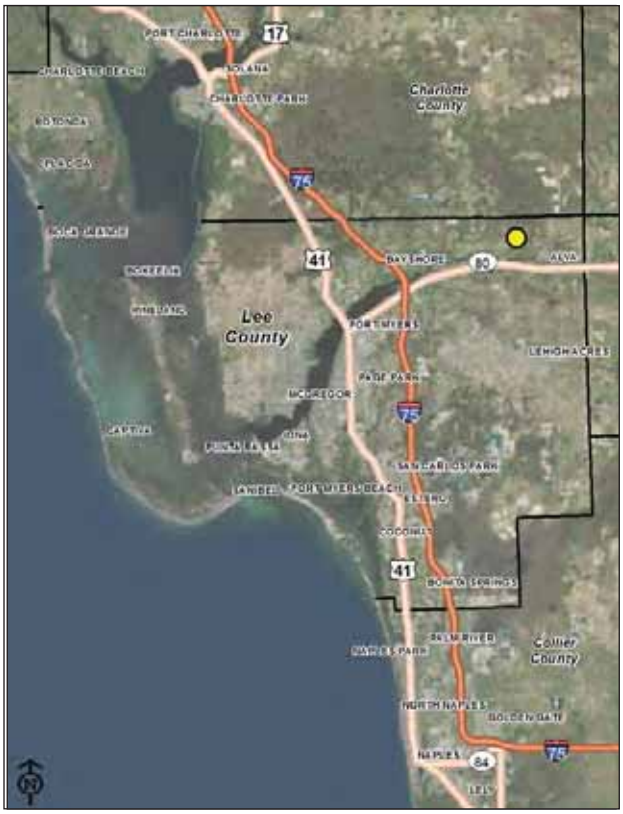


Figure 21-1A. North East Caloosahatchee Tributaries Restoration Project Location Map.

NEED AND JUSTIFICATION

The hydrology and water quality of the tidal Caloosahatchee River has been substantially impacted by controlled wet-weather discharges from Lake Okeechobee. Excessive wet season freshwater inflows to the Caloosahatchee River estuary and the Pine Island Sound Aquatic Preserve have resulted in adverse impacts to water quality, oyster reefs, and seagrasses in those receiving waters. In addition, the tidal Caloosahatchee River has been determined to be impaired for Total Nitrogen (TN), and a total maximum daily load (TMDL) and Basin Management Action Plan (BMAP) have been developed by the Florida Department of Environmental Protection (FDEP) to reduce nitrogen loads to the river (FDEP, 2012).

Lee County has taken a proactive role in conservation land acquisition and water quality. Approximately 25,000 acres have been acquired through Lee County's Conservation 20/20 program since its inception. To date, Lee County has met its first phase obligation for the Tidal Caloosahatchee TMDL by reducing more than 45,000 pounds of TN per year. The NECTR project will continue those efforts with the restoration of natural wetland and upland habitats and

the construction of surface water storage and treatment areas and recreational amenities on the Bob Janes Preserve. The primary restoration areas are bounded on the west by Oak Creek and on the east by the County Line Canal.

A substantial amount of research has been conducted over the last two decades to analyze opportunities on public and private lands including Babcock Ranch, County Line Drainage District, Telegraph Creek Preserve, and the Bob Janes Preserve. Planning is under way to identify additional lands and projects that will help meet the next phase of TMDL. The NECTR project has the potential to significantly contribute to this obligation as well as restore disturbed wetland and upland communities in the study area.

Prior to its public acquisition, the Bob Janes Preserve was part of a 91,361-acre working ranch known as the Crescent B Ranch. In 2006, the State of Florida acquired the ranch property, one of the single largest purchases of conservation land in Florida's history. During the property transaction, a portion of the original Crescent B Ranch acreage was reserved for private residential development (Babcock Ranch Community), while the remaining 73,239 acres was sold to the State, and is now manag*ed by the Florida Fish and Wildlife Conservation Commission (FWC).*

The portion of the acquisition in Charlotte County was renamed as the Babcock Ranch Preserve (Babcock Ranch). This area is managed under the auspices of a unique public-private partnership that will help sustain Babcock Ranch as a working ranch and a timbering and ecotourism operation. In 2009, a contiguous 5,620-acre portion of the acquisition in Lee County was transferred to County ownership as a conservation area and renamed as the Bob Janes Preserve in recognition of Lee County Commissioner Bob Janes. Commissioner Janes, who passed away in 2010, was instrumental in Lee County's efforts to successfully acquire the land for the preserve.

The Bob Janes Preserve alone has more than 700 acres of ditched, drained, and cleared lands that were previously altered for cattle grazing and other agricultural activities. The opportunity exists to create substantial hydrologic storage through the excavation and impoundment of these areas. In addition, the natural surface water flow patterns across the preserve can largely be restored through the filling of old drainage ditches and the reestablishment of historical intermittent sloughs and streams. Increasing on-site water storage will also provide for significant water quality benefits, contributing to nitrogen load reductions to the tidal Caloosahatchee River. Finally, native habitats on the site will be restored and enhanced through hydrologic restoration.

The Bob Janes Preserve also encompasses large swaths of native cypress swamp, wet prairie, stream, freshwater marsh, and wet pine flatwoods habitats. In addition, the area provides rich recreational opportunities, including hunting, hiking, wildlife viewing, bicycling, fishing, camping, and horseback riding. However, past drainage alterations have impacted natural surface water flow patterns. The NECTR properties receive water from natural areas and agricultural operations to the north, which in turn flow relatively unimpeded into the Caloosahatchee River.

In addition to restoration activities on the Bob Janes Preserve, the NECTR Project will also involve the coordinated natural resource management of the combined areas of the Babcock Ranch Preserve, the Bob Janes Preserve, and the Telegraph Creek Preserve, which is another adjacent County-owned preserve. These large, contiguous conservation areas contain regionally important water resources, diverse natural habitats and wildlife populations, scenic landscapes, and historic and cultural resources in the rapidly developing southwest Florida corridor.

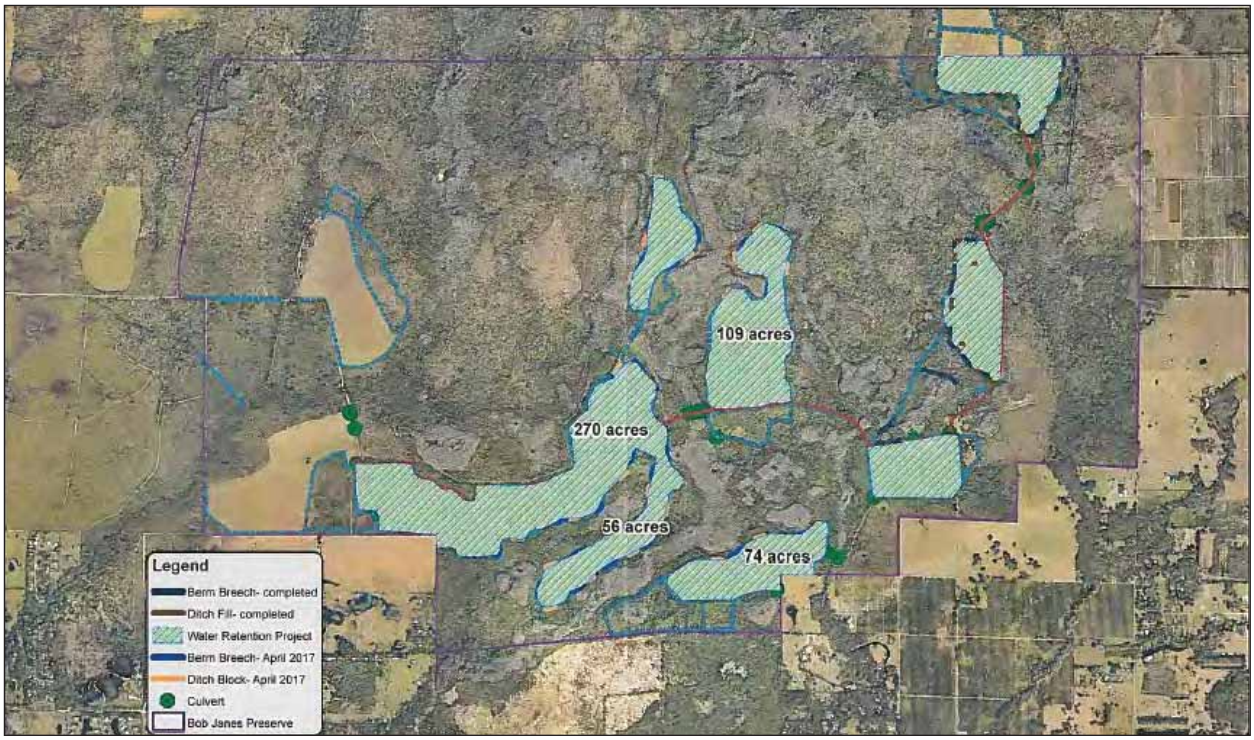


Figure 21-1B. Bob Janes Preserve Restoration Areas.

PURPOSE AND OBJECTIVES

The purpose of this project is to restore more natural hydrology and surface water flow patterns on the Bob Janes Preserve, while also providing enhanced hydrologic storage and water quality treatment of discharges to the Caloosahatchee River. The objectives of the project are to: (1) reduce excessive wet season flows and TN loads to the tidal Caloosahatchee River; (2) restore natural hydrology and habitat function in on-site wetlands; (3) recover dry-season flows in on-site and adjacent streams and sloughs; and (4) improve public recreational amenities and opportunities on the preserve.

PROJECT COMPONENTS

The planning phase of the project will involve the completion of a comprehensive conceptual design and feasibility study of Bob Janes Preserve and adjacent preserve lands. This study will examine the hydrology, hydraulic interconnectivity, and ecosystem landscape elements of the entire study area. Components of this study will include: topographic survey; Florida Land Use, Cover and Forms Classification System (FLUCCS) land cover mapping; geotechnical analysis; detailed hydrologic and hydraulic analysis; design alternatives analysis; water quality treatment and credit analysis; benefit/cost analysis of design alternatives; and a determination of a preferred alternative with conceptual design to 30 percent completion.

Project implementation primarily involves the design, permitting, construction, and monitoring of water storage and treatment areas, as shown in **Figure 21-1B**. In the first phase, approximately 500 acres of cleared lands on Bob Janes Preserve would be excavated to a shallow depth (1 to 3 feet), with the resulting fill material being used to create low berms around the excavated storage areas. Surface water flows would be stored during the wet season and released slowly during the dry season to on-site streams, sloughs, and wetlands to more closely simulate the

natural hydrology and flow patterns of the Preserve lands. The water storage areas would also be planted with native wetland species in appropriate areas to provide water quality treatment (nutrient uptake) and fish and wildlife habitat functions. Later components of the project will include the construction of trails and recreational amenities.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

Implementation of this project will restore natural surface water flow patterns and habitat functions on the Bob Janes Preserve, while also providing enhanced hydrologic storage and water quality treatment of discharges to the Caloosahatchee River, a nutrient-impaired waterbody. In addition, the project will preserve the contiguity of water resources and native habitats extending from the Caloosahatchee River north to include the Babcock Ranch Preserve in Charlotte County. Finally, the project will improve public recreational amenities and opportunities in Lee County.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches and coastal wetlands of the Gulf Coast Region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 3: Protect and Restore Living Coastal and Marine Habitats.

Implementing Entities

Lee County will be the primary implementing entity and sole grant sub-recipient responsible for the design, permitting, construction, and success monitoring of the project.

Best Available Science and Feasibility Assessment

This project is consistent with the ecological and recreational management of adjacent Babcock Ranch Preserve to the north. In addition, the project will contribute to the implementation of the BMAP for the tidal Caloosahatchee River. Key references supporting this project are cited below:

- *FWC, 2009. Babcock Ranch Preserve Recreation Master Plan.*
- *FDEP, 2012. Final Basin Management Action Plan for the Implementation of Total Maximum Daily Loads for Nutrients for the Caloosahatchee Estuary Basin.*

This project is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long term.

Risks and Uncertainties

In the evaluation of this project, no significant risks or uncertainties were discovered that would preclude further planning and implementation of this project. Yet to be determined are: (1) the potential volume of surface water that can be safely stored and released on the site; (2) the potential nutrient load reductions that can be expected; and (3) detailed implementation costs. These uncertainties will be addressed in the planning stage of the project though the completion of a comprehensive conceptual design and feasibility study.

Success Criteria and Monitoring

The primary objectives of this project are to restore more natural hydrology and surface water flow patterns on the preserve, while also providing enhanced hydrologic storage and water quality treatment of discharges to the Caloosahatchee River. Therefore, a range of success criteria will be developed and described in the implementation grant request. It is anticipated that quantitative success criteria will be developed for:

- Changes in seasonal surface water flows from the preserve to the Caloosahatchee River from existing conditions
- Reductions the nutrient loads discharged from the preserve to the Caloosahatchee River from existing conditions
- Changes in wetland and stream habitat metrics on the preserve over existing conditions.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Lee County is committed to conducting the success monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 16 years. The project is expected to start in 2018 and end in 2033. Implementation of this project has been divided into six milestones, as shown in the chart below. This project is ready to begin a conceptual design and feasibility study.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Conceptual design and feasibility study	■															
Final design and permitting		■														
Phase 1 – Storage area construction			■	■	■											
Phase 2 – Storage area construction								■	■							
Phase 3 – Recreational amenities and habitat restoration construction												■	■	■	■	
Monitoring		■				■	■			■	■				■	■

Budget and Funding Sources

A total cost estimate of approximately $19.5M has been developed by Lee County based on the best available information anda number of assumptions. The completion of the conceptual design and feasibility study is expected to result in a detailed cost estimate.

Lee County is committed to allocating all of its Direct Component funds, approximately $6,758,000, toward this project to supplement its entire $12,660,000 share of the Florida Spill Impact Component. Lee County has the financial capacity to make up project funding shortfalls with other County funds, but will also be seeking other leveraged funding sources. A summary of the project budget and funding sources is provided in the table below.

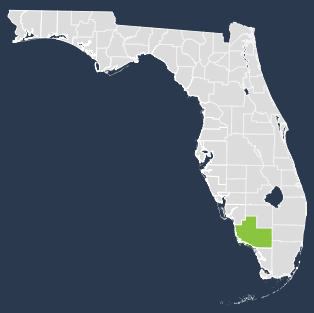
MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Conceptual design and feasibility study	$500,000	$500,000
Planning Subtotal	**$500,000**	**$500,000**
Final design and permitting	$1,800,000	$1,500,000
Construction – Phase I storage area	$5,500,000	$3,450,000
Construction – Phase II storage area	$7,700,000	$4,830,000
Construction – Phase III habitat/recreational	$3,500,000	$2,005,000
Implementation Subtotal	**$18,500,000**	**$11,785,000**
Monitoring	$418,000	$375,000
Total Cost	**$19,418,000**	**$12,660,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$12,660,000
Direct Component		$6,758,000
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$19,418,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
F.19 Conservation Technical Assistance		
F.21 Watershed Protection and Flood Prevention		
F.41 Habitat Conservation		
O.13 Conserve Wildlife Projects		
O.17 Environmental Solutions for Communities		
O.26 Healthy Watersheds Consortium Grant Program		
O.43 Southeast Aquatics		
S.23 Florida Recreation Development Assistance Program (FRDAP)		
S.26 Land and Water Conservation Fund (LWCF)		
S.36 Water Projects		
S.47 Florida's State Wildlife Grants Program (Florida's Wildlife Legacy Initiative)		
S.51 SFWMD Cooperative Funding Program		

Partnerships/Collaboration

Lee County will continue to coordinate with the Florida Forest Service and the Florida Fish and Wildlife Conservation Commission in the contiguous management of the Bob Janes Preserve and Babcock Ranch Preserve. In addition, Lee County will work closely with the Florida Department of Environmental Protection on the implementation of the Caloosahatchee Estuary BMAP. Finally, Lee County will coordinate with the South Florida Water Management District with regard to cooperative funding for the construction of the hydrologic storage and water control facilities, and for habitat restoration activities.

COLLIER COUNTY

Comprehensive Watershed Improvement Program



PROJECT NO. 22-1

Project Description

OVERVIEW AND LOCATION

The Collier County Comprehensive Watershed Improvement Program (CCCWIP) is a series of linked surface water management projects with the objectives of restoring the hydrology and ecology of both Naples Bay and Rookery Bay, as well as the Belle Meade area of the Picayune Strand State Forest. The program focuses on the restoration of more natural surface water flow patterns in the Naples Bay and Rookery Bay watersheds, which were significantly modified from historical conditions by major drainage alterations completed in the mid-1900s. The projects to be conducted as part of the overall CCCWIP are located in a large area of coastal Collier County, as shown in **Figure 22-1A**.

Figure 22-1A. Project location in Collier County.

NEED AND JUSTIFICATION

Over the past 70 years, extensive canal construction for urban and agricultural drainage improvements has substantially changed the volume and timing of freshwater inflows to Collier County estuaries. In particular, these hydrologic changes have significantly impacted the water quality and living resources in Naples Bay and Rookery Bay—two important southwest Florida estuaries, the latter being a designated National Estuarine Research Reserve (NERR). The construction of the Golden Gate Canal (GGC) in the 1960s increased the surface area of the Naples Bay watershed from about 10 square miles to over 120 square miles, and decreased the surface area of the Rookery Bay watershed by approximately the same amount. **Figure 22-1B** shows the current extents of these watersheds in Collier County.

As a result of these drainage alterations, Naples Bay now receives a much greater volume of freshwater inflow while Rookery Bay now receives proportionately less freshwater inflow than these estuaries did historically. These hydrologic alterations have resulted in drastic disruptions to natural salinity patterns in both Naples Bay and, to a lesser extent, Rookery Bay; as well as increased sediment and pollutant loads to Naples Bay. Consequently, the historic areal extents of oyster bars and seagrass beds have been significantly impacted in both estuaries, and altered freshwater inflows have been identified by the Rookery Bay NERR as the greatest threat to biodiversity in the reserve.

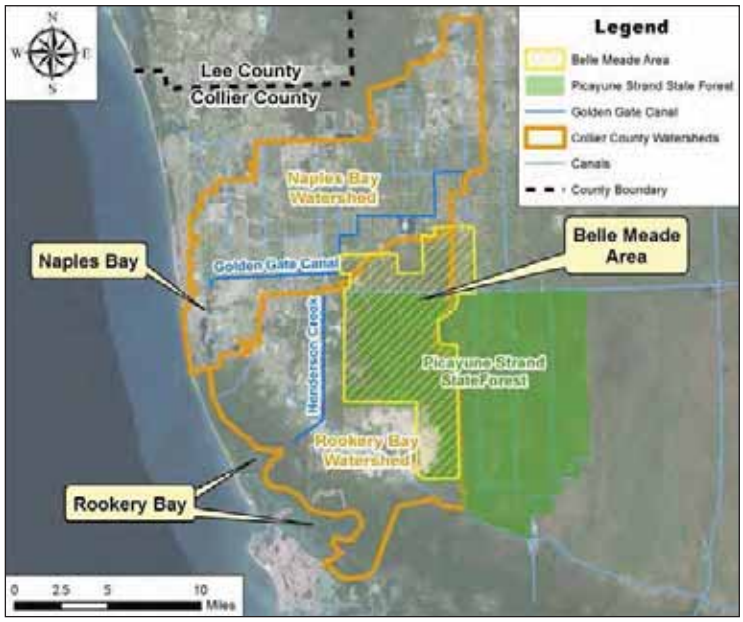


Figure 22-1B. Current extent of the Naples Bay and Rookery Bay watersheds and location of the Belle Meade area (source: Atkins, 2016).

In addition to the water quality and ecological impacts to Naples Bay and Rookery Bay caused by the drainage alterations, the hydrology and natural systems of the Belle Meade area (see **Figure 22-1B**) within the Picayune Strand State Forest (PSSF) have also been impacted by the above-described drainage modifications. In 1985, Conservation and Recreation Land (CARL) funds under the Save Our Everglades project were used to initiate the purchase of properties that later became the PSSF in 1996. These lands were purchased to help promote hydrologic and ecologic restoration and to encourage passive recreation in this area.

PURPOSE AND OBJECTIVES

The CCCWIP was developed to address two primary objectives: (1) restore more natural freshwater inflows—both volume and timing—and salinity patterns in Naples Bay and Rookery Bay and (2) recover groundwater levels, freshwater wetlands, and listed species populations in the Belle Meade area of the PSSF.

PROJECT COMPONENTS

The CCCWIP involves a series of linked surface water management modifications designed to meet the project objectives. These surface water management modifications have been modeled and conceptually designed to effect the desired changes to the hydrology of both the receiving water estuaries and the PSSF. **Figure 22-1C** presents an overview of the project components that encompass the CCCWIP.

The projects start in the north where a 100 cubic-feet-per-second (cfs) pump station (Pump Station A) will be constructed on County-owned property along the GGC, approximately 1 mile east of Collier Boulevard and upstream of the existing GG-3 structure. The pump station will start pumping when the gate for the GG-3 structure is lowered to elevation 6.5 feet NAVD88, which roughly corresponds to elevation 8.0 feet NAVD88 in the GGC. The pump station will pump water to a 1-mile-long channel flow-way (linear pond) controlled by outfall structures. The linear pond flow-way will be designed with wetland plantings to improve water quality and have a multi-use recreational trail amenity. This will divert flows south, under White Lake Boulevard to the Interstate 75 (I-75) north cross canal. Once

flows enter the I-75 north canal, they will be conveyed through the existing box culverts under this section of I-75 to the south canal. Operational structures or ditch blocks will be designed to contain the flows within the west segment of the canals. The I-75 south canal is not contiguous, so portions between the ditch segments will need to be excavated to convey flows the to the next pump station intake.

A second pump station (Pump Station B) will be constructed on the south side of the I-75 south canal, also with a 100 cfs capacity, and will start pumping when water begins flowing into the north I-75 canal. The pump station will pump into a 4,000-foot (dry) channel flow-way, which will convey flows south to a spreader swale that will discharge flows south through the Belle Meade wetland area flow-way. This flow will continue south to Sabal Palm Road, where additional siphon culvert cross drains will be constructed to convey the additional flow under the road and south through the flow-way.

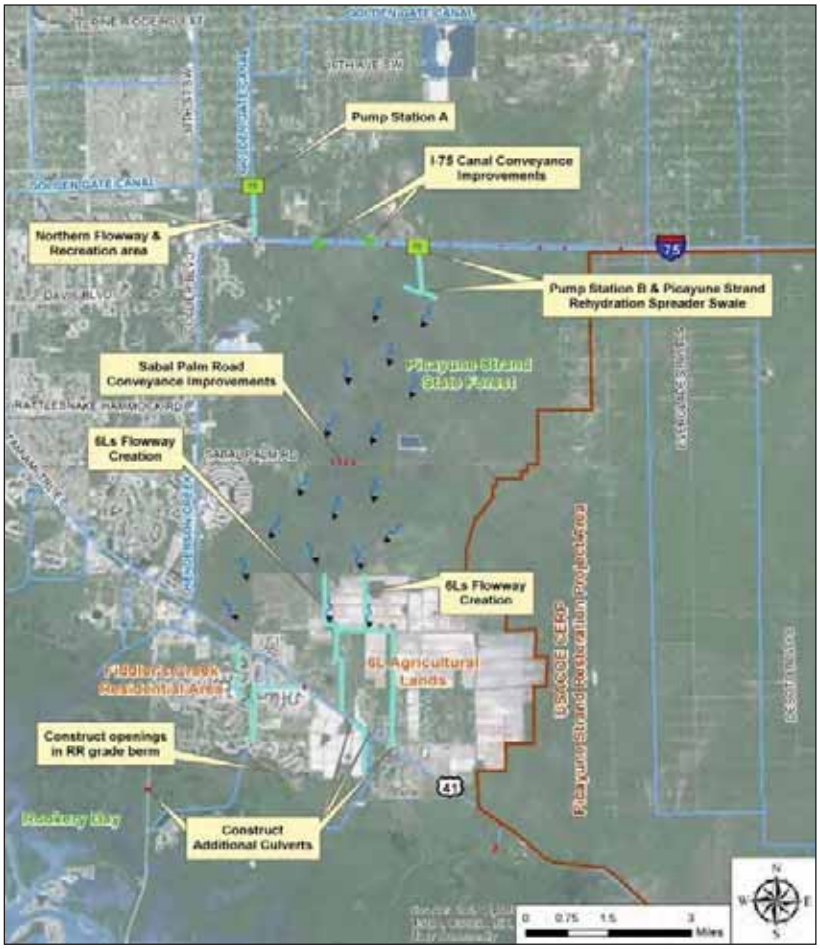


Figure 22-1C. Overview of the CCCWIP linked surface water management projects (source: Atkins 2016).

As diverted flow continues south, it will flow in one of three directions. Some flow could circumvent the Six L's agricultural lands to the west, while the majority will flow into one of two control structures, each with a designed flow-way that will take flows through the Six L's lands. All flows will continue to the existing north U.S. Highway 41 (US 41) drainage system, where additional culverts will be installed under US-41. From there the flows will continue south through the Fiddler's Creek residential area stormwater system and ultimately to Rookery Bay.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

This project will restore more natural freshwater inflows and salinity patterns in Naples Bay and Rookery Bay—two important southwest Florida estuaries, the latter being a designated NERR. The restoration of more natural freshwater inflows and salinity patterns is expected to support the recovery of degraded oyster bars and seagrass beds in these estuaries, thus contributing to the enhancement of fish and shellfish resources in the Gulf of Mexico. In addition, this project will also recover groundwater levels, freshwater wetlands, and listed species populations in the Belle Meade area of the PSSF.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activity:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources.

Implementing Entities

Collier County will be the sole implementing entity and grant sub-recipient responsible for the engineering design, permitting, construction, operation and maintenance, and success monitoring of this project. Collier County has coordinated with numerous other agencies in the development of the CCCWIP, and may collaborate with other entities in the implementation of the project through leveraging and other cooperative funding agreements.

Best Available Science and Feasibility Assessment

This project is the culmination of more than 30 years of study by numerous agencies, and in 2016 Collier County completed a conceptual design and feasibility study for the project, as cited below:

- *Atkins, 2016. Collier County Comprehensive Watershed Improvement Plan. Final Report prepared for Collier County and the Rookery Bay National Estuarine Research Reserve.*

As part of this study, various flow-diversion scenarios were proposed and modeled, and conceptual designs of the various project components were conducted. In addition, initial permitting discussions were held with federal and state regulatory and resource management agencies. This document also cites the relevant previous studies.

This project is considered to be feasible with respect to the ability to: (1) obtain necessary permits, (2) construct the project within the proposed budget, and (3) effectively operate and maintain the project components over the long term.

Risks and Uncertainties

In the evaluation of this project, no significant risks have been identified that will preclude implementation. There are some uncertainties with regard to (1) a potential increase in nutrient loads to Rookery Bay and (2) hydrologic alterations to the PSSF. However, these uncertainties will be fully evaluated during design and permitting.

Success Criteria and Monitoring

This project will affect estuaries, freshwater wetlands, and terrestrial systems. Therefore, a range of success criteria will be developed and described in the project grant request. It is anticipated that quantitative success criteria will be developed for:

- Changes in the distribution of salinity, oysters, and seagrass beds in Naples Bay and Rookery Bay from existing conditions
- Changes in groundwater levels, and the distribution of vegetation and listed species in the Belle Meade area of the Picayune Strand State Forest from existing conditions.

In the project grant request, a detailed monitoring program will be described that addresses data collection and assessment methodologies for the above-listed criteria. Collier County is committed to an adaptive management approach to the project, and to conducting the monitoring necessary to support this approach and to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 16 years. It is expected to start in 2018 and end in 2033. Implementation of this project has been divided into 11 milestones as shown in the chart below. This project is ready to begin engineering design and permitting.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Phase 1 preliminary design and baseline monitoring	■	■														
Mitigation design		■	■													
Final design and permitting (Golden Gate)			■													
Construction Phase 1 (Golden Gate)			■	■			■									
Project monitoring and modifications					■	■										
Phase 2 Belle Meade design & Six L's masterplan				■	■											
Final design and permitting Six L's						■	■									
Final design and permitting Belle Meade								■	■							
Construction Phase 2 (Six L's)										■	■					
Construction Phase 3 (Belle Meade)													■	■		
Success monitoring and certification		■						■	■			■	■		■	■

Budget and Funding Sources

As part of the project feasibility study (Atkins, 2016), a preliminary opinion of probable construction engineering, permitting, construction, and monitoring costs for the project was developed, based on best available information for quantities and unit prices for the year 2016. The total project cost was estimated to be $32,000,000.

Collier County is committed to allocating all of its Direct Component funds, approximately $5,400,000, toward this project to supplement its entire $12,660,000 share of the Florida Spill Impact Component. Collier County has the financial capacity to make up project funding shortfalls with other County funds, but will also be seeking other leveraged funding sources. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study (completed)	$0	$0
Preliminary design and monitoring	$1,155,500	$0
Mitigation design	$1,120,500	$0
North Belle Meade preliminary engineering	$1,225,000	$0
Six L's masterplan	$1,225,000	$1,225,000
Planning Subtotal	**$4,726,000**	**$1,225,000**
Final design and permitting (all three phases)	$3,500,000	$3,500,000
Construction Phase 1 (Golden Gate)	$7,720,500	$7,322,500
Construction Phase 2 (Six L's)	$7,720,500	$0
Construction Phase 3 (Belle Meade)	$7,720,500	$0
Implementation Subtotal	**$26,661,500**	**$10,822,500**
Monitoring	$612,500	$612,500
Total Cost	**$32,000,000**	**$12,660,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$12,660,000
Direct Component		$5,400,000
Other grants or co-funding		$0
Other County funds		$13,940,000
Total Committed Funding		**$32,000,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Council-Selected Restoration Component		
Natural Resource Damage Assessment		
F.19 Conservation Technical Assistance		
F.21 Watershed Protection and Flood Prevention		
F.27 Regional Conservation Partnership Program (RCPP)		
F.40 Coastal and Marine Habitat Restoration Grants		
F.51 National Coastal Wetlands Grants		
F.52 North American Wetlands Conservation Act (NAWCA) – Small Grants		
F.53 North American Wetlands Conservation Act (NAWCA) – Standard Grant		
F.54 Southeast Region Coastal Program		
O.43 Southeast Aquatics		
S.10 Community Planning Technical Assistance Grants		
S.36 Water Projects		
S.51 SFWMD Cooperative Funding Program		

Collier County is committed to the completion of this project and will allocate county funds to the project on an annual basis, as needed to support project implementation. Collier County has also requested consideration from the Florida Department of Environmental Protection (FDEP) to apply leveraged funds from both the Natural Resource Damages portion of the State's settlement as well as Council Selected Component (Bucket 2) funds in collaboration with FDEP, as part of a future Funded Priority List. If these and the other cited potential leveraged funding sources become available, they will be used to offset County expenditures.

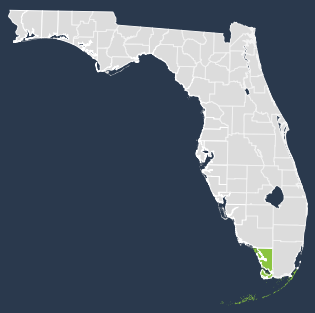
Partnerships/Collaboration

The development of the CCCWIP, and completion of the conceptual design and feasibility study, was co-sponsored by the Rookery Bay NERR, which has been involved from the beginning of project development and has provided technical support. In addition, Collier County has worked diligently to gain the support and partnership of other interested local groups/organizations, including:

- City of Naples
- South Florida Water Management District – Big Cypress Basin
- Florida Fish and Wildlife Conservation Commission
- Florida Department of Environmental Protection
- Florida Forest Service
- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- Florida Wildlife Federation
- Collier County Watershed Technical Advisory Committee
- Audubon of the Western Everglades/Audubon Florida
- Conservancy of Southwest Florida.

MONROE COUNTY

Canal Management Master Plan Implementation



PROJECT NO. 23-1

Project Description

OVERVIEW AND LOCATION

This program entails the implementation of the Monroe County Canal Management Master Plan (CMMP). The CMMP was developed to address the restoration and management of water quality and living marine resources in the extensive network of man-made dredged canals throughout the Florida Keys (see **Figure 23-1A**).

Figure 23-1A. Location of priority canal systems in the Florida Keys.

NEED AND JUSTIFICATION

Beginning in the late 1800s, the Florida Keys have been substantially altered and adversely impacted by dredge and fill activities to support development and human population growth. Approximately 170 linear miles of canals were dredged to create more than 37,000 acres of filled lands, resulting in 312 miles of waterfront property (AMEC Environment & Infrastructure, Inc., 2013). While these alterations created extensive new real estate, bringing associated wealth and prosperity, they also significantly impacted native habitats as well as nearshore water quality and living marine resources.

To maximize the volume of fill material, many of the canals were dredged to depths of 10 to 20 feet, with some as deep as 40 feet. Furthermore, most of the created canals are long, dead-end networks with little or no tidal flushing. These hydrographic alterations, combined with the addition of untreated residential stormwater runoff and wastewater effluent from leaky septic tanks, fostered persistent toxic algae blooms, low dissolved oxygen, and poor water clarity. Accordingly, living resources—including seagrass, benthic invertebrates, and fish—cannot tolerate these conditions, and many canals have become "dead zones." **Figure 23-1B** shows a poorly flushed canal with excessive decaying vegetation.

While ecological conditions within most of the canals are highly degraded, the impacts extend beyond just the canals themselves. The canals discharge surface waters directly to the nearshore Florida Keys National Marine Sanctuary (FKNMS), which is also a designated Outstanding Florida Water pursuant to Florida Statutes. Accordingly, the waters of the FKNMS are regulated to the State's anti-degradation policy, meaning that no degradation of existing water quality is allowable. Yet many of the canals have been identified as impaired, exhibiting exceedances of water quality criteria for nutrients and dissolved oxygen.

Figure 23-1B. Poorly flushed canal with excessive decaying vegetation.

In 2008, the Florida Department of Environmental Protection (FDEP) prepared a Florida Keys Reasonable Assurance Document (FKRAD), which recognized the extensive ongoing wastewater and stormwater restoration activities being implemented by Monroe County to address nutrient and dissolved oxygen impairments. The FKRAD was prepared as an alternative to using an established total maximum daily load (TMDL), which would have required regulatory pollutant load reductions. In the 2011 FKRAD document update, the FDEP stated that a canal restoration program would likely be needed to comply with dissolved oxygen standards.

Most of the damage to the canals and, subsequently, the near shore waters from unpermitted dredge and fill activities was done prior to the passage of major federal environmental laws such as the Clean Water Act, leaving a legacy of environmental degradation that will require a substantial commitment of resources to fully remediate.

PURPOSE AND OBJECTIVES

Monroe County collaborated with numerous stakeholders to develop the CMMP. The purpose of the CMMP is to reverse the legacy environmental degradation caused by historical residential canal construction. The objectives of the CMMP are to: (1) restore water quality and habitat in much of the approximate 170 miles of dredged canals throughout the Florida Keys; (2) make the canals habitable for living marine resources, thus improving recreational opportunities and aesthetics for residents; and (3) protect water quality in the FKNMS. Attaining these objectives will contribute significantly to the economic vitality of the Florida Keys.

PROJECT COMPONENTS

The development and implementation of the CMMP is part of a multipronged strategy to improve and protect surface water quality in the Florida Keys, dating back to the early 1990s. In 1992, Congress directed the USEPA and the State of Florida to develop a Water Quality Protection Program (WQPP) for the FKNMS. The WQPP recommended major upgrades to domestic wastewater facilities, and after decades of work most of the Florida Keys is now served by central sewage collection and treatment facilities, replacing tens of thousands of failing septic tanks. However, while the wastewater treatment upgrades have reduced nutrient and bacterial loads, they do not address the poor tidal flushing characteristics of the canals, and canal water quality has been slow to improve. As a result, the WQPP Steering Committee created the Canal Restoration Advisory Subcommittee (Subcommittee) in 2012

to provide scientific and objective oversight of the Canal Restoration Program and recommended the development of a plan to prioritize canal restoration projects and identify funding sources for these projects. In response to this recommendation, Monroe County and its partners completed the CMMP in September 2013. The CMMP used a two-step process to develop an action plan:

1. Engineering and Science-Based Assessment and Evaluation
2. Outreach, Management, and Program Development.

Step one involved: (1) preparation of a comprehensive county-wide map of residential canals; (2) a field study and assessment of canal hydrography and water quality; (3) development of a system for classifying and ranking canals based on their characteristics; (4) evaluation of various canal restoration technologies; and, (5) preparation of a ranked priority list of canal restoration projects. Step two included: (1) development, distribution, and analysis of a homeowner questionnaire; (2) development of a homeowner's best management practices manual; and, (3) inventory of potential funding sources to fully implement the plan.

A total of 502 residential canals, or canal segments, were identified, mapped, and assessed. Of those, 302 were determined to have poor or fair water quality—229 of which are located in unincorporated Monroe County. Those 229 canals were subsequently classified and ranked for priority restoration in the CMMP. The canal restoration techniques evaluated were those that primarily address quality degradation related to depleted dissolved oxygen and poor tidal flushing. Five primary technologies were evaluated, including:

- Removal of accumulated organic sediments in canals
- Installation of weed gates, air curtains, or other physical barriers to minimize external inputs of excess organic matter
- Construction of culvert connections to facilitate tidal flushing and circulation
- Backfilling to prevent the occurrence of stratification and deep stagnant zones
- Installation of water pumping systems to facilitate flushing when culvert connections are not feasible.

To test the efficacy of these various technologies, Monroe County developed a Canal Restoration Demonstration Program, the purpose of which was to: (1) implement various CMMP technologies; (2) evaluate the effectiveness of those technologies; and, (3) obtain realistic permitting, scheduling, and cost information for future project implementation. Since 2014, Monroe County has funded approximately $7 million for the implementation of seven canal restoration demonstration projects to evaluate various combinations of seven different technologies. The results of the demonstration projects have shown the that various technologies have been largely successful when properly applied to address the unique characteristics of each canal. **Figure 23-1C** shows a canal backfilling project under construction.

The CMMP describes a clear road map for canal restoration in Monroe County, and Spill Impact Component funding will be used to implement priority canal restoration projects identified in the CMMP.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

The canal restoration program specified in the Monroe County CMMP will directly contribute to the improvement of water quality conditions in nearshore coastal waters. Clean coastal waters are absolutely essential to the economy and ecology of the Florida Keys. The Florida Keys coral reef tract is the third largest barrier reef in the world, and the

only living barrier reef adjacent to the continental United States. Coral reefs are very sensitive to pollution, and the health of the Florida Keys coral reef tract and the FKNMS are very much dependent on excellent water quality. With regard to the economy, more than two million individuals visit the Florida Keys per year to enjoy water-related activities including snorkeling, scuba diving, and fishing. These water-based recreational activities support 70 percent of the tourism in the Florida Keys and generate more than 70,000 jobs and over $6 billion in economic activity annually.

Figure 23-1C. Canal shallowing under construction in Canal #75, Key Largo, Florida.

Eligibility and Statutory Requirements

This project is consistent with, and addresses, the following RESTORE Act eligible activities:

- Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches and coastal wetlands of the Gulf Coast region (primary)
- Eligible Activity 3: Implementation of a federally-approved marine, coastal, or comprehensive conservation management plan, including fisheries monitoring.

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 2: Restore Water Quality and Quantity (primary)
- Goal 1: Restore and Conserve Habitat
- Goal 3: Replenish and Protect Living Coastal and Marine Resources
- Goal 5: Restore and Revitalize the Gulf Economy.

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 2: Restore, Improve, and Protect Water Resources (primary)
- Objective 1: Restore, Enhance, and Protect Habitats
- Objective 3: Protect and Restore Living Coastal and Marine Resources
- Consortium Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects.

Implementing Entities

Monroe County will be the sole implementing entity and grant sub-recipient responsible for the permitting, construction, and success monitoring of all projects conducted under this program.

Best Available Science and Feasibility Assessment

As described above, the CMMP was developed to address recommendations specified in both federal and state management and regulatory documents related to water quality and living resource protection of the FKNMS. The CMMP solicited input from stakeholders and the public, and followed a methodical approach to project identification and prioritization. Furthermore, Monroe County has undertaken a demonstration program to field-test various canal restoration technologies and obtain realistic information on permitting constraints and project costs. This program is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct canal restoration projects; and (3) effectively operate and maintain constructed canal restoration technologies. The CMMP is fully described in the following document:

- *AMEC Environment & Infrastructure, Inc., 2013. Monroe County Management Master Plan (CMMP). Final report prepared for: Monroe County, the U.S. Environmental Protection Agency, and the Water Quality Protection Program Steering and Advisory Committees.*

This document also describes the consistency and compliance of the CMMP with other federal and state management and regulatory documents.

Risks and Uncertainties

In the evaluation of this program, no significant risks or uncertainties were identified that would preclude implementation of the CMMP. Coordination with federal and state regulatory agencies will be conducted to address potential impacts to listed species (e.g., manatee entrapment). Monroe County has identified priority projects and is ready to proceed with design, permitting, and construction.

Success Criteria and Monitoring

Projects implemented under this program will primarily affect water quality in the restored canals. Therefore, a range of success criteria will be developed and described in the implementation grant request. It is anticipated that quantitative success criteria will be developed for:

- Changes in water clarity and dissolved oxygen from existing conditions in the canals to be restored
- Changes in the abundance and distribution of seagrass and benthic invertebrates from existing conditions in the canals to be restored.

In the project grant request, a detailed monitoring program design will be described that addresses data collection and assessment methodologies for the above-listed criteria. Monroe County is committed to an adaptive management approach to the project, and to conducting the monitoring necessary to support this approach and to quantify project benefits.

Milestones and Schedule

Because of the large number of projects in the CMMP, as well as funding constraints, Monroe County will implement the CMMP program incrementally over the next 10 to 20 years. However, Monroe County has identified priority projects to be paid for using RESTORE Act funds and is ready to proceed with design, permitting, construction, and monitoring of those projects. The total estimated time horizon of these projects is approximately 8 years. The project is expected to start in 2018 and end in 2025.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Final design and permitting																
Construction																
Success monitoring																

Budget and Funding Sources

The total estimated cost to implement restoration projects in all 229 impaired canals is $671,100,000. However, Monroe County is proposing to use its full allocation of both Direct Component ($6,388,690) and Spill Impact Component ($12,660,000) funds to implement a select group of priority projects identified in the CMMP. The total cost of restoring the priority canals is approximately $19 million. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Final design and permitting	$1,874,869	$1,874,869
Construction	$16,873,821	$10,485,131
Implementation Subtotal	**$18,748,690**	**$12,360,000**
Monitoring	$300,000	$300,000
Total Cost	**$19,048,690**	**$12,660,000**
COMMITTED FUNDING SOURCES		
Spill Impact Component		$12,660,000
Direct Component		$6,388,690
Other grants or co-funding		$0
Other County funds		$0
Total Committed Funding		**$19,048,690**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Council-Selected Restoration Component		
Natural Resource Damage Assessment		
F.43 Coastal Resilience Grants Program		
S.20 Coastal Partnership Initiative – Florida Coastal Management Program		
S.36 Water Projects		
S.51 SFWMD Cooperative Funding Program		

Partnerships/Collaboration

Monroe County has coordinated with a wide range of stakeholders in the development of CMMP, including:

- Federal agencies
  - U.S. Environmental Protection Agency
  - U.S. Army Corps of Engineers
  - National Park Service
  - National Oceanic and Atmospheric Administration
  - Florida Keys National Marine Sanctuary
- State agencies
  - Florida Department of Environmental Protection
  - Florida Fish and Wildlife Conservation Commission
  - South Florida Water Management District
- Incorporated Cities
  - Village of Islamorada
  - City of Marathon
  - City of Key Colony Beach
  - City of Layton
  - City of Key West
- Non-government organizations
  - The Nature Conservancy
  - Florida Sea Grant.

C. Summary of Projects, Programs, and Activities

The **Project Summary Table** that follows provides a summary listing of all the projects and programs sorted by the following fields:

- County
- Project Number
- Project Name
- Primary Eligible Activity
- Primary Council Goal
- Primary Council Objective
- FDEP Project Type
- Stage of Development
- Total Project Cost
- Spill Impact Component Request
- Total Committed Funding
- Infrastructure Cost.

Project Summary Table Legend

RESTORE ACT ELIGIBLE ACTIVITIES

1. Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region
2. Mitigation of damage to fish, wildlife, and natural resources
3. Implementation of a federally-approved marine, coastal, or comprehensive conservation management plan, including fisheries monitoring
4. Workforce development and job creation
5. Improvements to or on State parks located in coastal areas affected by the Deepwater Horizon oil spill
6. Infrastructure projects benefiting the economy or ecological resources, including port infrastructure
7. Coastal flood protection and related infrastructure
8. Planning assistance
9. Administrative costs of complying with the RESTORE Act
10. Promotion of tourism in the Gulf Coast region, including recreational fishing
11. Promotion of the consumption of seafood harvested from the Gulf Coast region

COUNCIL GOALS

1. **Restore and Conserve Habitat:** Restore and conserve the health, diversity, and resilience of key coastal, estuarine, and marine habitats.
2. **Restore Water Quality and Quantity:** Restore and protect the water quality and quantity of the Gulf Coast region's fresh, estuarine, and marine waters.
3. **Replenish and Protect Living Coastal and Marine Resources:** Restore and protect healthy, diverse, and sustainable living coastal and marine resources.
4. **Enhance Community Resilience:** Build upon and sustain communities with capacity to adapt to short- and long-term changes.
5. **Restore and Revitalize the Gulf Economy:** Enhance the sustainability and resiliency of the Gulf economy.

Project Summary Table Legend (continued)

COUNCIL OBJECTIVES

1. **Restore, Enhance, and Protect Habitats:** Restore, enhance, and protect the extent, functionality, resiliency, and sustainability of coastal, freshwater, estuarine, wildlife, and marine habitats. These include barrier islands, beaches, dunes, coastal wetlands, coastal forests, pine savannahs, coastal prairies, submerged aquatic vegetation, oyster reefs, and shallow and deepwater corals.
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.
3. **Protect and Restore Living Coastal and Marine Resources:** Restore and protect healthy, diverse, and sustainable living coastal and marine resources including finfish, shellfish, birds, mammals, reptiles, coral, and deep benthic communities.
4. **Restore and Enhance Natural Processes and Shorelines:** Restore and enhance ecosystem resilience, sustainability, and natural defenses through the restoration of natural coastal, estuarine, and riverine processes, and/or the restoration of natural shorelines.
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.
6. **Promote Natural Resource Stewardship and Environmental Education:** Promote and enhance natural resource stewardship efforts that include formal and informal educational opportunities, professional development and training, communication, and other actions for all ages.
7. **Improve Science-Based Decision-Making Processes:** Improve science-based decision-making processes used by the Council.

CONSORTIUM OBJECTIVE

8. **Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects**

Project Summary Table

COUNTY	PROJECT NUMBER	PROJECT NAME	PRIMARY ELIGIBLE ACTIVITY	PRIMARY COUNCIL GOAL	PRIMARY COUNCIL OBJECTIVE	FDEP PROJECT TYPE	STAGE OF DEVELOPMENT	TOTAL PROJECT COST	SPILL IMPACT COMPONENT REQUEST	TOTAL COMMITTED FUNDING	INFRASTRUCTURE COST
Escambia	1-1	Bayou Chico Contaminated Sediment Remediation Project	1	2	2	Habitat Restoration	Feasibility	$22,600,000	$12,660,000	$13,795,510	$0
Santa Rosa	2-1	Santa Rosa Sound Water Quality Improvement Program	1	2	2	Water Quality/Quantity	Feasibility	$45,845,070	$12,660,000	$12,660,000	$0
Okaloosa	3-1	Coastal Stormwater Retrofit Program	1	2	2	Water Quality/Quantity	Feasibility	$6,460,000	$4,700,000	$5,000,000	$0
Okaloosa	3-2	Offshore Fish Aggregating Devices	10	5	8	Living Resources	Feasibility	$580,000	$500,000	$580,000	$0
Okaloosa	3-3	Choctawhatchee Bay Estuary Program	8	2	2	Water Quality/Quantity	Planning	$3,800,000	$1,000,000	$2,250,000	$0
Okaloosa	3-4	Shoal River Headwaters Protection Program	6	2	2	Water Quality/Quantity	Planning	$6,820,000	$5,550,000	$6,820,000	$6,820,000
Okaloosa	3-5	Veterans Park Living Shoreline	1	1	4	Habitat Restoration	Design & Permitting	$4,000,000	$910,000	$1,060,000	$0
Walton	4-1	Choctawhatchee Bay Septic to Sewer Conversion	1	2	2	Water Quality/Quantity	Feasibility	$14,252,925	$12,660,000	$12,660,000	$0
Bay	5-1	North Bay Water Quality Improvement Program	1	2	2	Water Quality/Quantity	Design & Permitting	$12,060,000	$6,500,000	$7,500,000	$0
Bay	5-2	St. Andrew Bay Stormwater Improvement Program	1	2	2	Water Quality/Quantity	Feasibility	$14,900,000	$6,160,000	$6,510,000	$0
Gulf	6-1	St. Joseph Bay/Chipola River Sewer Improvement Program	1	2	2	Water Quality/Quantity	Feasibility	$15,750,000	$7,000,000	$9,000,000	$0
Gulf	6-2	St. Joseph Peninsula Coastal Erosion Control Project	7	4	5	Community Resilience	Feasibility	$6,000,000	$3,000,000	$3,000,000	$0
Gulf	6-3	Coastal Public Access Program	10	5	8	Recreation/Public Access	Planning	$2,660,000	$2,660,000	$2,660,000	$0
Franklin	7-1	Emergency Operations Center	6	4	5	Community Resilience	Planning	$1,500,000	$1,000,000	$1,000,000	$1,000,000
Franklin	7-2	Apalachicola Bay Oyster Restoration	1	3	3	Living Resources	Planning	$5,000,000	$5,000,000	$5,000,000	$0
Franklin	7-3	Apalachicola Bay Cooperative Dredging Program	6	5	8	Community Resilience	Design & Permitting	$6,660,000	$6,660,000	$6,660,000	$6,660,000
Wakulla	8-1	Wakulla Springshed Water Quality Protection Program	1	2	2	Water Quality/Quantity	Planning	$8,040,570	$7,790,570	$8,040,570	$0
Wakulla	8-2	Coastal Public Access Program	10	5	8	Recreation/Public Access	Planning	$4,244,000	$4,235,000	$4,244,000	$0
Wakulla	8-3	Artificial Reef and Oyster Habitat Enhancement	10	5	8	Living Resources	Planning	$634,430	$634,430	$634,430	$0
Jefferson	9-1	Wacissa River Springshed Protection Program	6	2	2	Water Quality/Quantity	Feasibility	$7,160,000	$7,160,000	$7,160,000	$7,160,000
Jefferson	9-2	Wacissa River Park Improvement Program	10	5	8	Land Acquisition	Planning	$2,000,000	$2,000,000	$2,000,000	$0
Jefferson	9-3	Coastal Public Access Program	10	5	8	Recreation/Public Access	Planning	$3,500,000	$3,500,000	$3,500,000	$0
Taylor	10-1	Coastal Public Access Program	10	5	8	Recreation/Public Access	Planning	$12,660,000	$12,660,000	$12,660,000	$0
Dixie	11-1	Horseshoe Beach Working Waterfront Project	6	5	8	Community Resilience	Planning	$6,000,000	$3,000,000	$3,000,000	$3,000,000
Dixie	11-2	Shired Island Park Beach Nourishment and Living Shoreline	1	3	4	Habitat Restoration	Concept	$2,000,000	$2,000,000	$2,000,000	$0
Dixie	11-3	Horseshoe Cove Oyster Restoration	1	3	3	Living Resources	Concept	$1,000,000	$1,000,000	$1,000,000	$0
Dixie	11-4	Coastal Public Access Program	10	5	8	Recreation/Public Access	Planning	$1,460,000	$1,460,000	$1,460,000	$0
Dixie	11-5	Coastal Septic to Sewer Conversion Program	1	2	2	Water Quality/Quantity	Planning	$10,000,000	$5,200,000	$5,200,000	$0
Levy	12-1	Waccasassa River Conservation Land Acquisition	1	1	1	Land Acquisition	Planning	$2,960,000	$2,960,000	$2,960,000	$0
Levy	12-2	Suwannee Sound/Cedar Key Oyster Restoration Project	1	3	3	Living Resources	Feasibility	$2,000,000	$2,000,000	$2,000,000	$0
Levy	12-3	Coastal Septic to Sewer Conversion Program	1	2	2	Water Quality/Quantity	Concept	$30,000,000	$7,700,000	$7,700,000	$0
Citrus	13-1	NW Quadrant Sewer Force Main Project	1	2	2	Water Quality/Quantity	Design & Permitting	$6,500,000	$3,500,000	$6,500,000	$0
Citrus	13-2	Cross Florida Barge Canal Boat Ramp	10	5	8	Recreation/Public Access	Design & Permitting	$5,312,603	$3,958,000	$5,312,603	$0
Citrus	13-3	Artificial Reef Program	10	5	8	Living Resources	Implementation	$900,000	$850,000	$900,000	$0
Citrus	13-4	Springshed Stormwater Improvement Program	1	2	2	Water Quality/Quantity	Planning	$4,372,000	$4,352,000	$4,372,000	$0

* Activities, Goals, and Objectives are defined in the **Project Summary Table Legend** on previous pages

COUNTY	PROJECT NUMBER	PROJECT NAME	PRIMARY ELIGIBLE ACTIVITY	PRIMARY COUNCIL GOAL	PRIMARY COUNCIL OBJECTIVE	FDEP PROJECT TYPE	STAGE OF DEVELOPMENT	TOTAL PROJECT COST	SPILL IMPACT COMPONENT REQUEST	TOTAL COMMITTED FUNDING	INFRASTRUCTURE COST
Hernando	14-1	Artificial Reef Program	10	5	8	Living Resources	Feasibility	$2,350,000	$2,350,000	$2,350,000	$0
Hernando	14-2	Coastal Habitat Enhancement Program	1	3	3	Living Resources	Feasibility	$900,000	$750,000	$900,000	$0
Hernando	14-3	Coastal Public Access Program	10	5	8	Recreation/Public Access	Feasibility	$4,660,000	$4,560,000	$4,660,000	$0
Hernando	14-4	Weeki Wachee Springshed Septic to Sewer Conversion Program	1	2	2	Water Quality/Quantity	Design & Permitting	$22,950,000	$2,600,000	$2,600,000	$0
Hernando	14-5	Coastal Stormwater Improvement - Calienta Street	7	2	2	Water Quality/Quantity	Planning	$4,900,000	$2,400,000	$2,400,000	$2,400,000
Pasco	15-1	Port Richey Watershed Stormwater Management Project	7	4	5	Water Quality/Quantity	Design & Permitting	$10,600,000	$5,000,000	$5,000,000	$5,000,000
Pasco	15-2	Hammock Creek/Sea Pines Watershed Stormwater Management Project	7	4	5	Water Quality/Quantity	Design & Permitting	$3,800,000	$2,024,600	$2,024,600	$2,024,600
Pasco	15-3	Inshore Artificial Reef - Pithlachascotee River	10	3	3	Living Resources	Planning	$510,000	$510,000	$510,000	$0
Pasco	15-4	Coastal Environmental Research Network (CERN)	6	4	6	Community Resilience	Concept	$2,225,000	$2,100,000	$2,100,000	$2,100,000
Pasco	15-5	Artificial Reef Program – Hudson Reef	10	5	8	Living Resources	Design & Permitting	$115,000	$100,000	$100,000	$0
Pasco	15-6	Madison Street and Gulf Drive Stormwater Retrofit Project	7	4	5	Water Quality/Quantity	Feasibility	$1,321,600	$1,025,400	$1,025,400	$1,025,400
Pasco	15-7	Crews Lake Hydrologic Restoration	1	2	2	Water Quality/Quantity	Design & Permitting	$8,922,720	$1,400,000	$1,400,000	$0
Pasco	15-8	Ranch Road Infrastructure Improvements	7	2	2	Water Quality/Quantity	Planning	$2,800,000	$500,000	$500,000	$500,000
Pinellas	16-1	Lake Seminole Sediment Removal Project	1	2	2	Water Quality/Quantity	Implementation	$18,860,000	$1,160,000	$18,860,000	$0
Pinellas	16-2	Wastewater Collection System Improvements	1	2	2	Water Quality/Quantity	Planning	$18,000,000	$6,460,000	$6,460,000	$0
Pinellas	16-3	Land Acquisition for Floodplain Restoration and Resiliency	1	2	2	Land Acquisition	Planning	$10,000,000	$3,450,000	$10,000,000	$0
Pinellas	16-4	Coastal Public Access Program	10	5	8	Recreation/Public Access	Planning	$2,000,000	$1,150,000	$2,000,000	$0
Pinellas	16-5	Artificial Reef Program	10	5	8	Living Resources	Implementation	$490,000	$440,000	$490,000	$0
Hillsborough	17-1	Cockroach Bay Aquatic Preserve Land Acquisition and Ecosystem Restoration	1	1	1	Land Acquisition	Planning	$7,200,000	$5,000,000	$5,000,000	$0
Hillsborough	17-2	Delaney Creek/Palm River Heights Septic to Sewer Conversion	1	2	2	Water Quality/Quantity	Planning	$35,000,000	$7,660,000	$7,660,000	$0
Manatee	18-1	Manatee River Oyster Restoration	1	3	3	Living Resources	Planning	$2,628,090	$2,628,090	$2,628,090	$0
Manatee	18-2	Portosueno Park Living Shoreline	1	1	1	Habitat Restoration	Planning	$1,300,000	$1,300,000	$1,300,000	$0
Manatee	18-3	Preserve Management Plans	1	1	1	Habitat Restoration	Planning	$280,000	$280,000	$280,000	$0
Manatee	18-4	Artificial Reef Program - Borden Reef	10	5	8	Living Resources	Implementation	$1,320,000	$1,320,000	$1,320,000	$0
Manatee	18-5	Palmetto Greene Bridge Fishing Pier Replacement	6	5	8	Recreation/Public Access	Planning	$5,000,000	$3,000,000	$3,000,000	$0
Manatee	18-6	Applied Research for Shellfish Aquaculture	11	5	8	Living Resources	Planning	$400,000	$300,000	$300,000	$0
Manatee	18-7	Coastal Preserve Trail and Boardwalk Enhancements	10	5	8	Recreation/Public Access	Planning	$2,000,000	$956,667	$956,667	$0
Manatee	18-8	Coastal Watershed Management Plans	8	2	2	Water Quality/Quantity	Planning	$3,000,000	$1,275,243	$1,275,243	$0
Manatee	18-9	Urban Stormwater Improvements – GT Bray Park	1	2	2	Water Quality/Quantity	Planning	$2,030,000	$1,600,000	$2,030,000	$0
Sarasota	19-1	Dona Bay Hydrologic Restoration Program	1	2	2	Water Quality/Quantity	Implementation	$13,204,832	$12,660,000	$13,204,832	$0
Charlotte	20-1	Charlotte Harbor Septic to Sewer Conversion Program	1	2	2	Water Quality/Quantity	Design & Permitting	$89,710,000	$12,660,000	$89,710,000	$0
Lee	21-1	North East Caloosahatchee Tributaries Restoration Project	1	2	2	Water Quality/Quantity	Feasibility	$19,418,000	$12,660,000	$19,418,000	$0
Collier	22-1	Comprehensive Watershed Improvement Program	1	2	2	Water Quality/Quantity	Design & Permitting	$32,000,000	$12,660,000	$32,000,000	$0
Monroe	23-1	Canal Management Master Plan Implementation	1	2	2	Water Quality/Quantity	Implementation	$19,048,690	$12,660,000	$19,048,690	$0
							TOTALS	**$628,575,530**	**$291,180,000**	**$439,310,635**	**$37,690,000**
										Infrastructure %	**13%**

* Activities, Goals, and Objectives are defined in the **Project Summary Table Legend** on previous pages

Project/Program Summary

PROJECT/PROGRAM COSTS

As shown in the **Project Summary Table**, a total of 69 projects and programs are being proposed by the Gulf Consortium. The total estimated cost of all proposed projects and programs is $628,575,530, while the total Spill Impact Component request is $291,180,000. However, the total committed funding proposed by the 23 Consortium member counties is $439,310,635, leaving an overall budget deficit of $189,264,895. It is anticipated that this budget deficit will be at least partially closed through leveraged funding over the 15-year payout period. Other funding sources committed by the member counties include portions of their Direct Component, other grants and co-funding, and other county funding (e.g., general revenues; utility fees). Although these committed funding sources cannot be considered as "secured" funding in most cases, there is a reasonable likelihood that funding sources indicated in the project and program budget information will be available if and when it is needed. By inclusion in the Florida SEP, each Consortium member county is pledging their commitment to dedicate the necessary resources to undertake their respective projects and programs. For those projects and programs for which significant budget shortfalls cannot be closed through leveraging, implementation will need to be appropriately scaled down to match the available funding level.

COMPLIANCE WITH 25 PERCENT INFRASTRUCTURE LIMITATION

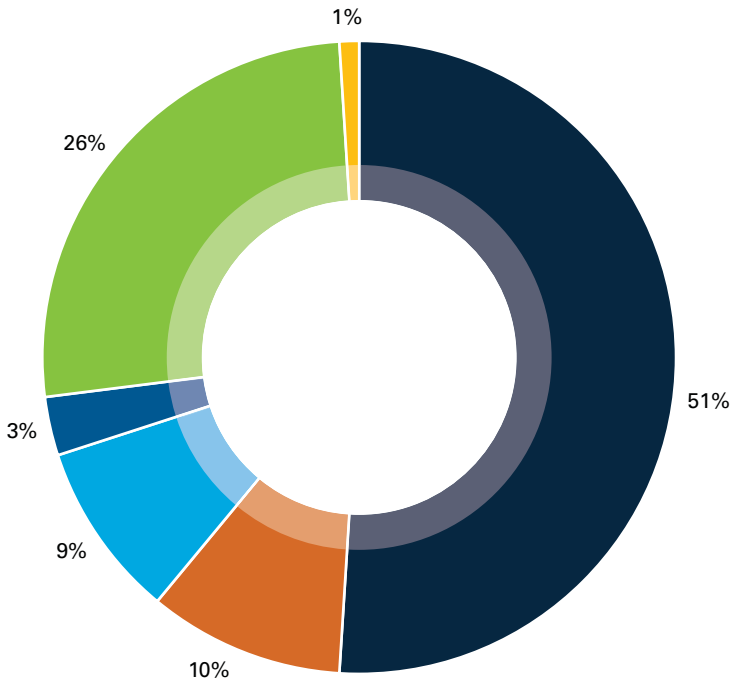
Of the 69 proposed projects and programs, a total 11 projects/programs have been determined to be "infrastructure" pursuant to guidance provided by the Council and Treasury Department. The total Spill Impact Component request for these projects is $37,689,400 which is approximately 13 percent of Florida's allocation of $294,338,815. Therefore, the Florida SEP is well within compliance with the RESTORE Act 25 percent infrastructure limitation. The majority of SEP projects that are classified as infrastructure address coastal flood protection, and the extension of new sewer lines to promote economic development. A distinction was made between the extension of new sewer lines to promote economic development, and septic to sewer conversions to address legacy pollution from old and failing septic tanks. The latter project type was classified as "water quality/quantity" rather than infrastructure. Other infrastructure projects in the SEP include navigation channel dredging to support commercial fishing; and the construction of the new county Emergency Operations Center, as well as a county environmental education facility.

Diversity and Balance of Project/Program Types

The 69 proposed projects and programs address a wide range of RESTORE Act eligible activities, Council goals and objectives, and project types as categorized by Florida Department of Environmental Protection (FDEP) on their Deepwater Horizon (DWH) project website. The following pie charts provide a summary of the proposed SEP project/program list with respect to various these classifications.

Figure V-1 shows the project/program breakdown by primary RESTORE Act eligible activity. The SEP project/program list represents six of the 11 RESTORE Act eligible activities; however, it should be noted that classifying projects/programs into a single activity was, in many cases, difficult due to multiple and overlapping project benefits. The two most prominent eligible activities are:

- **Eligible Activity 1:** Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches and coastal wetlands of the Gulf Coast region (51%)
- **Eligible Activity 10:** Promotion of tourism in the Gulf Coast region, including recreational fishing (26%).

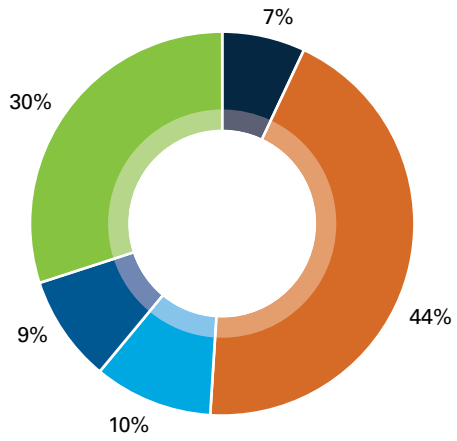


Primary Eligible Activities	% of Total
Eligible Activity 1: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region	51%
Eligible Activity 6: Infrastructure projects benefiting the economy or ecological resources, including port infrastructure	10%
Eligible Activity 7: Coastal flood protection and related infrastructure	9%
Eligible Activity 8: Planning assistance	3%
Eligible Activity 10: Promotion of tourism in the Gulf Coast region, including recreational fishing	26%
Eligible Activity 11: Promotion of the consumption of seafood harvested from the Gulf Coast region	1%

Figure V-1. Project breakdown by RESTORE Act eligible activity.

Figure V-2 shows the project/program breakdown by Council Goal. Again, classifying projects into a single goal was often difficult due to multiple and overlapping project benefits. The two most prominent goals are:

- Goal 2: Restore Water Quality and Quantity (44%)
- Goal 5: Restore and Revitalize the Gulf Economy (30%).

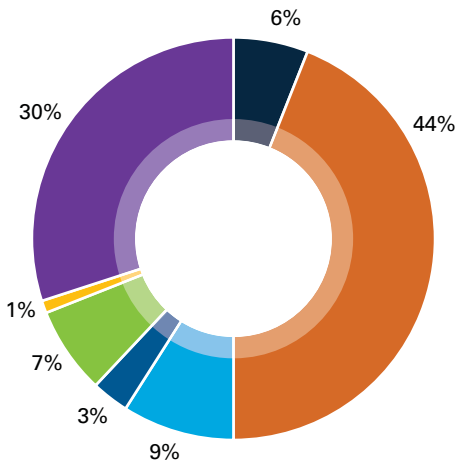


Primary Council Goals	% of Total
Goal 1: Restore and Conserve Habitat	7%
Goal 2: Restore Water Quality and Quantity	44%
Goal 3: Replenish and Protect Living Coastal and Marine Resources	10%
Goal 4: Enhance Community Resilience	9%
Goal 5: Restore and Revitalize the Gulf Economy	30%

Figure V-2. Project breakdown by Council Goal.

Figure V-3 shows the project/program breakdown by Council Objective. It should be noted that the Council objectives do not specifically include an objective addressing economic recovery and revitalization. Therefore, the Consortium adopted its own objective address the economy. The two most prominent objectives are:

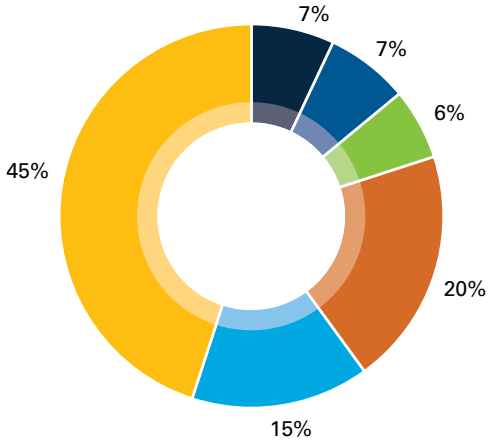
- **Objective 2:** Restore, Improve, and Protect Water Resources (44%)
- **Consortium Objective 8:** Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects (30%).



Primary Council Objectives	% of Total
Objective 1: Restore, Enhance, and Protect Habitats	6%
Objective 2: Restore, Improve, and Protect Water Resources	44%
Objective 3: Protect and Restore Living Coastal and Marine Resources	9%
Objective 4: Restore and Enhance Natural Processes and Shorelines	3%
Objective 5: Promote Community Resilience	7%
Objective 6: Promote Natural Resource Stewardship and Environmental Education	1%
Consortium Objective 8: Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects	30%

Figure V-3. Project breakdown by Council Objective.

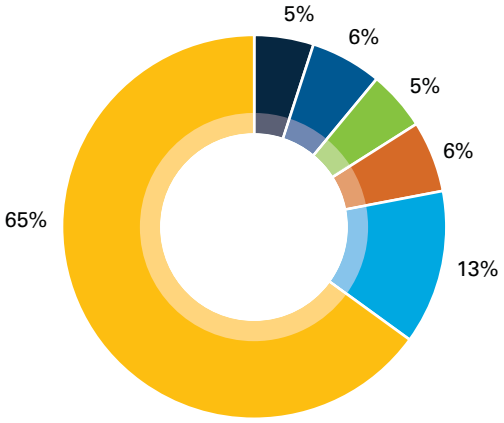
Figure V-4 shows the project/program breakdown by project type as categorized by the FDEP on its DWH website. The FDEP project type classification is generally more intuitive than classifying projects by Council goals and objectives. Using this categorization scheme, the diversity of the proposed projects/programs is more evident. Water quality/quantity is the most dominant project type (45%).



FDEP Project Type	% of Total
Community Resilience	7%
Habitat Restoration	7%
Land Acquistion	6%
Living Resources	20%
Recreation/Public Access	15%
Water Quality/Quantity	45%

Figure V-4. Project breakdown by FDEP project type.

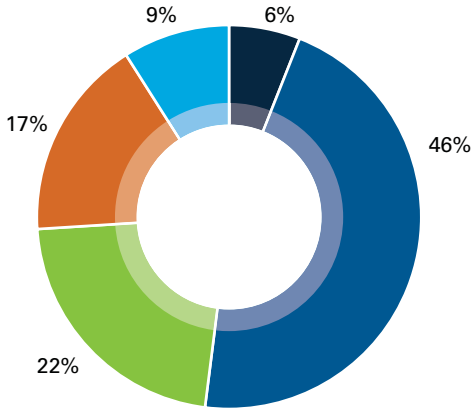
Figure V-5 shows the project breakdown by FDEP project type in terms of dollars. It should be noted that projects that fall into the water quality/quantity category account for 65% of the total SEP Spill Impact Component request. This is because wastewater and stormwater infrastructure projects are typically costlier than other project types.



FDEP Project Type Cost	% of Total
Community Resilience	5%
Habitat Restoration	6%
Land Acquistion	5%
Living Resources	6%
Recreation/Public Access	13%
Water Quality/Quantity	65%

Figure V-5. Project breakdown by FDEP project type dollars.

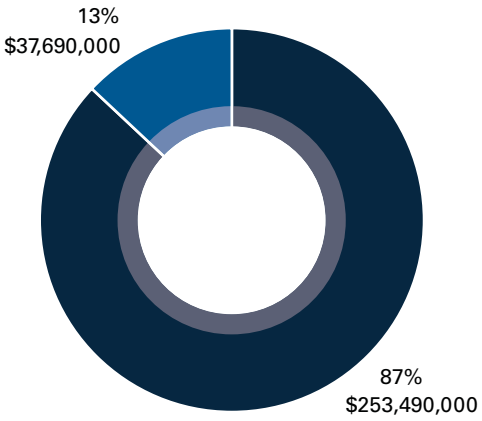
Figure V-6 shows the project breakdown by stage of development or readiness. This shows that 6 percent of the proposed projects are in the concept stage only (e.g., no planning activity conducted to date). About 46 percent of the projects have undergone some planning activity, while 22 percent have had some level of feasibility analysis. Only 6 of the 69 total projects (9 percent) have completed design and permitting activities and are considered to be "shovel ready" for implementation. Therefore, the majority of proposed projects/programs need further definition and refinement in terms of conceptual design, feasibility analysis, and detailed cost estimating. It is anticipated that a majority of the early project grants will be for conceptual design and feasibility studies.



Stage of Development	% of Total
Concept	6%
Planning	46%
Feasibility	22%
Design/Permitting	17%
Implementation	9%

Figure V-7. Project breakdown by stage of development.

Figure V-7 shows the project breakdown by infrastructure vs. non-infrastructure cost. As shown, about 13 percent of the total SEP Spill Impact Component request is proposed for projects/programs classified as infrastructure, pursuant to Council guidance.



Infrastructure Project Cost	Amount	% of Total
Non-Infrastructure Cost	$253,490,000	87%
Infrastructure Cost	$37,690,000	13%

Figure V-7. Project breakdown by infrastructure vs. non-infrastructure dollars.

Benefits of the County-Driven Process

The county-driven project selection and prioritization process resulted in a number of benefits that may not have been derived had a more centralized approach been used. These benefits are listed and discussed below:

- "Bottom-up" vs. "top-down" process
- Even distribution of funding across the Florida Gulf coast
- Projects/programs that address local and regional priorities
- Balanced and diverse range of project types
- Regional collaboration.

BOTTOM-UP VS. TOP DOWN-PROCESS

Compared to the other four Gulf states, Florida is unique with regard to the development and implementation of their SEP. In the other four Gulf states, these processes are administered by a designated state agency or group of agencies; whereas in Florida these processes have been delegated to a federation of the Florida Gulf Coast counties—the Gulf Consortium. Accordingly, the process for nominating projects for inclusion in the Florida SEP was very much a bottom-up versus a top-down approach. As a result, the Florida SEP includes a wide range of projects that address local and regional needs and priorities rather than priorities identified by a particular state agency. It is likely that the SEP project list would have been quite different had it been developed by a state agency, which may have been biased toward addressing a particular agency mission. For this reason, it can be argued that the bottom-up process used by the Consortium was more responsive to the overall body of stakeholders along the Florida Gulf Coast than a process driven by a single state agency would have been.

EVEN DISTRIBUTION OF FUNDING ACROSS THE GULF COAST

The equal distribution of Florida's Spill Impact Component allocation among the 23 member counties ensures that each Consortium member county will receive an equal amount of the allocation, without consideration of factors such as miles of shoreline, distance from the spill, population, etc. In addition, it confirms that each county will have the opportunity to equally participate in Gulf restoration and self-determine their own projects. This approach results in an even distribution of Florida's Spill Impact Component funds across the Florida Gulf Coast, rather than focusing those funds in a few select project locations.

This does not necessarily mean that total spending for SEP implementation will be evenly distributed along the coast. Some counties have proposed to use all or portions of their Direct Component and commit other county funds to support their SEP projects, while others have only committed Spill Impact Component funds. In addition, some projects have the potential to attract significant leveraged monies from other DWH funding streams, while others do not. Nonetheless, the even distribution of Spill Impact Component funding across the Florida Gulf Coast is a benefit to the overall body of stakeholders.

PROJECTS/PROGRAMS THAT ADDRESS LOCAL AND REGIONAL PRIORITIES

While the more insidious effects of the DWH oil spill on Florida's marine resources (e.g., long-term fishery population impacts) are still under investigation, significant overt ecological damage was fairly limited compared to other Gulf states. Therefore, the Consortium member counties have chosen to use Spill Impact Component funds to address other legacy environmental damage or unique regional challenges to their coastal economies. In reviewing the SEP project list, several common and regionally specific project types emerge.

The most numerous SEP project type proposed along the entire Florida Gulf coast are those related to water quality improvement. The insert at the end of this section – *Patterns of Water Quality Impairment Along the Florida Gulf Coast* – discusses regional differences in water quality issues.

Florida has a very active TMDL program administered by the FDEP, as well as the U.S. EPA. Florida has also been uniquely diligent in the collection of ambient water quality data, by both state agencies and local governments, from which impaired waters determinations can be made and addressed. In addition, Florida has a great deal of older coastal developments that were constructed prior to the implementation of the Clean Water Act, and the implementations of related federal and state regulations controlling wastewater and stormwater treatment.

The most common water quality improvement type of project proposed in the SEP is the replacement of failing or inadequate septic tanks in these older coastal developments with central sewer collection and treatment facilities. While the provision of adequate wastewater collection and treatment facilities has typically been the responsibility of local governments, retrofitting old development is very costly and counties have struggled to find adequate funding. Therefore, many of the Consortium member counties are committing all or part of their Spill Impact Component allocations to address these legacy problems and will be seeking leveraging from other funding sources and grant programs to maximize these benefits.

Another type of water quality improvement project is the removal of legacy contaminated sediments from bayous and coastal waterbodies that have been polluted by historical industrial and agricultural uses. Bayou Chico in Escambia County is a small urban bayou with a long history of industrial pollution dating back to the early 1800s, and during the response to the DWH oil spill, the Bayou served as a staging/cleaning location for vessels that deployed oil boom and dispersants. Lake Seminole in Pinellas County was historically an estuarine bayou that was impounded in the 1940s to create an irrigation water source for surrounding citrus groves. Decades of nutrient-laden runoff have resulted in an accumulated sediment mass that releases nitrogen and phosphorus to adjacent Boca Ciega Bay. Both counties are proposing major dredge projects to remove contaminated sediments and improve coastal water quality.

The Florida Keys and southwest Florida are naturally low-lying and poorly drained, and older development there relied upon substantial channelization and dredge and fill to make conditions habitable for humans. Accordingly, Monroe, Collier, Lee, and Sarasota Counties are proposing SEP projects aimed at reversing legacy environmental damage from extensive dredge and fill and/or channelization to drain wetlands and reroute natural surface water flow patterns. The canal and hydrologic restoration projects proposed by these counties are significant in their scope and will result in the restoration of both water quality and associated living resources affected by these historical alterations.

The counties of the Big Bend and Nature Coast regions of Florida (Hernando, Citrus, Levy, Dixie, Taylor and Jefferson) are relatively rural, with limited coastal development. One of the most significant impediments to coastal economic development in these counties is the wide and very shallow continental shelf, which offers very little natural deep water access. Although marine living resources (e.g., seagrasses, clams, scallops, oysters, reef fish) in this region are rich and extensive, these counties struggle to provide adequate public access to the coastal zone for residents, tourists, and commercial fisherman. Therefore, common project types proposed by these counties include: land acquisition for public access, improved boat ramps and coastal recreational facilities, and the enhancement of both offshore artificial reefs and nearshore oyster reefs.

Figure V-8 shows the spatial distribution by SEP projects and programs classified by FDEP project type and dollars across the Florida Gulf Coast. This figure shows the dominance of water quality/quantity projects, but also reflects the other regional differences in project priorities discussed above.

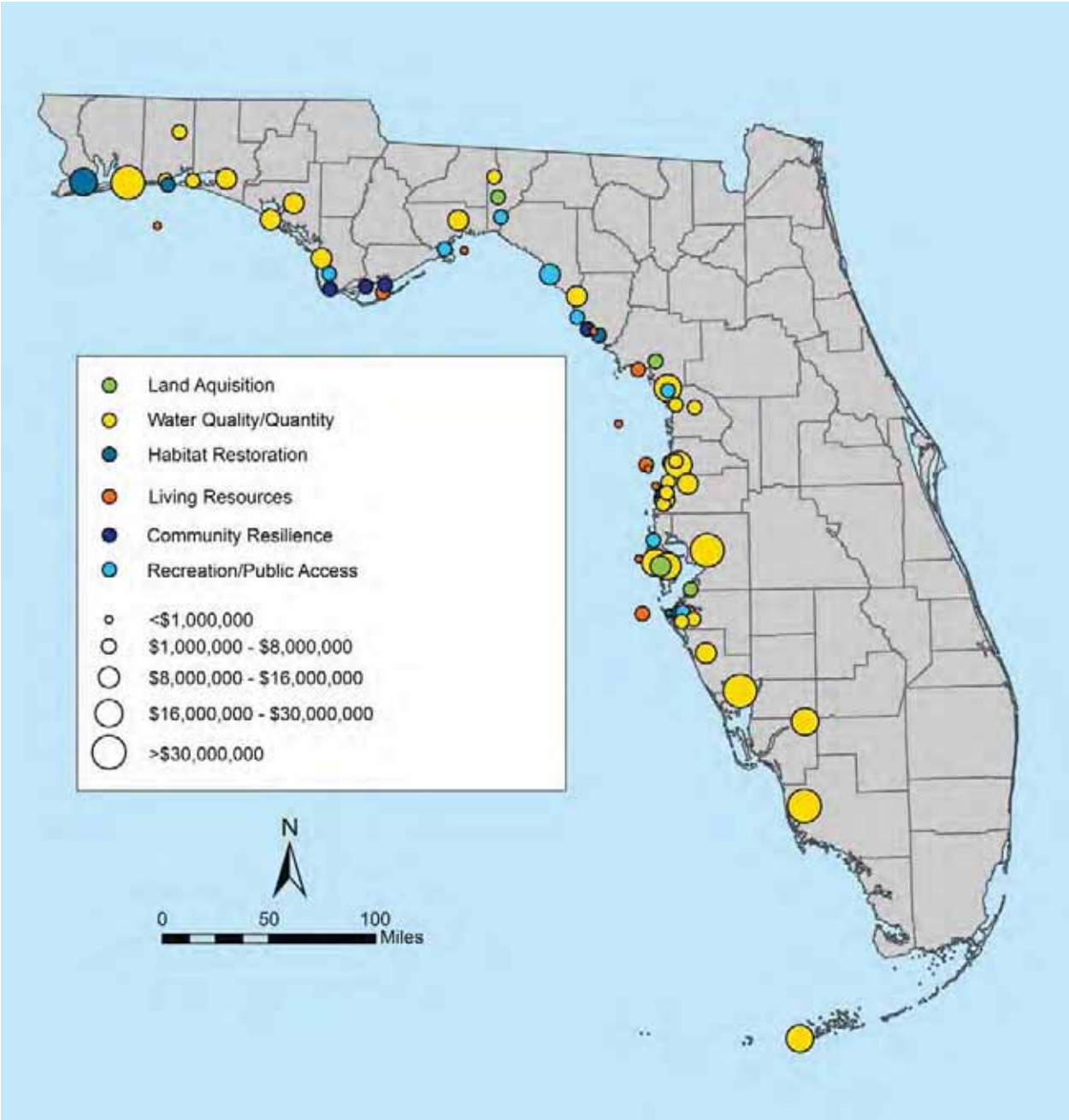


Figure V-8. Spatial distribution by SEP projects and programs classified by FDEP project type and dollars across the Florida Gulf Coast.

BALANCED AND DIVERSE RANGE OF PROJECT/PROGRAM TYPES

As discussed above, the Florida SEP proposes diverse range of project/program types that balances both the environment and the economy. A common theme that the Consortium has promoted is that Florida's economy is inextricably linked to the environmental quality of its coastal zone. The majority of Florida's economic activity occurs in its coastal counties, where residents, tourists, and commercial fisherman seek out white sand beaches, clear waters, natural wetland habitats, and rich living marine resources. For these reasons, Consortium member counties, in developing their proposed projects, often did not make clear distinctions between environmental and economic projects. Accordingly, the proposed SEP projects and programs represent a good balance between both environmental and economic projects. When classified in terms of RESTORE Act eligible activity, about 51 percent of the proposed projects/programs address environmental restoration and protection, while about 49 percent address various economic and infrastructure activities. The proposed projects/programs include a broad assortment of project types, addressing six of the seven Council objectives, as well as an eighth objective defined by the Consortium for economic activities. The balance and diversity of project/program types addresses state, regional and local priorities, and will yield multiple benefits to the stakeholders of the Florida Gulf Coast.

REGIONAL COLLABORATION

The creation and ongoing functions of the Gulf Consortium are the primary mechanisms by which the 23 member counties interact and collaborate. Through the deliberations of the Gulf Consortium Board of Directors, all 23 member counties have been able to reach consensus on a wide range of issues, including goals and objectives, geographic distribution of funds, the balance of environmental versus economic projects, and the temporal distribution of Spill Impact Component funds over the payout period.

With regard to the selection and prioritization of projects, programs and activities to be included in the SEP, discussions were held to identify projects that would benefit from cross-jurisdictional collaboration. It was determined that there was some potential economy of scale benefits for sharing artificial reef materials and staging sites between counties along the Springs Coast and Nature Coast regions (Pasco, Hernando, Citrus, and Levy Counties). However, during the project selection and prioritization process, the individual counties tended to focus on their own local needs and priorities with limited consideration of multi-county participation on regional projects. Nonetheless, the final list of the projects, programs and activities included in this SEP does reflect similarities within the various regions.

Patterns of Water Quality Impairments Along the Florida Gulf Coast

INTRODUCTION

In carrying out its obligations under the Federal Clean Water Act the State of Florida conducts a program of water quality monitoring and reporting, overseen by the Florida Department of Environmental Protection (FDEP). Florida is well known for these efforts, as it is the most data-rich state in the U.S., in terms of water quality. Water quality data are compared against standards that vary with the statutory "designated use" of the water body. The most widely used, and most relevant water quality standards in Florida include: Class I, for drinking water supplies; Class II, for waters designated for shellfish harvesting; and Class III, for recreational uses (aka "fishable / swimmable"). Class III is the "default" designated use, and applies to the vast majority of Florida surface waters. This designated use is further classified as either Class III-Marine or Class III-Freshwater.

In Florida, water quality impairments fall into three broad categories: those due to toxins such as heavy metals; those due to pathogens such as bacteria; and those due to nutrient enrichment.

- For toxins, most of the impairments in Florida are associated with mercury. Most of the coastal waters of Florida are considered "impaired" for mercury, usually due to findings of elevated levels of mercury in pelagic fish such as King Mackerel (aka Kingfish) or Bull Sharks. These species are typically found in offshore waters, and may not spend any time in the nearshore areas where runoff or point sources of pollution have their greatest impact. Additionally, while local sources can occur, much of the mercury found in these top-level predators could come from as far away as China, and dominant sources of mercury could be more strongly associated with coal-fired power plants in eastern China, rather than a specific activity in Florida. However, local sources can be important. Recognizing the importance of national and even international influences on mercury contamination, the State of Florida has developed a state-wide Total Maximum Daily Load (TMDL) for mercury.

- Water quality impairments due to pathogens are usually due to elevated levels of indicator bacteria, such as the group "fecal coliform bacteria." Despite their name, fecal coliform bacteria are not necessarily associated with fecal material. The techniques used to quantify fecal coliform bacteria can also test positive for bacteria that are naturally associated with soils and/or decomposing vegetation, as well as fecal material. When fecal sources are indicated, the fecal material can be associated with seabirds and other wildlife, as well as both humans and human-associated animals such as horses and cows and other livestock. The amount of fecal material that can trigger a finding of impairment varies as a function of the classification of the water body. Bacteria concentrations can occur below the level that would cause concern for recreational water contact, but can be problematic if those same waters were used for shellfish harvesting, as shellfish accumulate bacteria in the portions of their mass eaten by consumers.

- Nutrients such as nitrogen and phosphorus, by themselves, are not a threat to biological communities. Instead, nutrients become problematic via their ability to stimulate excessive amounts of plant growth, especially different types of algae. Excessive algal growth can show up as the long strands of filamentous algae that are increasingly abundant around Florida's spring systems, as well as the phytoplankton (floating microscopic plants) that can reduce water clarity in coastal waters. As well, excessive plant growth can give rise to reduced levels of dissolved oxygen (DO) when algal blooms die off and their biomass is decomposed by oxygen-consuming bacteria.

As most of Florida's waters are not impaired by toxins, or when they are classified as such the impairment is covered by the mercury TMDL, the primary focus of the FDEP is on impairments due to pathogens and/or nutrients.

From the Alabama state line to Key West, the Florida Gulf Coast encompasses approximately 975 linear miles, and includes a wide range of geological, ecological, and cultural conditions. Therefore, it is not unexpected that water quality impairments reflect these regional differences, and many of the projects proposed in the Florida SEP have been developed to address these problems. Below is a summary of patterns of water quality impairments along the Florida Gulf Coast.

WESTERN PANHANDLE

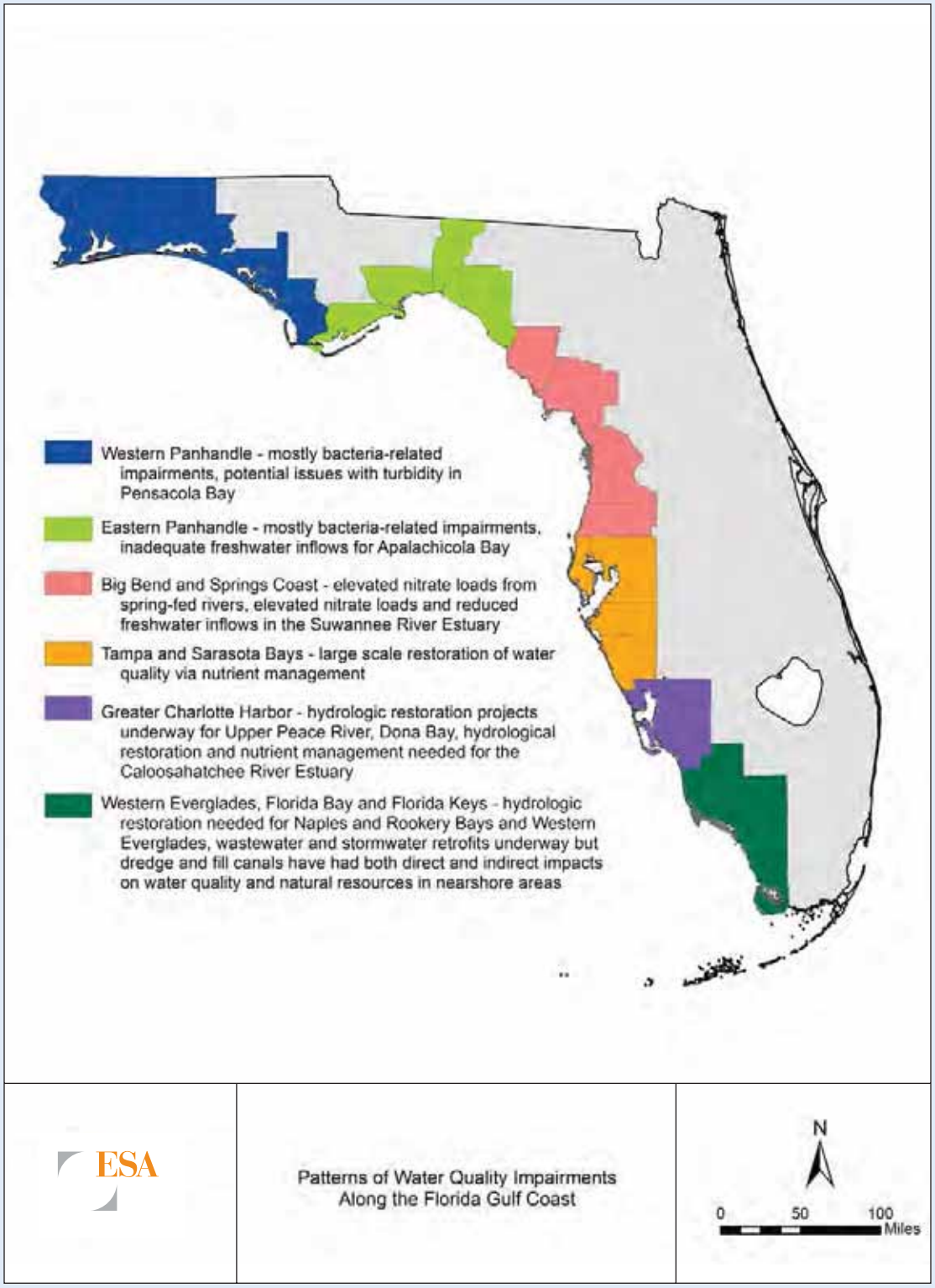
The coastal waters from the Alabama border east to Gulf County are mostly associated with impairments due to pathogens. However, some sections of the Pensacola Bay system show evidence of nutrient pollution as well. In Escambia and Santa Rosa counties, fecal coliform bacteria are high enough to cause impairment of waters such as Perdido Bay, Escambia Bay, Big Lagoon, and Santa Rosa Sound. Smaller waterbodies, such as Texar Bayou and Bayou Chico have also been classified as impaired for pathogens. In contrast to stretches of Florida's coastline farther south and east, nutrient enrichment has not been widely determined to be problematic in this region. For example, despite the widespread finding of impairments for fecal coliform bacteria in the Pensacola Bay system, the only nutrient-related impairments noted by FDEP are for Judges Bayou, North Escambia Bay, and Bayou Chico.

Farther east, bacterial impairments have been documented for Liza Jackson and Marler Park (Okaloosa County) as well as Choctawhatchee Bay, as well as Blue Mountain, Grayton and Holley Street beaches (Walton County). Choctawhatchee Bay was also determined to be impaired for DO, related to nutrient enrichment. In Bay and Gulf counties, bacterial impairments have been documented at high profile beaches, such as Panama City Beach, as well as Lookout and St. Joe Beach. These impairments are not found in every year, and are fairly infrequent (i.e., less than 25 days per year) for those years when such impairment was documented.

Clay deposits in the watersheds of many western panhandle rivers, as well as an abundance of unpaved roads in the more rural parts of this region, contribute to elevated turbidity and decreased water clarity in local waters, particularly after intense storms. Despite these problems, water quality impairments due to sediment are rare in Florida.

EASTERN PANHANDLE

Franklin County's Apalachicola Bay's watershed stretches up into the adjacent states of Alabama and Georgia. As such, the exceedances it shows for fecal coliform bacteria may not necessarily be controllable by managing Florida's land use practices alone. In addition, the scientific consensus on Apalachicola Bay is that insufficient freshwater inflow is a greater environmental impact than near-field nutrient or pathogen issues, and the lack of sufficient freshwater inflow has much more to do with agricultural and domestic water uses in Georgia than activities in the Florida portion of the watershed. In addition, bacterial impairments have been noted for the waters of Ochlockonee Bay, Alligator Harbor, and St. George Sound.


Western Panhandle - mostly bacteria-related impairments, potential issues with turbidity in Pensacola Bay
Eastern Panhandle - mostly bacteria-related impairments, inadequate freshwater inflows for Apalachicola Bay
Big Bend and Springs Coast - elevated nitrate loads from spring-fed rivers, elevated nitrate loads and reduced freshwater inflows in the Suwannee River Estuary
Tampa and Sarasota Bays - large scale restoration of water quality via nutrient management
Greater Charlotte Harbor - hydrologic restoration projects underway for Upper Peace River, Dona Bay, hydrological restoration and nutrient management needed for the Caloosahatchee River Estuary
Western Everglades, Florida Bay and Florida Keys - hydrologic restoration needed for Naples and Rookery Bays and Western Everglades, wastewater and stormwater retrofits underway but dredge and fill canals have had both direct and indirect impacts on water quality and natural resources in nearshore areas
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Patterns of Water Quality Impairments Along the Florida Gulf Coast
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In Wakulla and Jefferson counties, few water quality impairments have been noted. The exceptions are bacterial impairments for Dickerson Bay and Shell Point, along with a finding of excessive nitrate levels in the Wacissa Springs and Wacissa River complex.

Taylor County's Fenholloway River previously had the distinction of being the state's only water body with a Class V (industrial) designated use; however, the river was reclassified to Class III in 1998. The Fenholloway River was highly polluted by a cellulose plant for many decades, and poor water quality has degraded the extensive seagrass meadows at the mouth of the river. Prior impairment determinations for the Fenholloway River include those for fecal coliform bacteria, low levels of DO, and un-ionized ammonia. However, ongoing and planned water quality restoration projects are anticipated to allow the Fenholloway River to meet Class III standards sometime over the next five to ten years. In addition, the nearshore waters of Keaton Beach have been determined to be impaired for bacteria.

FLORIDA'S BIG BEND AND SPRINGS COAST

The coastal waters of Dixie County are dominated by the influence of the Suwannee River. While these waters are often viewed as healthy or nearly pristine, the Suwannee River itself is impacted by a combination of elevated levels of nitrate, as well as a long-term trend of decreasing flows. The degree to which the degraded water quality and diminished freshwater inflows from the Suwannee River will impact Dixie County's coastal waters is presently unknown. However, management plans have been approved and both programs and projects have been initiated to address the problems with both the quantity and quality of water in the Suwannee River watershed.

The waters of Levy County's Cedar Key are also influenced by inflows from the Suwannee River, and nutrient impairment for both nitrogen and phosphorus has been noted. In addition, the nearshore waters off Cedar Key have also been determined to be impaired for bacteria.

In Citrus, Hernando, and Paso counties, local waters are mostly thought to be healthy, with seagrass meadows that extend offshore more than twenty miles. However, the spring-fed rivers that discharge to these coastal waters have shown troubling trends in terms of nitrate enrichment. Elevated nitrate loads to coastal waters have been documented for the Rainbow, Chassahowitzka, and Weeki Wachee Rivers. Fortunately, the waters south of Cedar Key are thought to be phosphorus-limited, for the most part, which may give them some ability to assimilate nitrate without immediate impacts. However, the coastal waters of Kings Bay have been documented to have a problem with excessive nutrient loads and reduced water clarity, issues tied back to nitrate enrichment through various TMDLs and impairment studies. Increased sea level rise in the Kings Bay system is apparently causing ongoing changes in submerged aquatic vegetation, as more freshwater-dependent species are losing ground to species tolerant of more brackish conditions, a pattern that matches with long term trends toward higher salinities in Kings Bay.

TAMPA AND SARASOTA BAYS

The coastal waters from Tarpon Springs down to Venice exhibit one of the more interesting patterns in the State of Florida. Large-scale and obvious issues with degraded water quality resulted in some of the first water quality restoration efforts in Florida, starting as far back as the 1970s. As a result, the water quality and ecosystem health of Tampa and Sarasota Bays are thought to be as good as they were more than 50 years ago. Based on significant reductions in nutrient loads from stormwater and both industrial and domestic point sources, water quality has recovered to the extent that seagrass coverage has increased by more than 30 square miles over the past 40 years. However, water quality impairments continue for locations such as the Anclote River Estuary, Clam Bayou, Klosterman Bayou, Delaney Creek, and portions of Tampa Bay such as Old Tampa Bay and Boca Ciega Bay.

Further south in Sarasota County, bacterial impairments have been noted for Matheny, Hatchett, Philippi, North, and Catfish Creeks, as well as in Whitaker Bayou. The waters of Blackburn Bay, Dona Bay, and North Lemon Bay have also been determined to be impaired for nutrients, either through elevated levels of phytoplankton, or through the presumed influence of nutrient enrichment on low levels of DO.

GREATER CHARLOTTE HARBOR

The waters of Upper and Middle Charlotte Harbor were determined to be impaired for nitrogen by FDEP, although the Surface Water Improvement and Management (SWIM) Plan for these same waters determined that a "hold the line" strategy was needed for nutrient management, rather than there being a need for a nutrient load reduction from existing levels, as was the case in Sarasota and Tampa Bays. Bacterial impairments were noted for Lemon Bay, Matlacha Pass, and Pine Island Sound.

Farther south, the waters of the Caloosahatchee River estuary are adversely impacted by both nutrient enrichment and inadequate patterns of freshwater inflow. In one assessment, it was found that on average, the Caloosahatchee River discharged to local waters at rates either higher than proposed maximum inflow rates or lower than proposed minimum inflow rates for more than half of a typical year.

WESTERN EVERGLADES, FLORIDA BAY AND THE FLORIDA KEYS

Collier County's coastal waters include systems determined to be impaired for nutrients, such as Rookery Bay and the Gordon River. However, the scientific consensus is that the biggest impacts to the county's coastal waters have been widespread hydrologic alterations. As an example, the construction of the Golden Gate Canal system resulted in a reduction of Rookery Bay's watershed by eighty square miles, which was accompanied by a ten-fold increase in the size of the Naples Bay watershed. As in Sarasota County's Dona Bay, environmental restoration of the Naples Bay and Rookery Bay systems will require hydrologic restoration, rather than the nutrient reduction strategies that worked so well in Tampa and Sarasota Bay.

In Monroe County, great strides have been made in recent years to improve the collection, treatment, and disposal of domestic wastewater. However, extensive dredge and fill for residential development with water access has resulted in the creation of widespread problems due to the construction of "dead end" canals. Bacterial impairments have been documented in a number of high-profile beaches, including Smathers Beach, Sombrero Beach, and Fort Zachary Taylor State Park.

SECTION VI

Implementation

A. Unique Challenges of Implementing the Florida State Expenditure Plan

The proposed projects, programs, and activities included in this Florida SEP were developed through a "county-driven" process whereby each of the 23 member counties of the Gulf Consortium independently determined how they would use their allocation of Florida's Spill Impact Component. This process resulted in a large number of projects and programs (69) covering a wide range of RESTORE Act eligible activities and project types.

The 15-year payout period of the BP civil settlement with the federal government and the five Gulf Coast States presents significant challenges to developing a comprehensive implementation strategy to sequence the large number of projects proposed in the Florida SEP. In its deliberations, the Gulf Consortium has explored bonding opportunities at both the federal and state levels that would allow Florida's total Spill Impact Component allocation to be disbursed over a shorter time period (e.g., 4–5 years), but no such remedies are available at this time. One of the arguments in favor of the 15-year payout is that it distributes the funds incrementally, and prevents a flood of money that could potentially be misused. This approach may be more suitable to Gulf states that have proposed a few large projects that can be staged over 15 years. However, for the large number of projects/programs proposed in the Florida SEP, this is an impediment to implementation.

In addition to being very numerous, the projects/programs included in this SEP vary substantially with regard to their degree of "readiness" for implementation. Some projects/programs are concepts only, requiring conceptual design and feasibility studies to further determine their feasibility and refine their scopes and budgets. For other projects/programs, engineering design and permitting have been completed, and a few are truly "shovel-ready" at this time. Given the uncertainties associated with many of the proposed projects/programs, it is likely that project modifications will need to be made as conceptual design and feasibility studies are completed. It is also likely that county priorities may change over the payout schedule, resulting in some projects/programs being dropped from the list to be replaced by others.

Unlike the other four Gulf Coast states, implementation of the Spill Impact Component in Florida is not administered by a designated state agency. The Gulf Consortium operates as a coordinating body for the 23 member counties, and the county-driven process voted upon by the Consortium members has conferred a high level of independence to the individual counties with regard to both the content and implementation of the SEP. While this approach has resulted in a wide range of project/program types addressing local and regional priorities, it also creates the potential for conflicts in how the SEP projects are sequenced over time. For example, if a particular county decides to amend its proposed project list by dropping a project in the planning phase and adding a project that is shovel-ready, this change has the potential to affect the timing of projects/programs proposed by the other counties.

B. Project Sequencing

The term "sequencing" used herein refers to the timing or staging of projects or project components, and their respective dollars, over time. As the entity responsible for the development and implementation of the Florida SEP, the Consortium is the central coordinating body and grant recipient for all projects included in the SEP. Individual counties will be grant sub-recipients, and will not be able to engage independently with the Council with regard to applying for and managing grant funds for their specific projects. Therefore, it is critical that the Consortium develop a project/programs sequencing strategy that accommodates both the large number of projects/programs and their varying degrees of readiness. In addition, the sequencing strategy should treat each county fairly, without bias.

RESTORE ACT Payout Assumptions

In developing an overall implementation strategy, multiple alternatives for managing the accounting of Spill Impact Component funds among the 23 counties over the 15-year payout schedule have been evaluated under the following assumptions:

- The amounts available to each county according to the equal split of Florida's Spill Impact Component, minus project planning grant costs, is approximately $12.66 million.
- Funds will be paid out over a 15-year period, and there is no ability at this time to use these funds for bonding and debt payments at either the state or federal levels.
- Counties may self-fund projects described in the SEP and then be reimbursed with Spill Impact Component funds.
- At the time of Florida SEP approval (projected to be the second quarter of 2018), Florida's allocation under the Council's Spill Impact Component rule will have accrued $73,917,036 from the initial payment and the first 2 years of annual allocations over the 15-year payout.
- Every year thereafter, the Gulf Consortium will receive $16,713,931 annually until 2031.

Guiding Principles and Goals of Sequencing

In the process of developing their proposed project/program lists, most of the Consortium member counties expressed that their current and short-term (3–5 years) priorities could be clearly defined, but that beyond about a 5-year horizon it was difficult to predict how their project priorities might change. Therefore, a key guiding principle used by the SEP consultant in developing a recommended sequencing and implementation strategy is that temporal flexibility across the 15-year payout period must be accommodated, and that it is likely that the Florida SEP will need to be amended every 3–5 years to adapt to changing conditions and priorities in many of the counties. After considering several options, a 4-year work program was adopted by the Consortium. Assuming that the Florida SEP would is approved in 2018, this would allow for the sequencing of projects across four 4-year work programs, as follows:

- 2018-2021
- 2022-2025
- 2026-2029
- 2030-2033.

With the above-described guiding principle in mind, the SEP consultant defined three overarching goals for project sequencing and the overall SEP implementation strategy, including:

1. Address urgent needs
2. Demonstrate early successes
3. Ensure that every county is making progress.

The first goal addresses the need to capitalize on issues of timeliness that are embodied in the list of SEP projects. For example, if the acquisition of a parcel of land is needed to conduct a proposed restoration project, and that parcel of land is available now from a willing seller at an affordable price, then acquiring that parcel should be a high priority. Otherwise, the opportunity to conduct the dependent restoration activities on that parcel will be lost.

The second goal addresses the need to build confidence in the institutional ability of the Consortium to implement the SEP. For example, completing a few shovel-ready projects early during the implementation phase, and demonstrating attainment of success through project-specific monitoring, will build confidence with the Council, the Florida Governor, Florida state agencies, and the public at large. This confidence-building will be critical to establishing the organizational credibility of the Consortium going forward, and should streamline future grant applications and implementation activities.

The third goal addresses the need to ensure that each county is engaged and making progress during every year of the payout, regardless of the stage of project readiness. For some, this would involve initiating conceptual design and feasibility studies, while for others this would include the completion of final engineering design and permitting. For those counties that have proposed shovel-ready projects, at least some components could be initiated. This goal ensures that every county will be able to report to their stakeholders that they are making progress in the implementation of their portion of Florida's Spill Impact Component.

Development of Sequencing Models

Given the large number of projects and programs in the Florida SEP, their varying degrees of readiness, and the other complexities discussed above, the SEP consultant developed and evaluated three "models," or approaches, to sequencing the proposed SEP projects over the 15-year payout schedule. In addition to quantitative funding limits, three qualitative factors were identified for consideration in the development of the project sequencing models:

- Project Readiness. This factor addresses the stage of development of a particular project. Five levels of project readiness were identified:
  - Concept only
  - Initial planning completed
  - Conceptual design and feasibility analysis completed
  - Engineering design and permitting completed
  - Contractor bids completed—project is shovel-ready.
- Project Timeliness. This factor addresses external issues that could affect whether or not a project is ready of implementation. Examples include:
  - Does a parcel targeted for land acquisition have a willing seller and is it available at an affordable price?
  - Are co-funding grant opportunities or other leveraged funding sources available now that won't be available later?
  - Is the project waiting on the issuance of a permit(s) that has the potential to be denied?
- County Self-Prioritization. This factor addresses the county's self-determined prioritization and sequencing. In the process of developing proposed project lists, the SEP consultant did request self-prioritization by the counties, though it was not mandatory.

To document the alternatives considered by the Consortium, the three sequencing models developed by the SEP consultant are presented, compared, and contrasted on the following pages.

MODEL A – INDIVIDUAL COUNTY ALLOCATIONS

Model A can be described as follows. Each county accrues an estimated 4.3 percent (1/23rd) of the annual allocation of Florida's Spill Impact Component payout in its own separate "account" and executes its projects when adequate funds become available through a combination of sources, including Spill Impact Component funds, co-funding from other grants, other county funds, and leveraged funding sources. Under this approach, each county essentially operates independently, with the Consortium serving only as the coordinator of Council implementation grants.

This is the most equitable approach in that each county is treated exactly the same. However, it may not be the fairest approach in that it favors urban counties with larger revenue streams to self-fund until reimbursement funds are available. In addition, this model does not address all three of the overarching sequencing goals listed above. With funds limited to each county's individual accrued allocation, the model may prevent the early completion of larger, shovel-ready projects and preclude the ability of the Consortium to demonstrate early project implementation successes. The pros and cons of Model A are summarized in the table below.

MODEL A – INDIVIDUAL COUNTY ALLOCATIONS	
PROS	**CONS**
Most equitable approach	May preclude the ability to address urgent needs
Allows each county to make progress during every year of the payout	Decreases the ability to implement larger, early-action projects
May allow some counties to bond using annual accruals as collateral	Eliminates the collective ability of the Consortium to leverage other DWH funds
	Penalizes rural counties that do not have comparable access to other funding sources
	May penalize counties with fewer larger projects

Figure VI-1 shows the cumulative funds available to each county for each year in the remainder of the 15-year payout period. Hypothetically, under Model A, a county seeking to implement a $6 million project with only its Spill Impact Component funds could not do so until 2021, when adequate funds have been accrued in its "account."

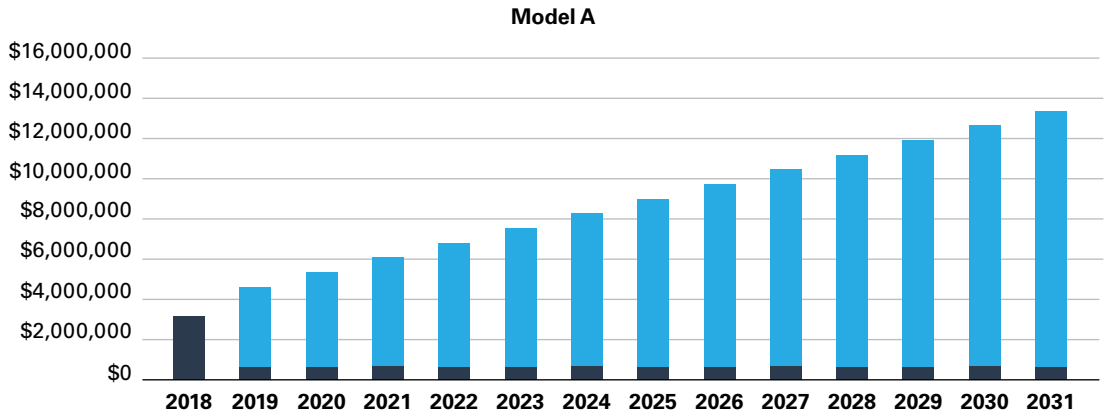

Figure VI-1. Cumulative dollars available to each county per payout year.

MODEL B – COLLABORATIVE PHASED ALLOCATIONS

Model B can be described as follows. The Consortium would collaboratively decide the sequencing of projects based on the qualitative factors of project readiness and timeliness, as well as the goals defined above, across a series of phased short-term work programs (e.g., 4 years). Assuming a 4-year cycle beginning in 2018, the Consortium would develop a work program for the period 2018–2021, and then repeat the process for the periods 2022–2025 and 2026¬–2029, and 2030-2033 if needed.

For example, in the first 4-year work program, the Consortium would have the discretion to sequence all projects using the aggregate projected 2021 accrual, but no county could spend more than their individual projected 2021 accrual during the 4-year cycle. However, under Model B some counties could potentially spend their entire projected 2021 accrual during the first year of the work program prior to actually accruing that amount, if the Consortium decided that their project should be accelerated to meet certain goals.

Using Model B, all three overarching sequencing goals can feasibly be met, and this model is essentially a hybrid between Model A and C. The pros and cons of Model B are summarized in the table below.

MODEL B – COLLABORATIVE PHASED ALLOCATIONS	
PROS	**CONS**
Supports ability to address urgent needs	Some counties will receive more of their allocation before others
Supports ability to implement larger early-action projects while keeping equity over 15-year payout	May require "incentives" for counties whose projects are sequenced later
Allows each county to make progress during every year of the payout	
Supports the collective ability of the Gulf Consortium to leverage other DWH funds	

Figure VI-2 shows the projected funds available to the Consortium for each work program period described above. Hypothetically, under Model B a county seeking to implement a $6 million project with only its Spill Impact Component funds could do so in 2018 if the Consortium decided that their project should be accelerated to meet certain goals.

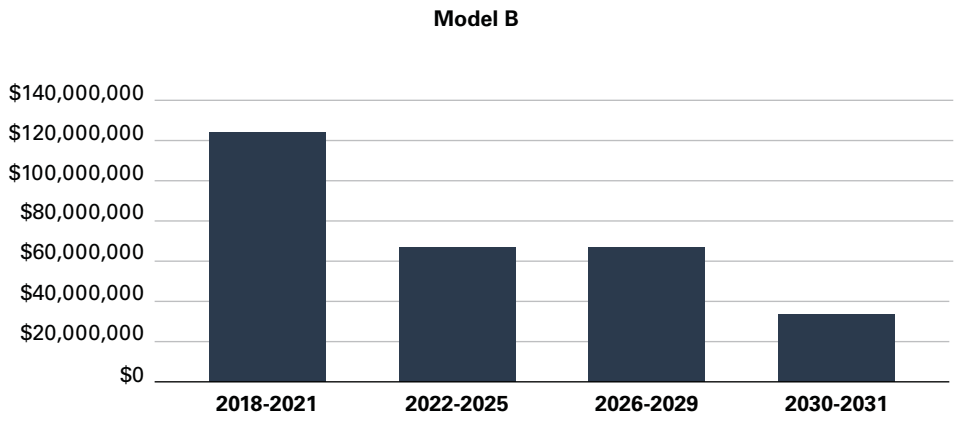

Figure VI-2. Dollars available to the Consortium for each work program.

MODEL C – COLLABORATIVE FULL-PAYOUT ALLOCATIONS

Model C can be described as follows. The Consortium would collaboratively decide the sequencing of projects based on the qualitative factors of project readiness and timeliness, as well as the goals defined above, across the entire payout period. The Consortium would have the discretion to sequence projects using the entire aggregate projected 2031 accrual amount, but no county could spend more than their total individual accrual of $12.66 million. This model takes into account the total allocation to the Consortium, and would support a hypothetical scenario where the Consortium could collaboratively decide that certain large, shovel-ready projects should be fully funded early in the payout period while other counties wait to begin work.

Using Model C, the three overarching sequencing goals can be met, and this is the most flexible of the three models. However, some counties would clearly benefit by receiving more, or perhaps all, of their Spill Impact Component allocation before others. This would likely necessitate the development of "incentives" in the form of allocation transfers, or the commitment of greater shares of leveraged funding, to encourage counties to support this model. The pros and cons of Model C are summarized in the table below.

MODEL C – COLLABORATIVE FULL PAYOUT ALLOCATIONS	
PROS	**CONS**
Supports ability to address urgent needs	Some counties will receive more of their allocation before others
Supports ability to fully implement larger, early-action projects	May require "incentives" for counties whose projects are sequenced later in the payout
Allows each county to make progress during every year of the payout	
Supports the collective ability of the Gulf Consortium to leverage other DWH funds	

Figure VI-3 shows the projected funds available to the Consortium for each year in the remainder of the 15-year payout period. Hypothetically, under Model C, a county seeking to implement a $12 million project with only its Spill Impact Component funds could do so in 2018 if the Consortium decided that their project should be accelerated to meet certain goals.

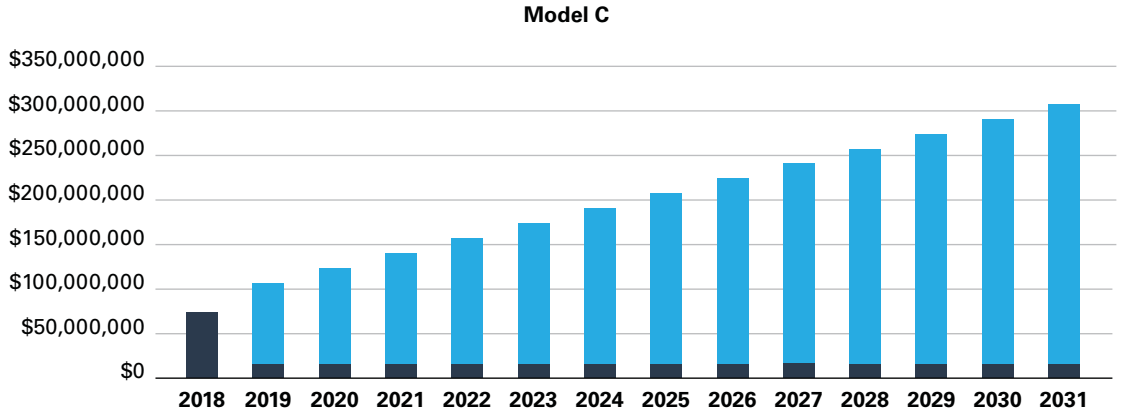

Figure VI-3. Dollars available to the Consortium per payout year.

Although the concept of a 4-year work program is discussed above with regard to Model B, it should be noted that projects could also be clustered and sequenced in 4-year work programs under both Models A and C. However, the total dollar amount allocated to each work program could never exceed what the Consortium has accrued by the last year of the work program, as shown in **Figure VI-3**.

PROPOSED SEQUENCING OF SEP PROJECTS AND PROGRAMS

In consideration of the pros and cons of the three proposed sequencing models, the Consortium adopted the collaborative phased allocations approach (Model B) to sequencing. There was also a strong consensus of support for the concept of a 4-year work program to organize and prioritize project start/end dates and sequencing across the 15-year payout period. Working with each of the counties, the SEP consultant developed a project sequencing schedule using the Model B approach described above.

The aggregate SEP project sequencing schedule is provided in **Sequencing Summary Table** that follows. This table shows the estimated start and end dates for each of the 69 proposed SEP projects and programs, as well as the dollar allocations for each project by year and by 4-year work program. The sequencing schedule corresponds in most cases to the individual project/program milestones; however, exceptions include those counties that will self-fund early project/program implementation and then seek reimbursement through project grant funds during later years.

It should be emphasized that this sequencing schedule is to be used by Consortium primarily as an internal guidance document to help with the coordination of project grant applications, and the equitable distribution of Spill Impact Component funds amongst the member counties over the 15-year payout period. Accordingly, there will clearly be a need to track each county's allocation and project/program expenditures over time; and it is anticipated that the Consortium will develop a basic accounting system to track the timing of Florida's total allocation and county splits of Spill Impact Component funds.

In addition, although the sequencing schedule represents a rough approximation of when, and how many, project grants may be submitted by the Consortium to the Council for review and funding approval, the grant application and review process could be slowed significantly during the first few years of implementation due to the large number of projects/programs proposed in the Florida SEP. This early implementation bottleneck could affect sequencing in later years. Furthermore, as noted above, there is much greater clarity in the first 4-year work program than in those that follow, and as leveraged funding sources become available, the funding allocations for each project/program could change substantially. Therefore, it is likely that the Consortium will need to amend this sequencing schedule periodically to accommodate future changes in priorities.

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Sequencing Summary Table

Years from SEP Approval	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
County Projects	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total Project Cost**	**Total Allocation**
Escambia				**$1,200,000**				**$8,300,000**				**$11,200,000**				**$12,660,000**		
1-1 Bayou Chico Contaminated Sediment Remediation Program	$300,000		$800,000	$100,000	$4,950,000	$2,150,000			$2,900,000				$1,460,000				$12,660,000	$12,660,000
Santa Rosa				**$5,300,000**				**$7,995,500**				**$11,207,403**				**$12,660,000**		
2-1 Santa Rosa Sound Water Quality Improvement Program	$1,915,465	$769,535	$1,297,500	$1,317,500	$1,431,750	$1,223,750	$20,000	$20,000	$1,098,500	$1,098,500	$20,000	$994,903	$1,412,597	$20,000	$20,000		$12,660,000	$12,660,000
Okaloosa				**$4,674,048**				**$6,200,000**				**$10,621,429**				**$12,660,000**		
3-1 Coastal Stormwater Retrofit Program	$761,429	$1,251,429	$61,429	$1,251,429	$1,251,429	$61,429	$61,429										$4,700,000	
3-2 Offshore Fish Aggregating Devices	$75,000	$121,667	$121,667	$121,667	$30,000	$30,000											$500,000	
3-3 Choctawhatchee Bay Estuary Program	$243,750	$243,750	$210,417	$210,417	$91,667												$1,000,000	
3-4 Shoal River Headwaters Protection Program									$42,857	$962,857	$2,022,857	$1,392,857	$1,042,857	$42,857	$42,857		$5,550,000	
3-5 Veterans Park Living Shoreline													$660,000	$83,333	$83,333	$83,333	$910,000	$12,660,000
Walton				**$3,627,783**				**$7,653,429**				**$10,585,279**				**$12,660,000**		
4-1 Choctawhatchee Bay Septic to Sewer Conversion	$382,029	$382,029	$2,481,695	$382,029	$4,025,646					$428,564	$428,564	$2,074,722	$2,074,722				$12,660,000	$12,660,000
Bay				**$5,197,333**				**$7,968,000**				**$10,730,000**				**$12,660,000**		
5-1 North Bay Water Quality Program	$50,000	$120,000	$700,000	$730,000	$100,000	$150,000	$150,000		$1,250,000	$1,250,000		70,000	252,500	$182,500	$747,500	$747,500	$6,500,000	
5-2 St. Andrew Bay Stormwater Improvement Program	$1,756,000	$1,156,000	$176,000	$509,333	$1,809,333	$409,333	$76,000	$76,000	$76,000	$76,000	$20,000	$20,000					$6,160,000	$12,660,000
Gulf				**$4,825,000**				**$7,600,000**				**$11,100,000**				**$12,660,000**		
6-1 St. Joseph Bay/Chipola River Sewer Improvement Program	$600,000		$500,000	$950,000	$950,000	$150,000	$250,000	$950,000	$1,825,000	$725,000	$50,000	$50,000					$7,000,000	
6-2 St. Joseph Peninsula Coastal Erosion Control Project	$210,000	$185,000	$1,190,000	$1,190,000	$75,000	$75,000	$75,000										$3,000,000	
6-3 Coastal Public Access Program					$250,000							$850,000	$850,000	$330,000	$330,000	$50,000	$2,660,000	$12,660,000
Franklin				**$4,035,000**				**$7,955,000**				**$10,606,667**				**$12,660,000**		
7-1 Emergency Operations Center	$150,000	$460,000	$360,000	$30,000													$1,000,000	
7-2 Apalachicola Bay Oyster Restoration	$150,000	$100,000	$50,000	$1,125,000	$1,125,000	$50,000	$50,000	$1,125,000	$1,125,000	$50,000	$50,000						$5,000,000	
7-3 Apalachicola Bay Cooperative Dredging Program	$100,000		$60,000	$1,450,000	$1,450,000	$60,000	$60,000		$300,000	$100,000	$60,000	$966,667	$966,667	$966,667	$60,000	$60,000	$6,660,000	$12,660,000
Wakulla				**$5,387,862**				**$8,286,633**				**$11,185,403**				**$12,660,000**		
8-1 Wakulla Springshed Water Quality Protection Program	$1,175,000	$810,833	$446,750	$1,320,696	$1,205,334	$561,600	$504,650	$369,937	$296,750	$8,000	$8,000	$251,020	$508,000	$308,000	$8,000	$8,000	$7,790,570	
8-2 Coastal Public Access Program	$25,000	$800,000	$25,000	$600,000		$150,000			$300,000	$85,000	$1,750,000		$500,000				$4,235,000	
8-3 Artifical Reef and Oyster Habitat Enhancement			$74,583	$110,000	$87,250	$10,000	$10,000		$50,000	$50,000	$50,000	$50,000	$50,000	$92,597			$634,430	$12,660,000
Jefferson				**$5,380,333**				**$7,764,667**				**$11,159,000**				**$12,660,000**		
9-1 Wacissa River Springshed Protection Program	$125,000	$385,000	$16,667	$3,275,000	$75,000	$16,667	$16,667	$16,667	$3,200,000	$16,667	$16,667						$7,160,000	
9-2 Wacissa River Park Improvement Program	$400,000	$1,000,000	$25,000	$41,667	$500,000	$16,667	$16,667										$2,000,000	
9-3 Coastal Public Access Program				$112,000	$435,000	$422,000	$447,000	$422,000	$137,000	$12,000		$12,000	$422,000	$745,000	$322,000	$12,000	$3,500,000	$12,660,000
Taylor				**$5,300,000**				**$8,300,000**				**$11,200,000**				**$12,660,000**		
10-1 Coastal Public Access Program	$500,000	$4,800,000					$3,000,000		$2,900,000				$300,000	$680,000	$430,000	$50,000	$12,660,000	$12,660,000
Dixie				**$4,866,667**				**$7,435,000**				**$10,486,667**				**$12,660,000**		
11-1 Horseshoe Beach Working Waterfront Project	$225,000	$875,000	$750,000	$1,100,000	$25,000	$25,000											$3,000,000	
11-2 Shired Island Park Beach Nourishment and Living Shoreline	$150,000	$125,000	$125,000	$775,000	$775,000	$25,000	$25,000										$2,000,000	
11-3 Horseshoe Cove Oyster Restoration	$100,000	$75,000	$91,667	$350,000	$350,000	$16,667	$16,667										$1,000,000	
11-4 Coastal Public Access Program				$125,000	$405,000	$80,000	$400,000	$425,000	$25,000								$1,460,000	
11-5 Coastal Septic to Sewer Conversion Program										$150,000	$756,667	$2,120,000	$2,120,000	$26,667	$26,667		$5,200,000	$12,660,000
Levy				**$4,326,667**				**$5,460,000**				**$10,560,000**				**$12,660,000**		
12-1 Waccasassa River Conservation Land Acquisition	$2,080,000	$867,500	$12,500														$2,960,000	
12-2 Suwannee Sound/Cedar Key Oyster Restoration	$200,000	$166,667	$500,000	$500,000	$500,000	$66,667	$66,667										$2,000,000	
12-3 Coastal Septic to Sewer Conversion Program							$250,000	$250,000	$1,000,000	$1,100,000	$1,100,000	$1,900,000	$1,900,000	$100,000	$100,000		$7,700,000	$12,660,000
Citrus				**$4,987,557**				**$8,298,000**				**$11,198,000**				**$12,660,000**		
13-1 NW Quadrant Sewer Force Main Project	$142,500	$1,214,167	$1,071,667	$1,071,667													$3,500,000	
13-2 Cross Florida Barge Canal Boat Ramp		$664,076		$823,481	$823,481	$823,481	$823,481										$3,958,000	
13-3 Artificial Reef Program								$840,000	$10,000								$850,000	
13-4 Springshed Stormwater Improvement Program									$700,000	$700,000	$745,000	$745,000	$600,000	$600,000	$140,000	$122,000	$4,352,000	$12,660,000

Years from SEP Approval	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
County Projects	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total Project Cost**	**Total Allocation**
Hernando				**$4,786,833**				**$8,137,500**				**$10,855,000**				**$12,660,000**		
14-1 Artificial Reef Program	$700,000	$250,000	$400,000	$250,000	$50,000	$50,000	$50,000	$50,000	$225,000	$225,000	$50,000	$50,000					$2,350,000	
14-2 Coastal Habitat Enhancement Program	$107,000	$220,000	$107,000	$252,000	$32,000	$32,000											$750,000	
14-3 Coastal Public Access Program				$80,000	$85,000	$22,500	$250,000	$250,000	$250,000	$272,500	$772,500	$772,500	$1,010,000	$750,000	$22,500	$22,500	$4,560,000	
14-4 Weeki Watchee Springshed Septic to Sewer Conversion Program		$300,000	$762,500	$925,000	$462,500			$50,000	$50,000	$50,000							$2,600,000	
14-5 Coastal Stormwater Improvement - Calienta Street	$37,500	$75,000	$162,500	$158,333	$1,900,000	$33,333	$33,333										$2,400,000	$12,660,000
Pasco				**$5,316,000**				**$7,800,687**				**$10,130,000**				**$12,660,000**		
15-1 Port Richey Watershed Stormwater Management Project	$150,000	$545,000	$2,320,000	$1,945,000	$20,000	$20,000											$5,000,000	
15-2 Hammock Creek/Sea Pines Watershed Stormwater Management Project							$166,667	$987,300	$837,300	$16,667	$16,667						$2,024,600	
15-3 Inshore Artificial Reef - Pithlachascotee River				$10,000	$30,000	$450,000	$10,000	$10,000									$510,000	
15-4 Coastal Environmental Research Network (CERN)													$500,000	$1,000,000	$550,000	$50,000	$2,100,000	
15-5 Artificial Reef Program - Hudson Reef		$50,000	$50,000														$100,000	
15-6 Madison Street and Gulf Drive Stormwater Retrofit Project									$140,640	$442,380	$442,380						$1,025,400	
15-7 Crews Lake Hydrologic Restoration	$246,000						$395,360	$395,360	$181,640	$181,640							$1,400,000	
15-8 Ranch Road Infrastructure Improvements												$70,000		$210,000	$215,000	$5,000	$500,000	$12,660,000
Pinellas				**$4,655,000**				**$8,206,667**				**$11,070,000**				**$12,660,000**		
16-1 Lake Seminole Sediment Removal Project		$333,333	$373,333	$373,333	$40,000	$40,000											$1,160,000	
16-2 Wastewater Collection System Improvements			$75,000	$50,000		$325,000	$366,667	$2,780,000	$2,780,000	$41,667	$41,667						$6,460,000	
16-3 Land Acquisition for Floodplain Restoration and Resiliency		$1,150,000	$1,150,000	$1,150,000													$3,450,000	
16-4 Coastal Public Access Program													$150,000	$100,000	$900,000		$1,150,000	
16-5 Artificial Reef Program													$440,000				$440,000	$12,660,000
Hillsborough				**$4,458,333**				**$5,600,000**				**$10,423,333**				**$12,660,000**		
17-1 Cockroach Bay Aquatic Preserve Land Acquisition and Ecosystem Restoration	$3,600,000	$75,000	$108,333	$575,000	$575,000	$33,333	$33,333										$5,000,000	
17-2 Delaney Creek/Palm River Heights Septic to Sewer Conversion	$50,000	$50,000						$500,000	$500,000	$50,000	$2,136,667	$2,136,667	$2,136,667	$50,000	$50,000		$7,660,000	$12,660,000
Manatee				**$4,433,253**				**$8,296,982**				**$10,360,047**				**$12,660,000**		
18-1 Manatee River Oyster Restoration	$100,000	$100,000	$128,571	$354,682	$354,682	$354,682	$28,571	$28,571	$354,682	$354,682	$28,571	$28,571	$354,682	$28,571	$28,571		$2,628,090	
18-2 Puertosueno Park Living Shoreline	$30,000	$45,000	$1,205,000	$10,000	$10,000												$1,300,000	
18-3 Preserve Management Plans	$126,667	$26,667	$26,667	$5,000	$5,000				$26,667	$26,667	$26,667	$5,000	$5,000				$280,000	
18-4 Artificial Reef Program- Borden Reef	$91,667	$1,195,000	$16,667	$16,667													$1,320,000	
18-5 Palmetto Greene Bridge Fishing Pier Replacement			$350,000	$150,000	$1,400,000	$1,000,000	$50,000	$50,000									$3,000,000	
18-6 Applied Research for Shellfish Aquaculture			$100,000	$50,000	$75,000	$50,000	$25,000										$300,000	
18-7 Coastal Preserve Trail and Boardwalk Enhancements	$60,000	$50,000	$50,000	$5,000	$252,222	$5,000	$5,000		$252,222	$5,000	$5,000		$5,000	$252,222	$5,000	$5,000	$956,667	
18-8 Coastal Watershed Management Plans	$12,500	$42,500	$42,500	$42,500	$42,500	$42,500	$42,500	$42,500	$187,334	$187,334	$187,334	$187,334	$187,334	$14,286	$14,286		$1,275,243	
18-9 Urban Stormwater Improvements – GT Bray Park												$200,000	$180,000	$1,220,000			$1,600,000	$12,660,000
Sarasota				**$640,000**				**$8,190,000**				**$10,860,000**				**$12,660,000**		
19-1 Dona Bay Hydrologic Restoration Program			$440,000	$200,000	$2,073,333	$2,073,333	$3,403,333		$2,470,000			$200,000		$1,800,000			$12,660,000	$12,660,000
Charlotte				**$5,393,862**				**$8,300,000**				**$11,100,000**				**$12,660,000**		
20-1 Charlotte Harbor Septic to Sewer Conversion Program	$2,150,000	$1,520,000		$1,723,862	$2,906,138					$2,800,000				$1,560,000			$12,660,000	$12,660,000
Lee				**$4,353,571**				**$8,025,714**				**$11,049,107**				**$12,660,000**		
21-1 North East Caloosahatchee Tributaries Restoration Project	$500,000	$1,553,571	$1,150,000	$1,150,000	$1,150,000	$53,571	$53,571	$2,415,000	$2,415,000	$53,571	$53,571	$501,250	$501,250	$501,250	$554,821	$53,571	$12,660,000	$12,660,000
Collier				**$5,183,567**				**$7,697,433**				**$10,205,967**				**$12,660,000**		
22-1 Comprehensive Watershed Improvement Project		$87,500	$2,548,033	$2,548,033		$2,513,867				$2,508,533			$2,454,033				$12,660,000	$12,660,000
Monroe				**$5,369,913**				**$8,264,956**				**$11,160,000**				**$12,660,000**		
23-1 Canal Management Master Plan Implementation	$937,435	$2,102,449	$1,165,015	$1,165,015	$723,761	$723,761	$723,761	$723,761	$723,761	$723,761	$723,761	$723,761	$1,500,000				$12,660,000	$12,660,000
Annual Allocation	$20,714,941	$26,343,672	$23,878,659	$32,761,310	$34,908,026	$14,396,140	$11,956,323	$12,777,096	$28,630,353	$14,751,989	$11,562,539	$16,372,252	$24,543,308	$11,663,950	$4,650,536	$1,147,333	$291,180,000	
Annual Cumulative Allocation	**$20,714,941**	**$47,058,613**	**$70,937,272**	**$103,698,582**	**$138,606,608**	**$153,002,748**	**$164,959,072**	**$177,736,168**	**$206,366,521**	**$221,118,510**	**$232,681,049**	**$249,053,301**	**$273,596,609**	**$285,260,560**	**$289,911,095**	**$291,058,429**		
County Individual Allocation	3,213,784	726,693	726,693	726,693	726,693	726,693	726,693	726,693	726,693	726,693	726,693	726,693	726,693	726,693				
County 4 Year Phase Cap of Allocation				5,393,862				8,300,633				11,207,403		12,660,789				
Total Annual Allocation Available to Gulf Consortium	73,917,036	90,630,967	107,344,898	124,058,829	140,772,760	157,486,691	174,200,622	190,914,553	207,628,484	224,342,415	241,056,346	257,770,277	274,484,208	291,198,140				

C. Project Leveraging

The concept of leveraging financial resources essentially means using one funding source to attract other funding sources. Leveraging has the potential to multiply the overall benefits of the Florida SEP by expanding the total pool of funds available for SEP projects and programs beyond that provided for by Florida's Spill Impact Component allocation. Leveraging not only allows for the expansion of project scopes and extents, but also solidifies collaborative relationship with partners, enhancing the potential for long-term sustainability of projects and initiatives beyond the SEP implementation phase.

In addition, leveraged funding can also increase flexibility in the implementation of project scopes of work. For example, RESTORE Act funds can be used to satisfy the non-federal share that may be required in other federal grant programs, creating the ability to use the Spill Impact Component funds to attract a variety of other complementary funding sources, many of which are competitively awarded. For these reasons, the Consortium has outlined and researched a wide range of complementary funding sources that could potentially be used to expand the scope, extent, magnitude, and positive impacts of many of the SEP projects.

In assisting the member counties in the project development process, the SEP consultant provided guidance with respect to the selection of projects that are more likely to attract leveraged funding, where applicable. There are multiple funding sources that could be used to leverage Spill Impact Component funds dedicated to the SEP projects and programs described in Section V. They include the four primary funding sources directly related to the various Deepwater Horizon (DWH) settlements, as well as a wide range of other grant sources. These potential leveraging sources are briefly discussed below.

SYNERGY ACROSS DEEPWATER HORIZON FUNDING STREAMS

The RESTORE Act has five different components, each with different targeted recipients, objectives, and administrative procedures. Throughout the development of the SEP, many of the Consortium member counties have been working concurrently on the preparation and implementation of their Multi-Year Implementation Plans (MYIPs), as required under the Direct Component. Direct Component projects are being implemented through a grant program administered by the Department of Treasury whereby each individual county is working directly with Treasury staff.

Some counties have chosen, or may choose in the future, to combine their Direct Component funds with their Spill Impact Component allocation to streamline priorities or to increase funding for certain key projects. Others are using a more collective approach, reaching out to the incorporated Cities and other stakeholders to identify projects to be funded by their Direct Component funds. In addition, some counties have collaborated with the Florida Department of Environmental Protection (FDEP), Florida water management districts (WMDs), and/or National Estuary Programs (NEPs) to be included in Florida's funding request under the Council Selected Component funding stream.

In addition to the RESTORE Act, natural resource damages were recovered under the Oil Pollution Act of 1990 through its established Natural Resource Damage Assessment (NRDA) process. Furthermore, a portion of the criminal penalties recovered from BP and Transocean as a result of the Deepwater Horizon oil spill by the federal government were deposited into the Gulf Environmental Benefit Fund (GEBF), which is managed by the National Fish and Wildlife Foundation. The goals and objectives for the use of each of the DWH funding sources are similar, and there is a great deal of synergy and opportunity to leverage funds between the RESTORE Act, NRDA, and GEBF funding streams. A synopsis of each of the DWH funding sources is detailed below.

RESTORE ACT COUNCIL-SELECTED RESTORATION COMPONENT	
Money Available to Florida	There is no specific allocation for Florida; however, the entire component is funded with $1.6 billion to be competitively awarded by the Council. The Initial Funded Priority List, published in 2015, awarded $22,607,406 in state- and federal-sponsored planning and/or implementation projects in the state of Florida. The Council listed an additional $10,212,175 in state- and federal -sponsored projects for the state of Florida for future consideration.
Managing Agency	The RESTORE Council administers the Council-Selected Restoration Component. The 11-member RESTORE Council is made up of the governors of each affected state, or their respective designees, and the secretaries of the U.S. Department of Agriculture, U.S. Department of the Army, U.S. Environmental Protection Agency U.S. Department of Commerce, Department of Homeland Security, and the Department of the Interior, and the Administrator of the U.S. Environmental Protection Agency, or their respective designees.
Leverageable Projects	Successful proposals will be activities that align with the Council Goals and Objectives listed in the Comprehensive Plan. The goals are: Restore and Conserve Habitat; Restore Water Quality and Quantity; Replenish and Protect Living Coastal and Marine Resources; Enhance Community Resilience; and Restore and Revitalize the Gulf Economy.
Geographic Limitations	Projects are limited to the Gulf Coast Region as defined in the RESTORE Act.
Funding Cycle	There is no deadline for project submissions for the next funding cycle. The RESTORE Council anticipates a development process of approximately three years between funding cycles. Council anticipates approving their next Funded Priorities List in 2020.
Process to Link to SEP	FDEP and Florida Fish and Wildlife Conservation Commission (FWC) receive projects through the DWH project portal on FDEP's website. Florida, as a RESTORE Council member, is eligible to submit projects for consideration to the RESTORE Council. Projects selected by the RESTORE Council will be submitted to the Council for inclusion in will be included in future iterations of the Funded Priorities List and Comprehensive Plan.

NATURAL RESOURCE DAMAGE ASSESSMENT	
Money Available to Florida	Total restoration funding allocated is $8.1 billion, plus $700 million for unknown conditions and adaptive management. Restoration funds are divided among Trustee Implementation Groups (TIGs) for defined restoration areas, three of which could potentially be leveraged with Florida's Spill Impact Component projects: Region-wide ($350 million), Open Ocean ($1.24 billion), and Florida ($680 million). The Florida-specific TIG has authorized approximately $144 million thus far on restoration activities. The Florida TIG is the focus of this leveraging analysis.
Managing Agency	The Florida TIG has six member agencies: FDEP, FWC, National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Agriculture, U.S. Environmental Protection Agency, and U.S. Department of the Interior. The Florida TIG develops, selects, and implements restoration projects on a consensus basis to accomplish the priorities of the Programmatic Damage Assessment and Restoration Plan (PDARP).
Leverageable Projects	In November 2016 the Florida TIG solicited proposals for projects addressing the following categories: Habitat Restoration on Federally Managed Lands; Nutrient Reduction; Water Quality; and Provide and Enhance Recreational Opportunities.
Geographic Limitations	Projects are limited to the Gulf Coast region. Early restoration was focused in the Panhandle; future restoration efforts may be statewide. Exact geographic limitations have not been defined. Projects for the Habitat Restoration on Federally Managed Lands type will seek to address habitat injuries at Gulf Islands National Seashore and St. Vincent National Wildlife Refuge.
Funding Cycle	There is no deadline for submissions. Projects submitted before December 5, 2016, were considered in the development of Florida's initial restoration plan, which is anticipated to cover the first 2 to 3 years of settlement funding. Projects submitted after this deadline will be considered for future restoration plans.
Process to Link to SEP	For Florida's NRDA process, FDEP and FWC receive projects through the DWH project portal on FDEP's website. Selected projects that align with the PDARP are then reviewed by Florida's TIG. Once approved by consensus at the TIG level, projects are included in project-specific restoration plans.

GULF ENVIRONMENTAL BENEFIT FUND	
Money Available to Florida	Of the $2.554 billion allocated to GEBF, $356 million is allocated for projects in Florida. As of FY17, approximately $244 million is still available for restoration activities in Florida.
Managing Agency	The NFWF manages the GEBF. The criminal plea agreements require the NFWF to consult with the appropriate state and federal resource managers; for Florida these include FDEP, FWC, FWS and NOAA. FWC and FDEP manage the project submission portal for Florida's GEBF funds and are the main partners in identifying priority restoration and conservation projects and evaluating and selecting proposals.
Leverageable Projects	GEBF will fund projects specific to restoring or rehabilitating natural resources that suffered injuries resulting from the DWH oil spill. Florida projects should address high-priority restoration and conservation needs. NFWF has outlined the following three funding priorities to delineate what restoration goals are emphasized for GEBF projects in Florida:
Geographic Limitations	"(1) Restore and maintain the ecological functions of landscape-scale coastal habitats and ensure their viability and resilience against existing and future threats; (2) Restore and maintain the ecological integrity of priority coastal bays and estuaries; and (3) Replenish and protect living resources, including oysters, red snapper, and other reef fish; Gulf Coast bird populations; sea turtles; and marine mammals."
Funding Cycle	The GEBF Restoration Strategy will concentrate projects in the Panhandle and Big Bend regions of Florida, stretching from Escambia county to Levy county. The rest of Florida's peninsular counties and offshore projects are restricted to migratory living resources.
Process to Link to SEP	There is no deadline for submissions. Project proposals for each funding cycles are expected to be reviewed in the spring of each funding year.
	Projects are first submitted through the project portal, common to NRDA, RESTORE Pot 2, and GEBF, on FDEP's website. They are then screened by FWC and FDEP. Projects are considered for inclusion in Florida's GEBF Restoration Strategy, which will be a planning tool for the remaining GEBF investments in Florida, to be finalized in 2018. Selected project proposals are recommended to NFWF, who will then award grants to successful proposals.

It should be noted that each of these three funding sources have different legal bases, administrative processes, and funding cycles, making it infeasible to determine set amounts of leveraged funds for each project at the time of SEP approval.

MATCHMAKING SEP PROJECTS WITH LEVERAGED FUNDING SOURCES

As part of the SEP development process, the SEP consultant conducted an in-depth inventory, evaluation and assessment of more than 175 funding sources to maximize the potential funding available to the member counties of the Gulf Consortium. Summaries of these other grant sources were compiled into a standalone document entitled *Potential Leveraged Funding Sources for State Expenditure Plan Projects*. In addition, the other grant sources inventory was provided to the Consortium and member counties as a searchable electronic database that uses keywords to match projects to potential leveraged funding source. Each of these grant programs have unique eligibility, application, and reporting requirements, as well as different funding cycles, that must be considered when applied as leveraging toward Spill Impact Component funds.

The section of the budget table titled "Potential Leveraged Funding Sources" lists additional competitive funding sources that could increase the overall scope, extent, magnitude, and positive impacts of the particular project or program. These are funding sources that have been identified as potential matching funds as they are consistent with the objectives of the particular RESTORE Act eligible activities and are applicable to the projects. These potential funding opportunities will have to be separately applied for through either a competitive grant process, a cooperative agreement, a direct allocation, or some other funding mechanism.

LEVERAGED FUNDING COMMITMENTS

In the process of developing the Florida SEP, the SEP consultant met with key representatives from the FDEP, FWC and applicable Florida WMDs. During these meetings, the SEP consultant presented and discussed the projects proposed by the 23 member counties for inclusion in the SEP. These representatives indicated that there was a great deal of synergy and leveraging potential between SEP projects and project priorities identified through the NRDA and GEBF planning processes, and that the total value of the SEP could be significantly increased. However, they also indicated that it was not possible to formally commit to specific leveraged funding amounts for specific projects until such funding sources were secured through their respective administrative processes. Therefore, the timing of matching SEP projects to specific leveraged funding sources cannot be predicted at this time, and this process will need to evolve over the implementation period.

It is anticipated that leveraging will be applied at the project grant level during SEP implementation. The Consortium, as the entity responsible for the implementation of the Florida SEP, will coordinate with and assist the individual counties in the preparation of project grants. Although it is anticipated that individual member counties may independently seek leveraged funding, a coordinated and centralized approach to leveraging could play a critical role in both filling project budget gaps, and in cost-effectively phasing projects over the payout period. This is an important consideration given the wide range of project readiness across the proposed suite of SEP projects, necessitating flexibility in project implementation to accommodate potential scope and budget changes, or the reprioritization of entire county project lists. Given the duration of the 15-year payout period, and the associated uncertainties, it is likely that the Consortium will need to amend the Florida SEP several times. Maintaining a coordinated approach to leveraging will ensure that the maximum value of the SEP is attained over the payout period.

The Consortium will continue to communicate and collaborate with the FDEP, FWC, the WMDs, and other applicable agencies to analyze the timing of funding cycles and the implementation schedule of SEP projects to optimize these synergies. In addition, the Consortium will seek to partner with other state agencies where collaborative opportunities make sense. These include the Florida Department of Transportation, the Florida Department of Economic Opportunity, and Triumph Gulf Coast, Inc., especially with regard to economic development and infrastructure projects. In addition, Consortium will seek to coordinate with relevant non-governmental organizations such as The Nature Conservancy and the Trust for Public Lands. These NGOs in particular could assist in the land acquisition components of SEP projects prior to Spill Impact Component funds being available to secure priority parcels before they are lost to other buyers.

COMMITTED COUNTY FUNDING

Although this State Expenditure Plan is concerned with Florida's Spill Impact Component allocation, many of the Consortium member counties are committing portions of their Direct Component funding, as well as other grants and county funding, to cover the costs of their proposed projects and programs. Funding proposed by the Consortium member counties for their SEP projects and programs can best be characterized as "committed" funding. By inclusion in the Florida SEP, each Consortium member county is pledging their commitment to dedicate the necessary resources to undertake their respective projects and programs. Accordingly, the term "committed" means that there is a reasonable likelihood that funding sources indicated in the project and program budget information will be available if and when it is needed.

It should also be noted that many of the projects and programs proposed in the Florida SEP have significant budget shortfalls for which additional funding will be needed for full implementation. In most cases, leveraged funding has been targeted to fill budget gaps. Spill Impact Component funds can be used as matching funds for other federal

and state grant programs, with some exceptions, but the Council can only issue a grant to the Consortium where sufficient documentation of other secured funding sources and amounts needed to implement a project is provided as part of grant application. Therefore, many member counties will be seeking leveraged funding concurrent with the project grant applications process. For those projects and programs for which significant budget shortfalls cannot be closed through leveraging, implementation will need to be appropriately scaled down to match the available funding level. An example of a "scalable" project/program would be a septic to sewer conversion where the total linear feet of new sewer line, and the number of septic tanks taken off line, would be scaled appropriately to the available funding. If greater leveraged funding becomes available later, then the extent of the project could be scaled up accordingly.