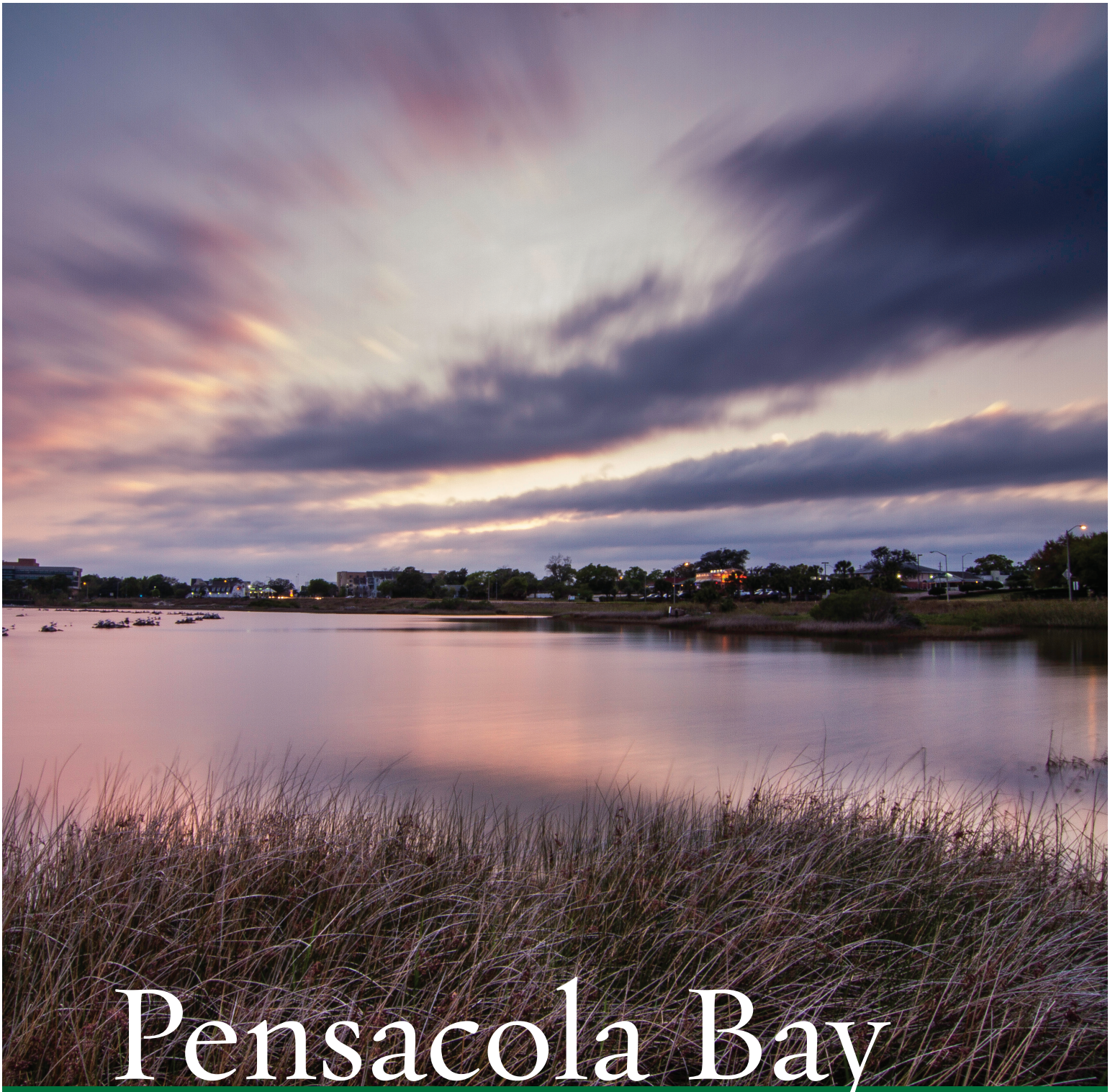

Pensacola Bay

Community-Based Watershed Plan

The Nature Conservancy in Florida

December 2014

The Nature Conservancy
Protecting nature. Preserving life.™

The Nature Conservancy would like to thank all of the stakeholders from local, state and federal governments, non-governmental organizations, community groups, businesses, and citizens who devoted their time, resources and support for this watershed planning process. Your desire and commitment to come together in the spirit of building a watershed community that will achieve more together than individually has created a solid foundation and legacy of collaboration and conservation for the Gulf. In particular, we would like to recognize the National Resource Conservation Service for their support in creating the GIS-based project maps and the leadership demonstrated by the counties in the Panhandle and Springs Coast regions to invest in a process that reaches across political and organizational boundaries and focuses on improving and protecting the watersheds today and for future generations.

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Executive Summary

The Deepwater Horizon Oil Spill has focused attention on opportunities to restore and enhance Gulf Coast ecosystems and communities. In Florida, funding opportunities associated with civil and criminal settlements of the Deepwater Horizon Spill provide an opportunity to address direct damage from the spill as well as long-standing water quality, habitat and coastal resilience restoration needs. A healthy environment is the foundation of healthy economies and communities. The Nature Conservancy (TNC) believes that identifying restoration needs and projects by watershed in collaboration with diverse community stakeholders is essential for achieving comprehensive and long-term success for Gulf Restoration.

In 2013 TNC initiated a facilitated community-based watershed planning process along Florida's Gulf Coast for the following six watersheds: Perdido Bay, Pensacola Bay, Choctawhatchee Bay, St Andrew and St Joe Bays, Apalachicola to St. Marks, and the Springs Coast. The Perdido, Pensacola and Choctawhatchee Bay watersheds also involved Alabama stakeholders. Similar planning efforts in the remaining Florida gulf coast areas have been led by other partners.

The community-based watershed planning provides a process for making thoughtful science-based decisions that help to both to assess already proposed projects and identify new projects that help solve recognized and documented problems in the watershed. Such a process involves understanding the priority issues facing each watershed (threats), the root causes creating each issue, and the major actions needed to address the root causes (solutions). Specifically, the process was designed to:

- **Develop watershed-based plans that identify the most pressing environmental issues affecting each watershed and solutions that address the issues, regardless of political jurisdiction and funding source.** Ideally, the plans will be 'living' documents used by all stakeholders to identify priority projects for funding that specifically address solutions to the identified issues and their root causes, documenting results to measure success, and updated as needed to help inform future activities needed to address watershed issues. The project list is designed to provide maximum flexibility for grouping projects to meet specific funding opportunity requirements and can be used to pursue project funding for RESTORE and non-RESTORE related funding programs (e.g., grants, Public Private Partnerships, etc.). The current project list is not comprehensive and further stakeholder input is needed to identify solutions necessary to resolve the watershed issues.

- **Create long term partnerships among stakeholders in each watershed and across the regions to maximize effectiveness of project implementation and funding efforts.** The stakeholders in each of the six watershed regions have voiced their desire to continue the coordination and outreach among diverse partners that this watershed planning process has supported and enhanced.
- **Provide a screening tool to evaluate the project priorities of these watershed plans for potential RESTORE funding by the communities, Florida Department of Environmental Protection (FDEP), Florida Fish and Wildlife Conservation Commission (FWC), National Fish and Wildlife Foundation (NFWF) and the Gulf Coast Restoration Council.** The project list can be used to pursue project funding for RESTORE and non-RESTORE related grants programs by clearly documenting the need for the projects in the context of how they will address solutions to critical watershed issues.

This first edition of the Pensacola Bay community-based watershed plan documents the results of the watershed planning process to date - the priority issues, root causes, major actions and initial set of priority projects - identified by the Pensacola Bay watershed stakeholders. The next steps are to identify additional projects to fill in gaps identified during the September 10, 2014 watershed meeting, refine the project maps as needed to more clearly define geographic extent of the projects (polygons rather than points), develop a science based selection process that prioritizes the projects proposed through this watershed process, and create a stakeholder organizational structure that will serve to continue the watershed planning and implementation work.

Introduction

As a result of the Deepwater Horizon oil spill, potentially billions of dollars will be coming to Gulf of Mexico communities for environmental and economic restoration. These funds will be coming through various pathways – Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast Act (RESTORE), National Fish and Wildlife Foundation's (NFWF) Gulf Environmental Benefit Fund (GEBF), and the Natural Resource Damage Assessment (NRDA). Each of these pathways has its own particular process, goals and objectives. A brief overview of each is provided in Appendix A-Deepwater Horizon Related Funding Opportunities.

In 2013 Florida opened an online portal to receive project suggestions based on their stated priorities and, to date, has received over 1,200 suggested projects totaling over $16 billion worth of work. As this was occurring, TNC and partners recognized the need for a thoughtful and strategic decision-making process to help assess existing and future projects in the context of addressing issues that are negatively impacting the environmental integrity of the landscape. In southwest Florida this context is being provided by the three National Estuary Programs (NEPs) in that area. In the Big Bend area, the process is being led by the Suwanee River Water Management District and partners. In the Panhandle and Springs Coast, this context is being provided by the Community Based Watershed Planning process facilitated by TNC. The process involves understanding the priority issues facing each watershed, the root causes creating each issue, and the major actions needed to address the root causes (solutions).

One of the core principles in the watershed planning process is that, although the Deepwater Horizon related funding was the spark for community discussions and information sharing, the priorities and projects identified through the process can be funded by non-Deepwater Horizon related sources as well. In addition, there is a need for integration and coordination between projects and funding sources to maximize the effectiveness and results of Gulf investments. This is recognized during public meetings at every level of government regarding the implementation of RESTORE and the other Gulf related funding opportunities. By harnessing all applicable funding sources and applying them to the most appropriate project, each community will maximize the number of projects that can be completed and, therefore, make the most progress in improving and protecting the long-term health of their watershed.

The community-based watershed process has been designed and adapted to facilitate communication among the diverse stakeholders. The process identifies a priority suite of projects necessary to improve and maintain the health of Gulf watersheds and matches priority projects with the most appropriate funding source(s). In addition to the Deepwater Horizon related

funding sources detailed in Appendix A, there are numerous other funding opportunities that could and should be leveraged as the Gulf of Mexico watersheds are restored that include, but are not limited to:

- Federal/State Grants – stormwater projects, habitat creation and restoration, land acquisition, etc.
- Public Private Partnerships (P3) – public infrastructure projects that include cost recovery mechanisms (e.g., sewer projects)
- Wetland mitigation opportunities
- Private foundations and contributors

The Pensacola Bay Community Based Watershed Plan documents the planning process, the initial set of priority projects, and next steps for the Pensacola Bay Watershed.

Planning Process

The Nature Conservancy organized and facilitated "watershed discussions" for the Pensacola Bay watershed with a variety of diverse community stakeholders that included federal, state and local governments, Non-Governmental Organizations (NGOs) and interested businesses, community groups and citizens. Several meetings were held during the development of this plan and the meeting dates and participants can be found in Appendix B–Stakeholder Participants.

The motivation for the community watershed planning is to help ensure a healthy and protected natural environment that supports a vibrant economy and community. The key objectives of this process are to:

- **Develop watershed-based plans that identify the most pressing environmental issues affecting each watershed and solutions that address the issues, regardless of political jurisdiction and funding source.** Ideally, the plans will be 'living' documents used by all stakeholders to identify priority projects for funding that specifically address solutions to the identified issues and their root causes, documenting results to measure success, and updated as needed to help inform future activities needed to address watershed issues. The project list is designed to provide maximum flexibility for grouping projects to meet specific funding opportunity requirements and can be used to pursue project funding for RESTORE and non-RESTORE related funding programs (e.g., grants, Public Private Partnerships, etc.). The current project list is not comprehensive and further stakeholder input is needed to identify solutions necessary to resolve the watershed issues.

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The Pensacola Bay Community Based Watershed Plan was developed using the following process. The process is ongoing and future steps are detailed in the Recommended Next Steps section. This process was not meant to duplicate the state's process for soliciting project ideas via their online portal. Rather it is specifically tailored to address the needs of the watershed as identified by the stakeholders during the community meetings facilitated by TNC.

- Convene key stakeholders and determine the boundary of the watershed for the purposes of this planning effort. The boundary identified by the stakeholders for the Pensacola Bay is similar to the boundary identified in the Northwest Florida Water Management District's Surface Water Improvement and Management (SWIM) Plan for Pensacola Bay. Matching the boundary to the SWIM Plan boundary may be addressed as the watershed process continues. This watershed extends into the State of Alabama and stakeholders from Alabama were invited to participate in the planning process. We recognize that representation from Alabama needs to be expanded.
- Discuss stakeholders' vision for the watershed
- Identify the priority issues that must be addressed, the root causes of the priority issues, and the major actions necessary to implement solutions for the root causes
- Develop a suite of priority projects that will help resolve identified issues and root causes. TNC developed an online form to solicit projects from stakeholders. Stakeholders were also asked to identify performance metrics that can be applied to monitor and track success of the project, once implemented, as well as changes in the overall health of the watershed (e.g., improved water quality, increase in seagrass habitat, etc.).

- Identify remaining needs and new projects to address gaps that are not addressed by the current proposed projects.
- Integrate results of the plans into the stakeholder's processes implemented by their respective affiliations, i.e., RESTORE processes, County comprehensive plan implementation, NGO restoration plans.

Meetings for the Pensacola Bay watershed began in March 2013 and continued through September 2014. After each meeting, meeting notes were distributed to all participating stakeholders (Appendix C–Stakeholder Meetings Notes). The notes and comments received were used to develop this draft plan. This plan represents the first edition of the Pensacola Bay Community-based Watershed Plan. The plan will be updated as future meetings are conducted and to recognize progress on implementation of solutions.

1) Identifying Priority Issues, Root Causes, and Major Actions:

The first step in the watershed planning process was to hear stakeholder perspectives on what they envisioned for their watershed's future. To do so, the following question was e-mailed to stakeholders prior to the first meeting held for the Pensacola Bay watershed. It was also provided on slips of paper to be filled out during the meeting:

In a sentence, of just a word or few, what is your Vision for the Pensacola Bay Watershed's future (land>river> estuary>Gulf)? What do you hope it looks like in 10, 20, or 50 years and beyond?

During the meeting held on August 7, 2013, TNC facilitated a short brainstorming session as an introduction for everyone to hear and understand each other's thoughts and viewpoints on their vision for the Pensacola Bay watershed. A vision statement was not developed; this can be done at a later date as part of creating a long term organizational structure to manage the implementation of this plan.

The following are the unedited comments that were presented on paper and during the brainstorming and have been grouped by common themes:

- Healthy habitats and resources
  - Healthy environment for people and species long-term and sustainable
  - Restoring grass beds
  - Sustainable/Appropriate habitat types (abiotic/biotic processes)
  - Oyster bed restoration

- Restoring productivity
- Healthy forests/urban forest
- Resilient ecosystems
- Habitat conservation for rare or endangered species
- Restoration to "pre-development" environmental conditions
- Reduce hard armoring
- Ensure access to public lands and waterways
- Planning accounts for effects/impacts from Sea Level Rise
- Large areas of parks and open space
- Environment friendly development standards
- Holistic approach
- Follow through with initial vision/planning
- Sustainable agriculture

o Clean Water
  - System wide approach to long-term monitoring and water quality
  - Reduce turbidity
  - Reduce excess nutrients
  - Clear Water
  - Safe swimming
  - Safe seafood
  - Addressing issues associated with unpaved roads
  - Sustained high quality drinking water

o Educated and active community
  - Active ecosystem management group
  - Worldwide recognition for eco-tourism

- Enhanced planning process to manage development and uses
- Public education and outreach

As projects are identified, prioritized and implemented it will be important to keep in mind those ideas generated through the Vision agenda item that address process.

- Availability of validated predictive models
- Acknowledge partners across jurisdictional boundaries
- Develop meaningful, sustainable projects
- Public buy-in into regional approach
- Establish and track costs of restoration
- Sustainable funding source/Post Restore sustainable funding source
- Need political will and support

The next step was to start identifying the Priority Issues, Root Causes, Major Actions facing the Pensacola Bay Watershed. Appendix D–Watershed Overview and General Issues contains a general description of the Pensacola Bay Watershed, a map of the watershed, and the high level issues it faces.

The following are the terms and definitions used for the watershed planning process:

- Priority Issues – main themes of problems that were universal across the watersheds and need to be addressed
- Root Cause – source(s) of the priority issues
- Major Action – essential activity(ies) that needs to be accomplished to address the root causes of the priority issues.

During this portion of the process there was much discussion and numerous issues, root causes and major actions were identified. For purposes of facilitating the discussion, it was explicitly recognized that there is considerable overlap and inter-relationships between issues, root causes and major actions. As such, there is no one correct way to categorize them and the groupings that were made were done in order to present the information in a logical fashion. The following list is the high level groupings for the Priority Issues and Major Actions. For a complete listing of these, and their relationships with the Root Causes, please see Appendix E–Stakeholder Identified Priority Issues, Root Causes, Major Actions and Project Types.

The Priority Issues, each having one or more root cause, are:

- Water Quality
- Natural Resource Protection and Management
- Education and Outreach
- Coastal Community Resilience

The Major Actions identified by the watershed stakeholders are:

- Protect, restore, create and/or manage natural habitat and resources and increase buffer areas
- Increase cooperation and coordination for management, monitoring, funding, implementation, outreach, enforcement
- Reduce impacts to groundwater and ensure adequate fresh water availability
- Reduce and treat stormwater
- Reduce nutrient loading
- Reduce sedimentation
- Increase economic diversification

2) Project Identification and Performance Measurement

The next step in the process was to begin to identify the priority projects that would initiate the implementation of major actions needed to address the identified root causes and priority issues. The process of identifying priority projects involves understanding and documenting how a project relates to identified root causes and priority issues. To aid in the prioritization of projects, each proposed project should include specific performance metrics that identify the expected results and quantify, if feasible, how those results relate to and address a root cause(s) and priority issue(s) identified in the watershed. Documented results will help inform future decision making and prioritization activities by tracking actual versus predicted results. These results will help inform communities and decision makers in the selection of future projects that show the most promise for return on investment based on desired outcomes.

Both short and long-term metrics must be identified to effectively monitor and evaluate the impact from implemented projects on the critical watershed issues they were designed to address. Short-term metrics focus on monitoring the success and effectiveness of the individual project efforts at addressing root causes (e.g., for a sediment stabilization project, what percent of the project area was successfully stabilized). Long-term metrics will focus on the impact of those

projects on the priority watershed issues (e.g., return of stream channels, increase in water clarity/quality, increase in seagrass coverage, improved fish landings, etc.) It should be noted that direct correlations between specific projects and improvement in a priority issue or issues may sometimes not be possible, particularly when several projects need to be implemented to adequately address a priority issue. However, these longer-term measures are important since they track the ultimate results the community and funders are seeking to achieve. Including effective metrics will also facilitate adaptive management as the predicted versus actual results can be evaluated to ensure implemented projects are achieving expected outcomes.

In order to be methodical and ensure that the highest priority projects were submitted, the following process was used:

- In advance of the watershed meeting, stakeholders were asked to submit their top three priority projects using an online form developed by TNC specifically for this watershed planning process.
  - Each project submission included fields which tied the project to identified root causes and major actions, and
  - Each project submitter was asked to include specific performance measures that could be used to evaluate the success of the project itself as well as success of the project on addressing a root cause(s) and priority issue(s).
- Jean-Paul Calixte with the Natural Resources Conservation Service partnered with TNC to develop a GIS-based map showing a point location of each project (Figure 1). The project locations were identified using latitude and longitude coordinates provided by the stakeholder proposing a project. It is important to note that many projects are not adequately represented by a single point since they span larger geographic areas and, in some cases, multiple projects within a proposed project. Future work on the watershed planning should strive to create accurate boundaries of each project represented by polygons on the map. The map was distributed to all stakeholders prior to the September 10, 2014 joint meeting of the Perdido Bay and Pensacola Bay stakeholders.
- At the watershed meeting, attendees broke out into groups to review the maps and spreadsheet of the proposed projects, to identify geographic and project type gaps, and to reconcile any questions on project locations. The attendees reconvened into one group and reported on their break out group findings regarding project gaps and next steps (Appendix C–Meeting Notes dated Sept. 10, 2014).

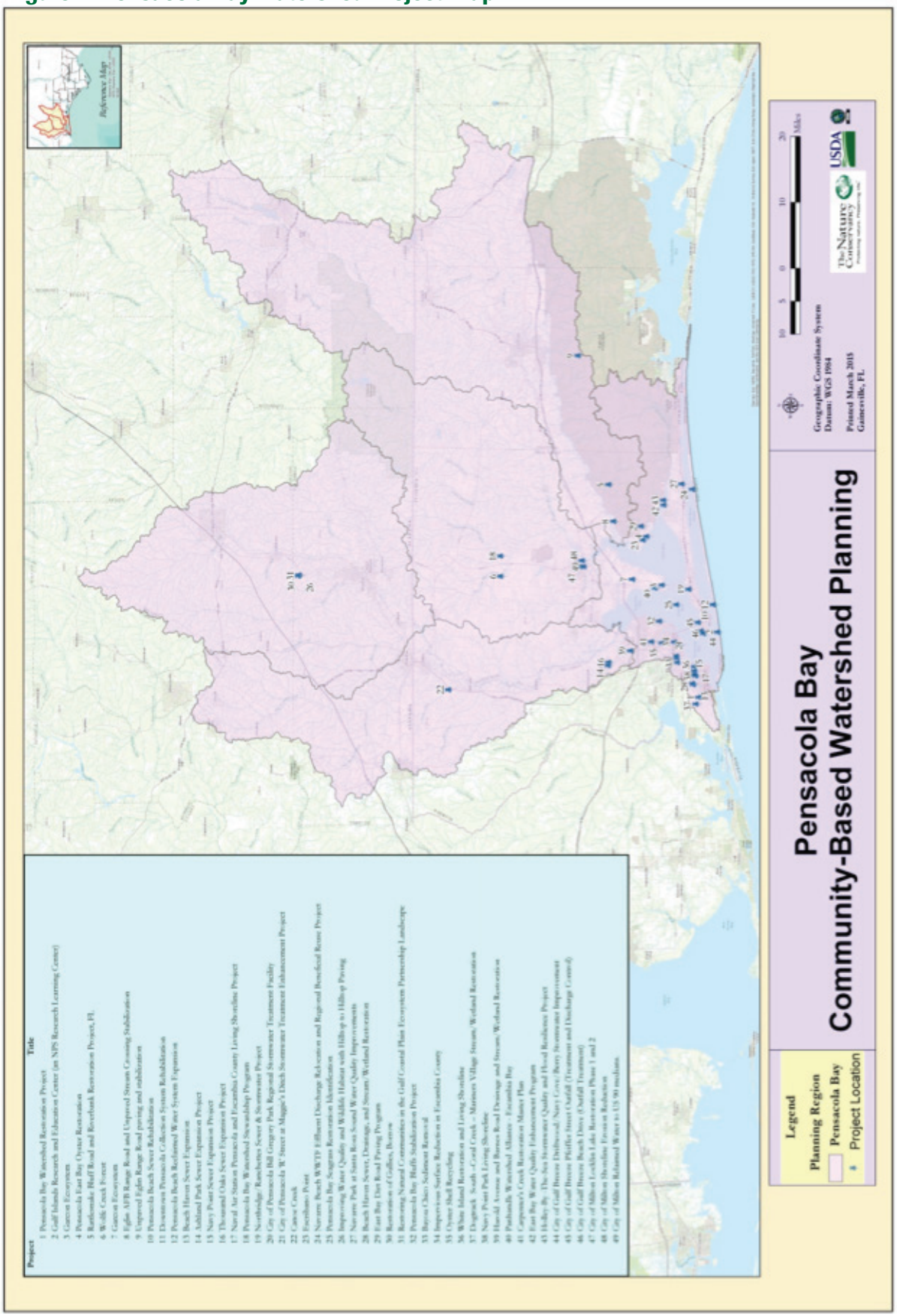
Forty-three projects totaling 159 different actions were submitted during the first round of project nominations (Appendix F–Project Table). Projects ranged from single focus projects such as stabilizing dirt roads, to multiple projects designed to restore a sub-basin within the watershed. The following is a breakdown of suggested projects by major action:

- Protect, restore, create and/or manage natural habitat and resources and increase buffer areas – 55
- Increase cooperation and coordination for management, monitoring, funding, implementation, outreach, enforcement – 4
- Reduce impacts to groundwater and ensure adequate fresh water availability
- Reduce and treat stormwater – 68
- Reduce nutrient loading – 24
- Reduce sedimentation – 8

Note that the above grouping is by Major Action, but numerous proposed projects would have positive impact on more than one Major Action.

One of the key principles behind the watershed planning effort is to develop the suite of projects necessary to improve the health of the watershed and protect it for future generations, regardless of potential funding sources. Once a comprehensive set of projects has been identified for each watershed, the projects can then be grouped, separated, and/or phased as necessary to apply for relevant funding sources. Potential funding sources include RESTORE, NFWF's Gulf Environmental Benefit Fund and other NFWF grants, federal and state grants (e.g., EPA 319, FEMA, NRCS, Florida Wildlife Legacy Initiative, and others). The project list will be refined as additional watershed meetings are held.

Figure 1. Pensacola Bay Watershed Project Map



Current Status and Recommended Next Steps

As discussed above, the stakeholders have identified the priority issues facing the watershed, their understanding of the root causes creating those issues, major actions needed to address the root causes, and have begun to identify the projects necessary to implement the major actions. In addition, TNC has been working with the stakeholders in the Perdido and Pensacola Bay watersheds to pilot the Resource Investment Optimization System (RIOS) to evaluate the model's usefulness to helping with the identification and priority setting for watershed projects. The RIOS model is being used to conduct spatial analysis to provide a science-based framework for spatially identifying what types of projects are best positioned to address multiple activities to help solve the issues of concern in the Pensacola Bay and Pensacola Bay watersheds. RIOS, designed to support this type of stakeholder process, provides a planning tool to prioritize watershed and coastal projects by identifying where land protection, restoration, or improved management activities are likely to yield the greatest benefits for people and nature. RIOS is a free and open source software tool managed by the Natural Capital Project (NatCap), and co-developed by NatCap, TNC, World Wildlife Fund and the University of Minnesota. RIOS will help answer two core questions:

1. What set of investments (which activities, and where) will give the greatest returns towards multiple objectives?

2. How much improvement in objectives can we expect from making the set of investments identified through a scientific analysis?

Applying RIOS to the Perdido and Pensacola Bay watersheds as a pilot project will provide a demonstration for how the RIOS planning tool might support a stakeholder process for developing watershed plans in other Gulf coast counties and watershed groups across Florida and beyond to help inform priorities related to future RESTORE funds, NFWF funds, or other opportunities. These pilot projects will also test and refine the new RIOS coastal module to support integrated watershed and coastal planning processes for multiple benefits.

1) TNC Recommendations

In order to complete the planning process TNC recommends the following actions:

- Northwest Florida Water Management District updates the Pensacola Bay SWIM plan (1997) to ensure all priority issues are identified and addressed. This action is dependent on funding received to update the SWIM plans. If updates are not funded then this watershed planning process will continue to use the existing SWIM plan until such time that updates are conducted.
- In addition, a focus was placed on identifying 'priority action areas' ("hot spots") that, if prioritized and restored, would make the most difference in restoring the watershed.
- Complete the identification of priority projects by conducting a technical review of the current list of watershed projects and a "gaps" analysis to determine where and what type of projects are still needed to address the issues and root causes of each watershed.
- Develop a science-based project prioritization process that uses the best available science to help make decisions on those projects that best address the issues.
- Create a long-term organizational structure (i.e., estuary program) in each watershed to continue the watershed planning effort.
- Pursue funding for the projects by matching each project and/or group of projects to potential funding sources (e.g., RESTORE, federal/state grants, public private partnerships, etc.).

2) The Path Forward

The following two proposals were submitted in November, 2014 in response to the initial round of RESTORE Council-Selected Restoration Component (Bucket 2) funding. If funded, these projects will significantly advance the watershed planning effort.

1. *Florida's Northwest Florida Estuaries and Watersheds* – This project will advance the watershed planning process by continuing the stakeholder outreach, updating the Pensacola and other Panhandle SWIM Plans, funding the design and permitting of priority project(s) in each estuary, implementation of priority project(s), and monitoring project success.
2. *EPA's Gulf of Mexico Estuary Program* – This project will provide funding to create Estuary Programs for up to 12 estuaries in the Gulf of Mexico. All five Florida Panhandle watersheds (Perdido, Pensacola, Choctawhatchee, St Andrew/St Joe and Apalachicola to St Marks) are included in the proposal. This proposal would satisfy the last objectives of the watershed planning process stated above by creating the long term partnerships in each watershed via the creation of Estuary Programs.

Together, these proposals would create and support an effective, and much requested and needed, science and community-based process for long term restoration and management of the Gulf's remarkable natural resources and coastal communities. In addition to supporting the selection and implementation of these two proposals by the Gulf Coast Ecosystem Restoration Council, TNC will be conducting the following to continue the intent of the watershed planning process:

- Supporting the integration and coordination of the planning processes being conducted by FWC for the NFWF Plan, the Gulf Consortium for the State Expenditure Plan and the 23 coastal counties developing their Multi-Year Implementation Plans.
- Support the creation and implementation of Estuary Programs in Florida's estuaries which will build on and complete the watershed planning process. This will include working with the EPA to convene a workshop to provide a forum for the local government leaders in the Panhandle and Big Bend regions to learn about EPA's proposal to create Estuary Programs in these regions (outlined above) and learn about the various organizational structures of existing NEPs and lessons learned.
- Finalize the results of the Resource Investment and Optimization System (RIOS) decision-support tool analyses for the Perdido and Pensacola Bays watersheds. The results of the analyses will help to further evaluate the relative benefits and costs of the projects identified in the watershed planning process. This tool might then be used to advance project identification and implementation decisions in the other watersheds and regions in the Gulf.

Appendix A

Deepwater Horizon Related Funding Opportunities

RESTORE Act (Clean Water Act Fines) Allowed Uses of Funding:

http://www.treasury.gov/services/restore-act/Documents/Final-Restore-Act.pdf

- Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.
- Mitigation of damage to fish, wildlife, and natural resources.
- Implementation of a federally approved marine, coastal, or comprehensive conservation management plan, including fisheries monitoring.
- Workforce development and job creation.
- Improvements to or on State parks located in coastal areas affected by the Deepwater Horizon oil spill.
- Infrastructure projects benefitting the economy or ecological resources, including port infrastructure.
- Coastal flood protection and related infrastructure.
- Planning assistance.
- Administrative costs of complying with the above

The RESTORE funds are divided into five components:

1. "Bucket 1" 35% of RESTORE funds divided equally among the five states. In Florida, these funds are allocated directly to, and will be spent by, the 23 Gulf of Mexico coastal counties.
2. "Bucket 2" 30% of RESTORE funds competitively awarded by the Gulf Coast Ecosystem Restoration Council for Gulf restoration projects. In Florida, the Governor decides which projects to nominate for consideration by the Restoration Council.
3. "Bucket 3" 30% of RESTORE funds allocated by formula to fund implementation of State Expenditure Plans (SEP). In Florida, the 23 Gulf Coastal Counties formed the Gulf Consortium to draft the SEP which the Governor reviews and submits to the Council for approval.
4. "Bucket 4" 2.5% NOAA Science Program (for Gulf of Mexico research and monitoring)
5. "Bucket 5" 2.5% State Centers of Excellence (for Gulf of Mexico research and monitoring)

NFWF GEBF (Criminal Penalties) Criteria:

http://www.nfwf.org/gulf/Pages/fundingpriorities.aspx#.U6GfxPldWt4 and http://www.nfwf.org/gulf/Pages/GEBF-Florida.aspx

- Restore and maintain the ecological functions of landscape-scale coastal habitats, including barrier islands, beaches and coastal marshes, and ensure their viability and resilience against existing and future threats
- Restore and maintain the ecological integrity of priority coastal bays and estuaries
- Replenish and protect living resources including oysters, red snapper and other reef fish, Gulf Coast bird populations, sea turtles and marine mammals
- Natural resource restoration efforts on marine and coastal environments that improve water quality and other critical habitat elements, strengthen management of important fish and wildlife populations, and enhance the resiliency of coastal resources and communities by implementing outcomes-based projects that maximize environmental benefits

Natural Resource Damage Assessment (Environmental and loss of use payment):

http://www.dep.state.fl.us/deepwaterhorizon/about_restoration.htm

- The Oil Pollution Act of 1990 (OPA) makes parties responsible for oil spills liable to the public and the environment. The environment and the public have a right to be made whole again following an injury to natural resources from an oil spill incident. Natural Resource Damage Assessment (NRDA) is a legal process to determine the type and amount of restoration needed to compensate the public for harm to natural resources and their human uses that occur as a result of an oil spill incident or a hazardous substance release. Natural resources include land, air, water, fish, wildlife, biota, groundwater and drinking water supplies. Natural resources also include habitats and individual biological resources such as species or communities.

State of Florida Priorities:

http://www.dep.state.fl.us/deepwaterhorizon/projects_restore_act.htm

The State of Florida and its 23 Gulf Coastal Counties have a great deal of decision-making power for a significant amount of RESTORE funds. In order to provide focus for project recommendations, Florida identified the following priorities for RESTORE Act-funded projects:

- Stormwater / Wastewater infrastructure projects
- Community resilience / Living shorelines
- Water quality projects including those which achieve water quality benefits provided by the preservation of buffer lands around military bases
- Implementation of agriculture best management practices, or
- Fish and wildlife habitat and management

Appendix B

Stakeholder Participants

Pensacola Bay Community-Based Watershed Meetings

Stakeholders who attended one or more of the following meetings
March 13, 2013, August 7, 2013, October 31, 2013, September 10, 2014
Note: Affiliations reflect those noted at the time of attendance and may have since changed

ORGANIZATION	NAME
Alabama Department of Environmental Management, Coastal Nonpoint Pollution Control Program	Randy C. Shaneyfelt
Alabama Rivers Alliance	Mitch Reid
Alabama State Lands Division-Chief Coastal Section	Phillip Hinesley
AMEC	Stephen Hanks
Aquatic Ecosystem Solutions	Carter Henne
Army Corps of Engineers	Clif Payne
Army Corps of Engineers, Mobile District, Regulatory Division, South Alabama Branch	James ″Eric″ Buckelew
Army Corps of Engineers, Mobile District, Regulatory Division, North Branch	Cindy House-Pearson
Atkins	Brad Rosenblatt
Atkins	Cheryl Cullison,
Atkins	Eric Schneider
Atkins & Santa Rosa County´s RESTORE Consultant	Jeff Helms
Audubon Chapter	James Brady
Avcon Inc. - Team administering Okaloosa County´s RESTORE projects/process	Lee Lewis
Bayou Chico Assn	Larry Hawks
Florida Clean Boating Partnership Clean Marina	John Naybor
Bream Fishermen Association	Scott Jackson
University of West Florida Watershed	Barbara Albrecht

Center for Environmental Diagnostics and Bioremediation, Research Associate	Jeff A. Eble, Ph.D.
Center of Independent Living	Gloria Horning
Citizen	Bill Young
Citizen	Donald Ray
City of Pensacola	Brad Hinote
City of Pensacola Public Works	L. Derrik Owens
CSA Ocean Sciences	Peggy Mathew
Dewberry	Mike Hanson
Earth Ethics Inc.	Mary Gutierrez
Ecology and Environment	Paul Johnson
Ecology and Environment	Woody Speed
Ecology and Environment, Inc.	Amy Mixon
Eglin Air Force Base/Leidos	Amanda Hansen
Eglin Air Force Base Public Works/Infrastructure	Ed O´Connell
Eglin Air Force Base/Leidos	Jeri Brecken
Eglin Air Force Base	John Oliveros
Eglin Air Force Base Natural Resources Wildlife Management	Rodney K Felix, Jr
Eglin Air Force Base Range and Aerospace Sustainment	Tom Heffernan
Eglin Air Force Base 9ETW	Tony Dzwkonski
Emerald Coast Surfrider	Michael Sturdevant
Emerald Coast Utilities Authority Utility Services & Planning	Tim Haag
Environmental Protection Agency	Jan Kurtz
Environmental Protection Agency Gulf Research Lab	Mike Lewis
Escambia County	Brent Wipf
Escambia County	Keith Wilkins
Escambia County	Michael Johnson
Escambia County	Robert Turpin
Escambia County Civil Engineering Dept.	Timothy Day
Escambia County Commission and Consortium Chair.	Grover Robinson
Escambia County Department of Health	Louvi Donado

Escambia County Engineering Dept	Chris Curb
Escambia County Engineering Dept	Kirk Kassebaum
Escambia County Extension	Carrie Stevenson
Escambia County Florida SeaGrant	Rick O'Connor
Escambia County Marine Resources	Shelly Marshall
Escambia County Natural Resources Conservation	Eddie Cooper
Escambia County NPDES Program	Dana Morton
Escambia County Public Works	Joy Jones
Escambia County Water Quality & Land Management Division	Chips Kirschenfeld
Escambia County Water Quality/Land Mgt., Community/ Environment	Molly Taylor
Florida Department of Environmental Protection Big Lagoon State Park	Anne Harvey
Florida Department of Environmental Protection Coastal and Aquatic Managed Areas	Becky Prado
Florida Department of Environmental Protection Coastal and Aquatic Managed Areas	Beth Fugate
Florida Department of Environmental Protection Coastal and Aquatic Managed Areas	Jessica L. Kanes
Florida Department of Environmental Protection NW District Clean Marinas	Jeanne Williams
Florida Department of Environmental Protection TMDL	Brad Hartshorn
Florida Department of Health	Robert Merritt
Florida Fish & Wildlife Conservation Commission	Andrew Lee
Florida Fish & Wildlife Conservation Commission	Maria Merrill
Florida Fish & Wildlife Conservation Commission Division of Habitat and Species Conservation	Kevin McDonald
Florida Fish & Wildlife Conservation Commission Division of Habitat and Species Conservation	Ted Hoehn
Florida Fish & Wildlife Conservation Commission Division of Habitat & Species Conservation	Barbara Shmelin Almario

Florida Fish & Wildlife Conservation Commission, Marine & Estuarine Subsection	Katie Konchar
Florida Forest Service	John Mathis
Gulf Coastal Plain Ecosystem Partnership	Vernon Compton
Gulf Island National Seashore	Dan Brown
Gulf Islands National Seashore	Cassity Bromley
Gulf Islands National Seashore	Jolene Williams
Keep Pensacola Beautiful	Jill Cleaver
National Energy USA & Santa Rosa County RESTORE Rep.	Dave Robau
National Oceanic and Atmospheric Administration	Heidi Stiller
National Oceanic and Atmospheric Administration	Laurie Rounds
National Wildlife Federation	Jessica Koelsch
Naval Air Station Pensacola	Mark Gibson
Naval Air Station Pensacola	Stephanie Oram
Navarre Beach Coalition	Laurie Gallup
Navarre Press	Romi White
Northwest Florida State College	Meredith Fingarson
Northwest Florida Water Management District	Blair Burleson
Northwest Florida Water Management District	Ken Friedman
Northwest Florida Water Management District	Linda Chaisson
Northwest Florida Water Management District	Linda Chaisson
Ocean Conservancy	Michelle Erenberg
OceanSpace	Jamie L. Serino
Office of Florida Representative Doug Broxson	Jennifer Reeves
Okaloosa County	Jim Trifilio
Okaloosa County Public Works	Scott Henson
Okaloosa ORAC	Steve Sippee
Okaloosa ORAC	Steve Sippee
PBA Beachkeepers, Pensacola Beach	Ryen Heffernan
Perdido Key Assn.	Bob Stender
POFO?	J.D. Brown

Real Estate Counselor, Inc.	Ted Brown
Santa Rosa County	Hunter Walker
Santa Rosa County	Roger Blaylock, PE
Santa Rosa County	Sheila Harris
Santa Rosa County	Stephen Furman, PE
Santa Rosa County & Marine Advisory Committee	Rick Harris
Santa Rosa County Commission & RESTORE Committee Rep.	Lane Lynchard
Santa Rosa County Public Works	Roger Blaylock
Santa Rosa County Sea Grant	Christine Verlinde
Santa Rosa Island Authority	Paolo Ghio
Sustainable Town Concepts/Escambia County RESTORE Committee	Christian Wagley
Taylor Engineering	Duncan Greer
Taylor Engineering	Matthew Trammell, P.E.
The Nature Conservancy	Josh Goldstein
The Nature Conservancy-FL	Anne Birch
The Nature Conservancy-FL	David Printiss
The Nature Conservancy-FL	Deborah Keller
The Nature Conservancy-AL	Judy Haner
The Nature Conservancy-FL	Kellyn Garrison
U.S. Geological Survey Florida Water Science Center	Eduardo Patino
U.S. Geological Survey Tallahassee Field Office	Ron Knapp
United Way of Santa Rosa	Kyle Holley
University of West Florida	Nicole Jetter
University of West Florida Center for Environmental Diagnostics and Bioremediation	Dr. Jane Caffrey
URS Corp.	John Wiley
US Fish and Wildlife Service	Debbie DeVore
US Fish and Wildlife Service	Melody Ray-Culp
USDA-Natural Resource Conservation Service	Jean-Paul Calixte
USDA-Natural Resource Conservation Service Escambia County	Josh McElhany

USDA-Natural Resource Conservation Service	Henry Burkwhat
USDA-Natural Resource Conservation Service	Jeff Norville
USDA-Natural Resource Conservation Service, Alabama West Team Office	Charlie Ramsey
West Florida Regional Planning Council	Terry Joseph
	Carole Tebay
	Cherre Huffman
	Mike Ranier

Appendix C

Stakeholder Meetings Notes

Joint Meeting of the Perdido and Pensacola Bays Community-Based Watersheds

September 10, 2014, 9:00-3:30 Central

Sanders Beach-Corinne Jones Community Center, 913 South I St, Pensacola, FL 32502

Hosted By Escambia County and Facilitated by The Nature Conservancy

AGENDA

Note times may be flexible to provide for more discussion, as needed.

Watershed Plan Objective: Create a unified holistic vision for the watersheds by collectively identifying and prioritizing a suite of projects and actions that solve the most pressing environmental issues affecting these watersheds and the Gulf, irrespective of the funding source or political jurisdiction.

Meeting Objective: Review projects needed to address watershed plan issues in the Perdido and Pensacola Bays watersheds

Time	Topic	Objectives
9:00-9:45 Anne Birch, TNC	o Welcome & Introductions	o Greetings and overview on meeting agenda and process to finalize plans.
9:45-10:15 Josh Goldstein, TNC	o Resource Investment Optimization System (RIOS)	o Overview of RIOS and objectives
10:15-11:45 Jean-Paul Calixte, NRCS & Anne Birch	o Review Responses to Priority Projects in Perdido Bay Watershed o PowerPoint and Map on wall o Discussion	o Potential gaps based on Root Causes o Opportunities for project consolidation.
11:45-12:30 Anne Birch	o Review Responses to Priority Projects in Pensacola Bay Watershed	o Review projects identified by all stakeholders who submitted pre-meeting information. o Discuss potential gaps based on Root Causes
12:30-1:15 LUNCH		
1:15-2:15	o Pensacola Bay Watershed Review (con't)	o Review projects identified by all stakeholders who submitted pre-meeting information. o Discuss potential gaps based on Root Causes
2:15-3:15 Anne Birch	o Projects Assessment and prioritization	o Metrics discussion o Prioritize top projects, time permitting.
3:15-3:30	o Moving Forward and Adjourn	o Review Next Steps in Watershed Planning

Joint Meeting of the Perdido and Pensacola Bays Community-Based Watersheds

September 10, 2014, 9:00-3:30 Central

Sanders Beach-Corinne Jones Community Center, 913 South I St, Pensacola, FL 32502

Hosted By Escambia County and Facilitated by The Nature Conservancy

MEETING NOTES

This was a combined meeting of the Perdido and Pensacola Bays watershed Community-Based Watershed planning process facilitated by The Nature Conservancy (TNC) and attended by 63 stakeholders. Thank you to the staff at the Community Center for their assistance with the meeting logistics. The meeting objective was to review the proposed projects stakeholders submitted to TNC's online form specifically for this phase of the watershed planning process (not RESTORE) and identify gaps in projects, look for opportunities for project consolidation, and discuss a project prioritization process. The proposed projects were to address the watershed's issues and root causes identified by the stakeholders during past meetings.

Anne Birch provided a PowerPoint that described the watershed planning process and status to date and reviewed the agenda for the meeting. Jean-Paul Calixte, Natural Resource Conservation Service, reviewed the maps he created showing the locations of the proposed projects submitted to TNC's online form specifically for the watershed planning process (not RESTORE). The attendees broke out into groups to review the maps and spreadsheet of the proposed projects to identify geographic and project type gaps and reconcile any questions on project locations. The attendees reconvened into one group and reported on their break out group findings. The following are notes from the break out groups and follow-up discussion with the full group. The meeting attendees are listed on the last page of these notes.

The following are the notes from the meeting's discussions.

Corrections/Edits:

- #'s 17, 27 & 29 corrected on the map
- #13 is a subset of #28 – combine into #28 – Tim Haag will provide text to combine
- 3, 9 & 13: needed a corrected lat/long

Gaps Identified:

- 60% watershed in AL but no project submittals – NRCS in AL, EQUIP funds could be leveraged
- Few inland projects but many of the root causes are inland
- Riparian buffer zones acquisition

- 303 (d) listed water bodies – TMDL's don't appear to all have projects
- Santa Rosa Sound – assess seagrass where water quality improvements via LS and seawall replacement
- Ag BMP's
- Projects by the Cities i.e., City of Gulf Breeze, Milton, Navarre
- East Bay sewer expansion
- Baywoods Gully program – lots of erosion
- Scenic highway area blow outs – Graveyard Creek and Olive Road stormwater ponds not designed to handle storm events
- Hurlburt Field projects?
- Assessments/threats to system based on field review of all portions of the watershed. Good example to follow is the Yellow River Assess. – conduct rapid assessment to ensure address all key threats in watershed
- Long-term monitoring
- Projects that address root causes of impaired waters
- Species tropicalization

Discussion Notes:

- Leave projects as separate but list in plan under a project type
- Maintain distinct projects and lump when $ source makes sense to do so
- Look upstream for impaired waters
- Look at land protection and riparian buffer projects in AL
- Oyster shell recycling – keep separate; partial supply for restoration projects
- 17 & 36 are close but separate one is small and one is several miles long
- Use NRCS offices in AL to make connections
- Create incentives to apply private property activities, ex. sea turtle lighting
- Look for projects that help incentivize to prevent problems rather than having to always look for solution to problem once it happens
- Prevention versus cures – do a financial comparison
- Hold mtg. in AL to include them more
- SRC develop higher standard for flooding than Escambia

- AL water resources conference - time when AL legislators work on water legislation – get FL delegates to this conference
- Integrate lessons learned as projects implemented: success criteria ex. cost/unit effort
- Collaborate and communicate lessons learned
- List metrics associated with projects to connect to root causes
- ID prior steps needed for projects to succeed, ex. seagrasses may need water quality fixed first
- Take time to tease apart existing projects and combine projects as feasible and makes sense to do so
- Look at regional sedimentation projects
- Prioritize within project categories and look at how many root causes a project addresses
- Ask Kelly Samek if there's any overlap with the watershed projects proposed and the NFWF round 2 projects
- Online repository of studies
- Provide one location to upload all plans so watershed stakeholders can see latest iterations of the plan + see other watershed plans

Stakeholders Missing from the Group

Please send suggestion of stakeholder groups that may have an interest in attending future meetings to Anne Birch at abirch@tnc.org.

Pensacola Bay Community-Based Watershed 'Round 3' Planning Meeting

October 31, 2013 9:00-3:00 Central

UF/IFAS Santa Rosa County Extension 6263 Dogwood Drive, Milton, Fl. 32570 (850) 623-3868

Hosted by Santa Rosa County and Facilitated by The Nature Conservancy

AGENDA

Plan Objective:

Create a unified holistic vision for the Pensacola Bay watershed by collectively identifying and prioritizing a suite of projects and actions that solve the most pressing environmental issues affecting these watersheds and the Gulf, irrespective of the funding source or political jurisdiction.

Goals for the watershed planning process:

1. Gulf Consortium adopts the watershed approach as part of the state's RESTORE expenditure plan, rolling up this and other watershed plans as an essential element of the state plan

2. Stakeholders continue to collaborate within and across jurisdictions to implement the watershed plan, seeking funding from public and private funding, grants and other sources

3. Stakeholders establish internal priorities consistent with the watershed plan

Draft Agenda

Welcome, introductions, overview of the meeting goals and agenda

Coastal Community Resilience – demo of the Coastal Resilience 2.0 web tool

Review and agree on Watershed Issues from the Draft Pensacola Watershed Plan per the August meeting (refer to attached draft plan)

Identify the root causes of each issue

- Identifying root causes will help to focus and prioritize projects on the most important activities to improve the watershed

LUNCH – estimated timing in agenda

Review data maps showing impaired waters/TMDL's, natural resources and many other data layers.

Identify the types of projects/actions for each root cause to filter and prioritize proposed projects

1. Restoration type projects to fix existing issues (e.g., septic tank retrofit, road stabilization) projects that

ensure the watershed will maintain good water quality and not degrade over time

2. Preventative type projects to avoid future impairments (e.g., land protection, management and habitat restoration)

3. Coastal Resilience

Review Draft Watershed Plan metrics

- Discuss the type of metrics that could be used to monitor success for each category

Public Comment, Wrap-up and Next Steps – Thank you to S.R./IFAS & Escambia County Staff!

Issues/Challenges identified by stakeholders during the August 7 mtg.

- Sedimentation
- Nutrients (TP – TN)
- Wider Riparian buffers
- Poor land use/development practices
- Insufficient Forest and upland management
- Management of Riverine / Marine Systems
- Shoreline development
- Best Management Practices
- Education/Outreach
- Quantity of freshwater flow
- Untreated stormwater (point & nonpoint)
- Cost of restoration activities
- Septic systems

The draft Pensacola Bay Community-Based Watershed Plan identifies four 'priority issues' that are common across all watershed areas.

1. Water Quality

2. Habitat/Resource Protection

3. Education/Outreach

4. Coastal Community Resilience

The above list was further categorized into 5 Major Actions in Table 2 of the draft plan (see below).

PRIORITY ISSUES 1. WATER QUALITY 2. HABITAT/RESOURCE PROTECTION 3. EDUCATION/OUTREACH 4. COASTAL COMMUNITY RESILIENCE	
Major Actions from Pensacola Mtgs.	Root Causes to be addressed on Oct 31st
Reduce sedimentation	
Reduce nutrient loading	
Reduce and treat stormwater	
Protect restore, and create natural habitat and resources and Increase buffer areas	
Cooperation and Coordination	

Pensacola Bay Community-Based Watershed 'Round 3' Planning Meeting

October 31, 2013 9:00-3:00 Central

UF/IFAS Santa Rosa County Extension 6263 Dogwood Drive, Milton, Fl. 32570 (850) 623-3868

Hosted by Santa Rosa County and Facilitated by The Nature Conservancy

Meeting Notes

Plan Objective:

Create a unified holistic vision for the Pensacola Bay watershed by collectively identifying and prioritizing a suite of projects and actions that solve the most pressing environmental issues affecting these watersheds and the Gulf, irrespective of the funding source or political jurisdiction.

Goals for the watershed planning process:

1. Gulf Consortium adopts the watershed approach as part of the state's RESTORE expenditure plan, rolling up this and other watershed plans as an essential element of the state plan

2. Stakeholders continue to collaborate within and across jurisdictions to implement the watershed plan, seeking funding from public and private funding, grants and other sources

3. Stakeholders establish internal priorities consistent with the watershed plan

Attending: 67 people signed-in representing federal, state, and county agencies, nonprofit organizations, university, business interests, and individuals. See separate list of those who attended.

Following the Pensacola and Perdido Round 2 meetings a suggestion was made to identify the Root Causes of the Issues. Based on this recommendation, subsequent Round 2 meetings for the other 3 watersheds included identifying Root Causes as part of the agenda. The Round 3 meetings for the Pensacola and Perdido watersheds needed to 'catch-up' to this point and identify the Root Causes of the issues.

Coastal Community Resilience – demo of the Coastal Resilience 2.0 web tool:

- Anne provided a short demo of the web site http://www.coastalresilience.org. Unfortunately, Anne learned after the fact that the system was being worked on at the same time, which made the site unresponsive.
- We encourage you to check out the site. To get to the Gulf of Mexico directly follow this link http://maps.coastalresilience.org/gulfmex/. There is a lot of information available and several different ways to look at the data to help assess changes and vulnerability of coastal communities to sea level rise and look at restoration scenarios.

- It's important to read the information (click on the "i" next to layers) for the data sets to correctly interpret the information in the tool.
- The 'Community Planning' app allows local communities to input more site specific data into the tool. Let Anne know if you'd like more information on this capability.
- The tool can be used on Explorer, Chrome, Fire.fox, tablets, etc.
- Anne is setting-up a WebEx for after the first of the year for those who would like to see the tool operate.

Review and agree on Watershed Issues from the Draft Pensacola Watershed Plan per the August meeting

- Identifying root causes will help to focus and prioritize projects on the most important activities to improve the watershed
- Based on the outcome of this meeting we renamed the table headings so that they make more sense to the stakeholders: Priority Issues is now Priority Actions and Major Actions are now Major Issues (see Table below)
- Four Priority Actions were identified based on the outcome of the Issues development across all 5 watersheds during the Round 2 meetings: 1. water quality, 2. habitat/resource protection, 3. education/outreach, 4. coastal community resilience
- The group reviewed the list of Issues that were identified during the Round 2 meeting and identified the following list of Major Issues: 1. Sedimentation, 2. Nutrient loading, 3. Contaminants, 4. Stormwater quality and quantity, 5. Need to protect restore, and create natural habitat and resources and Increase buffer areas, 6. Need for cooperation and coordination, 7. Groundwater
- Root Causes were then identified for each Major Issue.
- Types of Projects to address the Root Causes were then identified. These could be grouped into "Fix It" projects that ensure the watershed will maintain good water quality and not degrade over time (fix/restore existing issues such as septic tank retrofit, road stabilization), "Prevent It" type projects to avoid future impairments (e.g., land protection, management and habitat restoration). Many projects may also be framed as Coastal Resilience projects where they can integrate Ecological/Economic needs and solutions that mutually benefit both the natural environment and economy.
- The results of the meeting discussions on the Root Causes and Types of Projects are provided in the Table below.

Next Steps for Future Meetings

1. Review and analyze data maps showing impaired waters/TMDL's, natural resources, submitted project locations, and other relevant data layers to better understand where the "Hot Spot" areas might be for addressing priority Root Causes.

2. Identify which type of project (Fix or Prevent) is needed to address the priority Root Causes to start prioritizing proposed projects and identifying gaps where new projects are needed

3. Review Draft Watershed Plan metrics

4. Discuss the type of metrics that could be used to monitor success for each category

5. Develop criteria for selecting projects

Thank you again to Chris Verlinde and Santa Rosa County's Extension Service for taking care of the meeting logistics and taking care of all of us with the wonderful food, ice cream and Halloween Treats! They set the bar high!

Thank you to Brent Wipf for compiling all of the GIS information!

These meetings would not be possible with the amazing support of the partners and without each of your interest and time in participating in the watershed planning process. Thank you!

Outcome of Stakeholder Discussions on Root Causes and Types of Projects to address Root Causes

Based on the outcome of this meeting we renamed the table headings so that they make more sense to the stakeholders: Priority Issues is now Priority Actions and Major Actions are now Major Issues.

Priority Issues: 1. Water Quality 2. Natural Resource Protection, Restoration And Management 3. Education And Outreach 4. Coastal Community Resilience		
Major Actions from Pensacola R2 Mtg.	Root Causes	Project Types
1.Sedimentation • Shoreline development • Cost of restoration activities	o erosion of dirt roads o stormwater o poor implementation of BMP's for AG o development in low lying areas o development and land use practices on sloping topography o removal shoreline vegetation o development BMP's proper implementation o lack funding and commitment of post-implementation monitoring long-term o loss riparian buffer from AG. development, other o new construction codes aggravate sedimentation - tie codes to high rain events o older developments lack stormwater treatment o comprehensive stormwater systems o inappropriate river and creek crossings o seawalls o woody material removal from system/improper activity/log jams o Seagrass decline o improper beach renourishment o redistribution sedimentation o stream banks/channels erosion as urbanized o increased water over short time (impervious surfaces direct water to increase rate flow and sedimentation) o sand/gravel mining - regulations weak o habitat conversion o Borrow pits	o Use GIS to spatially map unpaved roads throughout watersheds o address problem areas o prevent dirt roads in high erosion areas - ID process to prioritize areas o paving dirt roads o retrofit stormwater systems - legacy areas o close highly erodible roads - foot traffic only (e.g. Eglin) o Use long-term GIS databases available (state agencies) - combine with on-site assessments/knowledge o use field assessments to prioritize projects & monitor post-implementation o Communication plans & training for designer/manager/equipment users to understand issues and implementation goals o Understand existing grades in problem areas and assess sediment types to prioritize based on risk o Maintain roads once fixed o Adequate road crew and equipment - heavy equipment and 'fine' hand work o Assessments of rivers to ID problem areas and prioritze (e.g., Yellow River) o Asset management system to track maintenance activities and monitoring o Prescriptions (pre-engineering assessment focusing on site problem with low vs. high cost approach; practices to use; site selection; biological; socioeconomic) for parameters of environment, equipment operators (end users) - Choc. pea stream river crossing, Eglin, WMD/FF revisit and assess projects completed (Contact Chris Metcalf USFWS; Paul Thorpe) o Gully restoration o Reclamation plans for borrow pits (includes replant native vegetation) o Stormwater retrofits and BMP's o Expansion street sweep o Well planned with environmental benefits and follow-up plans/ monitoring to increase permitting likelihood o Estuarine Marsh and oyster restoration and soft shoreline techniques where needed and appropriate (L.S.) o Promote use natural infrastructure/stabilization o Freshwater habitat restoration o Abatement of damning - prevent new o Remove non-functioning seawalls causing erosion o Earthen dams/legacy impoundments - ID locations and conditions especially in assoc. with stream crossings and downstream resources o Enforcement existing BMP and codes o Education programs (all ages) of natural processes o Stream and dune restoration o Discouraging development on dynamic shoreline o Windstorm incentives as a model for investment in sedimentation o BMP/mitigation

2. Nutrient Loading • Nutrients (TP – TN) include all nutrients • Best Management Practices • Quantity of freshwater flow • Cost of restoration activities • Septic systems	o overuse fertilizers and timing of use o livestock waste o yard waste o point sources in FL & AL o atmospheric deposition o detergents o storage of fertilizers by big box stores etc. (outside storgae) o septic tank leak o golf course should apply BMP o leaking city sewer systems (groundwater flows into systems is a problem) o sewer systems and lift stations below water table o AG/Forestry fertilize/herbicide o habitat conversion o quantity freshwater flow and timing o legacy landfills and disposal sites leaching into groundwater	o Increase use soil testing in residential areas o encourage no till farming and cover crop o NRCS programs educating contour farming - small farms need this as well o Public service announcements - education proper use fertilizers, disposable yard waste o Develop numeric criteria for instream nutrients concentrations o Retrofit stormwater & wastewater /legacy areas o Enforcement of existing BMP's o Incentive for establishing and maintaining private land owners for natural/grassy (emergent) buffers adjacent to water body o DOH has good PSA for septic tanks - need $$$$ for time when useful o TAPP (personal pollution) good PSA model (FDEP) o Phase out septic tanks where environmentally sensitive and prioritize these areas o Rehab existing sewer lines o Encourage use grasses and trees in stormwater facilities o Incentivize xeriscaping o Implement clean marina programs
3. Contaminants • Sediment • inorganic or organic	o industrial & commercial activities o domestic/industrial wastewater o air pollution o stormwater runoff o improper disposal pharmaceuticals o legacy issues (persistent) e.g., pesticides and herbicides & heavy metals, organic compounds o dredging release contaminants – resuspension o hurricanes redistribute sediments o oil spills o residential disposal of contaminants o improper burning o marinas (fuel, boat maintenance, operations)	o Certified pesticide, fertilizer, herbicide application programs - keep funded o Proper disposal of pharmaceuticals (e.g., City Pen.) with education/ outreach - amnesty days in each county (S.R. has) - promote service of envelopes provided from pharmacies o Household Haz. Waste days - availability regular disposal o Livestock pharmaceuticals - treat animal waste effluents o Retrofit point source wastewater discharges o Promote and develop reclaimed water reuse systems - industrial partnerships o Encourage tree canopy and forest establishment emphasizing local native trees/sp. o Expand Fats, Oil, Grease program (FOG) o Clean Marina program - already implementing - continue funding and promote o Clean Boat Ramp program o Physical removal of legacy issues or passive removal (e.g., phyto remediation) and proper disposal of materials o Monitoring project to share and communicate results and lessons learned o Independent monitoring programs o Fortifying/strengthen underground storage tanks regulations - above ground only in low lying wetland areas and funding for consistent and long-term groundwater monitoring for existing and new o Future workshops on regulations that affect watershed issues o Sealing legacy wells and remove failing/unused storage tanks

4. Stormwater quality and quantity • Best Management Practices • Quantity of freshwater flow • Untreated stormwater (point & nonpoint) • Cost of restoration activities	o loss of urban tree canopy o increase impervious surfaces due to urbanization o increased density of development o decreased green space o fertilizer/persticides - homeowner, golf courses (homeowner & commercial) - lack education o legacy issues pre-regulations/ BMP's - lack efficient/effective stormwater systems o overuse irrigation systems - illicit discharges o development of recharge areas o increase low/reduced density development o lack maintenance existing stormwater areas o livestock o inappropriate dumping hazardous wastes o multiple regulatory codes - layers and contradictory, variances. lack consistency - harder for education (lack communication between agencies) o pet waste o lack maintenance and monitoring of existing systems (lack resources to maintain?) o increased rainfall quantity o lack water conservation o stormwater and sewer interconnections o BMP compliance for industries o loss of urban tree canopy o increase impervious surfaces due to urbanization o increased density of development o decreased green space o fertilizer/pesticides - homeowner, golf courses (homeowner & commercial) - lack education o legacy issues pre-regulations/ BMP'	o Urban tree canopy - replace with wind resistant native species o Tree giveaways and education info. on care and placement o Increase maintenance existing stormwater facilities o Retrofit existing planned developments pre-stormwater regulations o Property acquisition program adjacent to environmentally sensitive areas o Fund FF and other land protection programs o Create buffers to natural areas o Create stormwater management in areas currently with none (ID and prioritize areas to bring into compliance with modern methods) o Implement low impact development and design to address quality and quantity (incentivize and regulatory) o Encourage/incentivize pervious surfaces o Long-term funding source for retrofit, implementation and especially maintenance o Encourage/incentivize redevelopment - provides $ to add treatment to area where previously did not have treatment o Redesign stormwater facilities to consider natural systems o Design stormwater systems as a community amenity o Eliminate sewer/stormwater interconnections - needs interagency coordination - can ID and correct in redevelopment areas o Ensure new stormwater management does not impact (drain) wetlands/wet prairie o Maintenance stormwater systems (ponds, baffle boxes) - need funding for special use equipment and long-term maintenance - shared resources among communities o Interconnect stormwater systems/ponds, plant native wetland tolerant species and incorporate education o Regional workshops with regulatory agencies to help streamline processes o Interagency strike teams to help projects work through regulations o Support Cooperative Invasive Species Management Areas (CISMA's) o ID and prioritize earthen dams and borrow pits for restoration or removal o Funding for access to cattle dip vat (remediation) sites

5. Need to protect, restore, and create natural habitat and resources and Increase buffer areas • Wider Riparian buffers • Poor landuse / development practices • Management of Riverine / Marine Systems • Shoreline development • Best Management Practices • Cost of restoration activities e.g., inlet protection	o improper land planning o lack prescribed fire o cost restoration activities - lack resources o loss of land management o fragmentation o invasive species o loss connectivity o loss wildlife corridors o roads crossings o bridge approaches at riparian zones o increased development/ population o reduced water quality o increased sedimentation o streamlined regulations o sprawl o SLR o Subsidence o storm events/CC o removal riparian vegetation o removal instream woody material o increase in noise & light pollution o changes in estuarine shoreline - transition of habitats o legacy - seawalls placement/ engineering controls o monoculture revegetation o decreased funding for land protection o feral cats, dogs - domestic pet control.	o Restore seagrasses o ID areas where water quality good for restoration o Mapping nearshore benthic and habitat resources o Oyster habitat restoration o Implement L.S. in appropriate areas o Control invasive species (flora and fauna) o Increase Rx fire acreage - personnel and other resources, and public education o Wetland restoration o Hydrologic restoration o Continue FDEP Ecosystem Restoration Team work with LS with private property - assess bays and bayous to prioritize shoreline o Engage private land owners in habitat conservation o Fund existing land protection AND management AND education programs o Science-based creation of artificial reefs to support and enhance species, where appropriate o Marine debris removal, prevention and education program o Planning for wildlife corridor crossings o Education homeowners and developers to create and maintain natural areas/buffers o Addendums to property owner deeds on smoke advisory due to Rx fire o Oyster shell recycling program incentivize o Support existing species/habitat monitoring programs by org. and agencies o Increase riparian vegetation o Develop BMP's for instream habitat o Continue coastal modeling processes - add layers and data to assist with prioritization o Education to new residents and options for coastal resilience - retreat as an options o Integrate natural infrastructure as viable options to coastal resilience o Offshore seafloor monitoring o Beach lighting and shorebird nesting education

6. Need for more Cooperation and Coordination • Poor landuse / development practices • Insufficient Forest and upland management • Education/Outreach	o Conflicting regulations o Loss of connection to nature o Loss value/understanding nature o Fear of nature o Nature ADA accessible o Capacity for long-term maintenance and o Enforcement o Lack of resources/funding – targeted o Broader community outreach o Accountability of agencies that issue o permits/retrofit/follow-up o Federal/state legislation complement each other and basis on lessons learned o Lack coordinated outreach among agencies/organizations o Lack understanding of watersheds are 3D o Lack trust o Lack personnel o Fiefdoms o Silos	o Participate in CISMA's o Strike team for regulatory agencies o Support/fund Ecosystem support teams o Education programs for above issues - inv. Sp, Rx fire, - fund for existing programs o Integrate into traditional education system o ADA accessibility o Support a system of nature Centers, EO Wilson Biophilia Ctr o Support citizen science monitoring programs - water quality and invasive species, lake watch o Funding ecotourism programs, e.g. additional canoe/kayak launch, hospitality industry education o Integrate ecology and economy e.g., beach renourishment, offshore/inshore reefs o Involve school principals in environmental education o Strengthen ecotourism infrastructure – o ID gaps that can help grow this economy o Facilitate funding for regional, professional wildlife rehab. care centers, marine mammal and sea turtle stranding programs o Funding for One Stop Shopping web site for volunteer opp. and projects funded - transparency e.g., Visit Pensacola web site
7. Groundwater	Note: Groundwater was identified as needing protection but the exact issue and root causes of an issue were not identified during the discussions so it is included here separately but may be integrated into another issue. Your thoughts are welcome	o Protection of existing large investments in groundwater for drinking water o Resiliency for communities o Reduce surface water contaminant projects (esp. Escambia) - ID sources o Production and preservation water o Protection natural lands

Pensacola Bay Community-based Watershed Planning Meeting

August 7, 2013, 9:00-12:00 noon Central

Pensacola Civic Center 201 E. Gregory Street Pensacola, FL 32502

Hosted by Escambia County and Facilitated by The Nature Conservancy

AGENDA

Meeting Objective: Create a unified holistic vision for the Pensacola Bay watershed by collectively identifying and prioritizing a suite of projects and actions that solve the most pressing environmental issues affecting the watershed and the Gulf, irrespective of the funding source or political jurisdiction.

Goals for the meeting products:

1. Gulf Consortium/Gulf States Caucus adopts the watershed approach as part of the state's RESTORE expenditure plan, rolling up this and other watershed plans to be a critical element of the state plan

2. Stakeholders continue to collaborate within and across jurisdictions to implement the plan, seeking funding from public and private grants and other sources

3. Stakeholders establish internal priorities consistent with the plan

Agenda

9:00-9:45

- Welcome and introductions
- Overview of the meeting goals and agenda
- Develop a vision statement for the watershed

9:45-10:00

- Review the watershed impacts from the first meeting and agree on the list of impacts that must be addressed to reach the vision

10:00-10:15

- Identify the types/categories of projects used to filter proposed projects (e.g. hydrologic restoration and/or septic to sewer might be project categories under the nutrients issue)

10:15-10:45

- Develop the set of metrics that will be used to monitor success for each category
  - short term such as number of homes hooked up to sewer, miles of dirt roads stabilized

- long term such as water quality improvements

10:45-11:15

- Review the existing projects in the watershed that have already been submitted to FDEP
  - Identify applicable category
  - Quantify the impacts of the project to addressing the solution, where feasible

11:15-11:45

- Identify additional projects and/or needs that will help address the agreed on watershed impacts

11:45-12:00

- Public comment
- Wrap-up and next steps

Pensacola Bay Community-based Watershed Planning Meeting

August 7, 2013, 9:00-12:00 noon Central

Pensacola Civic Center 201 E. Gregory Street Pensacola, FL 32502

Hosted by Escambia County and Facilitated by The Nature Conservancy

MEETING NOTES

The following are notes from the "Round 2" Pensacola Bay watershed meeting. The agenda, with meeting goals and objectives, is provided as an attachment at the end of the document.

VISION BRAINSTORMING

A short brainstorming session was held as a way for everyone to hear and understand each other's thoughts and viewpoints on their vision for the Perdido Bay watershed. A vision statement was not developed; this can be done at a later date. The following are notes on the ideas presented.

Brief summary: Natural resource protection/restoration, monitoring, stewardship; clean water for health, recreation, food safety and species; managed development/planning; recreation/open space.

- Healthy environment for people and species long-term and sustainable
- Restoring grass beds
- Sustainable/Appropriate habitat types (abiotic/biotic processes)
- Oyster bed restoration
- Restoring productivity
- Healthy forests/urban forest
- Resilient ecosystems
- Habitat conservation for rare or endangered species
- Restoration to "pre-development" environmental conditions
- Reduce hard armoring
- System wide approach to long-term monitoring and water quality
- Ensure access to public lands and waterways
- Active ecosystem management group
- Reduce turbidity
- Reduce excess nutrients

- Clear Water
- Safe swimming
- Safe seafood
- Planning accounts for effects/impacts from Sea Level Rise
- Large areas of parks and open space
- Addressing issues associated with unpaved roads
- Sustained high quality drinking water
- Environment friendly development standards
- Holistic approach
- Follow through with initial vision/planning
- Sustainable agriculture
- Worldwide recognition for eco-tourism
- Enhanced planning process to manage development and uses
- Public education and outreach

Ideas generated through the Vision agenda item that address process and are important to keep in mind as projects are identified, prioritized and implemented.

- Availability of validated predictive models
- Acknowledge partners across jurisdictional boundaries
- Develop meaningful, sustainable projects
- Public buy-in into regional approach
- Establish and track costs of restoration
- Sustainable funding source/Post Restore sustainable funding source
- Need political will and support

Pensacola Bay Watershed Impacts and Metrics

The group identified watershed issues and brainstormed on possible metrics to use to track success. There was a large list of issues identified and all are listed below with a draft list of metrics for each that will need to be further refined.

- Sedimentation Metrics
  - Tons captured

- Miles of Road Paved
- Reduce number of impaired water bodies
- Sediment quality guidelines
- Water clarity
- Industrial Discharge
- Legacy contaminates
- Unpaved roads

o Nutrients (TP – TN) Metrics

- Number of septic tanks abated in priority areas
- Nutrient concentrations in surface waters
- Reduce number of impaired water bodies
- Use of numeric criteria
- Acres under Ag BMPs
- Fertilizer Ordinances (Percent compliance)
- Tracking Nutrients by State
- Endocrine disrupters

o Wider Riparian buffers Metrics

- Width/Miles of Riparian buffers
- Width/Slope ratio
- Number of hardened structures removed
- Native vegetation coverage

o Poor landuse/development practices Metrics

- Improved zoning
- Track sprawl (urbanized vs rural)

o Insufficient Forest and upland management Metrics

- Acres under proper management
- Acres restored
- Recovery of species
- Areas under conservation plan
- Species diversity
- Acres managed by fire
- Acres treated for exotic species
- Acres monitored for exotic species
- Increase freshwater flow
- Tons of sediment captured

o Management of Riverine / Marine Systems Metrics

- Tons of sediment captured
- Benthic diversity (flora / fauna)
- Acres restored by specific habitat
- Acres monitored (umbrella species)
- Sustainable seafood harvest
- Bay salinity
- Bio criteria (additional criteria needed for monitoring)
- Number of exotics removed (lionfish, black tiger shrimp, etc.)
- Reintroduction of species (bay scallops)
- Reduction of marine debris

o Shoreline development Metrics

- Reduction of shoreline development
- Measure erosion
- Increase / measure shoreline buffering (length / width)

- Increase acres in public ownership/management/protection

o Best Management Practices Metrics
  - Construction BMPs
  - Ag BMPs

o Education/Outreach Metrics
  - Education on individual development impacts
  - Number of people that adopt BMPs
  - Number of demonstration projects
  - Number of workshops / people

o Quantity of freshwater flow Metrics
  - Natural hydrograph
  - Monitor flora / fauna
  - Percent of wells impacted by saltwater recharge
  - Plant community structure
  - Reduced benthic diversity
  - Loss of habitat
  - Unsustainable habitats and management practices
  - Mercury contamination
  - Loss of forest habitat
  - Saltwater intrusion
  - Lack of a coordinated monitoring network (water quality, etc.)
  - Altered fire / Fire suppression
  - Need for comprehensive education
  - Need to identify desired measurable outcomes
  - Turbidity & SAVs

- Untreated stormwater (point & nonpoint) Metrics
  - Stormwater pond function (percent / number)
  - Number of retrofits
  - Volume of treated water
  - Number of additional regional ponds
  - LID implementation at source
  - Number of demonstration projects (urban and rural)
  - Reduction of nutrient loading (cost per pound, etc.)
  - Improved conditions at outfalls vs. inflow
- Cost of restoration activities Metrics
  - Prioritized plan
  - Matching funding (local, state, federal)
  - Matching funding (sources to uses)
  - Available funding not directed to implementation
  - Prioritization of projects based on return
- Septic systems Metrics
  - Density of systems in priority areas
  - Number of new systems permitted

PROJECT CATEGORIES

Based on the issues the group identified 8 project categories for use in vetting the existing project list. The group had a few minutes to categorize a few projects to see if they are appropriate. Applying these categories to each project is homework. The Conservancy is facilitating two more watershed meetings on August 13 & 14 for the Choctawhatchee Bay and St Andrew/St Joe Bays watersheds, respectively. Following those meetings TNC will consolidate all of the Project Category suggestions from the four round 2 watershed meetings (Perdido, Pensacola, Choctawhatchee, and St Andrew/St Joe Bays) to arrive at a suggested list to use for all the watersheds. In this way there is consistency across the regions that will

allow for roll-up of similar type projects over a larger geographic region. Identification of large regional–scale projects will appeal to RESTORE and other funding sources. The spreadsheet of projects and project categories to fill out will be sent following the Choctawhatchee Bay and St Andrew/St Joe Bays watersheds meetings and project category consolidation.

The 8 categories identified during the meeting are:

1. Marine Systems

2. Habitat Loss & Resiliency (Restoration / Conservation)

3. Landuse /Protection/ Acquisition / Development Practices

4. Forest and Upland Systems

5. Riverine / Estuarine Systems (Riparian Buffers)

6. Education / Outreach

7. Water & Sediment Quality (Stormwater / Water Quality / Sedimentation / Septic / Wastewater / Point Sources)

8. Human Use

Pensacola Bay RESTORE Watershed Workshop

March 13, 2013 9:00-12:00 Central

Escambia County Central Office Complex, 3363 West Park Place, Pensacola, FL 32505

Hosted by Escambia and Santa Rosa Counties and Facilitated by The Nature Conservancy

MEETING NOTES

March 13, 2013 Pensacola Bay Watershed Workshop Notes: There were no official notes for this meeting except for the following email message and attachments that follow.

From: Anne Birch
Sent: Monday, April 08, 2013 3:43 PM
To: Pensacola Bay Community-Based Watershed Planning Stakeholders
Subject: Pensacola Bay watershed scale projects descriptions and map

Hello!

Apologies upfront if you receive this email twice.

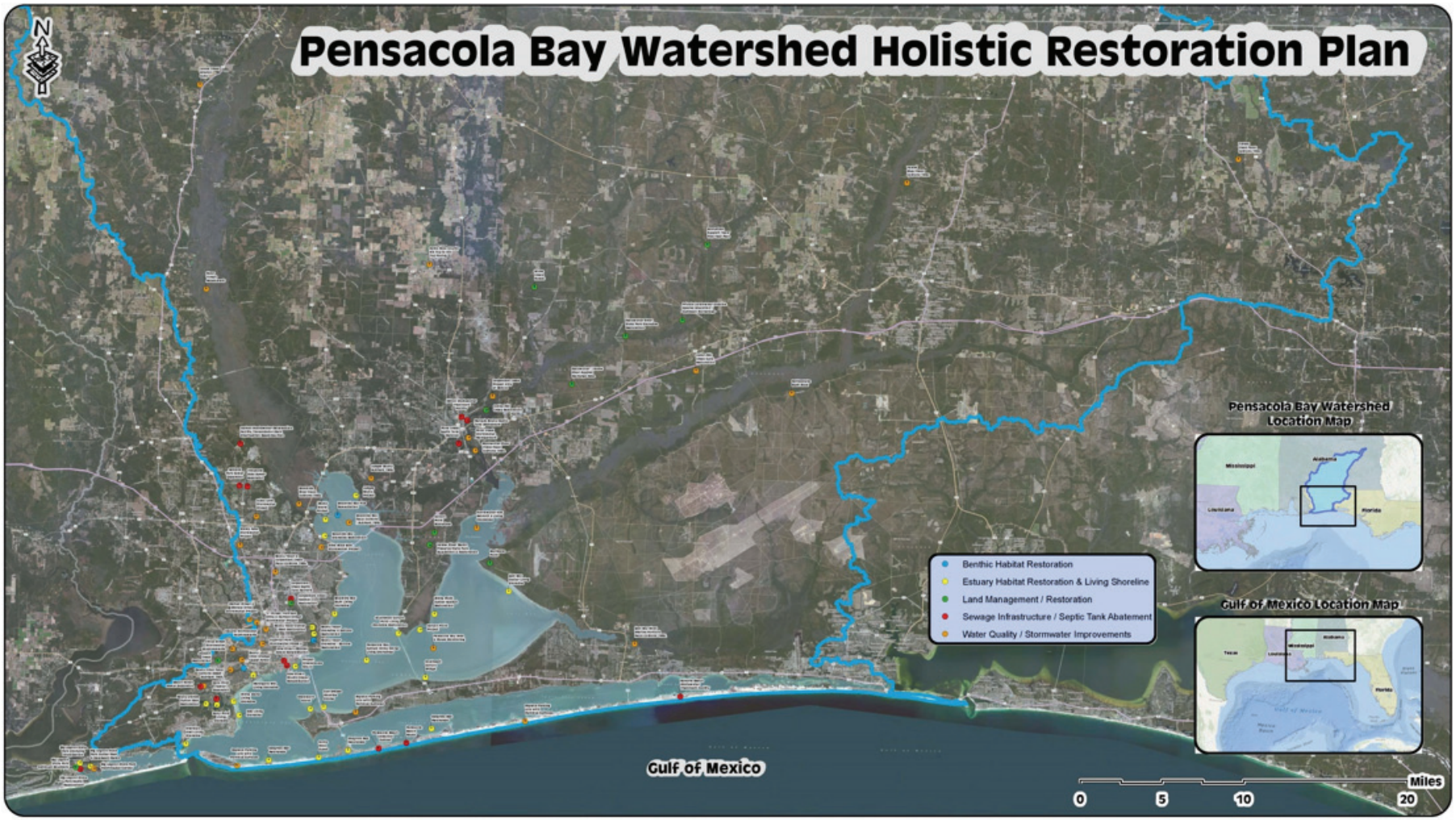
Attached is a map of all of the projects suggested by stakeholders who attended the recent Pensacola Bay living shoreline and watershed meetings. Many thanks to Brent Wipf who compiled the description sheets and created the map. Thank you so much for your participation and project recommendations.

We heard loud and clear from FDEP at the County Consortium meeting last week that regional projects may be looked at more favorably by the state and RESTORE council than individual projects, so it's good to know we are on the right track with this level of project planning. We will continue to work on developing a watershed scale plan that addresses the RESTORE funding criteria and keep you informed on the progress.

Thank you again!

Anne Birch
Marine Conservation Director
abirch@tnc.org
(321) 610-3892 (Office)
(321) 212-8064 (Cell)
nature.org

The following page is the map referenced above. Contact Anne Birch at abirch@tnc.org if you would like the 43 page pdf file of the Project Sheets for the points on the map.


Pensacola Bay Watershed Holistic Restoration Plan
N
Pensacola Bay Watershed Location Map
Gulf of Mexico Location Map
Benthic Habitat Restoration
Estuary Habitat Restoration & Living Shoreline
Land Management / Restoration
Sewage Infrastructure / Septic Tank Abatement
Water Quality / Stormwater Improvements
Gulf of Mexico
Miles
0
5
10
20

Appendix D

Pensacola Bay Watershed Overview (Source: FDEP Learn about your Watershed website http://www.protectingourwater.org/watersheds/map/pensacola/)

Pensacola Bay Watershed

- Size of Basin: Over 7,000 square miles total in Alabama and Florida; approximately 2,100 square miles in Florida
- Major Water Features:
  - Florida Portion of the Escambia River- Tributaries of the Escambia River are Pine Barren Creek, Canoe Creek, Mitchell Creek, Little Pine Barren Creek, McDavid Creek, Bray Mill Creek, Big Escambia Creek, Holland Branch, and Blue Water Creek.
  - Blackwater River - Tributaries to the Blackwater River are the Big Coldwater Creek (including the East and West Forks), Pond Creek, Big Juniper Creek, Juniper Creek, Panther Creek, Sweetwater Creek, Penny Creek, Mare Creek, Hurricane Creek, and Manning Creek. Lakes include Bear Lake and Hurricane Lake.
  - Yellow River - Tributaries to the Yellow River are Big Horse Creek, Murder Creek, Trammel Creek, Turkey Gobbler Creek, Davis Mill Creek, Burnt Grocery Creek, Julian Mill Creek, and Boiling Creek. Lake Karick is a man-made, managed impoundment.
  - Shoal River - Major tributaries are Gum Creek, Horseshoe Creek, Pond Creek, Long Creek, Pinelog Creek, Turkey Creek, Juniper Creek, and Titi Creek.
  - Pensacola Bay Estuary - The estuary comprises 5 interconnected arms or large embayments. The central embayment, Pensacola Bay, receives discharge from Escambia Bay, Santa Rosa Sound, and East Bay. The westernmost embayment is Escambia Bay, located at the mouth of the Escambia River. Mulatto Bayou and Pace Mill Creek discharge directly to the upper portion of Escambia Bay, and Indian and Trout Bayous discharge to the lower portion. The northeastern embayment, Blackwater Bay, receives discharge from the Blackwater and Yellow Rivers and Pond Creek, and discharges to East Bay. The larger bayous are Bayou Grande, Bayou Texar, and Bayou Chico.

The Pensacola Bay watershed headwaters are in southern Alabama. Within the Florida portion of the watershed, the Escambia River, Blackwater River, Shoal River, and Yellow River drainage basins comprise the major sources of water to the Pensacola Bay estuary. In addition to the major river systems, several bayous discharge directly to Pensacola Bay. The largest are Bayou Grande, Bayou Texar, and Bayou Chico.

The Blackwater River drains 860 square miles, of which about 80 percent is in Florida. For most of its length in Florida, the river flows through the Blackwater River State Forest in Santa Rosa and Okaloosa Counties before discharging into the Pensacola Bay estuary. Tidal fluctuations can reach as far as six miles upstream.

The Yellow River drains 1,365 square miles, of which about 60 percent is in Florida. Its drainage area has the highest elevation in Florida. The river drains the western highlands and carries more sediment than other Florida rivers of comparable size. In Santa Rosa County, the river cuts into the highlands in many places, producing bluffs as high as 40 feet. In its lower reaches, it flows through a large, woody, swampy floodplain. Tidal fluctuations have been observed as far as 19 miles upstream. Both the Blackwater River and the Yellow River (and its tributary, the Shoal River, which provides about half of the Yellow River's discharge) are characterized as blackwater streams.

The Escambia River drains 4,223 square miles, of which only about 10 percent is in Florida. A large, alluvial river, it carries a heavy sediment load, and seasonal fluctuations in flow are quite significant. The river and its tributaries have a well-developed, dendritic surface drainage pattern. Tidal fluctuations are noticeable as far as 10 miles upstream from the bay.

The Pensacola Bay estuary covers 144 square miles and comprises five interconnected arms or large embayments: Pensacola Bay, Escambia Bay, Blackwater Bay, East Bay, and Santa Rosa Sound. Tidal fluctuations and flushing of the estuary are limited. Railroad and highway bridges also limit mixing between the waters of the upper and lower parts of the bay. Water exits the estuary through a narrow pass, Caucas Channel, at the mouth of Pensacola Bay. Santa Rosa Sound also receives little freshwater inflow.

The diverse habitats in the watershed support at least 70 identified rare, imperiled, or threatened animal species, including the Gulf sturgeon, and at least 68 rare, imperiled, or threatened plant species. A number of these species are endemic. Conservation and recreational lands make up a substantial part of the watershed, representing a diverse assemblage of ecological types and protecting many of the watershed's water resources and fragile ecosystems. These lands include Blackwater River State Forest; Blackwater, Yellow, and Escambia Rivers Water Management Areas; Garcon Point Water Management Area; and Gulf Islands National Seashore. Large tracts of Eglin Air Force Base are also managed for habitat conservation and the protection of endangered species.

The prominent upland land use is sandhills, pinelands, and hardwood hammock. Extensive tracts of mature longleaf pine forest are still present, particularly in the Conecuh National Forest-Blackwater River State Forest-Eglin Air Force Base corridor. Freshwater wetland communities are predominantly bay swamp, mixed hardwood swamp, and freshwater marsh. The Florida Natural Areas Inventory also lists the rare seepage slope community as present in the watershed. These shrub thickets or

boggy meadows form at the base of a slope where water moving downslope or seeping creates moist soil conditions. Pitcher plants are commonly found on seepage slopes in the watershed. Ravines and steepheads occur along the Escambia River.

A number of waterbodies have been given additional protection through designation as Outstanding Florida Waters (OFWs), including the Blackwater River; Shoal River; all waters in the Yellow River Marsh Aquatic Preserve, Fort Pickens Aquatic Preserve, Gulf Island National Seashore, and Blackwater River State Park; Escambia Bay Bluffs; and Milton to Whiting Field.

Figure 2 is a map of the Pensacola Bay watershed from the Northwest Florida Water Management District's Surface Water Improvement and Management Plan (1997) http://www.nwfwmd.state.fl.us/pubs/swimpens/pbswim.pdf.

Figure 2. Pensacola Bay Watershed Project Map

Issues

The following are excerpts from the Northwest Florida Water Management District and Florida Department of Environmental Protection web sites on the Pensacola Bay watershed.

Sources:
FDEP Learn about your Watershed website: http://www.protectingourwater.org/watersheds/map/pensacola/
NWFWMD SWIM Plan 1997: http://www.nwfwmd.state.fl.us/pubs/swimpens/pbswim.pdf;

The basin has experienced significant population growth since the 1950s, with the populations of Santa Rosa and Okaloosa Counties increasing more than 500 percent between 1950 and 2000. This growth has led to increased pollution from human activities, including stormwater runoff and residential, commercial, and industrial land uses. A dramatic increase in tourism, beginning in the 1980s, has led to the rapid development of previously pristine wilderness beaches, particularly around Panama City and Fort Walton Beach.

The sand and gravel aquifer in the western Panhandle is susceptible because it is near the surface and recharged by rainfall. A long history of industrial land use in the region has resulted in several significant instances of ground water contamination.

In the Blackwater River drainage basin, land clearing associated with agriculture, silviculture, and recreation, as well as dirt road erosion, have led to increased sedimentation. The heavy use of vehicles on unpaved roads in Blackwater River State Forest has increased soil erosion, leading to higher turbidity in streams and smothered aquatic habitat.

Sedimentation is a problem in the Pensacola Bay as a result of poor flushing and the input of large sediment loads from tributaries. In addition, current and historical land uses and industrial practices have left a legacy of polluted sediments.

The areas of greatest concern for sediments are Bayou Chico, lower Bayou Grande, upper Bayou Texar, mid- and upper Escambia Bay, and Pensacola Bay, near the downtown Pensacola waterfront. Historically, numerous industrial and domestic waste facilities discharged to Pensacola Bay and the lower Escambia River. Bayous Grande, Texar, and Chico are all heavily industrialized and urbanized, and stormwater runoff from Pensacola tends to become concentrated in the bayous. Heavy metals are present in sediments in Bayous Chico, Grande, and Texar, and in Pensacola Bay. Pesticides have been found in all of these waterbodies, including many of the older, now-banned chlorinated pesticides. Nutrients, including nitrogen and phosphorus, are also concerns in all of these waterbodies.

Historically, fish kills frequently occurred in the Pensacola Bay estuary and its tributary bayous, particularly Bayous Texar, Grande, and Chico. Many of these kills were large-more than 1,000 fish. However, water quality improvements have somewhat reduced the size and number of fish kills. More recently, red tide events in 1999 and 2000 resulted in fish kills.

The current seagrass coverage is much less than was present historically. The earliest documented loss of seagrasses was recorded in 1955, with the commencement of a discharge from the Monsanto Company's Pensacola facility. Additional discharges from chemical plants exacerbated seagrass losses. Most seagrasses have been lost from Escambia Bay, where they were common as late as the early 1950s. Large areas of the Pensacola Bay estuary-predominantly in Pensacola Bay, Bayou Chico, Bayou Grande, and Bayou Texar-also have a degraded benthic index, which is a measure of biological health based on the types of aquatic insects found in bottom sediments.

The challenges facing the Pensacola Bay system may be summarized in the following broad issue areas.

- Water and Sediment Quality. Nonpoint source pollution is carried into the Pensacola Bay system by stormwater runoff from such sources as urban and suburban lands, agricultural and forestry activities, dirt roads, pavement, construction sites, golf courses, and lawns. A number of point sources (industrial and domestic wastewater discharges) also discharge directly into waters of the Pensacola Bay system. This is a relatively low energy system with limited flushing, and pollutant loading has possibly been exceeding its assimilative capacity for decades. Following many years of such pollutant loading, sediments in portions of the system are altered in size and composition, enriched with nutrients, and contaminated with metals and toxic organic compounds.
- Habitat Quality. Benthic riverine and estuarine habitats have been, and continue to be, threatened by and degraded through sedimentation and deposition. Degraded water and sediment quality have also caused the degradation and loss of seagrass communities, other benthic habitats, and associated biological resources. Substantial areas of wetlands and other important habitats have been and continue to be lost throughout the watershed. These include tidal marshes, bayous, coastal strand communities, bottomland hardwood swamps, and other littoral and benthic habitats.
- Administration, Planning, and Coordination. The Pensacola Bay system watershed spans two states and is subject to the management and regulatory actions of numerous local governments and various state and federal agencies. Effective protection and restoration of the system requires coordination and cooperation with these entities, community organizations, and other resource management initiatives.

Public Education and Awareness. If efforts to protect and restore the resource are to succeed, its values and vulnerabilities must be well understood by the public. This will both help individuals make informed

personal decisions relevant to water resources and promote an understanding of resource management initiatives. This is particularly significant given the importance of voluntary participation and achieving consensus across diverse interests.

Appendix E

Stakeholder Identified Priority Issues, Root Causes, Major Actions and Project Types

Priority Issues: 1. Water Quality 2. Natural Resource Protection, Restoration And Management 3. Education And Outreach 4. Coastal Community Resilience		
Major Actions (formerly called Issues. Revised to Major Action needed to address a priority issue)	o Root Causes to be addressed o The root causes were grouped into the bolded bullet headings. The root causes as stated during the stakeholder meetings are under these headings and have not been altered.	o Project Types
Reduce sedimentation	o Erosion o dirt roads o gullies o borrow Pits o Ineffective or unused BMPs, regulations & development codes o agriculture o commercial/residential development o sand/gravel mines o inspection/enforcement o lack funding and commitment of post-implementation monitoring o improper beach (re)nourishment o redistribution of sedimentation o paper mill suspended solids o boat wakes o Loss of vegetation, riparian buffers, and/or wetlands o removal of shoreline and riparian vegetation (e.g., seawalls) o loss of natural habitat on sloping areas o woody material removal from system/ improper activity/log jams o seagrass o loss of urban tree canopy o Ineffective stormwater systems (also a major action) o increased water over short time (impervious surfaces direct water to increase rate flow and sedimentation) o no systems in older developments	o Use GIS to spatially map unpaved roads throughout watersheds o address problem areas o prevent dirt roads in high erosion areas - ID process to prioritize areas o paving dirt roads o retrofit stormwater systems - legacy areas o close highly erodible roads - foot traffic only (e.g. Eglin) o Use long-term GIS databases available (state agencies) - combine with on-site assessments/knowledge o use field assessments to prioritize projects & monitor post-implementation o Communication plans & training for designer/manager/equipment users to understand issues and implementation goals o Understand existing grades in problem areas and assess sediment types to prioritize based on risk o Maintain roads once fixed o Adequate road crew and equipment - heavy equipment and 'fine' hand work o Assessments of rivers to ID problem areas and prioritize (e.g., Yellow River) o Asset management system to track maintenance activities and monitoring o Prescriptions (pre-engineering assessment focusing on site problem with low vs. high cost approach; practices to use; site selection; biological; socioeconomic) for parameters of environment, equipment operators (end users) - Choc. pea stream river crossing, Eglin, WMD/FF revisit and assess projects completed (Contact Chris Metcalf USFWS; Paul Thorpe) o Gully restoration o BMP/mitigation

		o Reclamation plans for borrow pits (includes replant native vegetation) o Stormwater retrofits and BMP's o Expansion street sweep o Well planned with environmental benefits and follow-up plans/ monitoring to increase permitting likelihood o Estuarine Marsh and oyster restoration and soft shoreline techniques where needed and appropriate (L.S.) o Promote use natural infrastructure/stabilization o Freshwater habitat restoration o Abatement of damning - prevent new o Remove non-functioning seawalls causing erosion o Earthen dams/legacy impoundments - ID locations and conditions especially in assoc. with stream crossings and downstream resources o Enforcement existing BMP and codes o Education programs (all ages) of natural processes o Stream and dune restoration o Discouraging development on dynamic shoreline o Windstorm incentives as a model for investment in sedimentation

Reduce nutrient loading	**Ineffective or unused BMPs, regulations & development codes** o golf Courses o stores o residential and commercial o agriculture o point sources in FL & AL **Ineffective stormwater systems (also a major action)** o yard waste o detergents **Atmospheric deposition** **Domestic Wastewater** o septic tank (leaks, improperly located, etc) o sewer systems (I&I, lift station failure) **Loss of vegetation, riparian buffers, and/or wetlands (also major action)** **Quantity and timing of freshwater flow** **Contamination** o legacy landfills and disposal sites leaching into groundwater o industrial & commercial activities o domestic/industrial wastewater o air pollution o stormwater runoff (also a major action) o improper disposal pharmaceuticals o legacy issues (persistent) e.g., pesticides and herbicides & heavy metals, organic compounds o dredging release contaminants – re-suspension o hurricanes redistribute sediments o oil spills o residential disposal of contaminants o improper burning o marinas (fuel, boat maintenance, operations)	o Increase use soil testing in residential areas o encourage no till farming and cover crop o NRCS programs educating contour farming - small farms need this as well o Public service announcements - education proper use fertilizers, disposable yard waste o Develop numeric criteria for instream nutrients concentrations o Retrofit stormwater & wastewater /legacy areas o Enforcement of existing BMP's o Incentive for establishing and maintaining private land owners for natural/grassy (emergent) buffers adjacent to water body o DOH has good PSA for septic tanks - need $$$$ for time when useful o TAPP (personal pollution) good PSA model (FDEP) o Phase out septic tanks where environmentally sensitive and prioritize these areas o Rehab existing sewer lines o Encourage use grasses and trees in stormwater facilities o Incentivize xeriscaping o Implement clean marina programs o Certified pesticide, fertilizer, herbicide application programs - keep funded o Proper disposal of pharmaceuticals (e.g., City Pen.) with education/outreach - amnesty days in each county (S.R. has) - promote service of envelopes provided from pharmacies o Household Haz. Waste days - availability regular disposal o Livestock pharmaceuticals - treat animal waste effluents o Retrofit point source wastewater discharges o Promote and develop reclaimed water reuse systems - industrial partnerships o Encourage tree canopy and forest establishment emphasizing local native trees/sp. o Expand Fats, Oil, Grease program (FOG) o Clean Marina program - already implementing - continue funding and promote o Clean Boat Ramp program o Physical removal of legacy issues or passive removal (e.g., phyto remediation) and proper disposal of materials o Monitoring project to share and communicate results and lessons learned o Independent monitoring programs o Fortifying/strengthen underground storage tanks regulations - above ground only in low lying wetland areas and funding for consistent and long-term groundwater monitoring for existing and new o Future workshops on regulations that affect watershed issues o Sealing legacy wells and remove failing/unused storage tanks

Reduce and treat stormwater	**Ineffective or unused BMPs, regulations & development codes** o no stormwater treatment o improperly designed systems o interconnections with sewer o loss urban tree canopy and green space o loss of permeable land and developed land not maximizing use of open/green space o development in recharge areas o increased density of development o increased impervious surfaces o pet waste o contaminants (pesticides, fertilizers, hazardous materials) getting into stormwater system o lack water conservation o overuse of irrigation systems - illicit discharges o inappropriate hazardous waste dumping o variances lack consistency o multiple regulatory codes and layers that are contradictory (lack of communication between agencies) o livestock waste and access to riparian areas **Ineffective stormwater systems** o lack of maintenance of stormwater systems (residential, commercial and industrial) **Lack of adequate funding**	o Urban tree canopy - replace with wind resistant native species o Tree giveaways and education info. on care and placement o Increase maintenance existing stormwater facilities o Retrofit existing planned developments pre-stormwater regulations o Property acquisition program adjacent to environmentally sensitive areas o Fund FF and other land protection programs o Create buffers to natural areas o Create stormwater management in areas currently with none (ID and prioritize areas to bring into compliance with modern methods) o Implement low impact development and design to address quality and quantity (incentivize and regulatory) o Encourage/incentivize pervious surfaces o Long-term funding source for retrofit, implementation and especially maintenance o Encourage/incentivize redevelopment - provides $ to add treatment to area where previously did not have treatment o Redesign stormwater facilities to consider natural systems o Design stormwater systems as a community amenity o Eliminate sewer/stormwater interconnections - needs interagency coordination - can ID and correct in redevelopment areas o Ensure new stormwater management does not impact (drain) wetlands/wet prairie o Maintenance stormwater systems (ponds, baffle boxes) - need funding for special use equipment and long-term maintenance - shared resources among communities o Interconnect stormwater systems/ponds, plant native wetland tolerant species and incorporate education o Regional workshops with regulatory agencies to help streamline processes o Interagency strike teams to help projects work through regulations o Support Cooperative Invasive Species Management Areas (CISMA's) o ID and prioritize earthen dams and borrow pits for restoration or removal o Funding for access to cattle dip vat (remediation) sites

Protect, Restore, Create and Manage natural resources and increase buffer areas	Lack of Adequate Funding o land purchases/easements o land management activities (e.g., invasive species and Rx fire) o restoration activities (land and water) o lack prescribed fire Ineffective or unused BMPs, regulations & development codes o lack of adequate LDRs/development codes o fragmentation of natural habitats leading to loss of corridors and connections/sprawl o lack of, inadequate or improper stream/creek crossing designs/construction o legacy seawalls placement/engineering controls o removal riparian vegetation o removal in-stream woody material o monoculture re-vegetation o changes in estuarine shoreline - transition of habitats o streamlined regulations o Increased noise & light pollution Contamination o increased sedimentation o increased nutrient loading Environmental changes / issues o sea level rise, o increase in severe storm events o subsidence o feral animals	o Restore seagrasses o ID areas where water quality good for restoration o Mapping nearshore benthic and habitat resources o Oyster habitat restoration o Implement L.S. in appropriate areas o Control invasive species (flora and fauna) o Increase Rx fire acreage - personnel and other resources, and public education o Wetland restoration o Hydrologic restoration o Continue FDEP Ecosystem Restoration Team work with LS with private property - assess bays and bayous to prioritize shoreline o Engage private land owners in habitat conservation o Fund existing land protection AND management AND education programs o Science-based creation of artificial reefs to support and enhance species, where appropriate o Marine debris removal, prevention and education program o Planning for wildlife corridor crossings o Education homeowners and developers to create and maintain natural areas/buffers o Addendums to property owner deeds on smoke advisory due to Rx fire o Oyster shell recycling program incentivize o Support existing species/habitat monitoring programs by org. and agencies o Increase riparian vegetation o Develop BMP's for instream habitat o Continue coastal modeling processes - add layers and data to assist with prioritization o Education to new residents and options for coastal resilience - retreat as an options o Integrate natural infrastructure as viable options to coastal resilience o Offshore seafloor monitoring o Beach lighting and shorebird nesting education

Increase cooperation and coordination for management, monitoring, funding, implementation, outreach, enforcement	Ineffective or unused BMPs, regulations & development codes o conflicting regulations o capacity for long-term maintenance and Enforcement o accountability of agencies that issue permits/retrofit/follow-up o lack coordinated outreach among agencies/organizations o lack trust o lack personnel o Fiefdoms/ Silos o federal/state legislation needs to complement each other and base on lessons learned o lack understanding of watersheds are 3D Lack of environmental awareness o loss of connection to nature o loss value/understanding nature o fear of nature o broader community outreach o nature ADA accessible Lack of adequate funding	o Participate in CISMA's o Strike team for regulatory agencies o Support/fund Ecosystem support teams o Education programs for above issues - inv. Sp, Rx fire, - fund for existing programs o Integrate into traditional education system o ADA accessibility o Support a system of nature Centers, EO Wilson Biophilia Ctr o Support citizen science monitoring programs - water quality and invasive species, lake watch o Funding ecotourism programs, e.g. additional canoe/kayak launch, hospitality industry education o Integrate ecology and economy e.g., beach renourishment, offshore/inshore reefs o Involve school principals in environmental education o Strengthen ecotourism infrastructure – o ID gaps that can help grow this economy o Facilitate funding for regional, professional wildlife rehab. care centers, marine mammal and sea turtle stranding programs o Funding for One Stop Shopping web site for volunteer opp. and projects funded - transparency e.g., Visit Pensacola web site
Reduce impacts to groundwater and ensure adequate fresh water availability	Note: Groundwater was identified as needing protection but the exact issue and root causes of an issue were not identified during the discussions so it is included here separately but may be integrated into another issue. Your thoughts are welcome	o Protection of existing large investments in groundwater for drinking water o Resiliency for communities o Reduce surface water contaminant projects (esp. Escambia) - ID sources o Production and preservation water o Protection natural lands
Increase economic diversity	Note: this Major Action was identified during other watershed meetings and are inserted here as a placeholder in the event the Pensacola stakeholders address this Major Action as they identify projects	

Appendix F

Watershed Project List

Note: Due to space limitations the following information provided by the stakeholders on their projects was omitted from the table.

- Alignment with Federal RESTORE Priorities
- Alignment with Federal RESTORE Objective
- Alignment with State RESTORE Priorities

A complete table of the information submitted for each project is available upon request to Anne Birch at abirch@tnc.org.

Project Map #	1
Latitude	30.366778
Longitude	-87.335227
Project Title	Pensacola Bay Watershed Restoration Project
Location Description	Pensacola Bay Watershed
Project Description	This Pensacola Bay Watershed Restoration Project Plan consists of 115 multifaceted priority watershed restoration projects that address one or more of the identified five restoration strategy goals & the 5 recommended types of restoration projects for Florida. The list of projects include 28 estuarine habitat living shoreline projects, 62 water quality/stormwater improvement projects, 14 sewage infrastructure projects, & 11 land management restoration projects. Provides integrated approach to watershed restoration and conservation.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach., Reduce impacts to groundwater.
Root Causes	Contamination, Domestic wastewater, Environmental changes / issues, Erosion, Ineffective or unused BMPs, regulations & development codes, Ineffective stormwater systems, Invasive species, Lack of adequate funding, Lack of communication among diverse stakeholders, Lack of environmental awareness, Limited economic diversity, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow, Water reuse, Water supply
Proposed Metric(s)	Increase acres under public lands management.Protect, restore, create and/or manage natural habitat and resources and increase buffer areas Reduce impacts to groundwater and ensure adequate fresh water availability Reduce and treat stormwater Reduce nutrient loading Reduce sedimentation Provide local and region job opportunities.
Project Contact Name	Taylor “Chips” Kirschenfeld
Project Cost	>$1 million

Project Map #	2
Latitude	30.325075
Longitude	-87.192136
Project Title	Gulf Islands Research and Education Center (an NPS Research Learning Center)
Location Description	Gulf Island National Seashore, Florida District
Project Description	The Gulf Islands Research and Education Center(GIREC) would serve two overlapping purposes. The GIREC would bring together state, federal , county and non profit agencies to conduct the essential research needed to support science based resource management in the northern gulf. The second key component is to promote the development of high-impact K-12 STEM based resource education programs, to further science education and outreach about critical processes effecting the gulf coast. The GIREC would do this by building on the long-standing partnership between the University of West Florida (UWF) and Gulf Islands National Seashore to support the Seashore in conservation and restoration of Gulf Coast ecosystems, and the University in its mission to provide access to high-quality educational opportunities that improve the economy and quality of life in the region.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas. Increase cooperation and coordination for monitoring, funding, implementation, and outreach.
Root Causes	Environmental changes / issues, Lack of adequate funding, Lack of communication among diverse stakeholders, Lack of environmental awareness, Limited economic diversity, Loss of vegetation, riparian buggers, and/or wetlands.
Proposed Metric(s)	(1) Cooperative scientific analysis of the Park's natural and cultural resources.(2) Number of awarded research seed grants, student internships, and STEM training and participation grants.(3) Number of students and Park visitors exposed to natural and cultural resource education programs.(4) Construction of research and education facilities to enhance long term scientific activities and regional educational opportunities.
Project Contact Name	Daniel Brown
Project Cost	>$1 million

Project Map #	3
Latitude	30.4486
Longitude	-87.089343
Project Title	Garcon Ecosystem
Location Description	Garcon Peninsula, Santa Rosa County
Project Description	Completing a Florida Forever project with a 3,800 acre purchase to protect Garcon Point peninsula. this project will joint disjunct parcels currently under management & provide easement/access to previously unaccessible lands. By protecting larger landscapes, introducing prescribed fire will be easier & perimeter firelines will be greatly reduced as tracts become larger. Protects current parcels from wildland urban interface projects which increase prescribed fire complexity.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach., Reduce impacts to groundwater.
Root Causes	Environmental changes / issues, Erosion, Ineffective or unused BMPs, regulations & development codes, Ineffective stormwater systems, Invasive species, Lack of adequate funding, Lack of environmental awareness, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow
Proposed Metric(s)	Increase acres under public land management.Increase treatment (acres) using prescribed fire.Reduce impacts from unauthorized ORVs on wetlands.Reduce hazardous fuel loading.
Project Contact Name	Manley Fuller
Project Cost	>$1 million

Project Map #	4
Latitude	30.482066
Longitude	-86.982477
Project Title	Pensacola East Bay Oyster Restoration
Location Description	East shore of East Bay from north of Escribano Point south to the mouth of the East River. The Lat/Long point represents an estimated point along the middle of the length of the project.
Project Description	The project is located in the East and Blackwater Bays, within the Pensacola Bay system in Santa Rosa County. As a collaborative effort with The Nature Conservancy, Florida Fish and Wildlife Conservation Commission, Florida Department of Environmental Protection, Santa Rosa County, Dauphin Island Sea Lab, and Florida SeaGrant, the project will result in the creation of up to eight miles of non_contiguous oyster habitat and restoration of salt marsh habitat. The goals are to create restore oyster reefs that can serves as a natural approach to help prevent shoreline erosion, increase oyster habitat and the amount of habitat available for recreationally and commercially important shellfish and finfish, and promote the growth of submerged aquatic vegetation and salt marsh. The project provides a comprehensive science-based approach to restoration that includes pre-restoration monitoring, project design and permitting, implementation of restoration activities and post-restoration monitoring. The project will select the most appropriate methodology(s) to meet the project goals. The selected methodology(s) will use the most appropriate natural substrate for oyster larvae to settle and colonize, ultimately serving as nursery habitat for commercially and recreationally important finfish and shellfish, providing forage and nesting areas for birds, dampen wave energy, and decrease shoreline erosion. Specific objectives are to:1. Design a natural oyster reef breakwater/reef to promote settlement and colonization of oyster larvae and other encrusting organisms, and become a healthy, functioning oyster reef habitat.2. Restore fringe marsh habitat with specific value for coastal birds and increase foraging habitat available for shorebirds, wading and migratory birds (e.g. pelicans, terns, warblers, herons, egrets, passerines)3. Increase the amount of structural habitat available for recreationally and commercially important shellfish and finfish species in the region (e.g. spotted trout, red drum, black drum, mangrove snapper, gag grouper, spot, croaker, mullet, blue crab, stone crab, and shrimp).4. Promote the growth of submerged aquatic vegetation (e.g. seagrasses) that in turn also support a diversity of species including those listed in this section.5. Serve as a natural `soft' alternative (e.g. green infrastructure) to hardened shoreline structures such as bulkheads and rip rap to help prevent further shoreline erosion along the east shores of East and Blackwater Bays, dampening of wave energy and decreasing erosion to help stabilize sediments and decrease turbidity.6. Help protect significant archaeological and historical sites on the Department of Defense Eglin Air Force Base property that are increasingly vulnerable to the eroding shoreline.

Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Environmental changes / issues, Erosion, Lack of environmental awareness, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	Some basic parameters will be tracked at every restoration site: project design area vs. actual footprint, shoreline position, depth profile, marsh/SAV survey. Some specific locations will be selected for more comprehensive monitoring (finfish, shellfish, encrusting organisms, water quality, marsh diversity), based on site conditions, location or other science needs. Pre-restoration monitoring will include the basic parameters outlined above to establish a baseline to assess changes. Post-reef restoration monitoring will occur at semi-annual intervals for a 5-year required monitoring period. In addition to directly measuring the response of marine habitats to the restoration efforts, these data will measure the change in available habitat and food resources for birds and other marine animals that may use this habitat. Our surveys will determine the success of the following targeted draft goals:Oyster counts: Species richness and abundanceAbundance of shellfish and finfish: Species richness and abundanceSeagrass beds: Density, percent cover and mappingShoreline dynamics: Shoreline profile and change over timeMarshes: Species richness and abundanceMonitoring results will be evaluated annually to determine any obvious positive or negative trends. Those trends will be examined in annual reports and used as points of discussion for any needed adaptive management strategies.
Project Contact Name	Anne Birch
Project Cost	>$1 million

Project Map #	5
Latitude	30.564966
Longitude	-86.868566
Project Title	Rattlesnake Bluff Road and Riverbank Restoration Project, FL
Location Description	Rattlesnake Bluff Road extends from Route 87 (western-most terminus) in Santa Rosa County east to SR 85 in Okaloosa County. Rattlesnake Bluff Road may also be known as Eglin AFB Road 221.
Project Description	The Yellow River is a large, blackwater river which flows through Alabama and Florida into Pensacola Bay and the Gulf of Mexico. Historically considered a relatively undisturbed system, the Yellow River is increasingly impacted by human population growth and development. Excessive sedimentation resulting from riverbank instability and unpaved road crossings is believed to be the primary factor causing degradation and imperilment of river habitat and biological communities in the basin as well as Pensacola Bay. A 2010 study completed by The Nature Conservancy, funded by the Florida Fish and Wildlife Conservation Commission and the U.S. Department of Defense, identified and prioritized areas contributing to habitat degradation and impairment within the river corridor and at unpaved road crossings throughout the entire Yellow River Basin. Among the highest priority areas for restoration was the area near Rattlesnake Bluff Road, an unpaved road located in Okaloosa and Santa Rosa counties in Florida. The study identified a total of 35 impaired sites in the nearby riverbank and road which contribute a substantial amount of sediment pollution to the river and bay, including 15 impaired sites within the Yellow River corridor and 20 impaired unpaved road crossings. In addition to substantially degrading habitats for state and federally protected species, the poorly-maintained road commonly washes out, limiting or restricting public access and isolating communities along its length. Fortunately, on-the-ground restoration is effective in stabilizing riverbanks and unpaved roads, with direct and measurable benefits to riverine habitats and biota, as well as the public. The objective of this project is to stabilize Rattlesnake Bluff Road and nearby eroded riverbank sites in order to reduce sediment pollution to the Yellow River and Pensacola Bay and provide a reliable thoroughfare for the public. We will work with local, state, and federal experts to determine the most effective methods for restoring these sites; with road restoration options including culvert replacement, soil and outlet stabilization, and paving; and riverbank restoration options including gabions, revegetation, and other standard riparian stabilization techniques. This project will benefit the environment and the public by restoring approximately 15 miles of road and 25 miles of river and tributary habitats; improving the populations and stability of riverine biota, including state and federally protected species; reducing sediment pollution to the Yellow River and Pensacola Bay; improving water quality and clarity by reducing suspended solids; and providing a stable and reliable road to local communities and the general public.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach.

Root Causes	Environmental changes / issues, Erosion, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	100% of the "high" risk impaired river corridor and stream crossing sites identified for this road in the Yellow River Assessment are stabilized. The quantity of sedimentation from Rattlesnake Bluff Road entering the Yellow River and its tributaries and into West Bay is reduced by X% over X years (need engineering plans to quantify). Gulf sturgeon essential habitat is improved that allows for increased spawning events (need to quantify).
Project Contact Name	Anne Birch
Project Cost	>$1 million

Project Map #	6
Latitude	30.802552
Longitude	-87.069852
Project Title	Wolfe Creek Forest
Location Description	N of Milton (Florida) and NAS Whiting Field; generally E of SR 87 and W of CR 191 on SW side of Blackwater River State Forest. Lat/Long is near mid-point of project.
Project Description	The project connects Blackwater River State Forest (BRSF) to the east and NAS Whiting Field to the southwest. It is proposed as either fee or acquisition of a conservation easement. The project is part of a long-standing, landscape-scale and watershed-based acquisition and restoration project seeking to connect the BRSF, Eglin Air Force Base and the Conecuh National Forest in adjacent Alabama, into a conservation landscape of nearly one million acres. Such an interconnected and managed landscape will provide ample habitat for wide-ranging vertebrate species (e.g., Florida black bear), numerous waterfowl and other migratory bird species, as well as provide high ecosystem resiliency. The region represents the largest, contiguous landscape-level longleaf pine system in the world. The project will compensate for impacts to water quality through the protection of key biodiversity, sustain and restore the quality and natural function of terrestrial and freshwater systems, protect surface waters of the state and provide resource-based public recreation. Conservation of the project will afford protection to numerous seepage and blackwater streams that are tributaries of the Blackwater River. These streams support numerous rare aquatic flora and fauna, and are considered a focal habitat of the FFWCC's Comprehensive Wildlife Conservation Strategy. Big Coldwater Creek is one of the most ecologically significant, scenic and popular canoeing/kayaking creeks in all of Florida and is a major tributary of the Blackwater River, which itself feeds into the estuarine system of Blackwater Bay – an Outstanding Florida Water that sustains important fisheries in the region. The Florida Natural Areas Inventory indicates that Big Coldwater Creek and Wolfe Creek are identified as Priority 1 Wetlands Protection Priorities. By extending and buffering existing managed areas in the region, the project enhances management of the series of important public lands, waters and estuaries, including protection of the vital military mission at NAS Whiting Field.The Wolfe Creek Forest project targets restoration of historic longleaf pine communities and reestablishment of the natural hydrology of the region, including water quality and quantity improvements, seasonal timing and historic flow patterns to ensure that sufficient quantities of water are available to meet the current and future needs of natural ecosystems – including significant estuaries – and the public. With thinning, replanting of longleaf pine, introduction of prescribed fire, and sustainable forestry management practices, the project will increase the region's overall resilience to future natural and human-made disasters and protect a valuable watershed of several of the Gulf's near-shore estuaries.

Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Contamination, Environmental changes / issues, Erosion, Invasive species, Lack of adequate funding, Lack of environmental awareness, Limited economic diversity, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow, Water supply
Proposed Metric(s)	Monitor yearly for improved water quality using established parameters; Determine species/community change, track sea level rise and other climate related change, CO2 sequestration by forestlands; Measure turbidity and monitor yearly; EPPC Category 1 invasive exotics, treatment of infestations. Monitor by regional CISMAs; Increase in acres protected/year vs. previous five years (2009-2013); Number of visitors to environmental education programs and informational/interpretive signs installed. Conduct surveys on visitor experiences; New jobs added/maintained (e.g., military bases), hunting/ fishing licenses sold, fisheries productivity (e.g., shellfish harvesting), acres of timberland with forest product revenue, ecotourism expenditure; Base line of vegetative cover, riparian corridors, seagrass beds, etc. Monitor yearly for changes. Number/size of clear cuts and forest restoration on working lands and Silvicultural BMPs; Use flow (cubic feet/second) and stream velocity devices. Aerial and remote imagery to measure variability in seasonal and headwater wetlands; Acres of recharge lands for Floridan, intermediate and surficial aquifers. Recharge rate (inches/year) multiplied by acres of variable recharge type (soil, geology, depth to aquifer) estimate gallons of water recharged. Acres of total watershed/headwater wetlands and riparian areas for municipal water supply. District plans for well fields and areas targeted for alternative water supply.
Project Contact Name	Richard Hilsenbeck
Project Cost	>$1 million

Project Map #	7
Latitude	30.513636
Longitude	-87.0765
Project Title	Garcon Ecosystem
Location Description	Mostly S of I-10 on Garcon Peninsula and SW of Milton and Bagdad, Florida. Lat/ Long is near mid-point of project.
Project Description	Note: This material is adapted from that in the Florida Forever Five Year Plan. The wet, grassy prairies covering the long peninsula jutting into the north end of Pensacola Bay – and dividing East Bay and Escambia Bay – represent some of the best pitcher-plant prairies remaining in Florida. The Garcon Ecosystem project will protect these prairies and their intact hydrology, thereby helping their rare plant and animal species survive, maintain the seasonal timing and flows of these unique habitats and help support and enhance the water quality of Pensacola Bay. The project also presents numerous opportunities for public recreation and education.Natural communities within this project are in good to excellent condition and include wet prairie, estuarine tidal marsh, and wet flatwoods. The prairie community is highly diverse and includes terrestrial orchids and insectivorous plants such as pitcher plants, sundews, butterworts and bladderworts. Especially significant is the large population of state endangered white-topped pitcher plants and the globally imperiled panhandle lily. The property also provides habitat for the federally listed flatwoods salamander. The sensitive prairies are threatened by ditching, roads and residential development that fragment and degrade these significant wetland habitats. Wetland soils of the site are easily compacted and rutted with resulting surface water flows to the adjacent estuarine systems disrupted. Development pressure has also increased because of the Pensacola Bay bridge that routes considerable traffic from I-10 across to the Gulf Breeze peninsula southeast of Pensacola.The project has the size, location, and quality of resources to qualify as a "State Buffer Preserve" to the Yellow River Marsh Aquatic Preserve and adjacent Class II shell fishing waters. The project includes lands that require prescribed fire management and long-range plans include restoration of disturbed areas, the perpetuation and maintenance of natural communities. The primary goals of protection and management for the project are to conserve and protect environmentally unique and irreplaceable lands that contain native, relatively unaltered flora and fauna representing a natural area unique to, or scarce within, a region of this state or a larger geographic area; to conserve and protect significant habitat for native species or endangered and threatened species; and to conserve, protect, manage, or restore important ecosystems, landscapes, and forests, in order to enhance or protect significant surface water, coastal, recreational, timber, fish or wildlife resources which local or state regulatory programs cannot adequately protect. The Northwest Florida Water Management District (NWFWMD) has already acquired substantial acreage within the project area and has actively managed the property for restoration of its plant, animal and water resources.

Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Contamination, Environmental changes / issues, Erosion, Invasive species, Lack of adequate funding, Lack of environmental awareness, Limited economic diversity, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow, Water supply
Proposed Metric(s)	Monitor yearly for improved water quality using established parameters; Determine species/community change, track sea level rise and other climate related change, CO_2 sequestration by forestlands; Measure turbidity and monitor yearly; EPPC Category 1 invasive exotics, treatment of infestations. Monitor by regional CISMAs; Increase in acres protected/year vs. previous five years (2009-2013); Number of visitors to environmental education programs and informational/interpretive signs installed. Conduct surveys on visitor experiences; New jobs added/maintained (e.g., military bases), hunting/ fishing licenses sold, fisheries productivity (e.g., shellfish harvesting), acres of timberland with forest product revenue, ecotourism expenditure; Base line of vegetative cover, riparian corridors, seagrass beds, etc. Monitor yearly for changes. Number/size of clear cuts and forest restoration on working lands and Silvicultural BMPs; Use flow (cubic feet/second) and stream velocity devices. Aerial and remote imagery to measure variability in seasonal and headwater wetlands; Acres of recharge lands for Floridan, intermediate and surficial aquifers. Recharge rate (inches/year) multiplied by acres of variable recharge type (soil, geology, depth to aquifer) estimate gallons of water recharged. Acres of total watershed/headwater wetlands and riparian areas for municipal water supply. District plans for well fields and areas targeted for alternative water supply.
Project Contact Name	Richard Hilsenbeck
Project Cost	>$1 million

Project Map #	8
Latitude	30.554685
Longitude	-86.949242
Project Title	Eglin AFB Range Road and Unpaved Stream Crossing Stabilization
Location Description	Areas within the 460,000 acres that comprise the Eglin Air Force Base Test Range, which spans across Santa Rosa, Okaloosa, and Bay Counties in Florida.
Project Description	We propose the stabilization or replacement of approximately 78 stream crossings that directly affect the Yellow River, more if the requested money allows. All stabilization will be hilltop to hilltop at each crossing. Technical Feasibility: Eglin AFB completed a Road –Stream Crossing Assessment in 2008 to evaluate the impact of the unpaved road-stream crossings aquatic ecosystems and prioritize crossing sites for treatment. The result is an accessible library of information for the stakeholders to use in a designing and implementing crossing site treatment (decommission or maintenance) solutions. Environmental Benefits: Many environmental documents have identified sedimentation as a primary issue affecting the heath of the Pensacola Bay Watershed and unpaved roads as a primary source of this sedimentation. From a biological perspective, sedimentation is altering the habitats of aquatic species protected under 270 state and federal regulations. Economic and Social Benefits: Stabilization of the Eglin Range Road Network will benefit the test and training mission conducted on the range complex and reduce the annual maintenance costs for these roads. Logistics and maintenance costs for the extensive range vehicle fleet and equipment will also be reduced. Improving the water quality of the Yellow River and Pensacola Bay Watershed will provide economic benefits to local tourism, recreation, and regional flora and fauna. The Florida Panhandle attracts thousands of tourists each year that come to enjoy the coastal and inland natural environment. The unique and diverse natural environment in the Panhandle is what attracts tourists and by protecting and improving the inland and costal waterways this project will be an important strategy to make sure that tourists continue to be attracted to the area. Improving water quality will help maintain the Panhandle as a desirable destination for boaters and kayakers, and will help maintain water quality, maintain biodiversity, provide habitat for plants, birds and wildlife, and maintain fish populations which attract divers and fisherman. Community Resilience: Improvements to the Yellow River and Pensacola Bay Watershed promotes the resilience of the area's economy by strengthening the attraction of the natural environment to attract tourism and local investment. This area relies heavily on the economic base provided by a large military presence. In today's atmosphere of government downsizing and economic uncertainty this proposal would help build a more diverse economy by strengthening tourism and attracting more permanent residents that do not rely on the military for their income. Conflict or Complements to Existing Efforts: These funds will enable Eglin to move forward on the many repairs need to reduce and control the sedimentation caused by the stormwater runoff from the many stream crossings that intersect the Eglin test range.

Major Actions	Reduce sedimentation.
Root Causes	Erosion
Proposed Metric(s)	Many environmental documents have identified sedimentation as a primary issue affecting the heath of the Pensacola Bay Watershed and unpaved roads as a primary source of this sedimentation. From a biological perspective, sedimentation is altering the habitats of aquatic species protected under 270 state and federal regulations. Economic and Social Benefits: Stabilization of the Eglin Range Road Network will benefit the test and training mission conducted on the range complex and reduce the annual maintenance costs for these roads. Logistics and maintenance costs for the extensive range vehicle fleet and equipment will also be reduced. Improving the water quality of the Yellow River and Pensacola Bay Watershed will provide economic benefits to local tourism, recreation, and regional flora and fauna. The Florida Panhandle attracts thousands of tourists each year that come to enjoy the coastal and inland natural environment. The unique and diverse natural environment in the Panhandle is what attracts tourists and by protecting and improving the inland and costal waterways this project will be an important strategy to make sure that tourists continue to be attracted to the area. Improving water quality will help maintain the Panhandle as a desirable destination for boaters and kayakers, and will help maintain water quality, maintain biodiversity, provide habitat for plants, birds and wildlife, and maintain fish populations which attract divers and fisherman.
Project Contact Name	David K Holland, P.E.
Project Cost	>$1 million

Project Map #	9
Latitude	30.63233
Longitude	-86.58561
Project Title	Unpaved Eglin Range Road paving and stabilization
Location Description	Covers Pensacola and Choctawhatchee Bays. Areas within the 460,000 acres that comprise the Eglin Air Force Base Test Range, which spans across Santa Rosa, Okaloosa, and Bay Counties in Florida.
Project Description	We propose the stabilization of 2,000 miles of clay road which are adjacent to the many waterways that intersect Eglin AFB and add to the sedimentation of the Yellow River, Pensacola Bay, and Choctawhatchee Bay watersheds. Technical Feasibility: Eglin AFB has been very proactive over many years establishing plans and processes to reduce sedimentation in the waters of the state. We have the plans and process in place to reduce this sedimentation through many years of research and study. Environmental Benefits: Many environmental documents have identified sedimentation as a primary issue affecting the heath of the Yellow River, Pensacola Bay, and Choctawhatchee Bay Watersheds; unpaved roads are a primary source of this sedimentation. Eglin's range roads directly affect many different watersheds but two major watersheds are Pensacola Bay and Choctawhatchee Bay. From a biological perspective, sedimentation is altering the habitats of aquatic species protected under 270 state and federal regulations. Economic and Social Benefits: Stabilization of the Eglin Range Road Network will benefit the test and training mission conducted on the range complex and reduce the annual maintenance costs for these roads. Logistics and maintenance costs for the extensive range vehicle fleet and equipment will also be reduced. Improving the water quality of the Yellow River, Pensacola Bay, and Choctawhatchee Bay watersheds will provide economic benefits to local tourism, recreation, and regional flora and fauna. The Florida Panhandle attracts thousands of tourists each year that come to enjoy the coastal and inland natural environment. The unique and diverse natural environment in the Panhandle is what attracts tourists and by protecting and improving the inland and costal waterways this project will be an important strategy to make sure that tourists continue to be attracted to the area. Improving water quality will help maintain the Panhandle as a desirable destination for boaters and kayakers, and will help maintain water quality, maintain biodiversity, provide habitat for plants, birds and wildlife, and maintain fish populations which attract divers and fisherman.Community Resilience: Improvements to the Yellow River, Pensacola Bay, and Choctawhatchee Bay watersheds promotes the resilience of the area's economy by strengthening the attraction of the natural environment to attract tourism and local investment. This area relies heavily on the economic base provided by a large military presence. In today's atmosphere of government downsizing and economic uncertainty this proposal would help build a more diverse economy by strengthening tourism and attracting more permanent residents that do not rely on the military for their income.

Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach., Reduce impacts to groundwater.
Root Causes	Contamination, Environmental changes / issues, Erosion, Lack of adequate funding, Lack of communication among diverse stakeholders, Lack of environmental awareness, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow
Proposed Metric(s)	Reduction of Soil Loss. Many environmental documents have identified sedimentation as a primary issue affecting the heath of the Yellow River, Pensacola Bay, and Choctawhatchee Bay Watersheds; unpaved roads are a primary source of this sedimentation. Eglin's range roads directly affect many different watersheds but two major watersheds are Pensacola Bay and Choctawhatchee Bay. From a biological perspective, sedimentation is altering the habitats of aquatic species protected under 270 state and federal regulations.Economic and Social Benefits: Stabilization of the Eglin Range Road Network will benefit the test and training mission conducted on the range complex and reduce the annual maintenance costs for these roads. Logistics and maintenance costs for the extensive range vehicle fleet and equipment will also be reduced. Improving the water quality of the Yellow River, Pensacola Bay, and Choctawhatchee Bay watersheds will provide economic benefits to local tourism, recreation, and regional flora and fauna. The Florida Panhandle attracts thousands of tourists each year that come to enjoy the coastal and inland natural environment. The unique and diverse natural environment in the Panhandle is what attracts tourists and by protecting and improving the inland and costal waterways this project will be an important strategy to make sure that tourists continue to be attracted to the area.
Project Contact Name	David K Holland, P.E.
Project Cost	>$1 million

Project Map #	10
Latitude	30.335398
Longitude	-87.132069
Project Title	Pensacola Beach Sewer Rehabilitation
Location Description	Pensacola Beach (Reference Point is approximate middle of the project)
Project Description	The proposed project entails the rehabilitation of various wastewater collection system components owned by the Emerald Coast Utilities Authority (ECUA) on Pensacola Beach to correct existing inflow & infiltration (I&I) problems, with the objective of minimizing the number and severity of sanitary sewer overflow (SSO) incidents. The project includes: sewer main rehabilitation through cured-in-place pipe lining and point repairs; repair and sealing of sewer laterals; and rehabilitation or replacement of failing manholes.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading.
Root Causes	Domestic wastewater, Environmental changes / issues, Lack of adequate funding
Proposed Metric(s)	The project's impact and success will be gauged, in large part, by the reduction of Sanitary Sewer Overflows (SSOs) attributable to reduced inflow and infiltration (I&I) entering the wastewater collection system. The SSOs that occur on Pensacola Beach can have a direct impact on the water quality of Santa Rosa Sound and the Gulf of Mexico.
Project Contact Name	Tim Haag
Project Cost	>$1 million

Project Map #	11
Latitude	30.408154
Longitude	-87.22103
Project Title	Downtown Pensacola Collection System Rehabilitation
Location Description	Pensacola, FL (Reference point is approximate middle of the project area)
Project Description	The proposed project entails the rehabilitation of various wastewater collection system components within downtown Pensacola to correct existing inflow & infiltration (I&I) problems, with the objective of minimizing the number and severity of sanitary sewer overflow (SSO) incidents. The project includes: sewer main rehabilitation through cured-in-place pipe lining and point repairs; repair and sealing of sewer laterals; and rehabilitation or replacement of failing manholes.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading.
Root Causes	Domestic wastewater, Environmental changes / issues, Lack of adequate funding
Proposed Metric(s)	The project's impact and success will be gauged, in large part, by the reduction in number and severity of Sanitary Sewer Overflows (SSOs) attributable to reduced inflow and infiltration (I&I) entering the wastewater collection system. The SSOs that occur within downtown Pensacola can have a direct impact on the water quality of Pensacola Bay, Santa Rosa Sound and the Gulf of Mexico.
Project Contact Name	Tim Haag
Project Cost	>$1 million

Project Map #	12
Latitude	30.335398
Longitude	-87.132069
Project Title	Pensacola Beach Reclaimed Water System Expansion
Location Description	Pensacola Beach, FL (Reference point is approximate site of ECUA's Pensacola Beach Wastewater Treatment Plant)
Project Description	This project entails the expansion of the existing reclaimed water reuse system on Pensacola Beach. The system improvements include pumping, storage, and distribution components. The project would achieve an increase in the use of reclaimed water from Emerald Coast Utility Authority's Pensacola Beach Wastewater Treatment Plant (PBWWTP), and reduction of surface water discharge to Santa Rosa Sound/Pensacola Bay system.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Domestic wastewater, Environmental changes / issues, Lack of adequate funding, Water reuse
Proposed Metric(s)	The ECUA's PBWWTP is permitted at 2.4 MGD, with current average daily flows of approximately 0.9 MGD. Currently, approximately 10% of the reclaimed water is reused for irrigation of public Rights-of-Way and industrial (in-plant) purposes. Expansion of the reclaimed water distribution system would reduce the surface water discharge and the associated nutrient loading, of the AWT reclaimed water, the majority of which is currently discharged to Santa Rosa Sound, and lessen the demand and use of the potable water resources that serve Pensacola Beach.
Project Contact Name	Tim Haag
Project Cost	>$1 million

Project Map #	13
Latitude	30.37854
Longitude	-87.307792
Project Title	Beach Haven Sewer Expansion
Location Description	Warrington, FL (reference point is approximate middle of the project area)
Project Description	This is a joint project between Escambia County and Emerald Coast Utilities Authority (ECUA) to design and construct infrastructure improvements for: (1) stormwater management; and (2) sewer expansion in the Beach Haven area of coastal Escambia County, directly adjacent to Bayou Grande and Jones Swamp Creek, which is part of the Bayou Chico watershed. Bayou Chico is a DEP-designated BMAP project area, with a program strategy aimed at reducing fecal coliform. These two bayous are part of the overall Pensacola Bay system. The project would entail: (1) installation of stormwater conveyance and treatment systems throughout the project area; and (2) extension of central sanitary sewer service to approximately 1720 properties, with the associated phase-out of on-site treatment and disposal systems (septic tanks) for the same properties. The project would also entail an associated surface water quality monitoring program in Bayou Grande and adjoining areas in Pensacola Bay, and possibly in areas within the Bayou Chico watershed.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Domestic wastewater, Environmental changes / issues, Ineffective or unused BMPs, regulations & development codes, Ineffective stormwater systems, Lack of adequate funding
Proposed Metric(s)	The project's impact and success can be gauged, in large part, through: (1) the number of connections made to the central sewer collection system and the associated properties abandoning septic tanks; (2) linear feet of stormwater and wastewater lines constructed and put into use; and (3) monitoring surface water quality parameters.
Project Contact Name	Tim Haag
Project Cost	>$1 million

Project Map #	14
Latitude	30.566196
Longitude	-87.266014
Project Title	Ashland Park Sewer Expansion Project
Location Description	Escambia County, FL (Reference point is approximate center of project area
Project Description	This is a joint project between Escambia County and Emerald Coast Utilities Authority to design and construct infrastructure improvements for: (1) stormwater management; and (2) sewer expansion in the Ashland Park Subdivision in Escambia County, which is located within the Escambia Bay watershed. The Upper Escambia Bay is the subject of a current TMDL study by the DEP, and is being considered for inclusion in a BMAP program for nutrients. The Ashland Park subdivision is adjacent to Clear Creek, which flows into the lower Escambia River. The project would entail: (1) installation of stormwater control measures in the project area; and (2) extension of central sanitary sewer service to approximately 210 properties, with the associated phase-out of on-site septage treatment and disposal systems (septic tanks) for the same properties. The project would also entail an associated surface water quality monitoring program in affected water bodies.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Domestic wastewater, Ineffective or unused BMPs, regulations & development codes, Ineffective stormwater systems, Lack of adequate funding
Proposed Metric(s)	The project's impact and success can be gauged, in large part, through: (1) the number of connections made to the central sewer collection system and the associated properties abandoning septic tanks; (2) linear feet of stormwater and wastewater lines constructed and put into use; and (3) monitoring surface water quality parameters.
Project Contact Name	Tim Haag
Project Cost	>$1 million

Project Map #	15
Latitude	30.379021
Longitude	-87.286119
Project Title	Navy Point Sewer Expansion Project
Location Description	Warrington, FL (reference point is approximate middle of the project area)
Project Description	This is an Emerald Coast Utilities Authority (ECUA) project to design and construct infrastructure improvements for sewer expansion in the Navy Point area of coastal Escambia County, directly adjacent to Bayou Grande, which is part of the Pensacola Bay watershed. The project would entail the extension of central sanitary sewer service to approximately 371 properties within Phase III & IV of the project area, with the associated phase-out of on-site sewage treatment and disposal systems (septic tanks) for the same properties. The ECUA already has completed Phases I, II and IIB of this project, which established sewer service to a total of 335 properties. The proposed project would also entail an associated surface water quality monitoring program in Bayou Grande and adjoining areas in Pensacola Bay.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading.
Root Causes	Domestic wastewater, Environmental changes / issues, Lack of adequate funding
Proposed Metric(s)	The project's impact and success can be gauged, in large part, through: (1) the number of connections made to the central sewer collection system and the associated properties abandoning septic tanks; and (2) monitoring surface water quality parameters.
Project Contact Name	Tim Haag
Project Cost	>$1 million

Project Map #	16
Latitude	30.564977
Longitude	-87.258461
Project Title	Thousand Oaks Sewer Expansion Project
Location Description	Escambia County, FL (Reference point is approximate center of project area
Project Description	This project entails the design and construction for sewer expansion in the Thousand Oaks Subdivision in Escambia County, which is within the Escambia Bay/Pensacola Bay watershed. The Upper Escambia Bay is the subject of a current TMDL study by the DEP, and is being considered for inclusion in a BMAP program for nutrients. The Thousand Oaks subdivision is adjacent to Clear Creek, which flows into lower Escambia River. The project would entail the extension of ECUA's sewer collection system to provide service to approximately 215 properties, with the associated phase-out of on-site sewage treatment and disposal systems (septic tanks) for the same properties. The project would also entail an associated surface water quality monitoring program for nutrients.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading.
Root Causes	Domestic wastewater, Environmental changes / issues, Lack of adequate funding
Proposed Metric(s)	The project's impact and success can be gauged, in large part, through: (1) the number of connections made to the central sewer collection system and the associated properties abandoning septic tanks; (2) linear feet of stormwater and wastewater lines constructed and put into use; and (3) monitoring surface water quality parameters
Project Contact Name	Tim Haag
Project Cost	>$1 million

Project Map #	17
Latitude	30.3764
Longitude	-87.2687
Project Title	Naval Air Station Pensacola and Escambia County Living Shoreline Project
Location Description	the eastern shore of NAS Pensacola, and the eroded southern shore of NAS Pensacola across from Pensacola Pass
Project Description	This proposed project will create living shoreline habitat along White Island, the eastern shore of NAS Pensacola, and the eroded southern shore of NAS Pensacola across from Pensacola Pass. The living shoreline will be comprised of an offshore breakwater of rock and oyster shell, and a vegetated shoreline of emergent marsh vegetation.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce and treat stormwater., Reduce sedimentation.
Root Causes	Erosion, Ineffective stormwater systems, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	Decrease in turbidity; Decrease in nutrient loading; Water Sediment Quality/ Quantity ratio improvements; Priority habitat areas created, restored, managed, and protected for wetlands, forests, seagrass, saltmarsh, oyster reef; Enhanced military lands resilience .
Project Contact Name	Mark Gibson
Project Cost	>$1 million

Project Map #	18
Latitude	30.802778
Longitude	-87.025556
Project Title	Pensacola Bay Watershed Stewardship Program
Location Description	middle of watershed
Project Description	Pensacola Bay Watershed Stewardship ProgramProject will be designed to utilize existing and creating new citizen environmental monitoring programs throughout the PB watershed. Goals:· Create a holistic, interdisciplinary citizen science monitoring network and environmental educator network to address watershed issues throughout the Pensacola Bay watershed. Utilize data collected to monitor trends and respond to changes in the watershed. · Establish a relationship of residents with in the watershed in which they works and play. Activities:· Develop "Train the trainer" programs to develop lead volunteers to train others in citizen science programs and stablish a network of trained environmental educators to address issues such as stormwater runoff, nutrient loading, erosion, groundwater contamination, restoration, habitat conservation, shoreline hardening, fish advisories, invasive species and other watershed issues, etc. · Utilize protocols for best practices of various citizen science monitoring projects such as the Phenology Network, St. Andrews Bay RMA (Resource Management Association) seagrass monitoring, Charlotte/ Lee Sea Grant scallop monitoring, Mobile Bay Oyster Gardening program, Fl. Lakewatch, Alabama Water Watch, Bream Fishermen water quality monitoring program, CBA (Choctawhatchee Basin Alliance) volunteer trained invasive species monitoring and removal, S.U.R.F (Shoreline Users Resource Force) volunteer coastal monitoring and educators, Ocean Hour, coastal clean-ups, mPInG (meteorological phenomena identification near the ground) weather information, amphibian an bird migrations, etc. · Develop best practices for citizen science projects as needed to address needs of the community and volunteers· Expand the OYSTER shell recycling program throughout the 2 county area of the watershed· Utilize GCOOS citizen science website as a clearing site for reporting coastal data and monitoring trendsBudget: $79,000, purchase monitoring equipment, supplies, training materials for organizations.Partners: UF/IFAS Extension, Fl. Sea Grant, citizen organizations throughout the Pensacola Bay Watershed.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach., Reduce impacts to groundwater.
Root Causes	Atmospheric deposition, Contamination, Domestic wastewater, Environmental changes / issues, Erosion, Ineffective or unused BMPs, regulations & development codes, Ineffective stormwater systems, Invasive species, Lack of adequate funding, Lack of environmental awareness, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow, Water reuse, Water supply

Proposed Metric(s)	Number of primary school students educated on environmental issues and demonstration and adaptation of behaviors and BMPS to increase environmental protection and restoration · Number (and trend) of citizens involved in environmental restoration projects, environmental education and citizen science activities· Acres of land managed using Best Management Practices (BMPs), reduction of nutrients and sediments as a result of adopted BMPs· Adaptation of watershed BMP's and behavior changes by homeowners
Project Contact Name	Chris Verlinde
Project Cost	<$100,000

Project Map #	19
Latitude	30.388812
Longitude	-87.09814
Project Title	Northridge/Ranchettes Sewer & Stormwater Project
Location Description	The area to benefit from this project includes the Northridge and Ranchettes subdivision located to the north of Hwy 98 (Gulf Breeze Parkway) and to the south of Pensacola Bay in Gulf Breeze Florida. The project boundaries include both the benefit area as well as the neighboring subdivision to the west, Whisper Bay Subd including the private property located between the impacted subdivisions. The latitude/ longitude point represents the intersection of Rancho Villa Dr (main subd entrance fro Northridge/Ranchettes) and Ranchette Square.
Project Description	The Ranchettes and Whisper Bay subdivision areas have experienced repetitive, extensive roadway and structural flooding including the inundation of septic tank drain fields resulting in septic tank failure. Approximately 44 private residences were affected by the April 30th flooding event including 10 that were considered minor damage and 3 that were considered major damage. Some property owners have experienced structural flooding with previous rainfall events. There has been chronic yard and road flooding for several years as these subdivisions were constructed prior to the implementation of stormwater control regulations. This project includes two components. The first is conversion of the Ranchette Square Subdivision from septic system to wastewater gravity line and lift station. Significant public health risks were created as a result of the damage and flooding caused by Hurricane Ivan and other more recent flooding disasters including the April 30, 2014 flooding resulting in flooding and overflows of septic systems in this area. Conversion to a sewer system would have virtually eliminated this problem. The second component would include the acquisition of drainage easements and potentially, retention pond property to facilitate a drainage avenue from the affected properties to a safe outfall in Pensacola bay. Given the topography of the area, a positive drainage outfall can be attained with minimal disruption to existing homes and properties. The project is technically feasible and the most cost effective as property acquisition is typically more costly.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation., Reduce impacts to groundwater.
Root Causes	Contamination, Domestic wastewater, Environmental changes / issues, Ineffective or unused BMPs, regulations & development codes, Ineffective stormwater systems, Lack of adequate funding

Proposed Metric(s)	Contamination in the form of septic effluent mixing with the high ground water table will be eliminated. Sedimentation into the adjoining wetlands will be reduced by allowing a quantity of the SW to be deposited into a treatment basin. This quantity would be removed during maintenance activities and the volume documented. * Domestic WW is currently not available for this area. The installation of a central SS will enhance both the quality of life and quality of groundwater. The number of abated septic tanks will be documented. * Environmental changes/issues - With environmental climate change, the frequency of groundwater table being elevated due to excessive rainfall is more prevalent. This causes the more frequent interaction of septic effluent with the groundwater table and potential sedimentation into the wetlands due to additional SW runoff. * Ineffective or unused BMPs, regulations & codes AND Ineffective SW systems. Development occurred prior to the implementation of meaningful SW treatment and regulations. Implementation of this project will bring the area more in compliance with current state and local SW treatment and control regulations. * Lack of adequate funding - The county budget (for SW) and the city budget (for SS) do not have sufficient capital funds in place to construct necessary SW and sewer enhancements without grants. The traditional grant sources available (CDBG) are only available to LMI residents, of which this area does not qualify.
Project Contact Name	Sheila Harris
Project Cost	>$1 million

Project Map #	20
Latitude	30.415075
Longitude	-87.250083
Project Title	City of Pensacola Bill Gregory Park Regional Stormwater Treatment Facility
Location Description	middle of the proposed stormwater pond
Project Description	The proposed Bill Gregory Park Regional Stormwater Treatment Facility project will capture and treat stormwater runoff from approximately 37 acres currently discharging untreated runoff directly into the eastern head waters of Bayou Chico and eventually into Pensacola Bay. The Bayou Chico watershed is located in the southern end of Escambia County, just east of Blue Angel Parkway and north of Bayou Grande, and has a 10.36-square-mile (mi_) drainage basin area and has been identified as impaired for fecal coliform by state-adopted TMDL standards. The proposed facility improvements will include a two-tier treatment system with proprietary pretreatment units upstream to remove debris and floatables prior to entering a wet detention pond. The pond will be approximately 2.5 acres in size and will take an innovative approach to stormwater management by having multiple ecological benefits. In addition to its water quality improvement, the pond will also serve as a wetland habitat for a variety of plants, birds and other aquatic animal species. Continued growth in the City of Pensacola and the adjacent suburban areas has increased the discharge of untreated runoff, causing increases in both sediment and nutrient loading that have had adverse effects on the ecology of Bayou Chico Pensacola Bay. The Bay represents a significant habitat for 70 identified rare, imperiled or threatened animal species and at least 68 rare, imperiled or threatened plant species. The proposed pond will replace an existing manmade conveyance ditch (approximately 200 feet long or .06 acres) that currently meanders through the park and promotes erosion and transport of runoff pollutants directly to the eastern tributary of Bayou Chico during rainfall events.Project benefits include:· The pond project will be constructed as part of the existing recreational public park and will be designed to attract human use to an area near the Bayou Chico head waters. · Currently no structured parking exists for Bill Gregory Park and this creates safety issues and areas where grass has died and erosion issues are present. The proposed park improvements will create a new organized sustainable semi-pervious parking area in which the rainwater will be captured directly by the permeable pavement in the parking lot. Any run off from the parking lot will be directed into rain gardens or bio-swales where it can drain into the underlying soil instead of flowing into storm drains. · Creates a unique educational opportunity for an underserved diverse neighborhood to learn more about wetland systems and the importance of habitat protection and preservation. Elevated boardwalks with educational kiosks and signage will be constructed. These kiosks will explain the importance of stormwater management and treatment to enhance bay water quality, describe the purpose and benefits to sustainable parking design, and identify vegetation and animal species critical to this unique habitat.

Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation.
Root Causes	Contamination, Erosion, Ineffective stormwater systems, Lack of adequate funding, Lack of environmental awareness, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow
Proposed Metric(s)	· Reduction of non-point source pollutants directly discharging into Pensacola Bay via Bayou Chico. · Project will contribute to the City of Pensacola's stormwater treatment goal of 80% pollution reduction from runoff by 2020. · Gradual improvement in water quality for Bayou Chico and Pensacola bay. · This project not only complies with Federal, State and Local regulations, it is one more step in bringing Bayou Chico into compliance with Federal and State TMDL goals, which will significantly improve the marine ecosystem of Pensacola Bay and will serve as a model for future projects. Effective June 7, 2013, the fecal coliform TMDL was set at 400 counts/100ml and overall will require a 61 percent reduction at sources contributing to exceedances of the criteria.· Limited partnering with Escambia County and the Emerald Coast Utilities Authority (ECUA) will also be part of the project to ensure long-term sustainability and effectiveness of the facility and benefits to the surrounding environment.
Project Contact Name	Brad Hinote, PE
Project Cost	>$1 million

Project Map #	21
Latitude	30.415692
Longitude	-87.244992
Project Title	City of Pensacola 'R' Street at Maggie's Ditch Stormwater Treatment Enhancement Project
Location Description	proposed stormwater treatment vault location prior to discharge into Maggie's Ditch
Project Description	This proposed project will capture and provide an element of treatment for stormwater runoff from approximately 225 acres of primarily commercial area currently discharging untreated runoff directly into Maggie's Ditch, a manmade wetland tributary that discharges to head waters of eastern Bayou Chico and ultimately into Pensacola Bay. The Bayou Chico watershed is located in the southern end of Escambia County, just east of Blue Angel Parkway and north of Bayou Grande, and has a 10.36-square-mile (mi_) drainage basin area and has been identified as impaired for fecal coliform by state-adopted TMDL standards. This project is currently listed in the approved BMAP projects for Bayou Chico and improvements will include a proprietary underground treatment unit to remove an estimated 50% of total suspended solids (TSS) from the first 1" of basin runoff and removal of debris/ floatables also prior to entering Maggie's Ditch through an existing 48" discharge pipe. The City of Pensacola has partnered with both the Escambia County School District (ECSD) and Escambia County Board of County Commissioners (ECCC) on the project, as the site location is on ESCD property and the discharge location into Maggie's Ditch is owned/maintained by the ECCC. Being located on an active school site (Global learning Academy), the proposed facility will serve as an educational tool to the public and provide a unique opportunity to directly reach school-age children with an onsite kiosk and display diagram that explains how the treatment system works and benefits the environment and ecology of Maggie's Ditch, Bayou Chico and Pensacola Bay. It is estimated the system will remove approximately 20 tons of solids annually that would otherwise be discharged into Maggie's Ditch. The project site is approximately one (1) acre in size and will exhibit numerous amenities with aesthetic landscaping, an educational pavilion area, bike racks and sitting benches.· Creates a unique educational opportunity for school-age children to learn more about current stormwater treatment technologies and the importance of habitat protection and preservation. Educational kiosks and signage will be constructed to explain the importance of stormwater management and treatment to enhance bay water quality. · The project will actually be constructed as part of an existing public school facility that has recently received state recognition for scientific and environmental learning achievements and accomplishments. The facility will have an educational pavilion, resting benches, a drinking fountain, proper trash receptacles, extensive landscaping, bicycle racks and complete ADA accessibility.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation.

Root Causes	Contamination, Ineffective stormwater systems, Lack of adequate funding, Lack of environmental awareness, Quantity and timing of freshwater flow
Proposed Metric(s)	· Reduction of non-point source pollutants directly discharging into Pensacola Bay via Bayou Chico. · Project will contribute to the City of Pensacola's stormwater treatment goal of 80% pollution reduction from runoff by 2020. · Gradual improvement in water quality for both Bayou Chico and Pensacola bay. · This project not only complies with Federal, State and Local regulations, it is one more step in bringing Bayou Chico Bay into compliance with Federal and State TMDL goals, which will significantly improve the marine ecosystem of Pensacola Bay and will serve as a model for future projects. Effective June 7, 2013, the fecal coliform TMDL was set at 400 counts/100ml and overall will require a 61 percent reduction at sources contributing to exceedances of the criteria.· Partnering with ECSD and the ECCC will also be part of the project to ensure long-term sustainability and effectiveness of the facility and benefits to the surrounding environment.
Project Contact Name	Brad Hinote, PE
Project Cost	=<$1 million

Project Map #	22
Latitude	30.91758
Longitude	-87.31878
Project Title	Canoe Creek
Location Description	middle of project
Project Description	Canoe creek empties into the Escambia River. A gully on the west side of Hwy 29 that originates from an agricultural field, now extends 1 mile from the field to Canoe creek. The project would be to remove the sand deposited in the gully, reshape the gully, create a vegetative buffer,and prevent further erosion from transporting sediment to the Escambia Riverbasin.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce sedimentation.
Root Causes	Erosion, Ineffective or unused BMPs, regulations & development codes, Lack of adequate funding, Lack of environmental awareness, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	FP1, FP2, FO1, FO2, FO6, S3, S4, S5
Project Contact Name	Arlo Kane
Project Cost	>$1 million

Project Map #	23
Latitude	30.49
Longitude	-86.99
Project Title	Escribano Point
Location Description	The Latitude and longitude represent the middle of the subject property
Project Description	This project will help protect the coastal habitat of Escribano Point in Pensacola Bay. The acquisition of these parcels will help restore and maintain a high quality coastal wildlife habitat. State-owned parcels will be enhanced through prescribed burning, vegetation management and hydrologic restoration to help maximize the ecological value. The Escribano Point region of the Yellow River Wildlife Management Area represents high value coastal fish and wildlife habitat located in the East Bay portion of Pensacola Bay at the confluence of the Yellow River and Black Water River. This project complements acquisition and restoration activities already underway or planned. The shoreline provides stopover and foraging habitat for migrating shorebird species, among which are listed species such as the piping plover, Cuban snowy plover, least tern and black skimmer. Moreover, this project will also protect the estuarine system and adjacent Blackwater Bay, which contains sea grass beds vital to fish and other marine species such as the listed Gulf sturgeon.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce and treat stormwater., Reduce sedimentation., Reduce impacts to groundwater.
Root Causes	Environmental changes / issues, Invasive species, Lack of environmental awareness, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow, Water supply
Proposed Metric(s)	Projects success will be judges by the number of acres acquired thereby helping to protect the areas natural resources.
Project Contact Name	Gary Cochran
Project Cost	>$1 million

Project Map #	24
Latitude	30.380833
Longitude	-86.879167
Project Title	Navarre Beach WWTF Effluent Discharge Relocation and Regional Beneficial Reuse Project
Location Description	Location of WWTF and outfall
Project Description	Navarre Beach is an unincorporated community in Santa Rosa County, Florida. It is located on Santa Rosa Island (Island) and adjacent to the Gulf Island National Seashore. The island is a popular tourist destination for the region and provides residence for military personnel stationed at the nearby Eglin Air Force Base (AFB) and Hurlburt Field. Navarre Beach Utilities is a department within Santa Rosa County (County) public services, and provides water and sewer service to approximately 2,200 units. The Island has a build-out capacity of approximately 5,000 units. Santa Rosa County has a population of approximately 150,000 persons. The existing wastewater treatment facility (WWTF), originally constructed in the early 1970s, has a capacity to treat approximately 900,000 gallons of wastewater per day. The treated wastewater discharges directly to the Santa Rosa Sound (Sound), which is designated a Florida Outstanding Water. The County has been working since the late 1990s toward the goal of removing the discharge of the WWTF's effluent from the Sound to improve the water quality in the Sound and the Pensacola Bay Watershed. In 2001, the County approved a plan to convey the effluent to a land application site located on Eglin AFB property. The proposed project includes partnering with the other wastewater utilities within the watershed because of their need for reliable, effluent disposal and a source of reuse water for irrigation. Often during dry periods, the wastewater utilities do not have sufficient reuse capacity to adequately serve existing customers.The proposed project includes permanently relocating the discharge of the WWTF effluent to a land application site located on Eglin AFB property. The project will include the construction of rapid-rate infiltration basins (RIBs) for groundwater recharge; upgrades to the WWTF; and pump stations with forcemains to convey the effluent from the WWTF to the RIB site. In addition to eliminating direct discharge to the Sound, the project will also include provisions for distributing reclaimed wastewater to various residential and commercial reuse customers in the area to reduce potable water use and reduce withdrawals from the groundwater aquifer. Reuse of the reclaimed water will distribute the treated wastewater over a wider locale, which will better distribute nutrient loading across the surficial aquifer. Applying reclaimed water as an irrigation supply may reduce the fertilizer use by residential and commercial development. To date, the County has spent nearly $1 million toward the project, but the progress has been stalled because of the lack of available funding to continue to move forward. The planning and preliminary engineering for the RIB site and the pipeline are complete. All of the environmental assessments, surveys, and permits have been obtained. The County has negotiated a preliminary agreement for a long-term lease with Eglin AFB. Funding is needed to construct the facilities.

Major Actions	Reduce nutrient loading., Increase cooperation and coordination for monitoring, funding, implementation, outreach., Reduce impacts to groundwater.
Root Causes	Domestic wastewater, Lack of adequate funding, Water reuse, Water supply
Proposed Metric(s)	The short term metric for the reduction in nutrient loading to the watershed if the discharge to the sound is eliminated can quantified based on the historical concentrations of nitrogen and phosphorus in the wastewater treatment effluent and the average discharge flows. The long term metric will be improved water quality and clarity due to the reduction in algae growth and increase dissolved oxygen. The metric for measuring cooperation among other stakeholders in the watershed will be the agreement executed between Navarre Beach Utility, South Santa Rosa Utilities System, and Holley Navarre Water System for the supply, distribution, and monitoring of reclaimed water, including public access reuse. The short term metric for reduction in groundwater demands for potable water use and irrigation will be the increase in metered residential and commercial reuse. The long term metric will be continual reduction in demand for groundwater.
Project Contact Name	Roger Blaylock
Project Cost	>$1 million

Project Map #	25
Latitude	30.415931
Longitude	-87.132314
Project Title	Pensacola Bay Seagrass Restoration Identification
Location Description	Pensacola Bay Basin
Project Description	Seagrass have been identified in this watershed plan as being a high valued target for restoration. The health of this estuary is directly dependent on healthy seagrass habitats. Seagrass meadows provide many ecosystem services, and are one of the most productive habitats on the planet. The important ecological and economic functions of seagrass beds have been widely acknowledged, notably to their importance to fisheries (Bell and Pollard, 1989). The FDEP estimates that up to 90% of all commercial and recreational important marine species are dependent on seagrass habitat at some point in their lifespan. Many of the projects proposed for funding specifically address projects affecting seagrass. Decreasing storm water pollutants and sedimentation will increase water quality. Improvement in water clarity will in turn, increase available seagrass habitat much in the same way it has in Tampa Bay. In addition, educating boaters with signage will decrease the frequency of propeller scarring. However, few projects have addressed the need to restore large depressions to increase suitable seagrass habitat. These depressions may have been caused as a result of old dredging activities or large vessel groundings. Depressions caused from dredging cause a tremendous amount of damage to the waterbody. The depressions often act as nutrient sinks similar to storm water retention ponds. The lack of vegetation in the bottom of the depressions do not sequester the nutrients nor stabilize the muck substrate. Phytoplankton blooms can stimulate from the nutrient source, and hydrogen sulfides are released from the bacteria that break down the organics in the mucky substrate. Seagrasses are dependent on a high quantity of light to survive. Previously dredged sites create conditions that make seagrass recolonization impossible due to the water depth alone. However, after filling the feature back to grade, the site would make prime seagrass habitat. It is the intent of this project to identify multiple areas that were historically seagrass habitat which were subsequently dredged or heavily damaged. The sites would be ranked on their potential for seagrass restoration success and cost analysis. Included is an example of site that would greatly benefit if restoration occurred.The basin wide review would include detailed specifications for individual features identifying:1. size of feature (volume and area)2. location in relation to a sediment source3. estimated cost for restoration4. expected species of emergent and submerged vegetation that could be supportedWorks CitedBell, J.D., Pollard, D.A., 1989. Ecology of fish assemblages and fisheries associated with seagrasses. In: Larkum, A.W.D., McComb, A.J., Sheperd, S.A. (Eds.), Biology of Seagrasses. A Treatise on the Biology of Seagrasses with Spatial Relevance to the Austrailian Region, Aquatic Plant Studies 2. Elsevier, Amsterdam, pp. 565-609.

Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce sedimentation.
Root Causes	Environmental changes / issues, Ineffective or unused BMPs, regulations & development codes, Lack of environmental awareness, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	Project will be considered successful if new potential seagrass habitat sites are identified, and a thorough restoration plan is determined.
Project Contact Name	Carter Henne
Project Cost	<$100,000

Project Map #	26
Latitude	31.248028
Longitude	-87.067585
Project Title	Improving Water Quality and Wildlife Habitat with Hilltop to Hilltop Paving
Location Description	GCPEP landscape in northwest Florida and south Alabama
Project Description	Erosion and the resulting sediment loading from dirt roads have a negative impact on water quality and aquatic system habitat in the Pensacola Bay Area Watershed. The proposed project is to work with Federal, State, and Local Government agencies to identify and prioritize dirt roads with the greatest erosion and sediment runoff problems. Paving would then be carried out hilltop to hilltop following the priority list, thus occurring across multiple ownerships and counties in the watershed.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation.
Root Causes	Contamination, Erosion, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	Paving of priority dirt roads hilltop to hilltop will improve water quality through reduction of erosion and sediment loading currently having a negative impact in the Pensacola Bay Area Watershed. Project success will be measured by the percentage of critical dirt roads stabilized through paving.
Project Contact Name	Vernon Compton
Project Cost	>$1 million

Project Map #	27
Latitude	30.399662
Longitude	-86.866785
Project Title	Navarre Park at Santa Rosa Sound Water Quality Improvements
Location Description	Location of Navarre Park outfall. Area of improvements will be in northern vicinity of this outfall area
Project Description	This project proposes phased improvements to reduce the nutrient and sediment input in the immediate area of the Navarre Park at Santa Rosa Sound (SRS). The majority of SRS is designated as Class II waters (shellfish propagation and harvesting) with the portion within the National Seashore being classified as an Outstanding Florida Water. Although, SRS is a Class II waterbody, it currently is unclassified for shellfish harvesting. SRS is one of the few waterbodies supporting diverse sea grasses when compared to the rest of the Pensacola Bay System. Unfortunately, stresses on the habitat resulting from development pressures in Navarre and increased stormwater runoff are affecting the ability of SRS to maintain productivity. SRS has experienced habitat loss due to rapid development. Population in Navarre has nearly doubled since 2000. Since 2003 there have been 29 documented health advisory warnings specifically at Navarre Park adjacent US highway 98. These health warnings are further symptoms that additional action is needed to immediately address sediment and nutrient loading issues adjacent the Navarre Park area. This project proposes to address the contributing factors through the implementation of four phases:Phase 1: Design and construct a large hydrodynamic separator at the primary Navarre Park outfall . The goal is to immediately remove 80% of the sediments flowing via the Navarre Park outfall into SRS Includes paving a short section of Barrancas Street between Prado Street and Granada Street in the vicinity of Navarre Park.Phase 2: Provide stormwater treatment within an approximately 157 acre area located east of State Road 87 and north of US 98, currently untreated. This phase would utilize the preliminary stormwater study analysis from the Navarre Town Center study to identify possible stormwater management facility locations. This phase would entail property acquisition (no condemnation) for stormwater facilities, design/permitting of stormwater facilities and collection infrastructure and construction of stormwater facilities and associated piping systemsPhase 3: Includes septic tank abatement in the Navarre Park area along and/or near US 98 and SRS. Reducing the amount of improperly treated wastewater should help reduce the number of Navarre Park beach at SRS swimming advisories. This would entail coordinating with Holley-Navarre Water Sewer System to identify appropriate septic tank abatement measures, then prioritize the improvements, develop construction plans and construct the most impactful projects. Phase 4: Water Quality Monitoring will involve sampling prior to completion of Phase I and will involve continuous periodic water quality sampling/monitoring five years past final phase construction. Rough order of magnitude costs is 11.15 million for all phases including design, construction and inspection services.

Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach., Reduce impacts to groundwater.
Root Causes	Domestic wastewater, Environmental changes / issues, Erosion, Ineffective or unused BMPs, regulations & development codes, Ineffective stormwater systems, Lack of adequate funding, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	Short term:-Reduced number of health warnings for Santa Rosa Sound in vicinity of Navarre-Tons of sediment captured-Increase urban stormwater treatment acreage within basinLong term:-Decrease in nutrient loading (trend data from water quality sampling)-Decrease in turbidity
Project Contact Name	Sheila Harris
Project Cost	>$1 million

Project Map #	28
Latitude	30.380175
Longitude	-87.304942
Project Title	Beach Haven Sewer, Drainage, and Stream/Wetland Restoration
Location Description	The Latitude and Longitude represents the approximate a center point of the project area. The project area is divided into three separate areas divided by Gulf Beach Hwy and Fairfield Drive, with the phases referenced as Northeast, Northwest, and South Phases. The northern extent is Jones Swamp Creek and extends South to Bayou Grande. The Western extent is Albany Avenue and extends East to Mills Avenue.
Project Description	Beach Haven is Joint Stormwater, Wastewater, and Stream/Wetland Restoration Improvement Project. It is the intent of Escambia County (COUNTY) to continue our partnership with Emerald Coast Utilities Authority (ECUA) to implement certain drainage, sanitary sewer (septic tank abatement), and stream/wetland restoration in accordance with the study concepts outlined in the Beach Haven Drainage and Sewer Master Plan, July 2003. This study resulted in a 12-phased conceptual plan, now divided into 3 possible larger phases. The majority of the existing development in the Beach Haven area is served by septic tank, and limited stormwater management systems. Expansion of the central sewage collection system will reduce environmental impacts caused by the discharge from septic tank systems within the Bayou Chico and Bayou Grande. The project will include stormwater ponds and improved drainage conveyance infrastructure to address water quality and flooding needs for the area. The Southern Phase will include acquisition in combination with use of unopened ROW to provide stream restoration improvements that runs through the area to Bayou Grande. Wetland restoration, management, and preservation are a key focus to improve the water quality, stream and wetland floodplain habitat, by stream enhancements, floodplain expansion, riparian wetland restoration, and invasive exotic species eradication
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation., Reduce impacts to groundwater.
Root Causes	Environmental changes / issues, Erosion, Ineffective stormwater systems, Invasive species, Lack of adequate funding, Lack of communication among diverse stakeholders, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow

Proposed Metric(s)	Project attempts to decrease turbidity, nutrient loading, H20 sediment quantity, and economic impact of polluted water bodies. Project attempts to return loss uses, measured by acres of land protected, Treatment Volume, tons of sediment captured, number/% of priority septic tanks converted to domestic sanitary sewer connections, % of critical stormwater infrastructure needing upgrades, and acreages of previously untreated stormwater receiving treatment. Project also attempts to restore natural resources measured by the % of wetland acreage created, restored, managed, and/or protected. Stream Condition Index may also be a tool to measure success.
Project Contact Name	Chris Curb
Project Cost	>$1 million

Project Map #	29
Latitude	30.493412
Longitude	-86.958861
Project Title	East Bay Dirt Road Paving Program
Location Description	General Center of East Bay, Project includes various dirt roads north, south and east of this locations
Project Description	Unpaved roads provide clear and distinguishable impacts to Santa Rosa County (SRC) waterways. Sediment from dirt roads, included eroded particles of rock, is transported by sheet flow runoff into nearby waters. This process is accelerated as citizens utilize the roads. Sedimentation in streams impairs water quality, increases flooding, reduces aquatic habitats, impairs navigation and recreation, and alters fluvial and alluvial geomorphology. There are approximately 100 miles of dirt roads in SRC. When properly maintained, many sections of these roads contribute very little to stormwater problems. However, the most serious stormwater problem associated with dirt roads in SRC is associated with wetland approaches. A wetland approach is defined as a road that approaches creeks, rivers, bays or other wetland areas, with many of these approaches down slope. The erosion that occurs in these areas accounts for a high percentage of sedimentation and increases county road maintenance costs. Recognizing the stormwater impacts associated with managing dirt roads and the limited funds available to improve them, SRC's approach is a priority paving system that centers initially on funding critical sections of dirt road, sections approaching creeks, rivers, bays and wetlands. This application will specifically address dirt road paving within the East bay drainage basin. This area was initially selected to compliment the other funding commitments from NRDA, NFWF, & Moex funds to improving water quality within the East Bay area (Escribano Point) of SRC and to improve the long term efforts to re-populate oyster production within East Bay. SRC proposes an innovative approach to project delivery by utilizing in-house design and construction capabilities in concert with external contractors to efficiently and cost effectively deliver a dirt road paving program within the East Bay area of SRC. SRC proposes the following phased approach:Phase 1: SRC has identified key roadways within the East Bay basin that need to be addressed. The first phase will include ranking the most sensitive and problematic dirt roads and determining which BMP's to be implemented. A roadway selection matrix along with costs will be utilized to arrive at the most impactful projects fitting the pre-determined construction budgetPhase 2: Provide in-house and/or consultant design of BMP's for highest ranked dirt road approach locations.Phase 3: Construct roadway paving and BMP's for highest ranked locations with in-house construction crews and/or with outside contractors in approximately 24-30 months. Phase 4: Education of Santa Rosa and other county/city road crews regarding proper maintenance and grading of dirt roads and BMP's. Estimated Project Costs including design, construction, construction supervision, in-kind contribution and monitoring is $2.5 million.

Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Erosion, Ineffective or unused BMPs, regulations & development codes, Ineffective stormwater systems, Lack of adequate funding, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	Unpaved roads, especially thoughs with with steep gradients, deep cut-and-fill sections, poor drainage, erodible soils, and road stream crossings contribute to suspended sediment within the Pesacola Bay watershed.Suspended sediment can:-irritate the gills of fish, making them prone to disease-smother fish spawning and feeding grounds-gradually fill in near shore, resulting in the loss of desireable shoreline (due to encroaching weeds, for instance)-cause algae blooms, resulting from the attached phosphorous-diminish recreational and aesthetic valuesNutrients, such as phosphorous, are attached to dirt road sediments. In natural conditions, the scarcity of phosphorous in a water body limits alga growth. When a water body receives extra phosphorous in the form of dirt road sediment, alga growth increases dramatically. Sometimes this growth causes choking alga blooms, but more often it results in small, negative changes in water quality that over time, damage the health and aesthetics of a water body.Short Term Metrics: - Tons of sediment captured- Percent of priority dirt roads stabilizedLong Term Metrics:- Decrease in turbitity (trend data from water quality sampling)- Decrease in nutrient loading- Return of loss use (revive oyster populations)
Project Contact Name	Sheila Harris
Project Cost	>$1 million

Project Map #	30
Latitude	31.248028
Longitude	-87.067585
Project Title	Restoration of Gullies, Borrow
Location Description	Pensacola Bay Watershed portion of the GCPEP Landscape
Project Description	Erosion from gullies, borrow pits, and problem bridges/culverts lead to very large sediment loads in the watershed and degrade both water quality and wildlife habitat. A priority list in the Pensacola Bay Watershed will be developed through work with government agencies and non-profit and community organizations. Repair and restoration work will then be conducted either by agencies or contracted out.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce and treat stormwater., Reduce sedimentation.
Root Causes	Erosion, Lack of adequate funding
Proposed Metric(s)	Percent of priority gullies, borrow pits, and bridge/culvert crossings causing water quality and habitat degradation that are addressed. The Pensacola Bay Watershed Management Plan indicates this metric will be developed by identifying the areas that need to be addressed and then measuring progress in terms of % of the total area addressed.
Project Contact Name	Vernon Compton
Project Cost	>$1 million

Project Map #	31
Latitude	31.248028
Longitude	-87.067585
Project Title	Restoring Natural Communities in the Gulf Coastal Plain Ecosystem Partnership Landscape
Location Description	Pensacola Bay Watershed portion of the GCPEP Landscape
Project Description	Insufficient forest and upland management and cost of restoration activities were both identified as major issues in the Pensacola Bay Watershed Management Plan. Major needs identified for restoration in the watershed (GCPEP Conservation Action Plan, Range-wide Conservation Plan for Longleaf Pine, and Florida's Widlife Legacy Initiative: Keeping Common Species Common) are prescribed burning, invasive species control, and mechanical treatments. A team of restoration experts, the Ecosystem Support Team, will work with public and private landowners to accomplish this important habitat restoration work in the watershed.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Environmental changes / issues, Invasive species, Lack of adequate funding, Lack of communication among diverse stakeholders, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	Restoration of critical habitat within the Pensacola Bay Watershed will be measured through tracking of acres of priority habiat created, restored, and/or managed, acres of invasive species controlled, and recovery numbers for threatened and endangered species.
Project Contact Name	Vernon Compton
Project Cost	>$1 million

Project Map #	32
Latitude	30.45433889
Longitude	-87.16864167
Project Title	Pensacola Bay Bluffs Stabilization Project
Location Description	he site encompasses the areas north and south of Pensacola Bay Bluff Park and includes the park itself. More specifically, on the landside, the area runs along Bayview Memorial Park Cemetery to Summit Boulevard and then from Summit Boulevard to Wimbledon Drive.
Project Description	The project will reestablish coastal habitats that have been lost to either natural/ anthropogenic causes while improving water quality through the uptake of nutrients from runoff through the planting of shoreline vegetation. In addition, the project will establish essential habitat for a wide array fish and bird species through the placement and creation of oyster reefs/breakwaters. This will also promote sedimentation and reestablishment of historical submerged aquatic vegetation within the project site, which will in turn provide habitat for historically resident species of shellfish and finfish, providing feeding resources for transient fishes, and improved water quality via the filter-feeding bivalves with the placement of the oyster reefs. The project will establish stabilization for the bluff areas with the placement of woody material through terracing and the planting of native species. This will reestablish areas that have been subject to severe erosion causing the loss of vegetation and species habitat. The project includes the removal of exotic/invasive species and the replanting of native species. The restoration of the littoral zone will reestablish the abundances and diversity in benthic and the water column communities. The proposed project will support inclusion of the "living shoreline" approach of shoreline protection by ecological enhancement instead of shoreline hardening seawalls that degrade or eliminate crucial shallow water and intertidal habitat.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Environmental changes / issues, Erosion, Invasive species, Lack of adequate funding, Lack of environmental awareness, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	The project's impact and success will be measured by: 1. Natural establishment of shoreline vegetation after planting. 2. Oyster reef spat collection and/or observation. 3. Water quality improvements based on baseline data and continued water quality monitoring throughout the project timeline.4. Reestablishment of seagrass beds.5. Reestablishment of resident species of shellfish and finfish.
Project Contact Name	Mary Gutierrez
Project Cost	<$100,000

Project Map #	33
Latitude	30.413975
Longitude	-87.259414
Project Title	Bayou Chico Sediment Removal
Location Description	Bayou Chico North
Project Description	Due to inadequate stormwater treatment and attenuation, the northern upper arms of Bayou Chico have received tons of sediment from Jackson Creek from the west and Maggies Ditch from the east. In addition, a sill where the railroad trestle crossed the Bayou impedes water flow and exchange from the northern part of the Bayou to the south. Removing the sill and accumulated sediment from the northern part of Bayou Chico will result in improved water quality and allow for benthic habitat recovery.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce sedimentation.
Root Causes	Contamination, Ineffective stormwater systems, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow
Proposed Metric(s)	Project success will be measured by monitoring water quality improvement and benthic habitat improvement.
Project Contact Name	Chips Kirschenfeld
Project Cost	>$1 million

Project Map #	34
Latitude	30.421536
Longitude	-87.214264
Project Title	Impervious Surface Reduction in Escambia County
Location Description	Escambia County, center of downtown Pensacola
Project Description	Impervious surfaces generate stormwater runoff, increase flood potential, and contribute to decreased water quality. An analysis of underutilized impervious surfaces in Escambia County and Pensacola will result in conversion of some impervious surfaces to pervious surfaces. Every percent of converted impervious surface will reduce stormwater runoff, reduce flooding, improve water quality, and improve community resiliency.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation.
Root Causes	Contamination, Ineffective or unused BMPs, regulations & development codes, Ineffective stormwater systems, Quantity and timing of freshwater flow, Water supply
Proposed Metric(s)	Project success will be measured by quantifying the percent reduction in impervious surfaces, reduced flood damage, and improved water quality.
Project Contact Name	Chips Kirschenfeld
Project Cost	>$1 million

Project Map #	35
Latitude	30.448439
Longitude	-87.216378
Project Title	Oyster Shell Recycling
Location Description	The latitude longitude represents the location of our non-profit office in Pensacola. The shell will be recycled from any Escambia County restaurant that discards oyster shell and Gulf Breeze, Santa Rosa County.
Project Description	Oyster shell will be collected from local restaurants, reducing the input of valuable oyster shell into the local waste stream. Shell will be weathered, dried and bagged to be used as substrate to restore oyster reefs in the Pensacola Bay System (PBS). Shell collection is a key component and many times the long pole in the tent when restoring shorelines through the use of oyster reefs. Restoration of these reefs will increase oyster populations, provide nursery and foraging grounds for finfish, shell and wading birds, and aid in filtration of storm water runoff into the bayous benefiting the PBS as a whole. Keep Pensacola Beautiful (KPB) is the only organization in the Florida Panhandle that collects recycled shell from restaurants. We anticipate collecting a minimum of 750 tons (1.5 million pounds) of shell over a five year period. It is imperative that while all the other projects are being vetted that we start collecting the shell that is currently going into the waste stream so that is available for individual shoreline property owners and other community Living Shoreline (LS) projects. The project economically impacts restaurants who must pay for waste collection, and gives thousands of homeowners an opportunity to make an individual impact in their backyard with properly permitted LS applications. Our public educational demonstration area at Bayview Park, Bayou Texar, PBS has seen seagrass bed formation take a foothold two years after the oyster reef installation. Oyster shell collection only happens from the top three producing restaurants for the short timeframe that an environmental agency receives funding for that specific project. While the title of this project implies it is all about recycled shell we have an equally powerful educational outreach program. Shell collection and bagging is the largest expense line item in any grant we have participated. The product is heavy and puts extensive wear on trucks and trailers but the benefits of the oyster reefs and the amount of filtration of sediment and improvement to water quality that these reefs provide is demonstrated at every reef site we have been a partner in. KPB can make a huge impact on the Pensacola Bay System as the leader in this project; we can provide the shell and our established partners can easily scale the shoreline projects up in a grand scale impacting thousands of individual homeowners who never had access to shell and those agencies that need it. This is a project the whole community can feel that they are a part: eating oysters, students water sampling and seining, students bagging and building reefs, property owners watching their own backyards as the bayous are cleansed and the wildlife, foraging fish and seagrasses return. OYSTER (Offer Your Shell To Enhance Restoration).

Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Environmental changes / issues, Lack of adequate funding, Lack of environmental awareness, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	Acres of oyster reefs.Tons of recycled oyster shell# of properties impacted
Project Contact Name	Jill Cleaver
Project Cost	=<$1 million

Project Map #	36
Latitude	30.376389
Longitude	-87.277778
Project Title	White Island Restoration and Living Shoreline
Location Description	project center
Project Description	Pensacola Bay System has been severely impacted by anthropogenic changes to water quality, littoral habitat, and living marine resources. The proposed project will restore oyster habitat and emergent vegetation, thereby improving conditions necessary for other estuarine organisms and trophic systems. The project will reconfigure existing sediments to establish bathymetry necessary for the survival of planted species (e.g., Spartina alterniflora). "Living Shorelines" are proven restoration methods to restore lost biological components, improve water quality, and improving resilience of nearby uplands to long term sea level rise."White Island" is the unofficial name given to a small (100ft x 2000ft)undeveloped sand island located between Pensacola Naval Air Station and the Escambia County mainland. The island has slowly and steadily migrated westward towards bulk-headed private residential properties. If allowed to continue the westward movement, the supratidal portion of the island will disappear as it washes into the deeper navigational channel adjacent to the bulkheads. Loss of White Island would create additional losses of intertidal habitat as well as recreational opportunities to the many people that access the island by kayaks and small boats.The project will consist of three major components. An offshore breakwater/oyster reef will be constructed along the eastern (seaward) island margin to reduce the wave energy of the open waters of southwest Pensacola Bay. Reducing hydrodynamic energy is imperative to the success of the subsequent project phases: reconfiguring bathymetry and planting native intertidal and supratidal vegetation. Engineering and permitting conditions will dictate the precise location, configuration and materials used to construct the offshore breakwater. Final breakwater design will then determine the bathymetric reconfiguration (as planned, project will not involve importing sand), which will then provide the precise intertidal and supratidal locations for planting native vegetation. Typical species used in other successful nearby living shorelines in Spartina alterniflora, Juncus roemarianus, Distichlis spicata, Panicum sp., Baccharus sp., etc.Project design and permit application will be concluded approximately six months from date of award/contract. Depending upon permitting agency workloads and other factors, project permitting may be completed within 3-9 months. Project construction (all phases) should be completed with 6-9 months.Upon completion, the project will begin to provide water quality, habitat, ecological, coastal resiliency and human use benefits.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas.

Root Causes	Environmental changes / issues, Erosion, Lack of adequate funding, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	Project success will be measured by quantifying (via survey-grade GPS) the following areas: uplands (vegetated & non-vegetated); intertidal zone (vegetated & non-vegetated); and subtidal oyster reef habitat. These measurements will be made before and after project is completed. Post-completion quantification will be conducted during the summer growing season (july-August) each year for at least 5 years. Comparison of pre- and post-project vegetated area will provide an easy and quantifiable method of demonstrating project success. Although more difficult to quantify, pre- and post-project faunal surveys will provide a qualitative comparison of use by estuarine animals.
Project Contact Name	Robert Turpin
Project Cost	>$1 million

Project Map #	37
Latitude	30.373031
Longitude	-87.35015
Project Title	Dogtrack South – Coral Creek – Mariners Village Stream/Wetland Restoration
Location Description	The Latitude and Longitude represents the approximate center point of where two tributaries merge into one tributary. The project includes the creek and channel that crosses under the South end of Dog Track Road, the creek and channel that drains from Mariners Village on the West side of Blue Angel Parkway, and the creek where the two creek merges and floes South next to Coral Creek Subdivision under Sorrento Road to Bayou Grande
Project Description	This project will include property and/or easement acquisition in combination with use of exiting easements and right-of-ways to provide channel and stream restoration improvements that runs through two merging creeks in the project area to Bayou Grande. This project will require a public involvement component due to the large number of property owners adjoin the creeks. The project will include debris removal that has accumulated, restricting flow, and causing stream erosion, and sediment removal at the mouth of creek discharge to the Bayou. Wetland restoration, management, and preservation are a key focus of this project to improve stream and wetland floodplain habitat, by stream/channel enhancements, floodplain expansion, and invasive exotic species eradication.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce sedimentation.
Root Causes	Environmental changes / issues, Erosion, Ineffective or unused BMPs, regulations & development codes, Invasive species, Lack of adequate funding, Lack of communication among diverse stakeholders, Lack of environmental awareness, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow
Proposed Metric(s)	Project attempts to return loss uses, measured by acres of land protected, reduce sediment from scour measures in linear footage of creek bed restored and the attempts to restore natural resources measured by the % of wetland acreage created, restored, managed, and/or protected. Stream Condition Index may also be a tool to measure success.
Project Contact Name	Chris Curb
Project Cost	>$1 million

Project Map #	38
Latitude	30.373439
Longitude	-87.288383
Project Title	Navy Point Park Living Shoreline
Location Description	project center
Project Description	Pensacola Bay System has been severely impacted by anthropogenic changes to water quality, littoral habitat, and living marine resources. The proposed project will restore oyster habitat and emergent vegetation, thereby improving conditions necessary for other estuarine organisms and trophic systems. The project will establish shoreline and bathymetry creation of "Living Shoreline". Living Shorelines are proven restoration methods to restore lost biological components, improve water quality, and improving resilience of nearby uplands to long term sea level rise."Navy Point Park" is the largest public park and waterways access on the Escambia County mainland. The park comprises approximately two linear miles along Bayou Grande. Much of the park shoreline is relatively stable, with low rates of erosion. Several erosional "hot spots" were created and/or exacerbated by previous hurricanes and other storms. One such erosional hot spot is a sandy beach at the end of Gibbs Road. This site is highly used by nearby residents, particularly families with small children. A utility transfer station is located at the top of a small bluff that has eroded to the edge of the utility foundation. If erosion is allowed to continue the utility company will likely seek a permit to place rip-rap to protect the utility infrastructure. Loss of the sandy beach and adjacent vegetated shoreline would create additional losses of intertidal habitat as well as recreational opportunities to the many people that use the site. Several other areas of high erosion threaten the public road that provides access to the park and nearby residences. The proposed project seeks to create living shorelines to provide well-documented benefits and to prevent the inevitable armoring that would eventually be required to protect the road and private residences.The project will consist of three major components. Offshore breakwaters/oyster reefs and multipurpose dock (at Gibbs Point) will be constructed along the southern (seaward) shoreline margin to reduce the wave energy of the open waters of southwest Pensacola Bay. Reducing hydrodynamic energy is imperative to the success of the subsequent project phases: reconfiguring bathymetry and planting native intertidal and supratidal vegetation. Engineering and permitting conditions will dictate the precise location, configuration and materials used to construct the offshore breakwater. Final breakwater design will then determine the bathymetric reconfiguration (as planned, project will not involve importing sand), which will then provide the precise intertidal and supratidal locations for planting native vegetation. Project design and permit application have been accomplished and permits may be received prior to date of award/contract. Project construction (all phases) should be completed with 12-15 months.Upon completion, the project will begin to provide water quality, habitat, ecological, coastal resiliency and human use benefits.

Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas.
Root Causes	Environmental changes / issues, Erosion, Lack of adequate funding, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	Project success will be measured by quantifying (via survey-grade GPS) the following areas: uplands (vegetated & non-vegetated); intertidal zone (vegetated & non-vegetated); and subtidal oyster reef habitat. These measurements will be made before and after project is completed. Post-completion quantification will be conducted during the summer growing season (July-August) each year for at least 5 years. Comparison of pre- and post-project vegetated area will provide an easy and quantifiable method of demonstrating project success. Although more difficult to quantify, pre- and post-project faunal surveys will provide a qualitative comparison of use by estuarine animals.
Project Contact Name	Robert Turpin
Project Cost	>$1 million

Project Map #	39
Latitude	30.517323
Longitude	-87.233764
Project Title	Harold Avenue and Barnes Road Drainage and Stream/Wetland Restoration
Location Description	The Latitude and Longitude represents the approximate center point of lot to purchase to restore a wetland channel and reduce scour and erosion. The location of the drainage improvements channel restoration are along Harold Avenue and North of Harold Avenue through a channel that runs under Johnson Ave.
Project Description	This project will include property and/or easement acquisition in combination with use of existing right-of-ways to provide channel and stream restoration improvements along Harold Avenue ROW, that abruptly turn North within the ROW of Barnes Road, and then through residential rear yards, to a creek that flows under Johnson Ave to the North. One property owner on Barnes Road was cited for wetland violation resulting in damage to the channels natural characteristics. A vacant one-third acres lot at the NE corner of Barnes Road and Harold Ave is to be purchased to widen the creek channel and expand the wetland channel restoring wetland habitat. The plan also includes minor wetland restoration located on the wetlands South of Harold Avenue as necessary to restore the natural flow under Harold Avenue, including culvert capacity upgrades. Depending upon hydraulic analyses the project may include the Johnson Avenue culvert upgrades and additional stream restoration North of Johnson Ave ECUA has a sanitary sewer lift station in this area that floods during extreme rain events, due to inadequate culvert capacity on Harold Ave and the large area of wetlands in White Cedar Gardens Subdivision to the South. This project will includes debris and sediment removal restricting flow and causing stream erosion. Wetland restoration, management, and preservation are a key focus of this project to improve stream and wetland floodplain habitat, by stream/channel enhancements, floodplain expansion, and invasive exotic species eradication.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce sedimentation.
Root Causes	Environmental changes / issues, Erosion, Ineffective or unused BMPs, regulations & development codes, Ineffective stormwater systems, Invasive species, Lack of adequate funding, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	Project attempts to return loss uses, measured by acres of land protected, reduce sediment from scour measures in linear footage of creek bed restored and the attempts to restore natural resources measured by the % of wetland acreage created, restored, managed, and/or protected. Stream Condition Index may also be a tool to measure success.
Project Contact Name	Chris Curb
Project Cost	=<$1 million

Project Map #	40
Latitude	30.46335833
Longitude	-87.09566111
Project Title	Panhandle Watershed Alliance - Escambia Bay
Location Description	Private coastal properties
Project Description	The NW FL Program, Rebuild Northwest Florida (http://www.rebuildnwf.org/) provides home fortification and a strengthening mitigation program which matches costs at a 3:1 ratio. This proactive program includes an energy audit through a federal program and considers a range of criteria. If the homeowner elects to implement the program, a FEMA Grant which covers 75% of the costs will be applied to home-owners share of 25% of the total costs. Could the communities along the Gulf Coast develop a similar grant funded program which would mitigate the continued stressors of nutrient loading and stormwater run-off? This shoreline softening program would serve to encourage coastal land owners to replace/remove hardened bulkheads and return the shoreline interface with emergent grasses? This approach could be developed into a large scale phyto-remediation effort correlated to a new restoration method (low impact) which would serve to mitigate two of the biggest threats to our Area Waters by reducing nutrient loading from upland sources (stormwater run-off) and capture sediments and organic material which would help address and off-set sedimentation and fouling efforts impacting the remnants of our grass beds.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation.
Root Causes	Environmental changes / issues, Erosion, Ineffective or unused BMPs, regulations & development codes, Ineffective stormwater systems, Lack of environmental awareness, Limited economic diversity, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow
Proposed Metric(s)	Stormwater runoff, sedimentation can be abated by softening of shoreline
Project Contact Name	Barbara@PanhandleWatershed.org
Project Cost	=<$1 million

Project Map #	41
Latitude	30.471667
Longitude	-87.213611
Project Title	Carpenter's Creek Restoration Master Plan
Location Description	Carpenter's Creek/Bayou Texar watershed, in Escambia County and City of Pensacola. The lat/long represents a biological monitoring site (STORET #33020048) downstream of 9th Avenue.
Project Description	Carpenters Creek drains the Pensacola urban watershed into Bayou Texar, a tributary of Pensacola Bay, and experiences multiple problems associated with urban streams: severe bank erosion, poor water quality, flooding, and reduced habitat. This project would create a long-term roadmap to revitalize Carpenter's Creek, and the residential and the commercial areas that surround this waterway, transforming overlooked assets and driving urban revival. The plan would build upon existing information and previous planning efforts, including the Carpenter's Creek/Bayou Texar Watershed and Stormwater Management Assessment (City of Pensacola, May 2000), The Pensacola Bay Watershed Management Plan (EPA/NOAA/BARC/WFRPC, 2005), final TMDL Report (September 2012), and the city of Pensacola and Escambia County Comprehensive Plans.A master plan for Carpenter's Creek restoration would establish the community's multiple goals and objectives into a unified vision and multi-purpose solution for Carpenter's Creek. This project would update the assessment of the Creek's condition and then present a publically preferred plan to address the condition and community goals. Importantly, the plan will form the basis for identifying and securing adequate funding needed for a sustained, long-term phased implementation of restoration and monitoring. The basic planning steps are:1. Collect existing data, maps, & plans2. Conduct site reconnaissance/identify areas of ecological significance and concern3. Present summary of issues and concerns4. Conduct stakeholder meetings5. Identify resource council and /or technical advisory committee6. Identify goals, restoration priorities, & conflicts7. Undertake Creek assessment8. Conduct stakeholder meetings9. Refine goals, identify objectives, and develop program10. Develop alternatives for stakeholders comment/input11. Select preferred plan12. Develop more detail on preferred plan, including individual projects, identify priority restoration sites, wtershed specific BMP's preliminary costs, and timeframes.13. Identify finance strategy, grant sources/develop funding applications for implementation phases, including monitoring.Examples of opportunities include: retrofit existing detention basins, design greenway for improved recreation, and create treatment wetlands to improve water quality, control erosion, minimize flooding. Restoring this urban waterway will improve water quality of Carpenter's Creek and Bayou Texar and Pensacola Bay, and also provide enhanced aesthetic and recreational opportunities that benefit quality of life and the local economy.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation.

Root Causes	Domestic wastewater, Environmental changes / issues, Erosion, Ineffective or unused BMPs, regulations & development codes, Ineffective stormwater systems, Lack of environmental awareness, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow
Proposed Metric(s)	Long term: Decrease in turbidity, decrease in nutrient loading, H2)/Sediment Quality/Quantity, Return of loss of use, Reduce Impervious,Stream buffers. Short term:Tons of sediment captured/diverted, Acres protected, Stormwater infrastructure upgrades, % of stormwater infrastructure under maintenance plans, reduction in regulatory violations.
Project Contact Name	terry.joseph@wfrpc.org
Project Cost	=<$500,000

Project Map #	42
Latitude	30.4447
Longitude	-86.913427
Project Title	East Bay Water Quality Enhancement Program
Location Description	The program of work is contained in southwest Santa Rosa County, FL. Lat/Long represents a point in East Bay, which this program of work is intended to benefit.
Project Description	The project area (Navarre area) of Santa Rosa County has been one of the fastest growing areas of Northwest Florida. This Program of work is specifically geared to improve water quality in the East Bay Estuary of the Pensacola Bay Watershed with the ultimate goal of support re-establishing and increasing oyster habitat and the amount of habitat available for recreational and commercial important shellfish and finfish, while promoting the growth of submerged aquatic growth vegetation and salt marsh. The project directly complements the Pensacola East Bay Oyster Restoration project sponsored by The Nature Conservancy. Phase I - East Bay Dirt Road Paving ProjectUnpaved roads provide a clear and distinguishable impact to waterways. Sediment from unpaved roads is transported by sheet flow runoff into nearby waters. Sedimentation in streams impairs water quality, increases flooding, reduces aquatic habitats, impairs navigation and recreation, and alters fluvial and alluvial geomorphology. This project proposes to address only the critical unpaved roads within the East Bay basin area along both the north and south sides of the bay. The County proposes to utilize in-house design and construction capabilities in concert with external contractors to efficiently deliver a cost-efficient dirt road paving program for this area. The County has already identified key dirt roadways within the basin that need paving. The appropriate best management practices (BMP's) will be identified for each road and the most problematic and environmentally impactful roads will be addressed first. Phase II – Hydrodynamic Separator placement Design and construct four hydrodynamic separator units within the East Bay Basin. The goal is to immediately remove 80% of the sediments flowing through these four direct stormwater outfall discharge locations. These units will be constructed in lieu of purchasing expensive R/W, which would be necessary to construct retention ponds to collect and treat stormwater. Phase III - Sewer Expansion Projects directly adjacent East BayScience shows that septic tanks in certain locations, with specific soil conditions, are a contributor to nutrients and other pollutants entering our natural waterways, also called "surface waters." This may occur even if the septic tank is properly functioning. This phase presents two major areas where the Holley Navarre Sewer System would be extended to convert service from septic to an on-line sewer system for approximately 546 properties, which should contribute significantly to reducing pollutants especially Total Nitrogen (TN) within East Bay. III.A. - Robledal Estates subdivision, located directly adjacent the south side of East Bay and Tom King Bayou (353 tanks).III.B. - The Holley area (193 tanks). These projects would also include an associated surface water quality monitoring program for nutrients in East Bay.

Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation., Reduce impacts to groundwater.
Root Causes	Contamination, Domestic wastewater, Environmental changes / issues, Erosion, Ineffective or unused BMPs, regulations & development codes, Ineffective stormwater systems, Lack of adequate funding, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	Water monitoring will provide the first measurable results that sedimentation and pollutant levels are diminishing. Other results will be increased growth of seabed grasses and success of the oyster bed reintroduction project in East Bay.
Project Contact Name	sheilah@santarosa.fl.gov
Project Cost	>$1 million

Project Map #	43
Latitude	30.445037
Longitude	-86.902979
Project Title	Holley-By -The-Sea Stormwater Quality and Flood Resilience Project
Location Description	The Holley by the Sea neighborhood is a 4700 lot neighborhood located in south Santa Rosa County that was developed in 1972. The Lat/Long point represents East Bay, the waterbody this project is designed to benefit.
Project Description	Reducing sedimentation and turbidity, improving the water quality and the overall biological health and productivity of East Bay will improve recreational and fishing opportunities for residents and tourists. Especially important is the long term goal of supporting the re-establishment of oyster harvesting, a once thriving mini industry, within East Bay.The program is expected to directly create or preserve approximately 40 construction-related jobs over the two year project time period.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Contamination, Domestic wastewater, Environmental changes / issues, Ineffective or unused BMPs, regulations & development codes, Ineffective stormwater systems, Lack of adequate funding
Proposed Metric(s)	This project will facilitate treatment of stormwater runoff from areas within Holley by the Sea that area currently untreated. This project will significantly reduce erosion and sediment entering East Bay and will reduce turbidity, improve water quality, and improve the overall biological health and productivity of East Bay estuary. The sewer system construction will measurably reduce the nutrient loading, especially Total Nitrogen (TN) into Santa Rosa Sound Bay by removing old and poorly functioning septic tanks and reconnecting properties to a modern sewer system. Related Indicators:Average TurbidityCompliance with Best Management PracticesTotal NitrogenDissolved OxygenWater quality improvement projects as proposed have been identified by numerous federal, state, university, and local government studies as priority projects that are needed in the Northwest Florida estuaries. This project will focus on nutrient reduction, sediment reduction, dissolved oxygen improvement and fecal coliform bacteria reduction goal that have been identified for East Bay and Santa Rosa Sound.
Project Contact Name	sheilah@santarosa.fl.gov
Project Cost	>$1 million

Project Map #	44
Latitude	30.36141666
Longitude	-87.1897944
Project Title	City of Gulf Breeze Driftwood/Navy Cove/Berry Stormwater Improvement
Location Description	The project area is a residential area between Fairpoint Dr. and Pensacola Bay. The latitude/longitude point represents the center of the defined area.
Project Description	The Driftwood/Navy Cove/Berry Stormwater Improvement project consists of installation of necessary infrastructure to reduce localized flooding. The project will include installation of stormwater piping, inlets, and an outfall treatment system.
Major Actions	Reduce nutrient loading, reduce and treat stormwater, reduce sedimentation, reduce contaminants.
Root Causes	Ineffective or unused BMPs, regulations & development codes, Ineffective sotrmwater system, lack of adequate funding, environmental issues, contamination.
Proposed Metric(s)	Reduce and treat stormwater, reduce nutrient loading, reduce sedimentation.
Project Contact Name	Edwin A. Eddy, City Manager eaeddy@gulfbreezefl.gov 850-934-5100
Project Cost	$697,000

Project Map #	45
Latitude	30.36798611
Longitude	-87.17145556
Project Title	City of Gulf Breeze Pfeiffer Street Outfall (Treatment and Discharge Control)
Location Description	The project area is a residential area between Shoreline Drive and Santa Rosa Sound. The latitude/longitude point represents the center of the defined area.
Project Description	The Pfeiffer Street Outfall project consists of the installation of an outfall treatment system and discharge controls on the outfall of an existing stormwater conveyance system into Pensacola Bay.
Major Actions	Reduce nutrient loading, reduce and treat stormwater, reduce sedimentation, reduce contaminants.
Root Causes	Ineffective or unused BMPs, regulations & development codes, Ineffective sotrmwater system, lack of adequate funding, environmental issues, contamination.
Proposed Metric(s)	Reduce and treat stormwater, reduce nutrient loading, reduce sedimentation.
Project Contact Name	Edwin A. Eddy, City Manager eaeddy@gulfbreezefl.gov 850-934-5101
Project Cost	$391,000

Project Map #	46
Latitude	30.35649722
Longitude	-87.1959444
Project Title	City of Gulf Breeze Beach Drive (Outfall Treatment)
Location Description	The project area is a residential area between Shoreline Drive and Santa Rosa Sound. The latitude/longitude point represents the center of the defined area.
Project Description	The Beach Drive Outfall Treatment project consists of the installation of an outfall treatment system on the outfall of an existing City stormwater conveyance system.
Major Actions	Reduce nutrient loading, reduce and treat stormwater, reduce sedimentation, reduce contaminants.
Root Causes	Ineffective or unused BMPs, regulations & development codes, Ineffective sotrmwater system, lack of adequate funding, environmental issues, contamination.
Proposed Metric(s)	Reduce and treat stormwater, reduce nutrient loading, reduce sedimentation.
Project Contact Name	Edwin A. Eddy, City Manager eaeddy@gulfbreezefl.gov 850-934-5102
Project Cost	$261,000

Project Map #	47
Latitude	30.62813169
Longitude	-87.04869032
Project Title	City of Milton Locklin Lake Restoration Phase 1 and 2
Location Description	Phase 1 (lake bottom and shelf restoration) geographic boundaries include the footprint of the lake starting at SR-89/Dogwood Drive and ending at Park Avenue. Phase 2 (sediment and debris collection devices at storm water discharge points) geographic boundaries are defined by the 11 storm water outfalls entering Locklin Lake and the contributing storm water structures. The latitude/longitude point represents the center of Locklin Lake.
Project Description	Locklin Lake was created sometime in the early 1800's at the confines of 2 creeks that form Collins Mill Creek. Collins Mill Creek then flows from the lake, easterly into the Blackwater River. The Blackwater River is an Outstanding Florida Waters as noted as the ONLY pristine sand river left in the United States. The total contributing watershed into Locklin Lake is estimated at approximately 3,000 acres. Locklin Lake is, because of its location, a natural collector of silt, sediment, trash, debris and other things that flow into the lake. Over time, silt and sediment have filled in the lake causing it to become less effective. Because of the shallower depths, grass and weed growth have caused additional problems with flows. Phase 1 would allow for the excavation of the lake bottom back to historical depths, along with the littoral shelf restoration around its shoreline. As with past restoration projects, the lake would require draining and then the removal of all sand, silt and debris by means of mechanical excavation. Phase 2 would allow for the installation of sediment and trash collection devices on many of the existing storm water discharge points into the lake.
Major Actions	Protect, restore, create and/or mange natural habitat and resources, and increase buffer areas, reduce nutrient loading, reduce and treat stormwater, reduce sedimentation.
Root Causes	Erosion, ineffective or unused BMPs, regulations & development doces, ineffective stormwater systems, lack of adequate funding.
Proposed Metric(s)	The project provides adequate funding to make the improvements possible. Success will be measured through the restoration and revitalization of Locklin Lake. The reduced nutrient loading and sedimentation resulting from stormwater infrastructure improements that effectively treat stormwater flows will help restore and protect this marine habitat as well as help restore the fresh water quality of the lake and the Balckwater River.
Project Contact Name	Brian Watkins, City Manager brian.watkins@ci.milton.fl.us 850-983-5411
Project Cost	$595,000

Project Map #	48
Latitude	30.62342321
Longitude	-87.0353812
Project Title	City of Milton Shoreline Erosion Reduction
Location Description	The geographic boundaries of the project include the shorelines of Blackwater River within the corporate limits of the City of Milton. The latitude/longitude points the Milton Riverwalk Facility, a landmark on the western shore of the Blackwater River.
Project Description	This project is to construct or provide devices, structures or ways that will help reduce shoreline erosion along the Blackwater River within the corporate limits of the City of Milton. Currently, the City has over 26,000 linear feet or nearly five miles of shoreline. This includes both sides of the Blackwater River and the inland shores along Quinn Bayou and Carpenters Park. Included along this shoreline are four (4) boat launching facilities, two of which are utilized for emergency response activities. In addition, the two (2) emergency response ramps are required to remain open on a 24 hour basis. The Blackwater River at Milton is heavily used for sport fishing and recreation boationg activities. Milton is located less than four (4) miles from the mouth of the river near Blackwater Bay. Within the City, the longest single run of shoreline is Russell Harbor Landing and Old River Trail with 1.3 miles of limited or unprotected shoreline. To help combat the erosion effort, the City has developed a Boating Restricted Area Ordinance. One of the purposed of this ordinance is to help reduce shoreline erosion caused by wake action from boating activities during heavy use periods. The Blackwater River watershed drains approximately 860 square miles in both Florida and Alabama. Heavy seasonal rains and the occasional hurricane have caused major flooding. The flooding caused shoreline erosion and damage to both public and private facilities. During Hurricane Ivan in 2003, the City experienced a 12-14 foot tidal surge. This project would utilize sound shoreline protection measures following the practices of the U.S.D.A. Natural Resource Conservation Service and would include, but not be limited to bulkheads, revetments and other environmental/ eco-friendly alternatives such as vegetation plantings, soil bioengineering systems, and coconut fiber rolls.
Major Actions	Protect, restore, create and/or mange natural habitat and resources, and increase buffer areas, reduce nutrient loading, reduce sedimentation.
Root Causes	Environmental changes/issues, erosion, lack of adequate funding, loss of vegetation, riparin buffers, and/or wetlands, quantity and timeing of freshwater flow.
Proposed Metric(s)	The project will provide funding to protect the shorelines of the Blackwater River. Success will be measured through stabilization of the Blackwater River shoreline resulting in less erosion, nutrient loading and sedimentation.
Project Contact Name	Brian Watkins, City Manager brian.watkins@ci.milton.fl.us 850-983-5412
Project Cost	$907,000

Project Map #	49
Latitude	30.62030833
Longitude	-87.048425
Project Title	City of Milton Relaimed Water to US 90 medians.
Location Description	The end use area of the project is within the medians of Highway 90 from Stewart St. to Dogtrack Rd. The latitude/longitude is a point about midway between the two intersections.
Project Description	This project is to construct a reclaimed pipeline infrastructure from the Downtown Wastewater Treatment Facility to US Highway 90 where portions of the median are currently being irrigated with freshwater from groundwater resources. The irrigation system will be connected to the new reclaimed water main where effluent will provide beneficial reuse for irrigation purposes.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading, Increase cooperation and coordination for monitoring, funding, implementation, reduce impacts to groundwater.
Root Causes	Contamination, envrionmental changes/issues, lack of adequate funding, water reuse, water supply.
Proposed Metric(s)	The project will provide funding to reduce the discharge of treated wastewater to the Blackwater River and reduce the use of natural groundwater resources for irrigation purposes. Success will be measured through redcued nutrient loading and stability of groundwater levels in the area.
Project Contact Name	Brian Watkins, City Manager brian.watkins@ci.milton.fl.us 850-983-5413
Project Cost	$699,000

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The Nature Conservancy would like to thank all of the stakeholders from local, state and federal governments, NGOs, community groups and citizens who devoted their time, resources and support for this watershed planning process. Your desire and commitment to come together in the spirit of building a watershed community that will achieve more together than individually has created a solid foundation and legacy of collaboration and conservation for the Gulf. In particular, we would like to recognize the leadership demonstrated by the county governments in the Panhandle and Springs Coast to invest in a process that reaches across political and organizational boundaries and focuses on improving and protecting the watersheds today and for future generations.


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