

FINAL
ESTUARINE RESTORATION IMPLEMENTATION
PLAN
FOR THE
DECEMBER 7, 1997 ALAFIA RIVER SPILL

PREPARED BY

ENVIRONMENTAL PROTECTION COMMISSION OF HILLSBOROUGH COUNTY
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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1.0 PURPOSE AND NEED FOR RESTORATION

On December 7, 1997, approximately 55 million gallons of highly acidic process water was released into the Alafia River (the Spill) from the Mulberry Phosphates, Inc., fertilizer plant in Mulberry, Polk County, Florida. The acidic waters traveled over 30 miles down the Alafia River, injuring freshwater habitats in its upper reaches and estuarine habitats near its mouth, and killing fish and other aquatic animals and plants from the point of discharge to the mouth of the river and into Tampa Bay. It also added substantial amounts of nutrients to the bay. Several public agencies worked together to assess the natural resource injuries and losses caused by the Spill and to require Mulberry Phosphates, Inc. to pay damages for those losses. As a result of those efforts, a settlement with the company and its insurer was reached in 2002 that requires payment of \$3.65M over five years to compensate for the loss of these public resources. Applicable laws and the terms of the settlement require that these funds be used to plan, implement and oversee restoration actions that address the natural resource losses that occurred. Approximately \$1.3M of the funds, plus a portion of the interest earned since the settlement, is available to plan and implement restoration projects to compensate for the estuarine resources lost due to the Spill. An additional \$2.363M is available to plan and implement freshwater riverine habitat restoration projects to compensate for the freshwater injuries, however, this plan will be described in a separate document at a later date.

The Final Damage Assessment and Restoration Plan and Environmental Assessment for the December 7, 1997 Alafia River Spill (Final DARP/EA), released in July 2000, identified restoration of estuarine wetlands and oyster reef creation as the appropriate restoration methods to compensate for estuarine fisheries losses as a result of the Spill. This Final Estuarine Restoration Implementation Plan (Final ERIP) selects specific wetland restoration and oyster reef creation projects to be undertaken to compensate for the estuarine fishery losses. The Final ERIP supplements the Final DARP/EA.

This Final ERIP has been prepared by the Environmental Protection Commission of Hillsborough County (EPC), the Florida Department of Environmental Protection (FDEP), and the National Oceanic and Atmospheric Administration (NOAA) (the Agencies). By statute, the Agencies have the authority and responsibility for identifying and implementing suitable estuarine restoration projects to compensate for the damages from the Spill. The Agencies formed a Restoration Council (Council) to complete the restoration planning process and to oversee the restoration.

The Council has been working for several years to identify restoration projects that will meet the restoration goals identified in the Final DARP/EA for the estuarine fishery losses. In developing this Final ERIP, the Council invited and considered public input on candidate projects and sought public comment on a Draft version of this document that identified the specific projects the Council was proposing to use. In releasing this Final ERIP, the Council now announces the projects selected for implementation and funding.

1.1 Authority

In developing this Final ERIP, each of the Agencies has acted under statutes vesting it with authority to assess and recover natural resource damages and to plan and implement appropriate restoration actions to compensate for resource losses. For NOAA and FDEP, these statutes include the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, 42 U.S.C. § 9601 et seq., the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq., (also known as the Clean Water Act or CWA) and other applicable Federal law including the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Subpart G, 40 C.F.R. Sections 300.600 - 300.615 and regulations at 43 C.F.R. Part 11 which are applicable to restoration planning under CERCLA. In addition, FDEP is acting pursuant to authority provided by Chapters 376 and 403, Florida Statutes, and other applicable provisions of State law. EPC's authority is found in Chapter 84-446, Laws of Florida, as amended, and Section 403.182, Florida Statutes.

1.2 Public Participation

Public participation in the process of identifying and selecting appropriate restoration projects is important to achieving restoration success. For that reason, on October 9, 2003, the Council published a "Notice of Intent to Develop Implementation Plan for Estuarine Restoration relating to the Mulberry Phosphates, Inc./Alafia River Spill; Opportunity to Submit Project Proposals" in both the Tampa Tribune and the St. Petersburg Times-Tampa Edition. That notice invited the public to submit ideas and proposals for creating one or more oyster reefs and for restoring or enhancing estuarine wetlands in the lower Alafia River and adjacent areas of Tampa Bay. The notice also provided the public with information on how to obtain an Information Sheet listing the criteria to be applied in the project selection process and information that would be helpful to the Council in evaluating potential projects. On October 10, 2003, the FDEP also issued a press release announcing this public call for project ideas.

The Council received nine project ideas in response to this initial request for restoration proposals. As it considered and evaluated these proposals, the Council also encouraged and invited further public input by posting the pending proposals on a FDEP webpage and notifying neighborhood and community groups likely to have an interest. The Council also sought input from the Tampa Bay Regional Planning Council's Agency on Bay Management (ABM) – Natural Resources/Environmental Impact Review Committee. In June 2004, the Council held a meeting immediately following a scheduled ABM meeting in which project proponents presented their proposals and answered questions from the Council members and other attendees. As a result of these and other efforts, the Council has reviewed or evaluated a total of 13 restoration proposals since 2003. A list of all proposals received or considered during the planning process and a map denoting their locations appears in Appendix A. Four of these are selected for implementation in this Final ERIP.

A Draft version of the ERIP was made available for public comment for a 30 day period via notices published in both the Tampa Tribune and the St. Petersburg Times-Tampa Edition on August 17, 2007. The Draft ERIP summarized the objectives of the restoration, the restoration projects that were considered, the process used by the Council to identify the preferred restoration projects, and the basis for their selection. Two public comments were received and considered by the Council prior to making final decisions on the projects to be included in this Final ERIP. A summary of comments received, and the Councils' responses, are included in the Final ERIP at Appendix B.

1.3 Administrative Record

FDEP has maintained an Administrative Record containing key documents generated or considered by the Council in the project selection process. In addition, the Administrative Record contains summary minutes for meetings of the Council. The Administrative Record is available for review by interested members of the public and is located at FDEP's offices at 13051 Telecom Parkway North, Tampa FL 33637. Interested persons can make arrangements to review the Administrative Record by contacting Judy Ashton (813.632.7600).

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2.0 PROJECT SELECTION FRAMEWORK

The restoration goal of this plan, as identified in the Final DARP/EA, is to replace the biomass of fish, crabs, and shrimp lost due to the Spill. The Final DARP/EA selected two types of projects - restoration of estuarine wetlands and oyster reef creation - as appropriate to achieve this goal. Wetlands and reefs enhance ecosystems by providing nursery habitat, refuge, and foraging for fish and other aquatic organisms, nesting and foraging for birds, erosion protection, and water quality improvements, and also improve recreational experiences for people who fish or observe wildlife.

During the damage assessment, the Agencies estimated that four acres of oyster reef and four acres of estuarine wetlands in or near the lower Alafia River represented an appropriate habitat mix for achieving this goal. This estimate relied in large part on a study by Peterson et al. (2003). While the acreages and location are not set in stone, the Council has used them to guide its consideration of available projects. The Agencies diligently sought projects in proximity to the Alafia River; however, for a number of reasons, potential projects with the closest proximity to the river ultimately were either unavailable or not feasible, so the Agencies have selected projects in and near Hillsborough Bay, the body of water at the mouth of the Alafia River, to meet the restoration goals for the fishery losses. Three projects involving wetland restoration and oyster reef creation are located on MacDill Air Force Base. An additional oyster reef creation project is located in Hillsborough Bay adjacent to spoil islands "2-D" and "3-D".

The Implementation Plan for Estuarine Restoration is set forth in Section 3.0. That Section identifies the projects that are selected for implementation (with anticipated funding levels). Projects that were considered but not selected are summarized in Section 4.0.

2.1 Restoration Project Identification Process

The strategy and process used by the Council to identify and evaluate the projects are described in the "Framework for Identifying and Selecting Estuarine Wetland and Oyster Reef Restoration Project(s)" (Framework) dated July 8, 2003. The Council took the following actions under that Framework:

- The public was invited to submit potential restoration projects via a legal notice published in two area newspapers, a press release announcing the need for restoration ideas and proposals, and direct consultations or contacts with interested individuals and other entities.
- All of these restoration proposals were posted to an FDEP webpage, and the Council notified neighborhood and community groups in the area of the Spill.
- Appropriate governmental agencies and other local entities were asked to review and comment on the initial project list.
- After receiving input from these sources, the Council screened the initial project proposals against the project selection criteria (Section 2.2) to identify the projects that should receive further consideration.

- Sponsors of these projects reviewed their proposals with the Council in a public forum, and the Council asked questions and sought additional information.
- The initial list of projects changed over time as some were withdrawn, others found funding from other sources, or initial proposals or ideas evolved.
- As it evaluated these projects, the Council continued to investigate and evaluate other potential projects as well.
- The Council conducted site visits and investigations as necessary to evaluate each project and funded a pilot study to assess the technical suitability of several sites, techniques and materials for oyster reef creation.

Of the project proposals considered over the course of this planning process, the Council found four projects to be most suitable for achieving the restoration objectives. Of these projects, two restore estuarine wetlands, one creates oyster reef, and one incorporates restoration of both types.

2.2 Project Selection Criteria

The Council evaluated project alternatives, using the criteria listed below. Project proposals were first judged according to the Threshold Criterion (Consistency with Restoration Strategy). This step eliminated projects that could not meet the objective of restoration under this plan. Project proposals surviving this initial screening were then evaluated according to several General Criteria as well as several Additional Criteria that were given special weight. These Additional Criteria focused on the location of the project, the type of wetlands to be restored, and/or methods linked to success in restoring oyster reefs. While all criteria were considered, not all were afforded equal weight.

Threshold Criterion:

Consistency with Restoration Strategy – This criterion considers the extent to which the project is an estuarine wetland restoration or oyster reef creation project in the appropriate area. Project proposals had to meet this criterion to be given any further consideration.

General Criteria:

Relationship of Restoration Action to Type and Quality of Resources and/or Services Injured – This criterion evaluates the extent to which a particular project will restore biomass of fishery resources, including fish, crab and shrimp.

Consistency with Community Objectives - This criterion considers the degree to which a particular restoration project is consistent with community ecosystem restoration objectives. These objectives may be reflected in policy, strategic or technical documents with broad community acceptance, such as the Comprehensive Conservation and Management Plan for Tampa Bay (“CCMP”) and “Restoring the Balance”, published by the Tampa Bay Estuary Program.

Multiple Benefits – This criterion evaluates the extent to which a particular project will also benefit natural resources other than fishery resources, especially other resources that may have been injured or lost due to the Spill.

Technical Feasibility - This criterion evaluates the likelihood that a project will succeed in a reasonable period of time. It takes into account such factors as the availability of the technical expertise, programs and contractors necessary to implement the project, prior experience with methods or techniques proposed for use, availability of suitable equipment and materials, site availability, and logistical difficulty.

Site Requirements – This criterion considers the extent to which a project site satisfies scientific, engineering, permitting, or legal considerations.

Potential for Additional Natural Resource Injury – This criterion considers whether a project may cause additional natural resource injuries.

Restoration is Self-sustaining – This criterion considers the degree to which a project will be successful without human intervention. It includes the extent to which the project site, and the ecological services it provides, will be protected into the future through public ownership of project lands, conservation easements, or other mechanisms for land management.

Consistency with Applicable Laws – Under this criterion, implementation of the project must occur in accordance with federal, state and local laws.

Potential Effects on Human Health and Safety – This criterion evaluates the potential adverse impacts that a project may have to human health and safety (including navigation).

Cost Effectiveness - Under this criterion, the Council evaluates whether the benefits of the restoration outweigh the costs of implementing the project. Other criteria being equal, a less costly restoration project will be rated higher than a more costly project. This criterion also takes into account whether matching or additional funds or other types of partnerships are available to build on or enhance the project.

Additional Criteria:

Proximity to the Alafia River – This criterion evaluates how close the project is to the area affected by the Spill.

Preference for Oligohaline Habitat – Because ecosystem planning documents adopted for this area identify restoration of oligohaline¹ habitat as a priority

¹ Oligohaline is a general term used to characterize water with a salinity range between 0.5-5.0/00 [parts per thousand] due to ocean-derived salts.

action for restoring and maintaining the overall health of Tampa Bay, if acceptable project proposals were available at both oligohaline and at higher salinity sites, preference was given to projects constructed in, or expected to increase the availability of, oligohaline environments.

Proven Methods for Creating Oyster Habitat – A preference was given to projects that use proven methods for oyster reef creation.

3.0 SELECTED ESTUARINE RESTORATION PROJECTS

The projects selected to restore estuarine wetlands and to create oyster reefs are described in subsections 3.1 and 3.2 below, respectively. One project has both estuarine wetland and oyster reef components and is discussed in both subsections. Subsection 4.0 identifies the other project alternatives that were considered but not selected. A list of all proposals received or considered during the planning process and a map denoting their locations appears in Appendix A.

3.1 Estuarine Wetlands Projects

The following projects are selected for estuarine wetland restoration:

Project #1 - Restoration of Mangrove Wetlands & Tidal Creek on MacDill Air Force Base (MacDill Mangrove/Tidal Creek Project)

This project will restore a 30+ acre black mangrove community on MacDill Air Force Base (AFB). This mangrove wetland, located in the middle of the AFB golf course, has been degraded by mosquito ditching, golf course construction, and alteration of surface water hydrology through constriction of the wetland's natural tidal connection to Hillsborough Bay. The wetland is currently tidally connected to Hillsborough Bay through a narrow channel with episodic tidal influence. Past alterations to the wetland have resulted in heavy infestation by non-native Brazilian pepper, particularly around the perimeter of the site. Restoration of the 30+ acre site will likely include eradicating the dense stands of Brazilian pepper and other non-native species, removing the mosquito ditch mounds located in the interior of the site, re-establishing historic surface water connection with the bay through construction of one or more tidal creeks, and replanting disturbed areas with Florida native species.

This project will be implemented through a partnership with the Southwest Florida Water Management District (SWFWMD) Surface Water Improvement and Management Program (Swim Program) and MacDill AFB, a partnership which will increase the likelihood of project success. While public access to the site will be limited due to the project's location on the AFB, the restoration project will enhance fisheries production, which will benefit recreational and commercial fisheries in adjacent Hillsborough Bay.

Estimated Project Cost: \$250,000

Project #2 - Shoreline Stabilization & Enhancement Through Oyster Reef Construction At MacDill Air Force Base (MacDill Oyster Dome Project)

This project will build upon an existing project constructed by the Tampa Bay Watch. It involves the creation of additional oyster habitat, restoration of estuarine marsh, and stabilization of an eroding shoreline on the south and/or east sides of MacDill AFB. Concrete oyster domes and oyster shell bags will be placed on the littoral shelf and parallel to the shoreline at depths that allow for both breaking wave energy and oyster

colonization. The Council anticipates that the oyster domes and shell bags will be delivered to nearby upland locales and then placed by hand at the desired locations, though other methods may be needed depending on site conditions. Tampa Bay Watch already has successfully completed two phases of this project with other funds. Their work has demonstrated that oyster spat (larvae) will successfully recruit to and grow on the dome and shell bag substrate.

The Agencies expect that once the domes and bags are installed, sediment will accumulate and stabilize in the shallow areas landward of the reefs, thereby making conditions favorable for the natural recruitment (or allow for planting) of marsh grasses behind the created reef. The decrease in wave energy and establishment of marsh vegetation behind the reef will also stabilize a stretch of shoreline that is experiencing rapid erosion and currently threatening a loss of fringing mangroves. This design has the potential to create up to eight acres of new salt marsh and/or mangrove habitat. Two phases of this project have already been completed. Implementation of three additional phases will create approximately 2300 linear feet of oyster reefs.

The Spill settlement will support implementation of all three remaining phases, as funds allow.

Estimated Project Cost: \$60,000 for each of the three remaining phases (a total of \$180,000)

Project #3 - Estuarine Habitat Creation at Lewis Lake On MacDill Air Force Base (MacDill Lewis Lake Project)

This project will convert the freshwater stormwater treatment system at Lewis Lake, a 22 acre permitted stormwater treatment system on MacDill AFB, into an estuarine wetland by creating a direct connection with a nearby tidally-influenced drainage canal. The project will likely remove or modify an existing water control structure and connect Lewis Lake to the drainage canal at the northeast and southeast ends of the lake. Where possible, the project will also improve the habitat value along the edges of the drainage canal by decreasing the bank slopes and widening the canal. These improvements will create additional marsh areas that will provide estuarine habitat for fisheries resources as well as stormwater storage and polishing.

Estimated Project Cost: \$200,000

3.1.1 Evaluation of Selected Wetland Restoration Alternatives & Rationale for Selection

The general criteria in Section 2.2 require that the projects be capable of restoring the lost fishery resources such as fish, crab and shrimp, in a way that is technically feasible, cost-effective, benefits other resources, avoids or minimizes undesirable consequences, is consistent with community objectives, and will meet applicable legal requirement. The additional criteria, which were given special weight in the evaluation, stressed the

proximity to the mouth of the Alafia River and a preference for oligohaline habitat. All of the proposed wetland restoration projects meet these criteria.

Estuarine wetlands, such as mangroves and salt marsh, are critical to the life history of many species of fish, shellfish, and shrimp. The restoration of historic estuarine wetlands is consistent with the objectives of the Tampa Bay community and State of Florida for restoring and protecting the Tampa Bay Estuary, including the Alafia River Basin (e.g., the Comprehensive Conservation and Management Plan for Tampa Bay 1997 and the SWIM Program).

All selected projects will create or restore estuarine wetland habitat, including mangroves and salt marsh. The projects involve a range of activities including removing exotic and invasive species, replanting with native Florida wetland species, removing mosquito ditches and mounds, and improving tidal exchange with existing wetlands.

Native vegetation provides more beneficial habitat for wildlife and estuarine biota than exotic or nuisance species. Removing non-native species and replanting with native vegetation is a common and desirable restoration strategy for restoring wetlands in Tampa Bay and is within the scope of the Estuarine Wetlands Restoration alternative in the Final DARP/EA. Removal of invasive species typically entails both herbicide application and physical removal, which is labor intensive and requires follow-up maintenance for some period of time. However, once appropriate elevations are achieved and native species have re-established, projects of this type are generally self-sustaining within a period of 5-7 years and require little additional maintenance.

Decades ago, mosquito ditches were dug throughout the southeastern United States to drain wetlands in an effort to control mosquitoes. This dramatically changed the natural function of estuarine wetlands by altering the timing and volume of tidal exchange in the wetlands and creating spoil mounds that were easily colonized by non-native vegetation. Removing spoil mounds and filling mosquito ditches will restore the natural hydrology and decrease the habitat available for non-native or invasive vegetation.

Restoring regular tidal inundation to wetland areas that currently experience only episodic tidal connection will increase the opportunity for fisheries species to access the wetlands for refuge and foraging. Tidal exchange will be enhanced by replacing or installing culverts, creating or improving tidal creeks, and redesigning a water control structure that currently facilitates stormwater treatment but provides little benefit to estuarine fishery habitat.

Projects with similar designs have successfully restored estuarine wetlands at other sites around Tampa Bay and throughout the state of Florida. SWFWMD's SWIM Program, an anticipated partner for implementing the Black Mangrove and Lewis Lake projects, has a proven record for successfully completing restoration projects of this nature. Tampa Bay Watch, a local non-profit organization with expertise in environmental restoration and an anticipated partner on the MacDill Oyster Dome Project, has demonstrated success at stabilizing shoreline sediments through the construction of nearshore oyster reefs in

similar projects at the AFB. Thus, all of the selected projects are technically feasible and likely to achieve long-term, self-sustaining success.

All of the selected projects are cost effective given the extent of habitat creation and enhancement, and corresponding ecological benefits to fisheries, relative to the cost of implementation. The estimated costs for the proposed projects reflect efficiencies and cost savings that are likely achievable only through partnerships with agencies such as the SWIM Program and Tampa Bay Watch.

Any adverse effects from implementation of these projects will be short-term and offset by the long-term environmental enhancements. Negative impacts include loss of non-native vegetation (from upland and wetland areas) and possible temporary increases in water turbidity that will lower water quality and impact associated resources. The environment could also be temporarily disrupted by the presence and noise caused by vessels, vehicles and/or mechanical equipment used in construction. These effects are generally local to the project site and minimized through implementation of best management practices during project planning and implementation. Best management practices are also generally required in the permits issued by the regulatory agencies for these projects. Invasive vegetation removal projects are likely to include herbicide application; however, off-site impacts will be minimized through training in application procedures. In the longer term, the benefits of restoring or creating estuarine wetlands, (i.e., providing habitat essential to healthy fisheries, bird nesting and foraging, other wildlife, assisting in maintaining surface water quality, and supporting recreational activities), outweigh these short term environmental impacts.

The Restoration Council diligently attempted to identify wetland restoration projects in close proximity to the Alafia River and areas affected by the Spill, but the potential projects in the closest proximity to the River mouth were either unavailable or infeasible for reasons discussed in Section 4.0. The wetland restoration sites on MacDill AFB are on the Interbay Peninsula that forms the western boundary of Hillsborough Bay and restoration at these sites will still directly benefit fishery resources affected by the Spill and offer the best opportunity to accomplish cost effective and technically feasible estuarine wetlands restoration for that purpose.

Socio-Economic Impact

The proposed projects will not result in any significant socio-economic impacts. The proposed projects are primarily designed to benefit or improve ecological resources. No human health or safety issues will exist beyond the construction phase.

Two of the project sites – the MacDill Mangrove/Tidal Creek Project (Project #1) and the Lewis Lake Project (Project #3) - currently provide either permitted or *de facto* stormwater treatment services. The design and implementation of the selected projects will take this into account to ensure that stormwater treatment capabilities are maintained to the degree necessary to provide appropriate water quality. While stormwater treatment capacity may be lower during the construction phase, these effects will be short term.

Restoration of estuarine wetlands will indirectly benefit people by improving opportunities for recreation, such as fishing and bird watching. While direct opportunities for these activities at the restoration sites will be limited because access to MacDill AFB is restricted, the ecological services provided by these wetlands will benefit the adjacent environment, including resources in Hillsborough Bay and the Alafia River, and thus indirectly enhance recreational opportunities in these areas.

3.1.2 Anticipated Funding for Projects 1, 2, & 3:

The total estimated cost to implement all three of the restoration projects selected at MacDill AFB is \$630,000. The Council anticipates providing \$430,000 to cover project implementation costs. While this sum represents only a portion of the total, it is estimated to allow for full implementation of Projects #1 and #2. If the project proponents are able to identify other sources of funding to cover some of the project costs associated with #1 and #2, then the remaining funding may be applied to Alternative #3. The Council will encourage the SWIM Program, MacDill AFB and Tampa Bay Watch to seek additional sources of funding to cover the estimated \$200,000 shortfall so that all three projects can be fully implemented. The project proponents have indicated a desire to leverage this funding and feel it is an achievable goal. However, if the additional funding cannot be leveraged, or if project budgets or actual costs change substantially from the current estimates, the Council will fund the projects in the following priority: Black Mangrove Project (Project #1), Oyster Dome Project (Project #2), and Lewis Lake Project (Project #3). This approach is feasible as all of these projects can be scaled, if necessary, and individual project components implemented, which would still result in estuarine wetland restoration. The MacDill Mangrove/Tidal Creek Project received the highest priority because it has the potential to restore 30 acres of historically productive wetland. The MacDill Oyster Dome Project received the second priority because of its multiple benefits affecting 1600 feet of shoreline, creating 2300 linear feet of oyster reef, preventing the loss of fringing mangroves, and potential creation of eight acres of salt marsh. The MacDill Lewis Lake Project was given third priority in part because it can be scaled down if complete funding is not possible.

3.2 Oyster Reef Creation Projects

There are two oyster reef creation projects selected for implementation. The first - the MacDill Oyster Dome Project (Project #2) - includes both oyster habitat and wetland restoration components. The features of that project relating to the wetland restoration component were described in subsection 3.1.

Project #2 - MacDill Oyster Dome Project

The oyster reef component of this project is described above in subsection 3.1. It will create approximately 2300 total linear feet of oyster reef, if all the remaining phases are implemented.

Estimated Project Cost: \$60,000 for each of the three remaining phases (total of \$180,000)

Project #4 - Oyster Reef Creation Adjacent To 2-D and/ or 3-D Island in Hillsborough Bay (2-D/3-D Oyster Project)

This project will construct oyster reef habitat in suitable shallow intertidal areas adjacent to 2-D and 3-D islands in Hillsborough Bay. Both 2-D and 3-D are spoil islands constructed from dredge materials that continue to be used for dredge spoil disposal. They are owned and managed by the Tampa Port Authority (Port Authority). The islands' avian resources are co-managed by the Port Authority and the Audubon Society of Florida. The Council's preliminary discussions with the Port Authority and Army Corp of Engineers indicate that the sites proposed for oyster reef creation are not likely to be impacted by future spoil disposal (Robert Musser, personal comm.).

Both islands are comprised of upland, wetland and beach habitats. Island 2-D, the larger and northernmost, is approximately 1.3nm long and 0.7nm wide. The eastern side of this island is protected from excessive wave energy. Approximately two-thirds of its eastern side has a healthy mangrove fringe, while the remaining portion is mostly an open beach habitat. Both the mangrove and beach habitat throughout the island are important for bird nesting and roosting. A shallow intertidal shelf along the eastern side may be ideal for oyster reef construction. Opportunities may also exist to create viable oyster reefs on the western side of the island. Island 3-D is approximately 1.0nm long and 0.5nm wide. This island has little estuarine marsh but does have open beach habitat that is important for bird roosting and nesting. Its eastern side is also somewhat protected from wave energy (though less so than 2-D) and has a shallow intertidal shelf, especially on the southeastern side, suitable for oyster reef construction.

The reefs will be constructed in the shallow intertidal areas adjacent to one or both islands with materials similar to those tested in an oyster pilot project undertaken by the Council in 2005 (described in subsection 3.2.1 below). These materials include crushed or broken concrete, limestone, and mined fossilized shell. The reef base may be constructed with one or more materials, as environmental conditions at each location dictate. Materials will likely be deployed by barge, though the most appropriate method and locations for reef construction will be determined during the design and permitting phase. The reefs will be constructed at depths required for successful oyster settlement and growth. Optimal depths and locations for avifaunal foraging will also be considered during project design and construction. Preliminary site visits and design considerations indicate a potential to restore in excess of three acres of oyster reef along the 2-D and 3-D

shorelines. The material will be placed between November and March so that the construction will not interfere with the nesting season for birds.

Estimated Project Cost: Approximately \$570,000; See Section 3.2.2

3.2.1 Evaluation of Selected Oyster Project Alternatives & Rationale for Selection

The general criteria in Section 2.2 require that the projects be capable of restoring the lost fishery resources such as fish, crab and shrimp, in a way that is technically feasible, cost-effective, benefits other resources, avoids or minimizes undesirable consequences, is consistent with community objectives, and will meet applicable legal requirement. The additional criteria, which were given special weight in the evaluation, stressed the proximity to the mouth of the Alafia River, a preference for oligohaline habitat, and the use of proven methods for creating oyster reefs. Both of the selected projects meet these criteria.

The creation of oyster reefs through the selected projects will provide fish habitat, contribute to improving surface water quality, enhance recreational opportunities, and result in the production of new fishery biomass in Tampa Bay. Due to the proximity of these sites to bird nesting sites in Hillsborough Bay, the resulting oyster habitat is also expected to provide additional foraging opportunities for nesting birds and fledglings. Oysters are filter feeders, so the projects may contribute to improving water quality, although this effect is not likely to be measurable due to the relatively small size of the reefs. The created reefs will result in permanent self-sustaining habitats. Results from other oyster restoration projects in Tampa Bay suggest that the reefs will experience a natural oyster spat set within 6-12 months and have oysters in the adult size range within 2-3 years. Creation of these reefs will displace existing sand bottom habitat; however, the created reef will likely result in greater or enhanced services to the environment, with minimal loss of or impacts to other resources or habitats. Existing regulatory requirements will ensure that reefs will not impact seagrass areas and restrict reef construction to areas with a low potential for injuring other resources. Reefs created adjacent to shorelines may also provide erosion protection and in some cases will allow sand to accrete in the quiescent area behind the reefs, which should recruit salt marsh vegetation. New oyster reefs adjacent to existing mangroves will particularly benefit those species that use both habitats for nurseries and foraging.

Oyster reef creation projects have been specifically identified as a part of a larger ecosystem restoration strategy for Tampa Bay (Tampa Bay National Estuary Program, 1996), which encourages the identification, protection, and restoration of hard-bottom communities. Because there were historically oyster bars in the lower Alafia River and in Tampa Bay, restoration of oyster habitat in these areas is desirable. The up-front attention given by the Agencies to identifying the best sites and methods for construction will maximize the likelihood that the created oyster reef habitat will be self-sustaining in the long term.

The Council diligently pursued oyster habitat project opportunities in the Alafia River, but several factors rendered projects in the river inferior to the selected projects. The projects considered in the river and the reasons they are not selected for implementation are summarized in Section 4.0. While not in the Alafia River, 2-D and 3-D Islands are in close proximity to its mouth. Oyster reefs constructed at these islands will be of direct benefit to fisheries resources within Hillsborough Bay and the Alafia River. The oyster restoration site at MacDill AFB is on the western boundary of Hillsborough Bay and restoration at this site will also directly benefit fishery resources in Hillsborough Bay and the Alafia River.

The Council evaluated project alternatives in light of information gained through site reconnaissance trips, consultations with experts, and the results of a pilot project that the Council undertook in 2005. The pilot study was used to evaluate potential sites, identify the most suitable locations, and evaluate materials for use in reef creation and is summarized below. Its results guided the identification of preferred locations and materials.

The Council consulted with Mr. Mark Berrigan, Chief of the Bureau of Aquaculture Development Division of Aquaculture, Florida Department of Agricultural and Consumer Services (FDACS). Mr. Berrigan has considerable experience and is a recognized expert in planning and implementing successful oyster reef creation projects in Florida. Mr. Berrigan assisted the Council in its evaluation of suitable sites for both the pilot project and larger scale oyster reef projects, and in identifying suitable methods for construction. The Council plans to consult with Mr. Berrigan further during 2-D/3-D Oyster Project planning, designing and permitting. The involvement of Mr. Berrigan in planning this project increases the Council's confidence that it will achieve long-term success.

For the 2-D/3-D Oyster Project, the best means of construction will be identified in further planning. As such, there is some present uncertainty about both the project cost and the total area of oyster reef that can be created. However, the Council intends to strive for the best and largest amount of reef possible, given the four-acre goal for oyster reef creation and the need to allocate available funds between estuarine wetlands and oyster reef projects. Anticipated funding for the 2-D/3-D Oyster Project is described in subsection 3.2.2.

Pilot Study

In the 2005 pilot study, three small oyster reefs (20 ft x 15 ft) were constructed at three project locations (for a total of nine small reefs). The 'pilot' reefs were constructed with mined fossilized shell, crushed concrete, and limestone boulders in order to evaluate the efficacy of each material. The reefs were constructed by barge and crane in the intertidal zone. Seawall Reefs® were also deployed at all three sites. These consist of sheets of diamond-shaped polyethylene mesh rolled into individual cylinders (7 in. diameter by 48 in. long). Individual cylinders were bound together to create an approximately 6 ft x 8 ft reef base.

The three pilot sites tested were located on the east side of island 2-D, the east side of Fantasy Island, (both in Hillsborough Bay), and the north side of the Alafia River (just east of the US-41 bridge). These sites were chosen after field reconnaissance and consultations with experts that considered the conditions required to successfully create a reef base and achieve colonization by and growth of oysters in the lower Alafia River and Hillsborough Bay. The choice of sites for the pilot reefs also took into account the potential for a larger scale oyster reef creation project, if the site proved feasible. The pilot sites were monitored over a six-month period to assess reef stability, oyster spat settlement, and oyster survival and growth over time. The results of the monitoring are detailed in the “Pilot Project Oyster Reef Monitoring and Elevation Report” dated February 2006. The information obtained from the pilot study is applicable to other sites in the area with similar environmental characteristics.

The monitoring results indicate that any of the three aggregate materials can be used to successfully create an oyster reef but that mined fossilized shell alone would not be appropriate for use in high energy locations because it is less dense and more prone to scatter. The Seawall Reefs® had less oyster settlement than any of the aggregate materials. The two sites in Hillsborough Bay had more oyster spat settlement and growth than the site in the Alafia River (the lower and variable salinity at the Alafia River site may have contributed to this outcome). However, creation of additional oyster reef on the east side of Fantasy Island, with the construction methods used in the pilot study, is not considered to be the most viable option. The shallow water conditions at this location make barge deployment difficult and the seagrass in the area limits the opportunity for reef construction.

Socio-Economic Impact

Oyster reefs that are shallow and near navigational channels will need to be marked to minimize potential navigational hazards. Marking required to minimize this risk at the proposed restoration sites will be determined once construction plans and permits are finalized. Oyster reef habitat is also hazardous to swimmers or waders because it is a sharp, uneven, and unconsolidated substrate, however, this should not be a problem at the proposed restoration sites. Public access to the 2D/3D sites is limited and access to the MacDill AFB site is generally prohibited. These areas are, presently closed to shellfish harvesting so adverse impacts to human health from eating contaminated oysters are not expected. The anticipated increased abundance of fish and birds should increase and enhance public recreational activities, such as bird watching and fishing.

3.2.2 Anticipated Funding Level for Project #4

The Council will allocate approximately \$570,000 to the 2-D/3-D Oyster Project and intends to create the maximum amount of oyster reef possible (within the design and permitting restrictions) with these funds. As noted above, the Council intends to involve FDACS in the planning and design, and one of the Agencies will likely serve as the permit applicant. This is a cost saving strategy intended to preserve the maximum amount of funding available for project construction. However, the precise costs and

restored acreage of this project cannot be determined until the detailed plans are complete. (Anticipated funding level for Project #3 is discussed in subsection 3.1.2 above.)

4.0 RESTORATION ALTERNATIVES NOT SELECTED FOR IMPLEMENTATION

Mangrove Estuary Restoration Along MacDill Air Force Base Southern Coastline: Estimated Cost: \$1.5M- with potential for phasing

The 500+ acre mangrove estuary along MacDill AFB's southwestern coastline has been negatively impacted by construction of mosquito ditches, past filling of wetlands, and invasion by exotic plant species. This project would involve restoration of the entire 500+ acre estuary in accordance with a Master Plan for restoration that is still to be developed. The Master Plan will likely break the restoration project into zones or segments that could be individually restored as funding becomes available. Restoration actions identified in the plan may include removal of mosquito ditch mounds, by hydro-blasting, to eliminate conditions that have led to colonization by invasive species throughout the mangrove estuary. Traditional restoration techniques using heavy equipment may also be used in portions of the site to grade and fill mosquito ditches, to expand or reshape mosquito ditches to create tidal creeks and open water features, and to reshape or recreate wetland boundaries. Funding from other sources has already been secured for preparation of the Master Plan, a wetland delineation survey, and to complete the project permitting phase.

While this project is consistent with the Final DARP, it was not proposed for a number of reasons. Given the early conceptual nature of the project, it was not possible to determine at this time exactly what would be accomplished with Spill funding and, given its scale and scope, a master plan for this project will likely take considerable time to complete. The projects identified in section 3.0 are better defined, and allow for a better present assessment of feasibility, time line and funding requirements and a greater degree of confidence in project outcomes and success. In addition, MacDill AFB has indicated this project was presently its lowest priority for implementation of the four it submitted for consideration. The projects selected in Section 3.0 will restore similar quality habitat in a more expeditious manner.

Oyster Reef Creation Adjacent To Bird Island, Green Key and Whiskey Stump Key:

Estimated Cost: \$285,000

This project would create oyster reef and estuarine wetland habitat along the north and south sides of Bird Island (in the Alafia Banks) and to the west of both Green Key and Whiskey Stump Key, located approximately 1.5nm south of Bird Island. The 'Alafia Banks', a series of spoil islands at the mouth of the Alafia River, houses the most important bird colony in Florida based on nesting birds, number of nesting pairs and species diversity. It has been protected by Audubon since 1934. Green Key and Whiskey Stump Key are natural mangrove islands that provide important fisheries and wildlife habitat in a productive area of Hillsborough Bay known as 'The Kitchen'. This project would deploy a matrix of oyster domes and oyster shell along the shoreline in a fashion similar to the MacDill Oyster Dome Project proposed in Section 3.0. The project as outlined would result in the construction of 4,500 linear feet (approximately 1.5 acres)

of oyster reef habitat and planting of 0.5 - 1.0 acres of *Spartina spp.*, to allow for natural recruitment of mangroves.

This project is generally consistent with the Final DARP and its proximity to the Alafia River weighed in its favor, however, it was not selected for implementation for several reasons. The site on the north side of Bird Island is adjacent to an active shipping channel into the Alafia River. Exposure to regular heavy wave energy from ships using the channel results in shifting, unconsolidated substrate that is unstable and, therefore, less suitable for placement of oyster domes or other reef materials. The wave energy itself makes the use of shell materials entirely infeasible. The proximity to the ship channel also brought up issues regarding the potential for and need to avoid creation of navigational hazards. Oyster reef creation on the south side of Bird Island and on the west sides of Green Key and Whiskey Stump Key adds a logistical challenge as the very shallow depths in these areas would preclude use of a barge for reef material deployment. These logistical difficulties add significant costs to the restoration effort in each area and results in a relatively high cost given the small area restored (as compared to the selected projects). Bird Island is also not an optimal location for expending restoration funds since it is not clear whether future dredging of the Alafia River and resultant dredge spoil disposal would negatively impact the restoration project.

Oyster Reef Creation within the Lower Alafia River:

Estimated Cost: Not estimated.

This project would construct oyster reef habitat along the north bank of the Alafia River, just to the east of the US 41 bridge. The Pilot Project described above created 0.06 acres of oyster reef habitat at this site. Of the three sites evaluated in the pilot study however, the Alafia River site was least successful in terms of oyster spat settlement, growth, and survival for the period monitored. While the Council expects the pilot reef created at this location will survive and establish itself in the long-term, the results of the Pilot Project clearly indicate that conditions at this site are not optimal for oyster reef construction, in comparison to the other sites tested. The salinities at this location are quite variable and range from relatively fresh to relatively saline. While oysters are capable of surviving in a range of salinities, rates of reproduction and oyster spat settlement are much better under more saline conditions. The Agencies have been unable to identify sites within the Alafia River that offer better saline conditions and that could support construction of larger oyster reefs. The pilot study provided information that suggests creation of oyster reef along island 2-D and 3-D in Hillsborough Bay, as proposed in Section 3.2, has a higher chance of success than reef created in the Alafia River.

Seawall Reefs® for Alafia River:

Estimated Cost: Cost on a per unit basis (\$8/tube), scalable to location

This project proposed using the Williams Park site (located on the Alafia River to the West of US 41) and adjacent property owned by CSX, Corp. to cultivate or ‘farm’ oyster reef units, using flexible polyethylene mesh manufactured and designed by Oyster Reef Designs, Inc. as the unit base. The “Seawall Reef” units would become established with suitable spat and juvenile oyster growth and later be moved to any number of possible locations within the river to construct and create permanent oyster bar(s). The Council

was initially concerned about the required movement of the Seawall Reefs after spat establishment. The General Selection Criteria in subsection 2.2 indicates a preference for projects that are self-sustaining once constructed. The Council then considered whether the project concept could be incorporated as a potential component of other estuarine wetland or oyster creation projects. To test this possibility, Seawall Reefs® were included in the pilot project. The pilot study results indicated that the use of aggregate substrates is more successful under the tested conditions. The Council also considered incorporating this project concept into a few other projects that were initially under consideration, but those projects were subsequently withdrawn by their proponents. In addition, this approach would not allow for large scale oyster reef construction due to the limited supply and elaborate deployment strategies.

**Restoration & Shoreline Stabilization of Several Islands along the Alafia River:
Estimated Cost: \$92,400**

This project envisioned restoring several islands within the Alafia River by removing exotic vegetation and trash as well as planting a limited amount of native salt marsh vegetation and mangroves in order to help stabilize eroding shorelines. The Council determined that this proposal predominately involved restoration work in the upland portions of the islands, involved no actions that would result in new oyster habitat, and included only minimal opportunity to add marsh or mangrove habitat. As such, the project did not meet the objectives of the Final DARP.

**Williams Park Stormwater Treatment and Wetland Restoration
Estimated Cost: Not estimated.**

This project was submitted by the Hillsborough County Parks and Recreation Department. It was a redesign/modification of the Williams Park Project designed by PBS&J that it originally submitted as a partnership proposal with Cargill Fertilizer, Inc. (now Mosaic) (See Appendix A). The original project involved creating wetlands through activities that would occur both in Williams Park (county property) and on adjacent property owned by Cargill. Cargill, however, withdrew from the project in 2005. As a result, Hillsborough County, along with PBS&J, worked to redefine a project that was implementable within the Park's boundaries. It focused on redirecting stormwater flow from the Park's existing parking lot through a constructed swale and small wetland to allow for sediment to fall out of suspension before entering the Alafia River. Although the possibility of modifying the design to allow some fisheries access to the created wetland area was discussed, that area was very small. The project concept also included features to improve access to the Alafia River by non-motorized recreational water craft, such as canoes and kayaks.

While the storm water treatment goal and opportunity to enhance recreational access to the river are laudable, neither directly relate to the objectives of estuarine restoration for this Spill; the potential wetlands component of the project, however, was very small and did not offer much opportunity for fisheries resource utilization or other ecological benefits aside from its primary purpose (stormwater treatment). Each of the estuarine restoration alternatives identified in Section 3.0 provide more and better quality fisheries habitat than this option.

No Action Alternative – No Projects Proposed or Implemented with Spill Funds

The National Environmental Policy Act requires federal agencies to consider the “no action” alternative. Under this alternative, no action to compensate for the fishery resources lost as a result of the Spill would be taken. The “no action” alternative was rejected in the Final DARP/EA because it was not consistent with the Agencies’ responsibility under applicable laws to seek compensation for the natural resource losses and because feasible, cost effective alternatives are available to provide such compensation. It is rejected again here, for the same reason.

5.0 COMPLIANCE WITH OTHER KEY STATUTES, REGULATIONS AND POLICIES

Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), 42 USC 9601, *et seq.*

CERCLA applies to sites contaminated with hazardous substances and to spills of such substances. In addition to addressing the cleanup, CERCLA establishes liability for the injury to, destruction of, or loss of natural resources caused by releases of hazardous substances. Damage recovered for these losses must be used to restore, replace, rehabilitate or acquire equivalent natural resources or services, in accordance with a restoration plan developed by designated natural resource trustees.

CERCLA is the primary statute under which the Agencies are acting in releasing this Final ERIP. It is being used to identify specific projects that will be used to restore and compensate for natural resource injuries caused by the Spill, to be implemented with damages recovered under CERCLA for this purpose. Issuance of this Final ERIP is part of the restoration planning process under CERCLA, and is consistent with all applicable provisions pertaining to natural resource damages.

National Environmental Policy Act (NEPA), 42 USC 4321, *et seq.*, 40 CFR Parts 1500-1508

Actions undertaken by federal Trustees (NOAA, in this case) to restore natural resources or services under CERCLA and other federal laws are subject NEPA, and the regulations guiding its implementation at 40 C.F.R. Part 1500. Federal agencies often prepare an environmental assessment (EA) to evaluate whether a contemplated federal action is likely to have significant impacts on the quality of the human environment under this Act. An EA was included in the Final DARP, and it considered the potential impacts of undertaking estuarine wetland restoration and oyster reef creation in this environment. That EA concluded that restoration actions of this nature were unlikely to significantly impact the quality of the human environment in this setting, and NOAA issued a Finding of No Significant Impact (FONSI) on that basis.

This Final ERIP includes additional information and analysis regarding the potential effects of the specific restoration actions proposed herein. This information indicates that the earlier analysis and conclusion remains appropriate: the selected projects are unlikely to significantly impact the quality of the human environment in this setting. NOAA has issued a decision document, dated December 19, 2007, to the Administrative Record that reaffirms the FONSI for the selected restoration project.

Federal Water Pollution Control Act, 33 USC 1251, *et seq.*

The Federal Water Pollution Control Act, also known as the Clean Water Act (CWA), is the principal federal law governing pollution control and water quality of the nation's waterways. Restoration projects that move amounts of material into or out of waters or wetlands, such as those proposed herein, are subject to permitting under Section 404 and must be certified as compliant with state water quality standards under Section 401. The permitting process is administered by the U. S. Army Corps of Engineers (USACOE).

Restoration actions that are consistent with a final restoration plan can be implemented by trustee agencies under USCAOE Nationwide Permit #32, in lieu of an individual 404 permit requirement. The Agencies will work with the project proponents and/or the USACOE, as appropriate, to ensure that all necessary 404 permits and state certifications, including pursuant to Nationwide Permit #32 where appropriate, will be obtained or issued prior to implementation of the restoration projects identified herein.

Coastal Zone Management Act (CZMA), 16 USC 1451, *et seq.*, 15 CFR 923

Section 1456 of the CZMA requires that any federal action inside or outside of the coastal zone be consistent, to the maximum extent practicable, with the enforceable policies of approved state coastal zone management programs. Regulations adopted under the CZMA outline procedures applicable to determining the consistency of federal actions with state approved plans. The restoration actions identified in the Final Damage Assessment and Restoration Plan (Final DARP) for the Spill – to wit, the restoration of estuarine wetlands and oyster reef creation – were previously determined to be consistent with the enforceable policies of Florida’s approved Coastal Management Program (FCMP)². NOAA viewed the project activities proposed in the Draft ERIP to be within the scope of and consistent with that determination. By letter dated August 20, 2007, NOAA notified the FCMP Clearinghouse of its conclusion in this regard and sought their concurrence with that determination. The FCMP Clearinghouse concurred in that determination in reply.

Endangered Species Act (ESA), 16 USC 1531, *et. seq.*, 50 CFR Parts 17, 222, 224

The Endangered Species Act is directed at conserving endangered and threatened species, and the habitats upon which they depend. Section 7 of the ESA requires Federal agencies to ensure that any action authorized, funded or carried out by them is not likely to jeopardize the continued existence of a listed species or modify their critical habitat.

NOAA will seek technical assistance from the USFWS and the National Marine Fisheries Service (NMFS) in determining whether the restoration actions identified herein may affect a listed species. If any project is likely to affect a listed species, NOAA will initiate consultation with the appropriate agency to determine what action(s), if any, is required to ensure that the project(s) or its implementation complies with the ESA.

Fish and Wildlife Coordination Act (FWCA), 16 USC 661, *et seq.*

The FWCA requires that federal agencies consult with the USFWS, the National Marine Fisheries Service (NMFS), and state wildlife agencies about activities that will affect the waters of any stream or waterbody to minimize or mitigate any adverse impacts on fish and wildlife resources and habitats. Projects affecting less than 10 acres of surface waters, however, are generally exempt from this requirement. The Agencies expect the selected restoration projects to have only positive effects on fish and wildlife resources, but NOAA will coordinate with the NMFS, USFWS and state agencies as appropriate under this Act.

² See Letters from NOAA and U.S. Fish and Wildlife Service (USFWS) to the Florida Department of Community Affairs’ FCMP Clearinghouse, dated August 11, 1999 and August 17, 2000, and respective responses from the FCMP Clearinghouse, dated November 17, 1999 and October 4, 2000.

Fish and Wildlife Conservation Act, 16 USC 2901, *et seq.*

This Act encourages all federal agencies to use their statutory and administrative authorities, to the maximum extent practicable and consistent their statutory responsibilities, to conserve and to promote the conservation and protection of nongame fish and wildlife species and their habitats. Both the estuarine wetland restoration and oyster reef creation projects selected herein will promote and conserve fish and bird habitat, and including for the benefit of non-game fish and wildlife.

Magnuson-Stevens Fishery Conservation and Management Act, 16 USC 1801, *et seq* (Magnuson-Stevens Act) – Essential Fish Habitat Assessment

The Magnuson-Stevens Act, as amended and reauthorized by the Sustainable Fisheries Act (Public Law 104-297), established a program to promote the protection of essential fish habitat (EFH) through the review of projects that affect or have the potential to affect such habitat that are conducted under federal permits, licenses, or other authorities. Once EFH is identified and described in fishery management plans by the appropriate fishery management council(s), federal agencies are obliged to consult with the Secretary of Commerce, acting through the NMFS, with respect to any action proposed to be authorized, funded or undertaken by such agency that *may* adversely impact any EFH.

The selected restoration actions will occur in areas that have been identified as EFH in fishery management plans approved for the Gulf of Mexico, however, the Agencies do not believe the selected restoration actions will have an adverse impact on any EFH. The selected projects will only result in the creation of new oyster habitat, or in the restoration or enhancement estuarine wetlands. As such, the effects of the selected actions will be to promote, produce and protect EFH. NOAA will consult with the NMFS before completing its EFH analysis and finding in this regard.

Marine Mammal Protection Act, 16 U.S.C. 1361-1326, 1371-1384 note, 1386-1389, 1401-1407, 1411-1418, 1421-1421h, *et. seq.*

The Marine Mammal Protection Act provides authority to manage and protect marine mammals. None of the selected restoration projects involve activities will affect any marine mammals.

Migratory Bird Treaty Act, 16 USC 715, *et seq.*

The Migratory Bird Treaty Act provides for the protection of migratory birds. The Act does not specifically protect the habitats of these birds but may support time-of-year restrictions on activities at sites where it is likely migratory birds may be nesting. The Agencies have and will continue to consult and coordinate with the USFWS, as well as other local experts, to ensure all project plans and construction schedules will, or are modified to avoid or minimize negative impacts to migratory birds. Once constructed, the restoration projects are expected to be utilized by and provide benefits to migratory birds.

Rivers and Harbors Act of 1899 (RHA), 33 USC 403, *et seq.*

Section 10 of the RHA prohibits the obstruction or alteration of the navigable capacity of any of the waters of the United States, except as authorized under the provisions of the Act. Restoration actions that require Section 404 CWA permits usually also require permitting under Section 10 of the RHA, and are often addressed in a single permit. Where a project involves activities within the scope of this Act, compliance will be addressed in the course of the processes and permits required by the CWA.

Information Quality Act Guidelines, pursuant to Public Law 1006-554

Information disseminated to the public by federal agencies after October 1, 2002, is subject to information quality guidelines developed by each agency pursuant to Section 515 of Public Law 106-554. These guidelines are intended to ensure and maximize the quality of such information (i.e., the objectivity, utility and integrity of such information). The Final ERIP, upon release, is an "information product" under the guidelines established by NOAA. The quality of the information contained herein has been certified as consistent with those guidelines.

Executive Order Number 11514 (34 FR 8693), as amended by Executive Order 11911 - Protection and Enhancement of Environmental Quality

These Executive Orders direct federal agencies to monitor, evaluate, and control their activities in order to protect and enhance the quality of the nation's environment, sustain and enrich human life, inform the public about these activities, share data gathered on existing or potential environmental problems or control methods, and cooperate with other governmental agencies. The selected projects and the release of this Final ERIP are consistent with the goals of these Orders. The selected projects are the product of inter-governmental cooperation, will protect and enhance the environment and will sustain and enrich human life, and the process for planning and implementing these projects has and continues to provide the public with information about these restoration activities.

Executive Order Number 11990 (42 FR 26961) - Protection of Wetlands

This Executive Order directs federal agencies to take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out agency responsibilities for acquiring, managing, and disposing of federal lands and facilities; providing federally undertaken, financed, or assisted construction and improvements; and conducting federal activities and programs affecting land use, including water and related land resources planning, regulating, and licensing activities. The selected restoration projects are compliant with this Executive Order as they will operate to restore and enhance existing wetlands, create additional wetlands, prevent additional wetland losses, and protect new and existing wetlands and the services they provide.

Executive Order Number 12898 (59 FR 7629), as amended by Executive Order 12948 – Environmental Justice in Minority Populations and Low-Income Populations

This Executive Order directs Federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. There are no low-income or ethnic minority communities that would be adversely affected by the projects selected herein. The restoration projects identified herein will enhance the quality of the environment for all populations.

Executive Order Number 12962 (60 FR 30769) - Recreational Fisheries

This Executive Order directs federal agencies to, among other things, foster and promote restoration that benefits and supports viable, healthy, and sustainable recreational fisheries. The selected projects will enhance or create habitats that will help support and sustain recreational fisheries in Tampa Bay.

Executive Order Number 13112 (64 FR 6183) – Invasive Species

This Executive Order directs federal agencies whose actions may affect the status of invasive species to use their relevant programs and authorities, to the extent permitted by law and where practicable, to prevent the introduction of such species, to control their populations, and to restore ecosystems that have been invaded. The selected projects will not cause or promote the introduction or spread of any invasive species. The MacDill Mangrove/Tidal Creek Project will remove invasive species, provide for the restoration of native species and habitat conditions in a coastal ecosystem that has been invaded, and make future colonization by invasive species unlikely.

6.0 ENTITIES CONSULTED

National Oceanic and Atmospheric Administration

Florida Department of Environmental Protection

Environmental Protection Commission of Hillsborough County

Tampa Port Authority

Fish and Wildlife Service, United States Department of the Interior

Audubon of Florida

Tampa Bay Regional Planning Council/ Agency on Bay Management

Tampa Bay Estuary Program

Southwest Florida Water Management District – SWIM Program

City of Tampa, Bay Studies Group

Florida Department of Agriculture and Consumer Services

7.0 LIST OF PREPARERS

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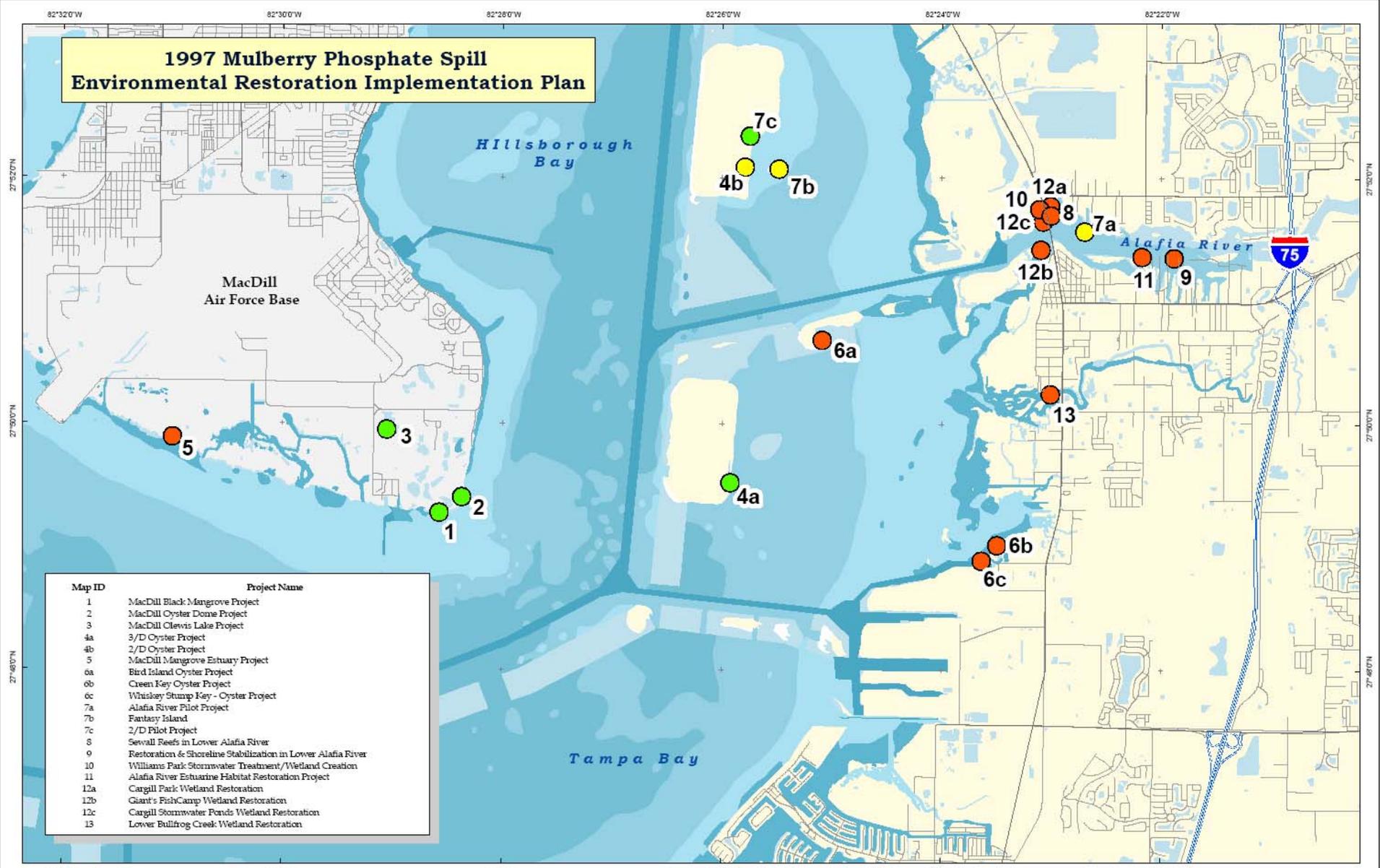
Tom Ash

APPENDIX A

MAP LOCATION	PROJECT	PROPONENT	SUMMARY	ESTIMATED COST	STATUS
1.	MacDill Mangrove/ Tidal Creek Project	MacDill AFB	Eradicate exotics, remove mosquito ditch mounds & construct tidal creek to restore hydrologic conditions within 30+ acre mangrove wetland.	\$250K	Selected by Restoration Council (RC) for implementation
2.	MacDill Oyster Dome Project	MacDill AFB	Placement of oyster domes & shell bags parallel to shore to create oyster habitat, prevent loss of mangroves, & promote sedimentation/establishment of marsh grasses behind reef.	\$60K per phase; \$180K for 3 phases	Selected by RC for implementation
3.	MacDill Lewis Lake Project	MacDill AFB	Establish estuarine wetlands by connecting Lewis Lake (permitted stormwater treatment area) to tidally-influenced drainage canal. Remove/modify water control structure & make canal bank modifications.	\$200K	Selected by RC for implementation
4A. 4B.	2D/3D Oyster Project 4A. 2/D 4B. 3/D	Identified by Restoration Council (RC)	Create reef base via placement of appropriate materials (i.e. crushed/broken concrete, limestone &/or fossilized shell) in intertidal	\$500K - \$600K	Selected by RC for implementation
5.	MacDill Mangrove Estuary Project	MacDill AFB	Restore 500+ acre mangrove estuary via removal of mounds/filling of mosquito ditches & creation of tidal creeks/open water areas; master project plan pending development.	\$1.5 million (potential for subcomponents/phase implementation)	Evaluated for Draft ERIP; not selected by RC
6A. 6B. 6C.	Bird Island (A.), Green Key (B.) & Whiskey Stump Key (C.) Oyster Project	Birkitt Environmental Services, Inc.	Create oyster habitat through placement of matrix of oyster domes & fossilized shell in intertidal.	\$285K	Evaluated for Draft ERIP; not selected by RC
7A. 7B. 7C.	Lower Alafia River Oyster Reef Creation 7A. Alafia River Pilot Project 7B. Fantasy Island Pilot Project 7C. 2/D Pilot Project	FDACS' Bureau of Aquaculture Development	Create oyster habitat through placement of appropriate materials in intertidal *Oyster Reefs were constructed at three locations in a pilot project to test efficacy and feasibility	Not estimated.	Evaluated for Draft ERIP; not selected by RC
8.	Seawall ® Reefs in Lower Alafia River	Oyster Reef Designs, Inc.	Cultivate oysters within Seawall Reef units, with later movement to locations in lower river.	Cost on per unit basis (\$8/tube); scaleable to location.	Evaluated for Draft ERIP; not selected by RC
9.	Restoration & Shoreline Stabilization in Lower Alafia River	Hillsborough Community College; Tampa Bay Education & Research Foundation	Remove exotic vegetation & trash with limited planting of mangroves & salt marsh vegetation to help stabilize eroding shorelines.	\$92.4K	Evaluated for Draft ERIP; not selected by RC

10.	Williams Park Stormwater Treatment/Wetland Creation	Hillsborough County & PBS&J	Redirect stormwater flow & route through small created wetland.	Not estimated.	Evaluated for Draft ERIP; not selected by RC
11.	Alafia River Estuarine Habitat Restoration Project	Protecting the Environment through Ecological Research, Inc. (PEER); Tampa Electric Co.	Create mudflat, fringing marsh, mangrove forest and oyster habitat adjacent to existing canal totaling at least 2 acres	\$280K	2004 -Withdrawn by proponents.
12A 12B. 12C.	Wetland Restoration @ 3 Sites in Lower Alafia River 12A. Cargill Park 12B. Giant's Fish Camp 12C. Cargill Stormwater ponds	Cargill Fertilizer, Inc. (now Mosaic), Hillsborough County & Tampa Bay Water	Site A - Remove exotics, create estuarine marsh, open water areas & tidal creeks, & oyster cultch placement in deeper open water areas. Site B- Remove/re-contour hardened shoreline to restore marsh elevation, plant intertidal marsh vegetation, place oyster reef substrate along seawall. Site C - Remove exotics, excavate to create intertidal marsh, open water areas & tidal channel to river; oyster cultch placement in deeper open water areas.	Site A - \$200K Site B - \$315K Site C - \$300K	2004 -Withdrawn by proponents.
13.	Lower Bullfrog Creek Wetland Restoration	Hillsborough County Parks, Recreation and Conservation and SWFWMD-SWIM	Re-grade land & re-route water flow to restore and/or enhance 3 types of disturbed wetlands; to include removal of exotic plants & replanting w/native plants.	\$325K	2004- Withdrawn by proponents; since implemented w/other funds.

1997 Mulberry Phosphate Spill Environmental Restoration Implementation Plan

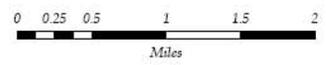


Map ID	Project Name
1	MacDill Black Mangrove Project
2	MacDill Oyster Dome Project
3	MacDill Clewis Lake Project
4a	3/D Oyster Project
4b	2/D Oyster Project
5	MacDill Mangrove Estuary Project
6a	Bird Island Oyster Project
6b	Green Key Oyster Project
6c	Whiskey Stump Key - Oyster Project
7a	Alafia River Pilot Project
7b	Fantasy Island
7c	2/D Pilot Project
8	Sewall Reefs in Lower Alafia River
9	Restoration & Shoreline Stabilization in Lower Alafia River
10	Williams Park Stormwater Treatment/Wetland Creation
11	Alafia River Estuarine Habitat Restoration Project
12a	Cargill Park Wetland Restoration
12b	Giant's Fish Camp Wetland Restoration
12c	Cargill Stormwater Ponds Wetland Restoration
13	Lower Bullfrog Creek Wetland Restoration




 Environmental Protection Commission
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 3629 Queen Palm Drive
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1997 Mulberry Phosphate Spill Environmental Restoration Implementation Plan



- Oyster Bar Pilot Study Sites
- Non-Selected Restoration Projects
- Projects Identified for Funding
- Interstates
- Major Roads
- Local Roads
- City of Tampa


 Environmental Protection Commission
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 For Reference Only

APPENDIX B: SUMMARY OF PUBLIC COMMENTS ON DRAFT ERIP & COUNCIL'S RESPONSES

Comment: A representative of the Sierra Club expressed concern that there was no freshwater/riverine component in the Draft ERIP and no projects considered, including in Polk County, to address the freshwater wetland losses in the Alafia River system caused by the Spill. The commenter recommended that the Council consider some specific freshwater habitat restoration projects discussed in 2000 and 2001 as potential alternatives to address these losses.

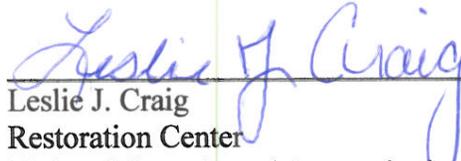
Response: *As explained in Section 1.0, the Estuarine Restoration Implementation Plan is focused only on projects intended to restore the estuarine fish, crabs, and shrimp lost due to the Spill and to be implemented with the approximately \$1.3M in damages recovered for that purpose in the 2002 settlement. An additional \$2.363M was recovered to plan and implement projects addressing the freshwater injuries but this planning has proceeded separately and will be described in a separate document to be released for review in the future. A copy of the commenter's letter has been provided to the agency staff involved in development of that plan for consideration.*

Comment: The President of the Alafia River Basin Stewardship Council expressed interest in having some funding from the settlement be used for annual maintenance activities along the Alafia River to save its banks and trees, specifically noting the serious problems (loss of trees, flooding and safety issues) caused by instability of banks along the North and South Prongs all along the State Designated Canoe Trail. The commenter believes the river has not fully recovered from the Spill and still needs "lots work on the bottom as well as stocking from the headwaters to the bay."

Response: *As explained in Section 1.0 and in the preceding response, the Estuarine Restoration Implementation Plan is focused only on projects meant to restore the estuarine fish, crabs, and shrimp lost due to the spill. Restoration of estuarine wetlands and oyster reef creation were identified as the most appropriate restoration for this purpose in the Final DARP/EA released in July 2000. The Estuarine Restoration Implementation Plan identifies projects to be used to implement that plan. Approximately \$2.363M from the 2002 settlement is available to plan and implement freshwater riverine habitat restoration projects. As noted in the preceding response, development of that plan has proceeded separately. A copy of the commenter's letter has been provided to the agency staff involved in development of that plan for consideration.*

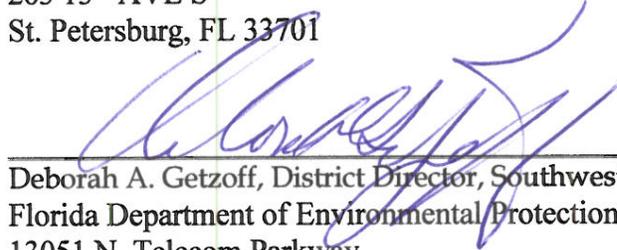
The undersigned designated members of the Restoration Council for the Alafia River Spill of 1997 hereby approve this Final Estuarine Restoration Implementation Plan.

For NOAA



Leslie J. Craig
Restoration Center
National Oceanic and Atmospheric Administration
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For FDEP



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Florida Department of Environmental Protection
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For EPCHC



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Environmental Protection Commission of Hillsborough County
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