

# **SPOIL ISLAND RENOVATION AND HABITAT CREATION**

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## **ABSTRACT**

The Florida Aquarium, in partnership with the Tampa Port Authority, has initiated a renovation project on a three-acre spoil island just north of the Alafia River in upper Hillsborough Bay. The Florida Department of Environmental Protection and the Environmental Protection Commission of Hillsborough County are participating in this project by providing partial funding through the Gardinier Settlement Trust Fund. Project objectives include the removal of invasive non-native plant species and the creation of an integrated upland and shoreline native plant community. Other objectives include the construction of trails, interpretive signage, an educational shelter and boat dock to provide opportunities for future phases of the project involving extensive educational and eco-tour programs as well as monitoring and analysis projects. The renovations are expected to enhance habitat quality, demonstrate environmentally responsible landscape management to the community, and increase public awareness & appreciation of habitats found in the bay.

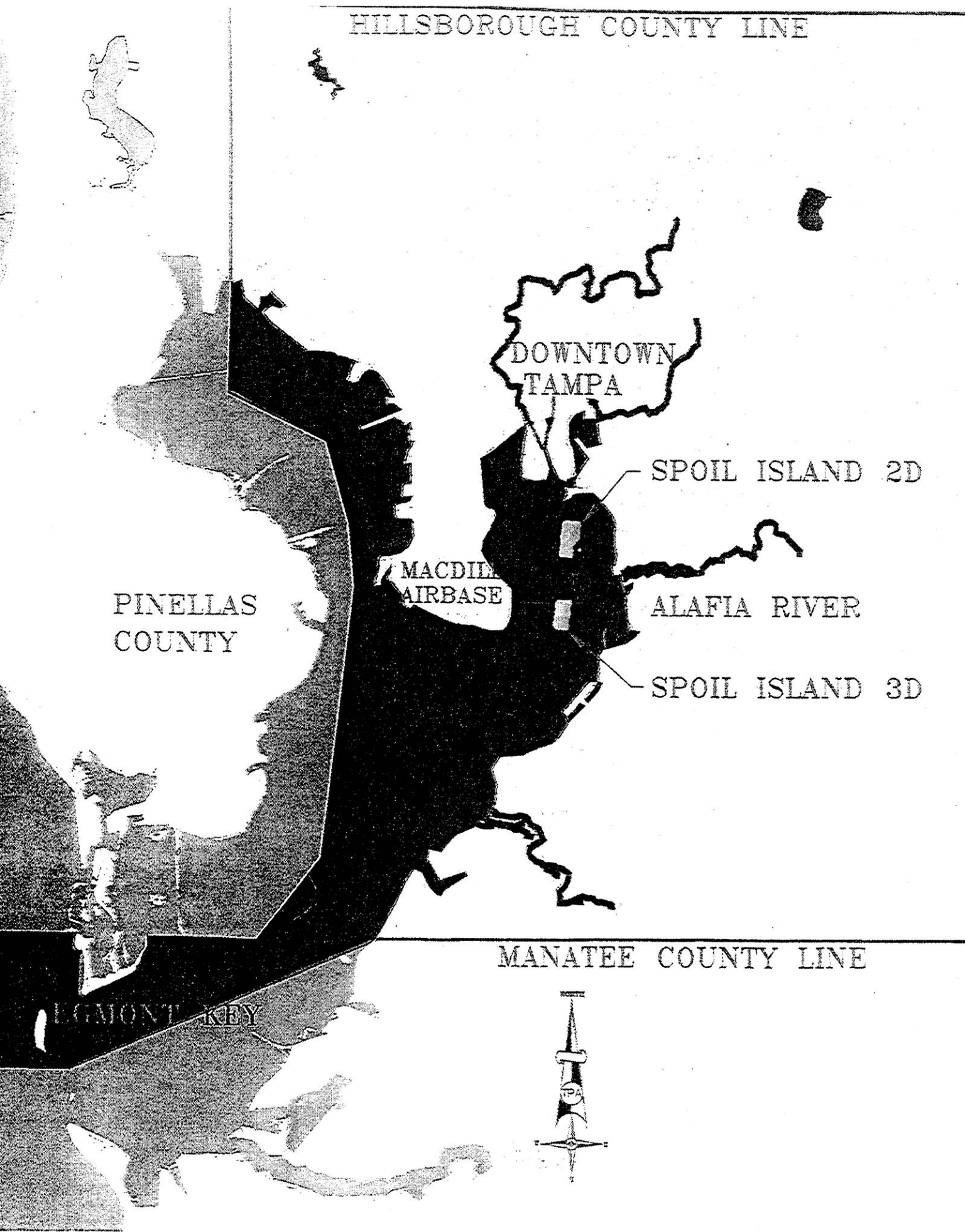
## **INTRODUCTION**

Florida is fortunate in the richness and variety of its 8,000 miles of coastline. In the last one hundred years, Tampa Bay has lost over eighty percent of its sea grass meadows and over forty-four percent of its mangrove and salt marshes. The bay is threatened daily from nutrient loading, toxic pollution, and habitat loss and degradation. The ecological restoration of shorelines in Florida is essential as the State expands to accommodate more people. This renovation project provides an opportunity to transform an ecologically unimportant manmade spoil island into a worthwhile coastal environment that can be used as a tool to assist in maintaining the environmental quality of coastal landscapes.

## **PROJECT SITE AND PARTNERS**

Just north of the Alafia River in upper Hillsborough Bay is a small manmade spoil island owned by The Tampa Port Authority. The island is referred to as "Fantasy Island." The Florida Aquarium, in partnership with the Tampa Port Authority, the Department of Environmental Protection and the Environmental Protection Commission of Hillsborough County are participating in the renovation of this island through partial funding provided by the Gardinier Settlement Trust Fund. Additional funding and in-kind services were

HILLSBOROUGH COUNTY LINE



PINELLAS  
COUNTY

DOWNTOWN  
TAMPA

SPOIL ISLAND 2D

MACDILL  
AIRBASE

ALAFIA RIVER

SPOIL ISLAND 3D

MANATEE COUNTY LINE

EGMONT KEY



**2D-spoil**

**Island**

**Fantasy**

**Island**

provided by Tampa Electric Company Bayside Project, Tampa Baywatch, and Audubon of Florida.

## **PROJECT DEFINITION**

The project is defined as a renovation as opposed to a restoration because it occurs on a manmade spoil island. Spoil islands are composed of dredge spoil material from the construction of navigation channels. Upon creation, the islands are quickly populated by exotic plants such as Brazilian pepper (*Schinus terebinthifolius*). Invasion of these exotic species leads to lower plant and animal diversity on the islands. Renovation of this island is an effort to protect & restore valuable and diminishing habitat in Tampa Bay.

## **PROJECT PHASES**

Phase one of the project includes the licensure agreement between the Tampa Port Authority and the Florida Aquarium, the initial vegetation survey, the design and planting plan, exotic plant removal, and planting. Phase two of the project includes the construction of a boat dock, the educational shelter, and signage. The third phase of the project will include educational programming and eco-tours.

## **PROJECT IMPLEMENTATION**

Phase one of the project began in June of 2000 with the examination of existing plant species. The Department of Environmental Protection provided global positioning system units to collect data on the island. This data, used in conjunction with satellite images and aerial photographs, was then incorporated into a geographical information system to create computer maps that would show the location and quantity of exotic plants to be removed and native plants to remain. These maps provided a guide for the removal of the exotics and a working template for the design and installation of native plant species that would provide a mosaic of habitats typical of a central Florida island. The design also includes areas to be preserved, a series of pathways, an educational shelter for outdoor classrooms and a dock to accommodate a large eco-tour boat. Opportunities to increase salt marsh and oyster beds were indicated on the design as well.

The exotic plant removal process began in August 2001. Over eighty percent of the island was covered by a thick matt of Brazilian pepper (*Schinus terebinthifolius*.) Brazilian pepper is a pioneer of disturbed sites and these trees took root two decades ago when the spoil was dumped. One or two lead tree (*Leucaena*), another exotic that readily invades open disturbed sites on coastal strands, were also found on the island. The goal was to remove the Brazilian pepper before November when the trees produce seed and still have time to plant the natives before the end of the rainy season of summer. There is no access to fresh water on the island to water in the new plantings. Project implementation options were limited by the carrying capacities of available boats. The



U.S. Coast Guard volunteered their services to transport the chipper needed to chip the Brazilian pepper on site once it was cut. The chipper was driven to Pendola Point and then transported via helicopter to the island. Before the actual removal process began, signage was placed on the island to inform the public about the renovation efforts taking place. Chain saws were used to cut the Brazilian pepper to ground level. The trees were fed through the chipper and the stumps were treated with Garlon herbicide. The stumps were left in place for erosion control. The removal process took two weeks.

Plant acquisition began immediately after removal of the exotics on the island. Only a few species of plants are adapted to life in this environment. This is the pioneer zone for plants and within it exists quite severe conditions of heat, drought, and high salinity. Twenty five species, over four thousand native plants, were salt acclimated in the nursery and delivered to the aquarium. The plants were sorted by species and placed onto pallets for ease in transport. Once the plants were on the pallets, they were wrapped with mesh to keep them in place during transport. The pallets were color coded to assist in proper placement once on the island. The plants were then transported with forklifts to a barge located behind the aquarium in the Port of Tampa. A crane located on the barge moved the plants from the dock to the barge. An all-terrain forklift was also craned onto the barge for use in transporting the plants once on the island. Areas to be planted on the island were color coded with spray paint to match the color codes on the plant pallets. This system enabled the forklift operator to get the plants as close to their designated areas as possible. The plants were then set out according to the planting plan and planted by groups of volunteers over several days. Pre-measured survival packs containing spores of beneficial fungi, terra-sorb hydrogel, humic acid, seaweed meal, and yucca plant extract were used to assist the plants in acclimating to their new home. Ice was also used to provide a slow release of moisture to the plants during the planting process.

The removal of exotic species provided an opportunity for other plants to grow. Solidago, Heliotrope, and Opuntia are some of the volunteer plant species that began to appear. Canavalia seeds were abundant throughout the island and soon began to sprout as well. Unfortunately, some exotic seeds are still viable. Monthly maintenance visits are required to keep the Brazilian pepper (*Schinus terebinthifolius*) and Lead tree (*Leucana*) in check.

Phase two of the project began in June of 2002. The construction of the boat dock is currently in progress. Phase three will begin upon the completion of phase two. The ultimate goal in this island renovation project is to provide a mosaic of habitats, essential information concerning those plants most valuable in protecting our coastal zone, and a basic understanding of the coastal environment in Tampa Bay.

## FANTASY ISLAND RESTORATION PLANT SPECIES

### Trees

Avicennia germinans	Black Mangrove	35	1-gal
Conocarpus erectus	Buttonwood	135	7-gal
Juniperus virginiana	Red Cedar	5	7-gal
Laguncularia racemosa	White Mangrove	54	7-gal
Quercus virginiana	Live Oak	3	10-gal
Rhizophora mangle	Red Mangrove	27	7-gal
Sabal Palmetto	Cabbage Palm	15	7-gal

### Shrub

Cocoloba uvifera	Seagrape	46	3-gal
Eugenia	Stopper	60	1-gal
Forestiera segregata	Florida Privet	60	1-gal
Iva frutescens	Marsh Elder	124	1-gal
Myrica cerifera	Wax Myrtle	10	7-gal
Myrsine guianensis	Myrsine	75	3-gal
Serenoa repens	Green Saw Palmetto	190	7-gal
Sophora tomentosa	Necklace Pod	50	1-gal

### Herbs

Borrichia frutescens	Sea Oxeye Daisy	124	1-gal
Helianthus debilis	Beach Sunflower	200	1-gal
Ipomea pes-capre	Railroad Vine	100	1-gal
Iva imbricata	Sea Coast Elder	142	1-gal
Muhlenbergia capilaris	Muhly grass	337	1-gal
Paspalum distichum	Salt Jointgrass	782	2"
Spartina bakerii	Sand Cordgrass	302	1-gal
Spartina patens	Saltmeadow Cordgrass	75	1-gal
Uniola paniculate	Sea Oats	500	1-gal

