

EXHIBIT A

**AUGUST 10, 1993 TAMPA BAY OIL SPILL
RESTORATION AND COMPENSATION PLAN FOR
BIOLOGICAL AND PHYSICAL NATURAL RESOURCE INJURIES**

Tampa Bay Oil Spill Ecological Restoration & Compensation Plan

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1.0 INTRODUCTION

On 10 August 1993, the Tank Barge OCEAN 255 and the Tank Barge B-155 collided with the freighter BALSAs 37 near the entrance to Tampa Bay, Florida (Figure 1). The OCEAN 255 was carrying approximately 7.9 million gallons of Jet A fuel and approximately 1.8 million gallons of gasoline. The OCEAN 255 caught fire, was grounded by the crew off Fort De Soto Park and burned for approximately 18 hours. The fire consumed a significant portion of the ship's cargo, and a portion of its cargo was allegedly observed on the water.

The Tank Barge B-155 was carrying approximately five million gallons of No. 6 fuel oil and approximately 328,440 gallons were alleged to have been discharged into Tampa Bay from the No. 1 port tank. The BALSAs 37 was carrying a cargo of phosphate and there was only a minor, if any, discharge of fuel from this ship. These incidents and discharges are collectively referred to as "the Tampa Bay oil spill." The various interests in the BALSAs 37, OCEAN 255 and B-155 are collectively referred to as the Potentially Responsible Parties (PRPs).

Although some oil came ashore at Fort De Soto Park and Egmont Key, mild east winds carried the majority of the discharged oil into the Gulf of Mexico approximately 15 to 30 miles offshore. On 14 August 1993, onshore winds from the west pushed oil onto beaches in Pinellas County and oil entered Boca Ciega Bay through Johns Pass, Pass-a-Grille and Blind Pass. As a result, mangroves, seagrass, saltmarsh and shellfish (oyster and clam beds) within Boca Ciega and Lower Tampa Bay were exposed to oil, and allegedly suffered injuries and interim ecological service losses as a result. Oil also came in contact with sea turtles and their nests, birds, beach sands, subtidal sediments, and the water column. It is alleged that other natural resources, such as public beaches and waterways, also suffered loss of recreational services as a result of the oil spill. The recreational losses and damages are not addressed by this Plan.

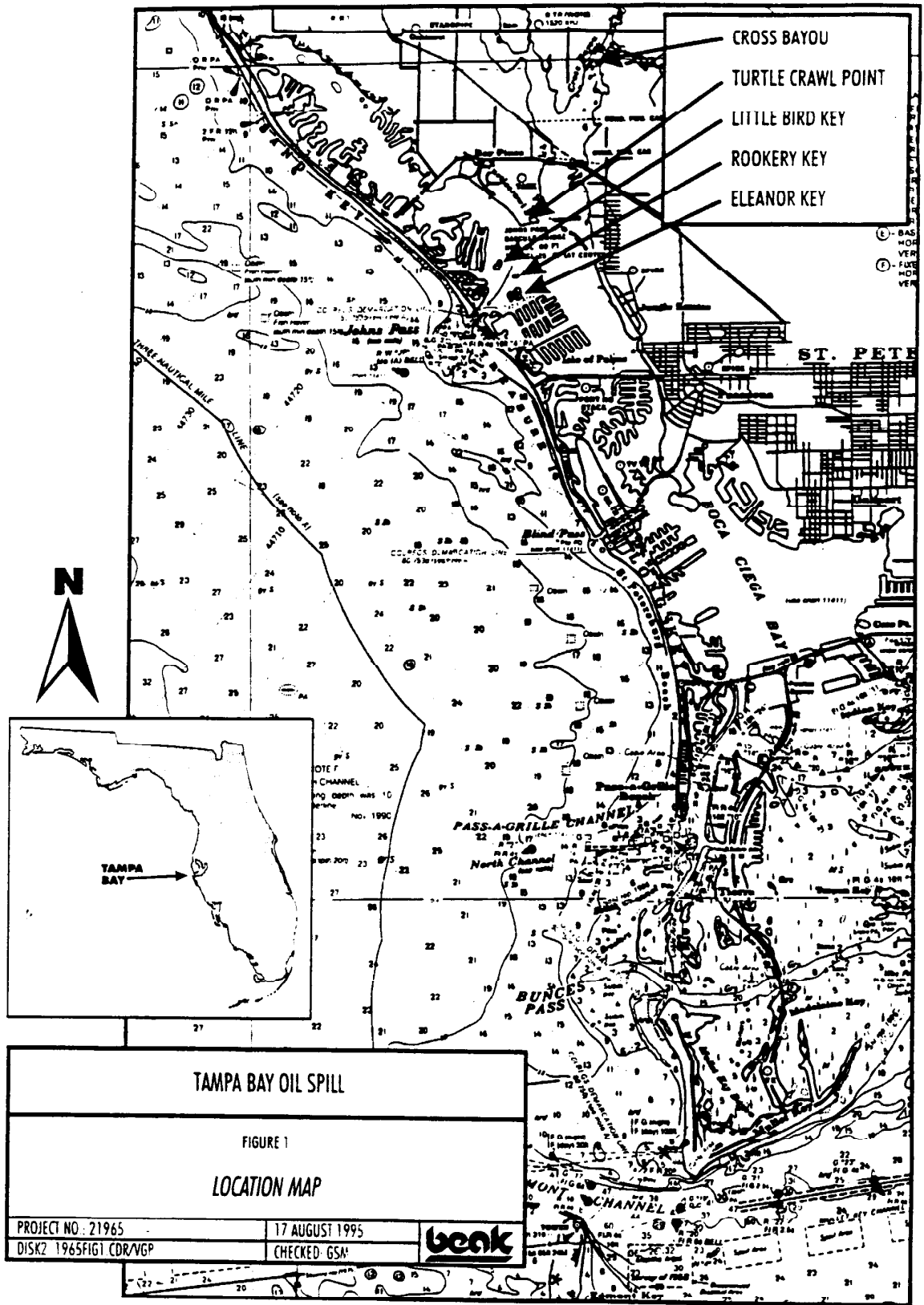
2.0 PURPOSE

This agreed Ecological Restoration and Compensation Plan (Plan) is based upon many years of communication between the Trustee and PRP representatives participating within a coordinating technical forum. The Technical Working Group (TWG) has coordinated the exchange of technical information regarding injury to, and restoration of, natural resources during many meetings and field surveys in this period and considered a PRP proposal for restoration and compensation. This agreed Plan has been developed through the cooperative efforts of the Parties.

A Final Damage Assessment and Restoration Plan/Environmental Assessment addressing Ecological Injuries (Volume 1 of the DARP/EA) for this spill was prepared by the designated natural resource Trustees, the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of the Interior (DOI), and Florida Department of Environmental Protection (DEP), the "Trustees", under applicable Federal and State laws. Volume I of the DARP/EA includes a description of the oil spill incident, a description of the natural resources found in the Tampa Bay area, the injured ecological and physical injury categories, a description of the assessment process and selected assessment methodologies and identifies preferred restoration alternatives.

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Figure 1. Location Map.



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This Plan is consistent with the objectives and goals of Volume I of the DARP/EA, and it represents an appropriate application of the preferred restoration and compensation alternatives. This Plan is intended to provide full and final compensation for injuries, including lost services resulting from this spill, to the following biological and physical natural resource categories identified in the DARP/EA: mangroves, water column, birds, sea turtles, saltmarshes, seagrasses, shellfish beds, subtidal sediments, and beach sand.

3.0 THE RESTORATION AND COMPENSATION PLAN

3.1 Elements of the Plan

3.1.1 Introduction - The Plan includes the creation and restoration of habitat, funding of activities and investigations that directly benefit the resources affected, and monetary compensation. The individual elements of this Plan may provide compensation for more than one identified category of resource injury. Therefore, the value of this Plan must be evaluated by considering the Plan in its entirety.

The injury categories and compensation are summarized below. Expanded discussion of some elements will follow in subsequent sections .

3.1.2 Mangrove Compensation - The PRPs will deed into public ownership in perpetuity the Cross Bayou parcel, a 10.76 acre plot of land in Pinellas County, contiguous to Boca Ciega Bay. Supratidal portions of this parcel will be modified at PRP expense to create marsh and mangrove habitat, increase the biological productivity of existing wetland habitat and eliminate invasive exotic vegetation.

3.1.3 Water Column Compensation - The PRPs will compensate for losses by providing \$80,000 for use to implement a general water quality improvement project or install artificial reefs.

3.1.4 Bird Injury Compensation - The PRPs will provide \$14,600 for use to fund bird rehabilitation activities or other appropriate projects for the restoration of injured bird resources, as identified by the Trustees.

3.1.5 Sea Turtle Injury Compensation - The PRPs will provide \$100,000 to fund projects for sea turtle nest monitoring and protection, or priority activities in sea turtle recovery plans, directly related to Pinellas County sea turtle enhancement.

3.1.6 Saltmarsh Injury Compensation - The PRPs will plant 1.5 acres of *Spartina alterniflora* at Turtle Crawl Point at War Veterans Memorial Park or other nearby sites. Additional compensation for injured salt marsh is included in the construction of the Cross Bayou site as described in sections 3.1.2 and 3.2.

3.1.7 Seagrass Injury Compensation - The PRPs will plant up to one acre of *Spartina alterniflora* in an effort to protect the integrity of the mangrove islands and the adjacent seagrass beds.

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3.1.8 Shellfish Injury Compensation - The PRPs have removed oiled oyster shell and replaced oiled material with clean fossilized shell. Creation of the Cross Bayou site is also expected to provide increased viable oyster habitat.

3.1.9 Sediment Injury Compensation - The PRPs will compensate for losses by providing \$52,700 for use to implement an appropriate water quality improvement project within Boca Ciega Bay or lower Tampa Bay.

3.1.10 Beach Physical Injury Compensation - The PRPs will fund beach sand nourishment in the amount of \$398,270.

3.2 The Cross Bayou Restoration Project

3.2.1 Site Description

3.2.1.1 General - The PRPs will deed into public ownership in perpetuity, a 10.76 parcel of land on the west bank of Cross Bayou in Boca Ciega Bay (Figures 2 and 3). The parcel of land is located in the southwest quadrant of the intersection of Park Street and Cross Bayou in Pinellas County, Florida.

The 10.76 acre parcel is located adjacent to at least two existing or proposed habitat restoration projects. Northeast of this parcel is the Joe's Creek restoration project being conducted by Pinellas County. That project encompasses more than 40 acres and has been underway for several years. To the southeast, on the other side of Cross Bayou is a parcel of land of just less than seven acres that Southwest Florida Water Management District has identified as a site with strong restoration potential.

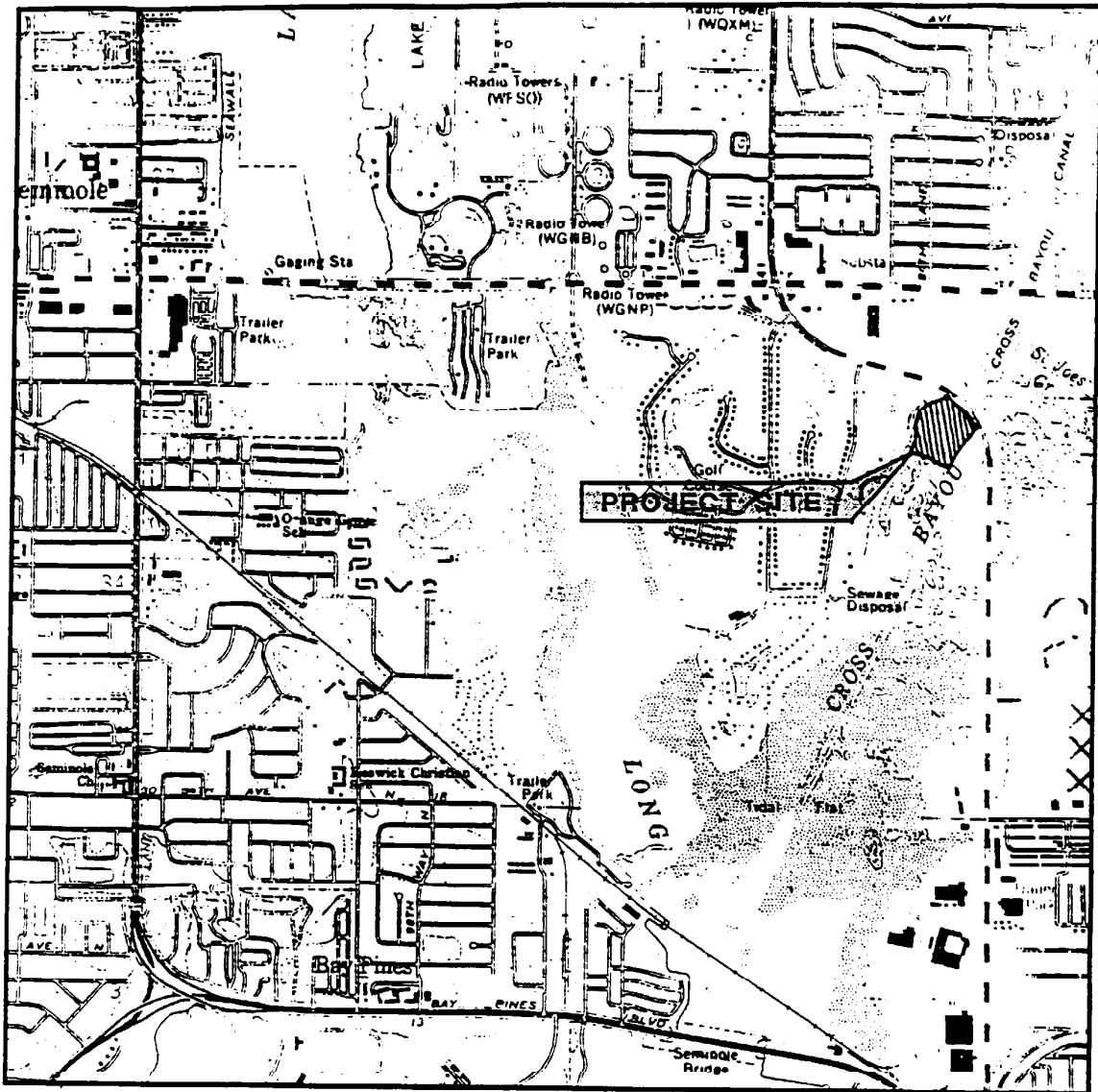
The 10.76 acre parcel of land contains supratidal, intertidal, and subtidal habitats. The site presently consists of approximately 5.0 acres of uplands, 4.4 acres of mangrove forest and 1.4 acres of intertidal and subtidal habitat.

The mangrove forest is comprised of approximately 10 percent red mangroves with black and white mangroves equally comprising the balance. The mangrove trees range from 5 to 7 meters in height. The large black mangroves on the site are estimated to be between 50 to 75 years old. Approximately 50 percent of the existing mangroves are isolated from tidal flow that would normally provide for estuarine fish rearing, detrital transport and physical and biological communication with Boca Ciega Bay. It is estimated that the ecological productivity of the existing mangrove forest is depressed by up to 70 percent.

The 1.4 acres of intertidal and subtidal land does not contain emergent vegetation. The 5.0 acre upland area supports vegetation consistent with a disturbed habitat and can be described as an old field. Invasive vegetation on the uplands consists of brush, grasses, Brazilian pepper, live oak, slash pine, wax myrtle, and southern red cedars.

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Figure 2. Cross Bayou mangrove restoration project.



TAMPA BAY OIL SPILL		
FIGURE 2		
<i>LOCATION MAP CROSS BAYOU MANGROVE RESTORATION PROJECT</i>		
PROJECT NO.: 21965	17 AUGUST 1995	bank
DISK2: 1965FIG2.CDR/VGP	CHECKED: GSM	

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Figure 3. Cross Bayou mangrove restoration project.



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The current zoning for the 10.76 acre parcel is "Aquatic Lands." Real estate professionals consulted by PRP representatives believe that it may be possible that two to three acres of the parcel could potentially be described as "high ground." Although they believe it is unlikely, it is possible that this portion of the parcel might be rezoned Residential Estate.

3.2.1.2 History - Examination of long term records and aerial photographs during a Phase I Environmental Site Assessment (ESA) revealed this site to have been a mangrove forest that was apparently utilized as a dredge spoil disposal site within the last 20 to 30 years. The site is also adjacent to Park Street and the Park Street Bridge which was constructed between 1974 and 1985.

3.2.1.3 Results of Phase I Site Investigation - The PRPs commissioned FGS, Inc. of Tampa, Florida to conduct a Phase I ESA. Its 22 March 1995 report and associated 25 May 1995 addendum conclude that "no environmental concerns were identified for the subject site."

3.2.2 Planned Restoration Actions

3.2.2.1 Objectives

Primary

- Establish a typical Tampa Bay mangrove forest composed of red mangroves (*Rhizophora mangle*), black mangroves (*Avicennia germinans*) and white mangroves (*Laguncularia racemosa*) throughout project site, and buttonwood (*Conocarpus erecta*). Establish typical transition zone species in the roadside buffer and easement areas. The transition zone shall be free of exotic plant species such as Brazilian pepper (*Schinus terebinthifolius*), Australian pine (*Casuarina* spp), and melaleuca or "punk tree" (*Melaleuca quinquenervia*).

Secondary

- Establish a typical Tampa Bay saltmarsh dominated by smooth cordgrass (*Spartina alterniflora*) as a successional precursor to mangrove recruitment by seeds and seedlings (with assisted recruitment if deemed necessary). Retain narrow fringe marsh in front of mangroves at lower tidal elevations .
- Increase tidal exchange through the site by attempting to reestablish the estimated historical tidal exchange within the existing mangrove forest and connecting to Cross Bayou with self-sustaining tidal channels. This action is to locally improve water quality and increase export of mangrove detritus and import high quality tidal waters to existing mangroves.
- Provide opportunities for oyster, epibenthic invertebrate and fish recruitment and growth within the constructed channels and on marsh and mangrove surfaces.
- Create foraging habitat for wading birds.
- Improve water quality entering Boca Ciega Bay via Cross Bayou.

3.2.2.2 Plan

The site has been acquired by the PRPs. Detailed design drawings have been prepared. After existing squatters are removed, a topographic survey of the site and adjacent well-flushed

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mangroves will be completed. The target elevations for the restored marsh planting area will be contingent upon those found within the adjacent mangroves to ensure that the site is not excavated too high or too low. As of this date, the PRPs have completed fence construction on the site.

Once the site is secure, the perimeter of the existing mangroves to be preserved will be identified by placing marked stakes in the ground for entry on the existing conditions survey. At the same time all exotic plants will be treated with an EPA approved systemic herbicide and physically removed to prevent seed production and subsequent recolonization after site excavation. The large amount of trash on the site including bottles, cans and plastic will be removed.

Using the existing conditions survey, a preliminary restoration plan will be prepared. This plan will be provided for Trustee and permitting agency review and comment. Estimates of cubic yardage of fill to be removed and numbers of plants needed for planting will be generated from this plan. After receipt of comments the plan will be finalized. Draft detailed design drawings and construction plans will be prepared.

When the Trustees have approved the detailed project plans, and all environmental permits are in hand, the final construction drawings and specification for the work will be prepared and reviewed by a professional civil engineer. The actual construction work will be performed by land-based equipment with the excavated fill removed to an approved offsite location. The material will first be offered to local governments for possible use to backfill any borrow pits or other areas where the fill could be beneficially used. Otherwise it will be disposed of in an approved landfill. Any construction permits required from local governments will be secured prior to actual construction and will be prominently posted along with other permits as required by law.

Installed plant materials will consist of nursery grown smooth cordgrass bare root units that will be ordered far enough in advance of actual construction to insure availability for installation as soon as site preparation is complete and an as-built survey has confirmed that slopes and elevations are correct. It is anticipated that the final site elevations will range between -3.0 and -1.0 ft. National Geodetic Vertical Datum (NGVD) within the constructed channels and between +0.5 and +2.0 ft NGVD in the planting areas. Plants will be installed on 3 foot centers to achieve a density of no less than 4840 units per acre. Planting will occur during the spring months (March-June) in order to achieve maximum cover prior to hurricane season and winter die-back of plants. If this window cannot be achieved, the entire construction and planting phase will be delayed one year.

3.2.2.3 Permitting

The PRPs will be required to fulfill all applicable permitting requirements as set forth in the Florida ERP Manual, in addition to meeting the performance criteria outlined herein (see Section 3.2.2.4).

The PRPs will contract for the preparation, submittal, and processing of all permits. The PRPs' agent will secure appropriate signed agent authorization forms from the owner of the property prior to permit submittals. A joint DEP/U.S. Army Corps of Engineers (USA-COE) Water Resources Permit Application will be prepared and signed by a professional civil engineer. If appropriate, the new Environmental Resources Permit Application will be utilized in order to include the South West Florida Water Management District in the permitting process. Copies will also be provided to the U.S. Fish and Wildlife Service, National Marine Fisheries Service and Florida Game and Freshwater

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Fish Commission in order to expedite review agency comments. Any construction permits will also be secured by the PRP designee prior to any work being performed on site.

3.2.2.4 Performance Verification

Post-Construction (Pre-Acceptance) Monitoring

- The monitoring measures are to ensure that all success criteria are met, and to allow for identification of the need for mid-course corrections in a timely manner.

Performance Criteria

- Restoration shall be considered successful at the project site when all of the following performance criteria have been met and maintained continuously for a period of at least one growing season without intervention, including but not limited to, any form of irrigation, dewatering, removal of undesirable vegetation, or replanting of desired vegetation.
- Saltmarsh vegetative cover shall be 80% in two years.
- Mangrove coverage shall be at least one mangrove seedling/4 sq meter over 50% of the area within two years, by natural recruitment or active planting.
- Vegetative cover shall be at least 80%, with mangrove cover accounting for at least 30% of the planted area at the end of the third growing season.
- Constructed tidal streams shall be open and free flowing with connections to Cross Bayou, without sill formation or indications of closure.
- Invasive exotic species, such as Brazilian pepper, Australian pine, or melaleuca, shall not be present within any planting zone, and shall constitute less than 5% cover in any buffer zone through time zero plus 60 months.
- The observed and reported presence of wading birds, oyster spat, epibenthic invertebrates and fish at the restoration site shall be generally similar to nearby natural wetland areas. (This is a qualitative observation.)

Monitoring

The frequency of monitoring shall be at the following intervals:

- Time Zero (within 60 days of completion of construction and planting including as-built survey),
- Time Zero plus 3 months,
- Time Zero plus 6 months,
- Time Zero plus 9 months,
- Time Zero plus 12 months,
- Time Zero plus 18 months,
- Time Zero plus 24 months,
- Time Zero plus 36 months,

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- Time Zero plus 48 months (Final report due within 90 days of actual date),
- Time Zero plus 60 months (Project Completion).

Measures used to verify performance shall include:

- Five fixed photographic reference points (produce color prints for reports) plus two panoramic photographic record points.
- Record the percent vegetation coverage by species in five 1m² stratified random quadrats.
- Record the height of the first ten mangroves encountered in each stratified random quadrat.
- Record the presence and location, or absence of all exotic species on the site.
- Record the actions taken to remove exotic species.
- Record the tidal stream depths relative to the surface elevation of the planting area, and conditions of the main channel connections.
- Record the salinity and temperature of the water.
- Record the presence and location, or absence of oysters on the site.
- Record the presence of epibenthic invertebrates, wading birds, and fish observed during routine monitoring.

Monitoring Contractor

The PRPs will hire a monitoring contractor who will send all communications and reports to both the PRPs and the Trustees. The monitoring contract will provide that the Trustees are third party beneficiaries of the contract.

Contingencies

A contract will be executed between the construction contractor and the PRPs specifying contractor performance criteria.

Mid-course Corrections

At any time that the submittal of a monitoring report indicates that a criterion is not being met or is in immediate risk of not being met within the next monitoring period, the monitoring contractor will arrange a meeting with the lead regulatory permitting agencies, the PRPs, and the Trustees to discuss corrective actions. After submittal of a written corrective action work plan and approval in writing by the permitting agencies and the Trustees, such actions will be performed and reported in writing to the Trustees and lead regulatory agency.

Acts of God

The PRPs are required to fulfill the project success criteria. No distinction or special exception is given during the performance period to acts of God.

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Post-Acceptance Maintenance

After the restoration site is deemed successful by the Trustees and FDEP permitting office, it will be necessary to ensure that exotic vegetation will not invade the project. For this purpose, the PRPs will be required to maintain the entire site for a period of three years post-acceptance by removing trash and maintaining exotics below the specified 5% level. An annual report certifying achievement of this success criteria will be forwarded to the Trustees.

Reset Requirements

If pre-acceptance phase monitoring indicates the project is not achieving the stated goals and trends, mid-course corrections will be required to replant or reconfigure any elements of the project that are hindering development. An alternative restoration plan must be submitted if two years after completion of initial construction, the restoration site is not clearly trending toward attaining success criteria. The new plan must include a new implementation schedule and will restart the project clock with respect to all monitoring requirements if the site is substantially (greater than 30%) recontoured or requires greater than 30% of the area to be replanted. If, however, the mid-course corrections require less than 30% recontouring of the entire site or less than 30% replanting, then the entire monitoring schedule will remain on track with no change except that one additional year of post-construction monitoring will be required (i.e., a zero plus 72 month report will be submitted).

3.2.2.5 Schedule

If final agreement and permits are received by 1 April 1999, then construction and planting can occur during the spring and summer of 1999. If permitting is not completed by 1 April 1999, construction and planting will not take place until 2000. Construction will not take place without immediate planting because the bare soil of the site would be subject to erosion and the critical elevations needed to ensure planting success could be altered. If construction and planting are completed on or about June 30, 1999, then monitoring will be completed during June 2004, unless reset in accordance with 3.2.2.4 (Reset Requirements).

3.2.3 Relationship of Project to Injury

The Trustees and the PRPs used the Habitat Equivalency Analysis (HEA) model as a tool to aid in the evaluation of proposed restoration actions for the Tampa Bay oil spill. There are several key components in determining habitat equivalency including: (1) actual habitat injury, (2) the number of years to recover to baseline or pre-incident conditions, (3) the number of years to full service flow after restoration or habitat creation, and (4) the period between service loss and restoration.

Because the mortality data collected on mangroves (trees and juveniles) were limited to the most heavily oiled areas (1.72 acres), the data represent a worst case estimate of mangrove mortality over the entire 5.5 acres which were oiled. Therefore, the estimates of mortality used for trees and juveniles for the HEA discussed below are conservative (i.e., in favor of over compensation) estimates of injury compensation requirements.

The HEA for mangrove trees assumes that 40 percent of all trees in the entire 5.5 acre area died, and that recovery to full service will require 45 years. Using these assumptions, the HEA indicates

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that creation of 3.27 acres of mangroves are required as compensation for short- and long-term loss of services.

The HEA for juvenile mangroves assumes a mortality of 60 percent over the entire 5.5 acres as discussed earlier. The juveniles present are largely (more than 80 percent) comprised of seedlings. The time used for recovery to full service was 8 years for juveniles, a conservative estimate (i.e., in favor of overcompensation). Application of these estimates to the HEA indicates that 0.66 acres of juvenile mangroves are required for compensation. Thus, the HEA estimates compensation for both trees and juveniles at 3.93 acres. However, the PRPs will create approximately 5.0 acres of mangrove habitat on the Cross Bayou parcel. The creation of an additional 1.07 acres of mangroves ensures that adequate mangrove services are restored, given any uncertainty in the assessment.

The Trustees have recognized that there are arguably other potential losses of mangroves services provided by the impacted 5.5 acres of mangrove community. To address these losses, the planned restoration project includes enhancing the productivity of 4.4 acres of existing mature mangroves by restoring water circulation that was eliminated by dredge spoil deposition many years ago.

It is estimated that this habitat enhancement approach could increase epibenthic and fish rearing services in the 4.4 acre area by up to 70 percent. This could effectively increase the total biological service function by approximately three (3) acres in addition to the existing services provided by the physical form of the 4.4 acres. The combination of the additional ecological service provided by the enhancement of these 4.4 acres of existing mangroves trees and the excess of 1.07 acre creation provides additional compensation for the partial loss of service of 0.75 acres of marsh and claimed unquantified losses of seagrass services.

Because the Cross Bayou parcel will be transferred to public ownership, it can be managed as a wildlife reserve in perpetuity, free from the threat of changes in land use zoning and development pressures that may effect the biological productivity of the site. The Cross Bayou parcel has additional value to the ecosystem because it is adjacent to a site that is currently being restored and is adjacent to another site that is proposed for restoration.

3.3 Oyster Reef Cleanup and Restoration Project at Elnor Island

3.3.1 General

The PRPs and Trustees identified areas of shoreline impacted by the oil spill that necessitated early restoration actions in addition to the initial cleanup. This work removed stranded oil mats on oyster shell from the high intertidal zone on the northwest shore of Elnor Island. This project removed oil from those areas without viable mangrove growth to avoid possible warm weather mobilization of oil and to decrease the potential for recurring contamination. Additionally the project restored shoreline stabilization adjacent to the mangrove resources. This project schedule was accelerated to minimize effects to the environment. This project was begun in July 1995, and initially completed in August 1995. Following completion of the agreed restoration, the Trustees identified additional contaminated areas and requested further restoration. Restoration on these additional areas was begun in

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November 1995, in the same manner and subject to the same criteria utilized in the initial work. The project was certified complete by the Trustees as of September 1996.

3.3.2 Restoration Actions

3.3.2.1 Objectives

Primary

- Remove agreed portions of asphalted shell which was a source of continuing oil exposure for oyster spat recruits, mangroves, and associated biota.

Secondary

- Provide clean substrate (oyster cultch) to facilitate natural recolonization of fringing oyster community.
- Establish self-sustaining fringing oyster community to provide island shoreline stabilization services.
- Reduce the threat to adjacent mangrove islands by reducing the risk of shoreline erosion.
- Reduce the threat of deposition of eroded material in adjacent seagrass beds.

3.3.2.2 Plan

The areas cleaned were those delineated with the cooperation and approval of the Trustees. Contaminated oyster shell was replaced with similar uncontaminated material.

Initially, zones of tar mat were cleaned within Section 1 shown on Figure 4. The initial area cleaned was less than 1,500 sq. ft. An additional 1200 square feet of oiled oysters within Section 1 were identified by the Trustees and cleaned in November 1995. Removal was not performed in Section 2A as oiled oysters could not be relocated by the Trustees in that area in 1995. It is likely that the oiled oysters were removed as a result of storm conditions between the incident and 1995.

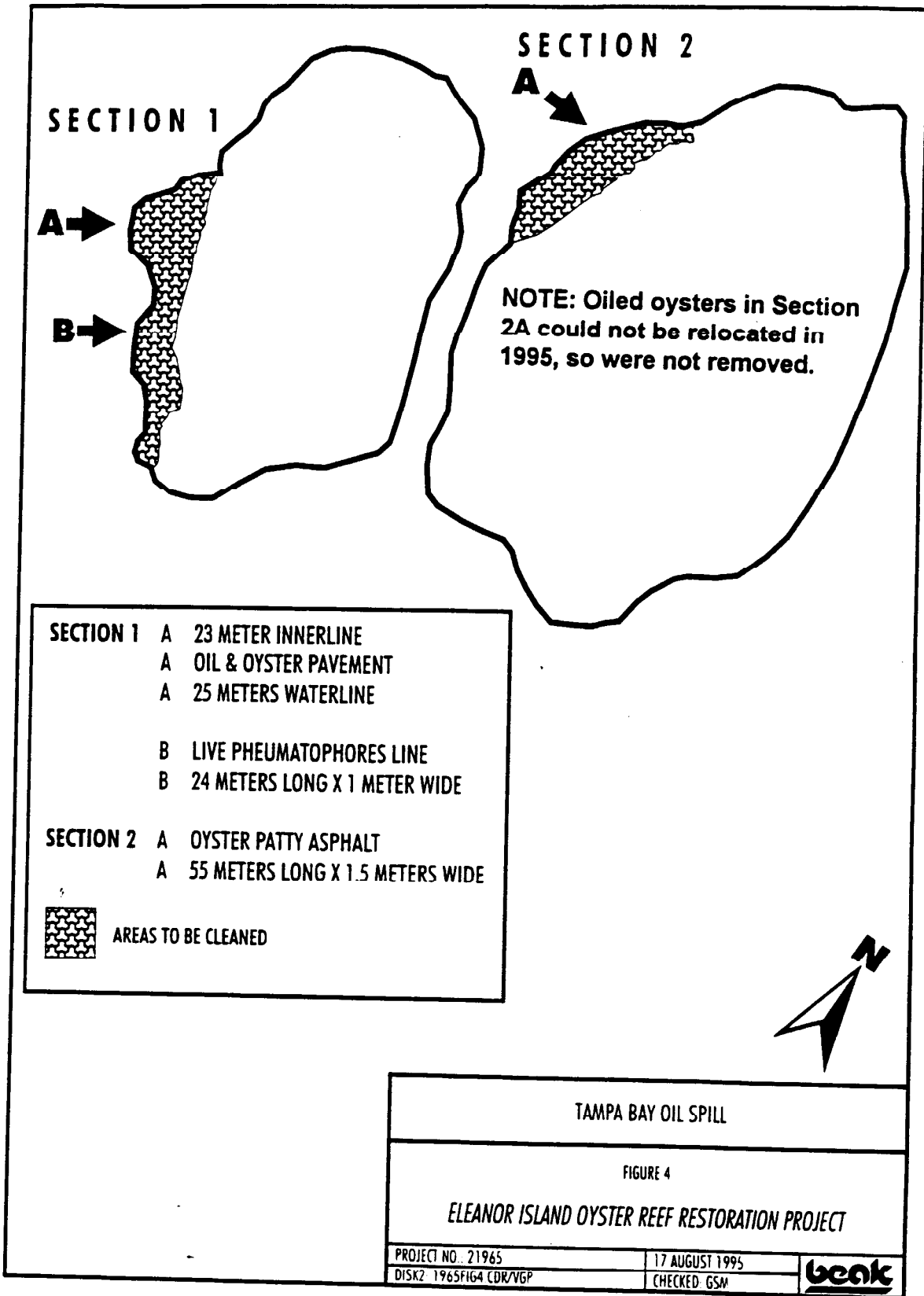
Cleanup Techniques - The tar mats were removed by hand and small rakes at a low tide. All oil and oiled material were placed in plastic bags and secured by trained personnel.

Shoreline Stabilization - Stabilization was accomplished on a daily basis by replacing oiled shell clusters with fossilized oyster shell clusters and loose oyster shells. All shell removed was replaced before the change of tide on that day.

Beach elevation prior to cleanup was established by driving 2"x 2" wood stakes into the substratum until the top of the stake was flush with the surface of the shoreline. Following cleanup, additional fossilized and/or loose natural shell was added to a thickness of 8" to 10" in excess of the original height or to an elevation sufficient to approximate adjacent healthy oyster bars following normal expected winnowing and settlement.

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Figure 4. Elnor Island oyster reef restoration project.



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3.3.2.3 Permitting

The DEP notified the PRPs in a letter dated 15 June 1995 that this activity was exempt from a Wetland Resource Permit pursuant to Rule 62-4.040(1) (b), F.A.C.

3.3.2.4 Performance Verification

Initial review was accomplished by representatives of the Trustees and the PRPs to ensure work was conducted according to approved and mutually agreed specifications. Results of this review led to additional oil removal and shoreline enhancement with fossilized shell. A six month review for specified configuration and stabilization was conducted on the additional work requested and corrections (one time) were implemented to bring the project to the performance specifications as described above.

3.3.2.5 Schedule

Operations commenced 17 July 1995. Initial work was completed by 29 August 1995. Supplemental restoration requested by the Trustees was completed and inspected on 28 March 1996. The Trustee six month review of the supplemental restoration was performed in September 1996, and the project certified complete by the Trustees as of that date.

3.3.3 Relationship of Project to Injury

This project provided direct, in kind, onsite restoration of injured resources. In addition, the creation of 5.0 acres of mangroves and the increase in biological productivity of 4.4 acres of existing mangroves at the Cross Bayou site will provide compensation for interim lost services and other non-quantifiable invertebrate losses.

3.4 Turtle Crawl Point Marsh Restoration Project

3.4.1 Site Description

Approximately 0.75 acres of preexisting smooth cordgrass marsh were impacted by oil along Boca Ciega Bay. The site is a low elongated point midway between Cross Bayou and John's Pass.

3.4.2 Planned Restoration Actions

3.4.2.1 Objectives

Primary

- Reestablish a typical Tampa Bay salt marsh dominated by smooth cordgrass.

Secondary

- Increase shoreline stabilization and deter erosion.

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- Increase the area and ecological value of the existing marsh.
- Create foraging habitat for wading birds.

3.4.2.2 Plan

The PRPs will plant 1.5 acres of smooth cordgrass in the area of Turtle Crawl Point and along Boca Ciega Bay. The project will preferentially replant areas that were impacted by the oil spill and have not yet effectively recovered. Additional plantings will be made on the perimeter of the marsh to increase fringe area until a cumulative planting of 1.5 acres is achieved.

Installed plant materials will consist of nursery grown smooth cordgrass bare root units that will be ordered far enough in advance of actual construction to insure availability for installation as soon as site preparation is complete and an as-built survey has confirmed that slopes and elevations are correct. It is anticipated that the final site elevations will range between +0.5 and +2.0 ft NGVD in the existing marsh and fringe area. Plants will be installed on three foot centers to achieve a density of no less than 4840 units per acre. Planting will occur during the spring months (March-June) in order to achieve maximum cover prior to hurricane season and winter die-back of plants. If this window cannot be achieved due to permitting delays, the entire construction and planting phase will be delayed one year.

3.4.2.3 Permitting

The PRPs will contract with an agent for preparation, submittal and processing of all permits. The PRPs' agent will secure appropriate signed agent authorization forms from the owner of the property prior to permit submittals. If required, a joint DEP/USA-COE Water Resources Permit Application will be prepared and signed by a professional civil engineer. If appropriate, the new Environmental Resources Permit Application will be utilized instead in order to include the South West Florida Water Management District in the permitting process. Copies will also be provided to the U.S. Fish and Wildlife Service, National Marine Fisheries Service and Florida Game and Freshwater Fish Commission in order to expedite review agency comments. Since it is not anticipated that site earthwork will be required, no permits will be secured by the PRPs' contractor for earthwork.

3.4.2.4 Performance Verification

Performance Criteria

- The PRP contractor shall plant 7,260 live smooth cordgrass units.

Monitoring

- Frequency: Shall be at time zero (within 60 days of completion).
- Measures: The monitoring report shall include the counts of live plants.

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3.4.2.5 Schedule

If permits are received by 1 April 1999, planting can occur during the spring and summer of 1999.

3.4.3 Relationship of Project to Injury

The Trustees and PRPs have agreed, based in part on a survey performed under the direction of the State of Florida, that 0.75 acres of saltmarsh dominated by smooth cordgrass were injured for approximately one year as a result of the discharge and PRP response activities. The PRPs will compensate for these injuries by using a 2:1 replacement ratio, derived from the Tampa Bay Comprehensive Regional Plan. This approach would require 1.5 acres of salt marsh to be created as onsite, in kind compensation.

3.5 Rookery Key and Little Bird Key Shoreline Stabilization Project

3.5.1 Site Description

Rookery Key and Little Bird Key are located between Turtle Crawl Point and John's Pass in Boca Ciega Bay. They are small, low, sand islands formed to various extents by dredge spoil disposal and natural processes. These islands support red, white and black mangroves and Buttonwood. As their names suggest, the islands are heavily used by a variety of bird species as roosting, loafing and nesting habitat. These islands have been experiencing significant erosion as a result of wakes from vessels and small personal watercraft. Eroded material is being transported from the shoreline of the islands and deposited on adjacent mangroves and seagrass beds resulting in their destruction.

3.5.2 Planned Restoration Actions

3.5.2.1 Objectives

Primary

- Reduce the loss of seagrass habitat in Boca Ciega Bay by attempting to prevent shoreline erosion.
- Shoreline stabilization of the islands.

Secondary

- Maintain existing mangrove habitat on Rookery Key and Little Bird Key.
- Provide additional marsh habitat within Boca Ciega Bay.
- Create foraging habitat for wading birds.

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3.5.2.2 Plan

The PRPs will plant approximately 2,000 units of bareroot nursery grown smooth cordgrass in shoreline areas adjacent to the mangrove forest so as to maximize shoreline stabilization. It is anticipated that these areas will be on the western shorelines between +0.5 and +2.0 NGVD as shown in Figure 5. Plants will be planted on two to three foot centers as deemed appropriate. No site preparation work is planned.

Planting of Rookery Key cannot take place between March 1 and July 1 to prevent disturbance of nesting birds. This project will be planted in the summer after July 1 as soon as practical in order to achieve maximum cover prior to the winter die-back of plants. If this window cannot be achieved, the entire construction and planting phase will be delayed one year.

3.5.2.3 Permitting

The PRPs will contract with an agent for preparation, submittal and processing of all permits. The PRP's agent will secure appropriate signed agent authorization forms from the owner of the property prior to permit submittals. If required, a joint DEP/USA-COE Water Resources Permit Application will be prepared and signed by a professional civil engineer. If appropriate, the new Environmental Resources Permit Application will be utilized instead in order to include the South West Florida Water Management District in the permitting process. Copies will also be provided to the U.S. Fish and Wildlife Service, National Marine Fisheries Service and Florida Game and Freshwater Fish Commission in order to expedite review agency comments. Because it is not anticipated that site earthwork will be required, no permits will be secured by the PRP's contractor for earthwork.

3.5.2.4 Performance Verification

The shoreline of the two islands is currently subjected to erosion unrelated to the oil spill at several locations. It is anticipated that this project will significantly retard erosion in these areas. However, due to the known instability of the shoreline and associated vulnerability of the planted stock, this project is planned as a best level of effort proposition. As such, no monitoring of plant success will be conducted.

Performance Criteria

- Planting of 2,000 live units.

Monitoring

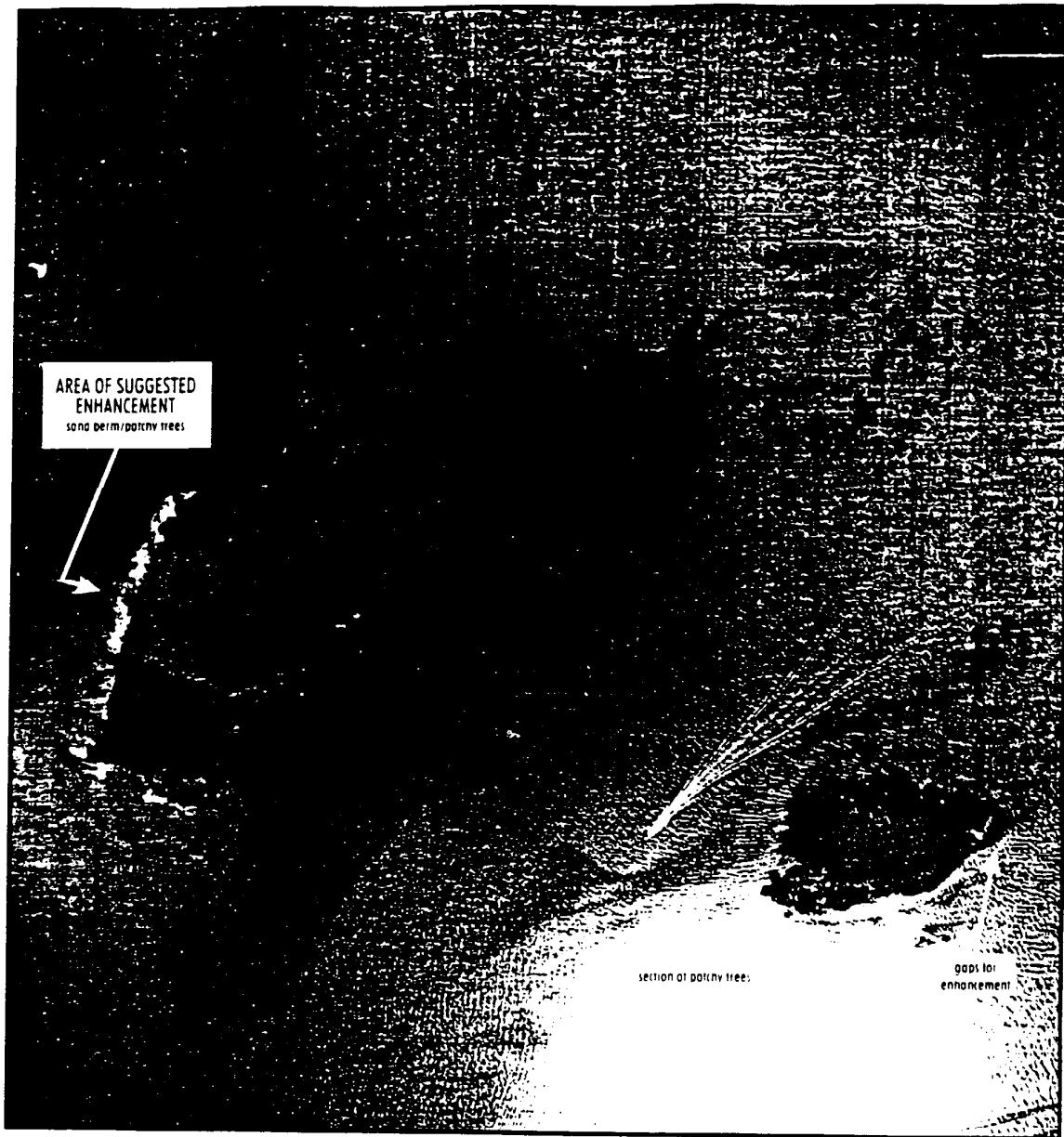
- Frequency: Monitoring shall be at time zero (within 60 days of completion).
- Measures: The monitoring report shall include the counts of live plants.

Monitoring Contractor

- None. Project site review will be by DEP.

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Figure 5. Little Bird and Rookery Keys shoreline stabilization project.



TAMPA BAY OIL SPILL		
FIGURE 5		
LITTLE BIRD & ROOKERY KEYS SHORELINE STABILIZATION PROJECT		
PROJECT NO. 23965	7 AUGUST 1999	beak
DISC. 138365 CDR VOT	138365 CDR VOT	

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Contingencies

- Failure to plant adequate number of plants will require additional placement of stock.

Mid-course Corrections

- None are required.

3.5.2.5 Schedule

- If environmental permits are received by 1 April, 1999, planting can occur during the summer of 1999. No human activity is allowed at Rookery Key between March 1 and July 1, to protect the nesting birds. Planting activities shall not take place during this period.

3.5.3 Relationship of Project to Injury

Aerial photography and ground surveys by the State estimate that 2.5 acres of seagrasses were lost due to oiling and PRP response activities. Another 255 acres are estimated from trajectory mapping to have been briefly exposed to the oil slick as it passed over them. Follow-up State aerial photography documented that the injured 2.5 acres grew back by Fall 1994. Also, the 255 potentially exposed acres never showed vegetation loss. An HEA estimate with this information indicates a maximum of 0.8 acres would be required to fully compensate for the interim ecological services loss to seagrasses from this spill. This injury will be compensated for by fringe plantings of smooth cordgrass on the mangrove islands in an attempt to protect the integrity of the mangrove islands and reduce migration of sediment which adversely affects adjacent seagrass beds.

3.6 Water Column Compensation

Direct assessment of injury to water column organisms using field methods are very expensive, and are difficult to conduct in a timely fashion. As a result, models have been developed in an attempt to estimate injuries to the water column biota (e.g., finfish, plankton, etc.). The Natural Resource Damage Assessment Model for Coastal and Marine Environments was used as a method to estimate these losses, an approach which is consistent with Volume 1 of the DARP/EA. Based on a range of likely input parameters, the model estimates short- and long-term losses to finfish in the range of 3,800 to 7,500 kg, and 53 to 94 kg losses of shellfish. The PRPs will provide \$80,000 as compensation for injury to water column organisms.

The Trustees will use this \$80,000 in accordance with Volume 1 of the DARP/EA, to implement a general water quality improvement project or to install artificial reefs.

3.7 Bird Compensation

Bird resources in the Tampa Bay area were adversely affected by the oil and the subsequent response activities. Injuries from oil discharges include direct injury as a result of oiling, ingestion,

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and stress from capture and cleaning, and indirectly through habitat loss and disruption of nesting and foraging activities. At least 366 birds were recovered that came into direct contact with the discharged oil. The Trustees estimate that at least twice that number of birds may have been affected.

The PRPs will provide \$14,600 as compensation for direct injury to birds. This amount represents the estimated cost to conduct routine bird rehabilitation at a Bay area facility for 732 injured birds. A compilation of reported bird rehabilitation statistics from U.S. Fish and Wildlife Service permits for the Tampa Bay area indicate that in 1991, 6245 birds were treated in rehabilitation centers and in 1992, 3974 were treated. The average of these two years is 5110. Using this average as the baseline number of birds rescued in one year against the estimated impact of the spill to birds in the Tampa Bay (732 birds), the impact of the spill represents about 14% of the annual rehabilitation load.

Compensation is based on the cost of operating a rehabilitation center (per week) multiplied by the number of weeks required for normal rehabilitation efforts to replace the estimated injured birds. Data provided by Pinellas Seabird Rehabilitation Center indicates that the costs for bird rehabilitation are \$1100-\$2000 per week. The estimated time required for normal rehabilitation efforts to replace the estimated injured birds is 7.3 weeks.

The \$14,600 in funds will be used by the Trustees to fund rehabilitation or other appropriate projects for the restoration of injured bird resources. Additionally, injury to bird habitat is to be compensated by appropriate mangrove and saltmarsh habitat restoration.

3.8 Sea Turtle Compensation

There were 4 loggerhead turtle hatchlings killed and 12 injured as a result of the discharge and response activities. Five loggerhead eggs were also destroyed. There was 1 juvenile green turtle of approximately 25 cm carapace length found covered with oil, cleaned, and released. Two loggerhead turtle nests were covered with oil as a result of the discharge and response activities. Subsequent evaluation of the nests revealed that they contained a total of 176 unhatched and 9 hatched eggs.

Compensation for sea turtle injuries will be based on the cost to improve or augment programs in the spill area to increase hatchling survival or assist in effective management of sea turtles in a manner that will generally replace the number and type of sea turtle resources injured as a result of the spill. These activities are consistent with Priority 1 tasks in the Recovery Plan for the U.S. population of sea turtles.

The PRPs will provide \$100,000 to accomplish this work.

3.9 Sediment Injury Compensation

Based on underwater inspection and SONAR surveys by the USCG during response activities, an estimated 58,540 sq. ft. of subtidal sand and mud sediments were in contact with submerged oil from this spill. Exposure of these sediments to the submerged oil resulted in injury to the associated

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bottom dwelling animals from smothering and toxicity. As with injury to the water column, injury to the affected subtidal sediments is difficult to quantify with field assessment methods. To determine compensation for this exposure consistent with Volume 1 of the DARP/EA, the Trustees multiplied the known area exposed to submerged oil, by a dollar value of \$0.90 per sq. ft. for sediments. This value is consistent with the most current revision of the Natural Resource Damage Assessment Model for Coastal and Marine Environments. The PRPs will provide \$52,686 as compensation for this loss.

The Trustees will determine an appropriate water quality improvement project in accordance with Volume 1 of the DARP/EA, within Boca Ciega or lower Tampa Bay to be funded by the \$52,686 compensation for sediment injury.

3.10 Beach Sand Compensation

Approximately 39,827 cubic yards of sand, oil and debris were removed from the beach during PRP response activities as a result of the spill. The State has estimated that beach sand renourishment costs during routine projects cost \$10.00 per cubic yard. Therefore, the PRPs will provide compensation using this price, times the volume of material removed during clean-up, as the measure of compensation. The PRPs will provide \$398,270 as compensation for sand loss. This money shall be used to augment a permitted beach renourishment project within the area of the oil-impacted beaches during the next project cycle, or to reimburse the State of Florida for this expense to the extent such replacement costs have already been incurred.

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