



COASTAL TECH

COASTAL TECHNOLOGY CORPORATION

COASTAL • ENVIRONMENTAL • CIVIL • ENGINEERING AND PLANNING

P.O. BOX 650099, AUSTIN, TEXAS 78765-0099

PHONE: (512) 914-6027 • FAX: 800-321-9673

TRANSMITTAL LETTER

Comm. No. 20244

Date: April 24th, 2002

To: Matthew Mahoney, CEPRA Project Manager
TEXAS GENERAL LAND OFFICE
Coastal Projects Division
1700 N. Congress Ave., Suite 617
Austin, Texas 78701-1495

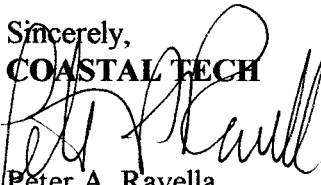
Via: Hand Delivery

Re: McFaddin Sand Placement Project, GLO Contract No. 01-574 C; General Work Order No. 1003-02-006, *as amended*

Transmitted:

<u>Item</u>	<u>Description</u>
1) Preliminary Project Design Report (Including Technical Specifications)	Task 1 Report - Complete
2) Preliminary Design Drawings	Task 1 Design - Complete
3) USACE 404 Permit Application Submission	Task 3 404 Application - Complete

Comment: Enclosed, please find the above referenced documents, which are submitted in completion of Task 1, Design, and in partial fulfillment of Task 3, Permitting. We will keep you advised as the permitting process for the project proceeds. As you recall, the project area survey, in completion of Task 2, was provided to you under cover letter of March 28, 2002. Please call me at 512-236-9494 if we can be of further assistance at this time.

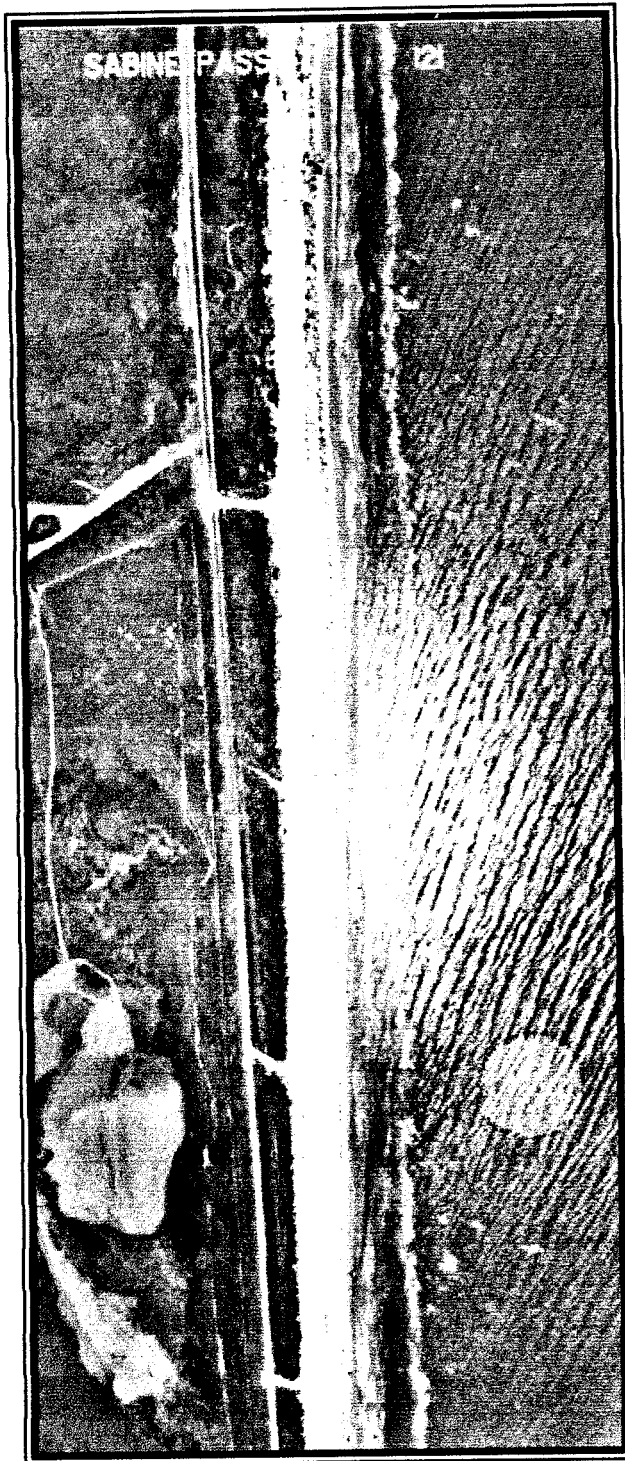
Sincerely,
COASTAL TECH

Peter A. Ravella
Project Manager

cc: Michael Walther, P.E.

AUSTIN

For

Internal Use Only



McFaddin National Wildlife Refuge

**Sand Placement Project
GWO No. 1003-02-006**



Preliminary Project Design Report



Peter Ravella
Michael Walther, P.E.
Coastal Technology Corp.
2306 Lake Austin Blvd.
Austin, Texas 78703
512-236-9494

April 24th, 2002

Project Area – McFaddin Sand Placement
September 2000, GLO



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Purpose of this Report: In accordance with GWO No. 1003-02-006, Task 1, Preliminary Design, and consistent with the project criteria, goals, objectives, and concept as set forth in the Project Concept Letter Report (Coastal Tech, January 30, 2002), we are pleased to submit to the GLO in fulfillment of the Work Order the preliminary design documents consisting of the proposed design, preliminary drawings, construction specifications, and written description of the project.

PROJECT GOALS AND OBJECTIVES

Project Goal: The project goal is to place the maximum amount of compatible beach quality sand within the specified budget on the beach seaward of the McFaddin Dune Restoration Project in the area beginning at the Sea Rim State Park boundary extending generally westward for a distance of 1,750 feet.

Project Objectives: Placement of beach quality sand within the project area is intended to serve two objectives:

- Expand the available public beach seaward of the McFaddin Dune Restoration Project; and
- Provide some degree of enhanced protection for the restored dune and dune vegetation installed in the McFaddin Dune Restoration Project.

GENERAL SCOPE, EXTENT AND CHARACTER OF THE PROJECT

The following characteristics define the scope, extent and character of the McFaddin Dune Beach Placement Project - CEPRA GWO No. 1003-02-006:

- Project Location: Sea Rim State Park Boundary, extending westward 1,750 feet
- Project Construction Budget: \$100,000
- Project Length: Maximum of 1,750 feet
- Estimated Unit Cost for Placed Sand: \$10.50/cubic yard
- Estimated Fill Quantity: 9,410 cubic yards (volume may vary depending on actual unit cost of sand obtained at the time of bidding)
- Landward Fill Placement Limit: Seaward of previous vegetated dune terrace at time of fill placement
- Seaward Fill Placement Limit: Seaward below MHW line as depicted in the attached preliminary design drawing
- Placement Method: Truck haul
- Recommended Sand Source: Local commercial sand supplier



PROJECT DESCRIPTION

The sand placement at McFaddin National Wildlife is proposed to expand the usable recreational public beach berm seaward and provide some protection for the previous dune restoration and vegetation project. Based upon the cost of sand at the time of construction, approximately 9,410 cubic yards of beach compatible sand is proposed to be placed along 1,750 feet of the beach fronting the previous dune restoration and vegetation project. The beach berm design calls for placement of approximately 5.37 cu. yds. of sand per linear foot of shoreline. After compaction, the resulting profile is expected to have approximately 3.67 cu. yds. of sand per linear foot of beach.

ENGINEER'S OPINION OF PROBABLE COST

ITEM	QUANTITY	UNIT COST	AMOUNT
1. Mobilization		\$ 1,195.00	\$ 1,195.00
2. Furnish and Deliver Sand	9,410 cu. yds.	\$ 7.50/cu. yd.	\$ 70,575.00
3. Place and Grade Sand	9,410 cu. yds.	\$ 3.00/cu. yd.	\$ 28,230.00
	TOTAL COST:		\$100,000.00

Sand will be placed from approximately 60 feet seaward of the toe of the existing dune (approximate seaward edge of vegetated terrace planted during the McFaddin Dune Restoration Project) extending seaward approximately 195 feet at the farthest point. The elevation of the proposed beach berm is designed to match the existing grade at the seaward edge of vegetation at approximately El. +2.5 feet, creating an additional construction beach berm averaging approximately 80 feet wide. At the seaward edge of the proposed berm, the proposed profile will slope at an approximate grade of 1:10 (1 foot vertical to 10 feet horizontal) until the slope meets the existing grade. The total width of the sand placement will average approximately 143 feet from the edge of vegetation to the seaward toe of the fill.

Given the small size of the project and the limited funds for construction, the General Work Order did not include funds to develop a sediment budget for the project area, assess long shore sediment transport conditions, conduct a wave analysis, or model the expected performance of the sand placement alternatives. According to the Bureau of Economic Geology, the McFaddin National Wildlife Refuge shoreline is generally eroding and subject to significant retreat under moderate storm conditions (see GC 75-6, Shoreline changes between Sabine Pass and Bolivar Roads, an analysis of historical changes of the Texas Gulf shoreline, by R.A. Morton. 1975; GC 77-6. Historical shoreline changes and their causes, Texas Gulf Coast, by R.A. Morton. 1977). In fact, just such a storm (Tropical Storm Frances) triggered the need for the McFaddin Dune Restoration project which was completed in August 2001. The chronic erosion conditions on the project shoreline, the documented vulnerability of the project shoreline to storm impacts, and the very limited quantity of sand that can be purchased within the budget significantly affect the



likelihood that the project will have little lasting impact on the shoreline or the available public beach width. Because the Work Order did not include funds to conduct modeling and other shoreline studies typically undertaken for large scale projects, no specific basis exists to predict the performance of the project. However, based on experience and judgement, it is expected that the sand placed in the project area would not be evident within three months.

The recommended design is primarily driven by the budget specified by the Land Office. This design can be expected to **temporarily** meet the projects goals and can be constructed within the specific budget limits for the project, assuming sand can be obtained in the market at the time of construction at or below the preliminary estimated cost of \$10.50 per cubic yard. If sand is more expensive than estimated, the amount of sand placed can be reduced in proportion to the increased cost while generally maintaining the suggested placement design.

ALTERNATIVES CONSIDERED

1. EXPAND THE BEACH BERM FROM THE TOE OF THE EXISTING DUNE: To increase the likelihood that the placed sand will not be quickly washed away, the sand could be placed higher on the beach, perhaps beginning at the toe of the restored dune extending seaward. However, expanding the beach berm from the toe of the existing dune would require the disturbance of the vegetation planted in a 60 foot wide terrace at the seaward toe of the dune during the previous project. Relocation the existing vegetation would result in additional costs reducing the funds available for the sand placement project. This alternative is not recommended.
2. EXPAND THE EXISTING DUNE: Placing additional sand on the restored dune could improve the life of the dune under storm conditions and could conceivably result in a slightly wider beach, as sand is naturally circulated through the beach/dune system by wind and wave energy. However, this option would not immediately expand the width of the public beach, a principle objective of the project. In addition, expanding the existing dune would require the disturbance of the vegetation on the dune and in the 60-foot wide terrace seaward of the dune. Based on the 180-day Dune Restoration Project Inspection Report (Dune Doctors, LLP, April 14, 2002), vegetation of the dune and terrace are well established and still spreading. Therefore, placement of sand within the McFaddin Dune Restoration area would impose significant replanting costs on the state, thus reducing the funds available to expand the size of the public beach area. This option is not recommended.
3. PLACE ALL THE SAND FROM THE EDGE OF VEGETATION ABOVE MEAN HIGH WATER: To avoid the need for a USACE 404 permit and to reduce sand placement in the water, all sand could conceivably be placed sand above the mean high water elevation to the seaward edge of vegetated terrace planted in the previous project. This alternative would result in a temporarily elevated berm or ridge at the seaward edge of the line of vegetation.



The resulting ridge would likely create an soft, beach cut by escarpments until full equilibrium was reached. We understand the Land Office may order removal of the bollards which limit vehicle traffic into the project area. If such an action were executed, the beach created by this alternative would be poorly suited for vehicle travel and some recreational uses and therefore would not be considered a feasible alternative.

4. EXTENSION OF SAND FENCING. Refuge staff have been pleased with reestablishment of vegetation behind the sand fence installed in the McFaddin Dune Restoration project.. By limiting vehicle access over sensitive foredunes, vegetation has naturally propagated seaward, enhancing the healthy of the natural dune system. As an alterative to sand placement, the \$100,000 construction budget could be devoted to installation of sand fencing beginning at the western edge of the McFaddin Dune Project and extending west to the extent of the project budget. At \$8.27 per linear foot installed (cost of fence already installed), approximately 12,000 linear feet of sand fence could be placed. Consistent with GLO guidelines, the fence could be placed 20 feet seaward of the natural line of vegetation on the shoreline. Installation of sand fences is a cost-effective and proven method to enhance dune vegetation reestablishment and, given the substantial length of shoreline that could be treated (six times the length of the sand placement project), this alternative would likely result in tangible benefits to the dune system within the refuge. However, this alternative fails to meet the specific goals outlined by the Land Office for the project – expansion of the public beach seaward of the McFaddin Dune Project and enhanced storm protection of the dune project. Therefore, this alternative is not within the current project criteria.



PRELIMINARY CONSTRUCTION SPECIFICATIONS

1. PRE-CONSTRUCTION MEETING: Prior to the start of construction, the CONTRACTOR shall meet on the site at the McFaddin National Wildlife Refuge (MNWR) with the ENGINEER to establish the construction access and pre-construction conditions of the site (photographs will be taken by the ENGINEER). At this meeting the ENGINEER and CONTRACTOR shall review the limits of proposed fill, and the construction sequence and methods proposed by the CONTRACTOR.

2. MOBILIZATION AND DEMOBILIZATION: All costs connected with mobilization and demobilization of the CONTRACTOR's labor and equipment shall be included within each item indicated on the Bid Schedule of the CONTRACTOR's proposal. The CONTRACTOR may obtain access to the property via Highway 87 and the existing Vehicular Access shown on the Drawings. During construction, the CONTRACTOR may store material and equipment on MNWR property within storage areas on the beach east of the existing Vehicular Access within the 100 feet seaward of the existing vegetation line. During construction, the CONTRACTOR shall make provisions to (a) not interfere with normal vehicular traffic on Highway 87 and on the beach within the MNWR west of the existing Vehicular Access, and (b) control public access and provide for public safety within the construction area east of the existing Vehicular Access.

3. FURNISH AND DELIVER SAND (BID ITEM 1a): Under Bid Item 1a, the CONTRACTOR shall furnish and deliver sand to the site within designated storage areas. All sand shall be (a) clean sand fill free of organic material and debris, (b) compatible with existing on-site beach material in both grain size and coloration, and (c) obtained from an approved upland site. Results from grain size analysis of the existing beach material are attached to these specifications. The CONTRACTOR shall submit a representative sample (15in³±) of the proposed sand with the CONTRACTOR's bid; the CONTRACTOR shall also provide the following:

- (a) Grain size distribution gradation curve;
- and (b) Geologic description of the sample, including color standard to the Unified Soil Classification System and Munsell Color Charts.

CONTRACTOR's proposed sand shall contain less than five percent (5%) fines passing a 200 sieve size. The ENGINEER shall assess the compatibility of the sand proposed by the CONTRACTOR based on determination of an "Overfill Factor" as prescribed by the U.S. Army Corps of Engineers Shore Protection Manual. The most cost effective source of sand (including consideration of the "Overfill Factor" and color) will be considered in the ENGINEER's recommendation for contract award.



The CONTRACTOR shall provide a "yard ticket " for each truckload citing the volume of material in the truck, the date of delivery, and the approximate location of delivery (where dumped by truck); these tickets will be the basis for final payment to the CONTRACTOR under Bid Item 1a. During construction, by 10 a.m. each day, the CONTRACTOR will provide to the ENGINEER a daily log including (1) a summary table of all truck loads of sand delivered to the site during the prior day including the volume and the location of delivery for each truckload, and (2) the total volume of sand delivered through the prior day. With the CONTRACTOR's requests for payment under this bid item, the CONTRACTOR shall provide the ENGINEER with copies of all yard tickets that shall be the basis of payment.

4. PLACE AND GRADE SAND (BID ITEM 1b): Under Bid Item 1b, the CONTRACTOR shall place and grade sand to meet the lines and grades as shown on the Drawings. The CONTRACTOR shall place sand only within the limits shown on the Drawings for "proposed fill". The CONTRACTOR shall "back blade" the placed fill to achieve compaction as approved by the ENGINEER.

5. PAYMENT: Payment for all materials and labor shall be made by the OWNER to the CONTRACTOR according to the unit prices indicated on the Bid Schedule for materials actually used in the construction and accepted by the OWNER.



TRANSMITTAL LETTER

Comm. No. 20244

Date: April 24th, 2002

To: Jeff Hill, Regulatory Specialist
U. S. Army Engineer District, Galveston
CESWG-PE-R
P.O. Box 1229
Galveston, TX 77551

Via: U.S. Mail

Re: ***404 Permit Application, McFaddin National Wildlife Refuge (MNWR) Sand Placement Project; General Land Office CEPR Project (GWO No. 1003-02-006)***

Transmitted:

Item

Description

1) 404 Permit Application

Peter A. Ravella, Coastal Tech,
Permitting Agent for MNWR

2) CMP Consistency Statement

Comment: Enclosed please find the above referenced 404 permit application and CMP Consistency Statement for the McFaddin National Wildlife Refuge Sand Placement Project. As you may recall, you previously reviewed the "Project Concept Letter" for this project and provided comments to Coastal Tech by email, dated February 11, 2002. We request that the permit application be placed on the agenda for the earliest upcoming Joint Processing Meeting and we look forward to attending the meeting to review and discuss the project with the Corps and other regulatory agencies. If you have any questions or need any additional information, please contact me at Coastal Technology Corp., 2306 Lake Austin Blvd., Austin, Texas 78703; 512-236-9494 and FAX 800-321-9673, pravella@coastaltechcorp.com.

Sincerely,

COASTAL TECH



Peter A. Ravella

Project manager/Permitting Agent for MNWR

cc: Matthew Mahoney, GLO CEPR Program
Michael Walther, P.E., Coastal Tech
Dean Bossert, MNWR



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**McFaddin Sand Placement Project
GLO CEPRA Project
General Work Order No. 1003-02-006 (state contract)**

The applicant should sign this statement and return to:

U.S. Army Corps of Engineers (USACE)
Regulatory Branch
P.O. Box 1229
Galveston, Texas 77553-1229
Fax: 409-766-3931

USACE Permit Number _____ (To be assigned by USACE)

Applicant's Name and Address (please print):

Peter A. Ravella, Permitting Agent for
McFaddin National Wildlife refuge
Coastal Technology Corp.
2306 Lake Austin Blvd.
Austin, Texas 78703
512-236-9494
800-321-9673 fax
pravella@coastaltechcorp.com

Project Manager or Regulatory Specialist (if known):

JEFFERY L. HILL

The proposed activity complies with the enforceable policies of the Texas Coastal Management Program and will be conducted in a manner consistent with such policies.

Date: April 24th, 2002

Signature: _____

Any questions regarding the Texas Coastal Management Program should be referred to:

Diane Garcia
Texas General Land Office
Coastal Coordination Council
1700 North Congress Avenue, Room 617
Austin, Texas 78701-1495
512-463-5385
512-475-0680 Fax
diane.garcia@glo.state.tx.us



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**APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT
(33 CFR 325)**

OMB APPROVAL NO. 0710-003

Public reporting burden for this collection of information is estimated to average 5 hours per response, including the time for reviewing instructions, Searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-003), Washington, DC 20503. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in, or affecting, navigable waters of the United States; the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Routine uses: Information provided on this form will be used in evaluating the application for a permit. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED
--------------------	----------------------	------------------	-------------------------------

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME Dean Bossert/McFaddin National Wildlife Refuge	8. AUTHORIZED AGENT'S NAME & TITLE (an agent is not required) Peter A. Ravella/Coastal Manager, Coastal Tech C
6. APPLICANT'S ADDRESS PO Box 609 Sabine Pass, Texas 77655	9. AGENT'S ADDRESS 2306 Lake Austin Blvd. Austin, Texas 78703
7. APPLICANT'S PHONE NUMBERS WITH AREA CODE a. Residence n/a b. Business 409-971-2909	10. AGENT'S PHONE NUMBERS WITH AREA CODE a. Residence n/a b. Business 512-236-9494

STATEMENT OF AUTHORIZATION

I hereby authorize Peter A. Ravella / Coastal Tech to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

Dean Bossert / McFaddin NWR
APPLICANT'S SIGNATURE

4/19/02
DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions) McFaddin Beach Fill Project	
13. NAME OF WATERBODY, IF KNOWN (if applicable) Gulf of Mexico	14. PROJECT STREET ADDRESS (if applicable) N/A
15. LOCATION OF PROJECT Jefferson COUNTY TX STATE	
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) Gulf beach, beginning at westernmost boundary of Sea Rim State Park, extending southwest for a distance of 2,000 feet.	
17. DIRECTIONS TO THE SITE The Project is located on the Gulf Beach in the McFaddin National Wildlife Refuge. The Refuge is located along State Highway 87 at the southeastern tip of Texas, approximately 15 miles south of Port Arthur and 90 miles east of Houston. The refuge lies about 12 miles west of Sabine Pass.	

18. NATURE OF ACTIVITY (Description of project, include all features)

The project involves placement of 9,524 cubic yards (final quantity may vary depending on cost of the sand) of beach quality sand along 2,000 feet of Gulf Shoreline (approximately 3.72 cubic yards per linear foot), extending westward from the western boundary of Sea Rim State Park. As presented in the attached plan, clean beach quality sand will be placed seaward of the line of vegetation extending partly above and below the line of Mean High Water (MHW).

19. PROJECT PURPOSE (Describe the reason or purpose of the project, see instructions)

The purposes of the project are: (1) Expand the available public beach seaward of the McFaddin Dune Restoration Project, and (2) Provide enhanced protection for the restored dune and dune vegetation installed in August 2001. The beach fill (for which this permit application is filed), is expected to be completed in Fall 2002, and require 15-30 days to complete.

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED**20. REASON(S) FOR DISCHARGE**

Public Beach Access and Erosion Control: To enhance and restore the beach width for improved public access and to protect the August 2001 dune restoration project from erosion, will necessarily require placement of additional beach quality sand along the gulf shoreline.

21. TYPE(S) OF MATERIAL BEING DISCHARGED AND THE AMOUNT OF EACH TYPE IN CUBIC YARDS

Material: Beach quality sand will be placed by truck and spread by dozer or front loader.
Design Quantity: 9,524 cubic yards or 3.72 cubic yards per linear foot. The project budget is limited to \$100,000, therefore the final volume will depend on the sand cost, estimated at \$9 to \$12 per yard. The design volume is based on \$10.50/yd.

22. SURFACE AREA IN ACRES OF WETLANDS OR OTHER WATERS FILLED (see instructions)

No wetlands will be filled or affected by the sand placement. Unvegetated beach area to be filled is 4.89 acres. Once placed, wave action will quickly but unpredictably move the material, resulting in an adjustment of the area covered.

23. IS ANY PORTION OF THE WORK ALREADY COMPLETE? YES ☐ NO ☒ IF YES, DESCRIBE THE WORK**24. ADDRESSES OF ADJOINING PROPERTY OWNERS, LESSEES, ETC. WHOSE PROPERTY ADJOINS THE WATERBODY (If more than can be entered here, please attach a supplemental list)**

Submerged Lands: State of Texas General Land Office, 1700 N Congress Ave., Austin, TX 78701-1495; (512) 475-4591
Eastern landowner: Sea Rim State Park, P.O. Box 1066, Sabine Pass, TX 77655; (409) 971-2559

25. LIST OF OTHER CERTIFICATIONS OR APPROVALS/DENIALS RECEIVED FROM OTHER FEDERAL, STATE, OR LOCAL AGENCIES FOR WORK DESCRIBED IN THIS APPLICATION

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
No other applications submitted or pending at this time. A CMP Consistency Certificate will be required from the Coastal Coordination Council.					

* Would include but is not restricted to zoning, building and flood plain permits.

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

Dean Barrett
SIGNATURE OF APPLICANT

4/19/02
DATE

[Signature]
SIGNATURE OF AGENT

4-24-02
DATE

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

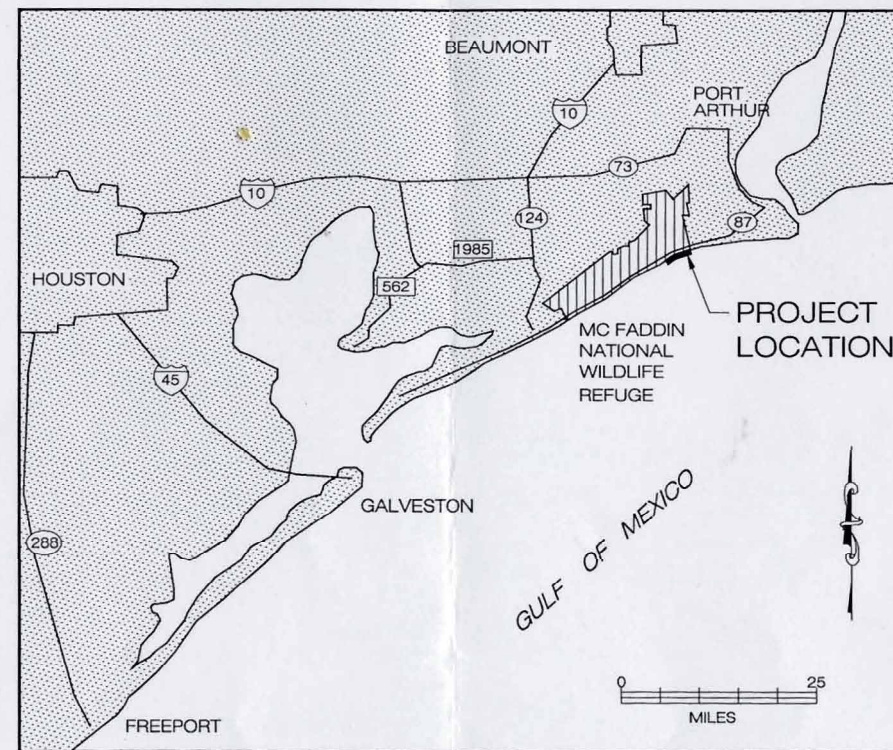
18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

Beach Nourishment at the McFaddin National Wildlife Refuge Jefferson County, Texas for the Texas General Land Office

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1.....	COVER SHEET
2.....	PLAN VIEW
3.....	CROSS-SECTIONS

ADVANCED COPY



LOCATION MAP

GENERAL NOTES

1. The work consists of furnishing all labor, equipment, and materials required for sand placement and grading for beach nourishment as shown on these drawings and as specified in the Contract Documents.
2. All work shall conform to the permits for the work. All required permits shall be provided by the Owner. The Contractor who performs the work shall post on the job site all permit placards and the Contractor shall comply with all terms of the permits as pertaining to performance of the work.
3. Prior to construction, the Contractor shall meet on site with the Engineer for a (pre-construction meeting).
4. Existing profiles, mean high waterline, and plan view survey details from a survey by Shine & Associates, dated 3-14/15-02.



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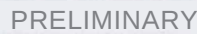
2306 Lake Austin Boulevard, Suite 14, Austin, TX 78703 (512) 236-9494
3625 20th Street, Vero Beach, FL 32960 (561) 562-8580
737 Hwy 98, Suite 6, Destin, FL 32541 (904) 650-1689
1900 Main Street, Suite 210, Sarasota, FL 34236 (941) 906-1138
715-G North Drive, Melbourne, FL 32934 (321) 751-1135

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PRELIMINARY

COMM. NO 20244 SHEET 1 OF 3

Date: 4/3/2002 Rev: 00/00/00



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Cross-Sections

Beach Nourishment at the McFaddin National Wildlife Refuge Jefferson County, Texas

[illegible]

