



DEPARTMENT OF THE ARMY  
GALVESTON DISTRICT, CORPS OF ENGINEERS  
P. O. BOX 1229  
GALVESTON TX 77553-1229

November 20, 2009

**COPY**

REPLY TO  
ATTENTION OF:

Evaluation Section

SUBJECT: Permit Application – SWG-2007-01025

Lou Mueller  
Park Board of Trustees for the City of Galveston  
2504 Church Street, Suite 200  
Galveston, Texas 77550-1709

Dear Mr. Mueller:

Enclosed for your review and signature are two copies of an initial proffered permit for work in waters of the United States.

If you accept the initial proffered permit, sign and date both copies in the spaces provided. Within ten days, both original copies of the accepted permit should be returned to us for approval, after which one copy of the signed permit will be returned to you. The permit is not valid until signed by us.

Sincerely,

Janet Thomas Botello  
Leader, Central Evaluation Unit

Enclosures



DEPARTMENT OF THE ARMY  
GALVESTON DISTRICT, CORPS OF ENGINEERS  
P.O. BOX 1229  
GALVESTON, TEXAS 77553-1229

REPLY TO  
ATTENTION OF:

November 20, 2009

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SUBJECT: Permit Application – SWG-2007-01025

Lou Mueller  
Park Board of Trustees for the City of Galveston  
2504 Church Street, Suite 200  
Galveston, Texas 77550-1709

Dear Mr. Mueller:

The above numbered permit has been approved and a signed copy is enclosed for your retention.

Also enclosed are ENG Form 4336, and a copy of "Notice to Permittee" which provides important information for permit administration. You should notify the District Engineer, in writing, upon completion of the authorized work. A pre-addressed postcard has been enclosed for your convenience. To assist us in improving our service to you, please complete the survey found at <http://per2.nwp.usace.army.mil/survey.html>.

Sincerely,

A handwritten signature in black ink that reads "Janet Thomas Botello".

Janet Thomas Botello  
Leader, Central Evaluation Unit

Enclosures

Copies Furnished:

Commander (dpb), Eighth Coast Guard District, Hale Boggs Federal Building, 501 Magazine Street, New Orleans, Louisiana 70130-3396 w/encl

Director, National Ocean Service, Coast & Geo. Sur., Mapping & Charting Branch, Source Data Unit, Attn: N/CG2211, Station 7317, SSMC3, 1315 East-West Highway, Silver Spring, Maryland 20910-3233

## NOTICE TO PERMITTEES

Department of the Army Permits for Work in Navigable Waters require attention to administration and policies which are often misunderstood or disregarded. To avoid possible misinterpretations and to expedite procedures, permit post-authorization requirements and pertinent information are outlined as follows:

1. Permits remain in effect until revoked, relinquished, or the structures are removed. An extension of time for completion of structures or work may be granted provided that a public notice is issued and that evidence is furnished of the bona fide intention of the permittee to complete the work within a reasonable time. If work or structures are not completed within the time provided in the permit, it is the permittee's responsibility to request an extension of time at least 4 months before the expiration date.
2. Maintenance of authorized completed structures may be done at any time without extending the completion period. It is, however, required that the District Commander be notified prior to commencement of maintenance.
3. SPECIAL REGULATIONS GOVERN MAINTENANCE WORK INVOLVING DREDGING OR FILL. This maintenance is not authorized by the original permit and specific prior approval is required before such work is commenced in navigable waters. Your request for authorization should be submitted in time for public notice requirements and coordination with other agencies.
4. If ownership of structures or work covered by a permit is transferred, the District Commander must be notified immediately. The notification will provide information so that permit responsibilities can be changed to the new owner or assignee.
5. Permittees are reminded that the Area Engineer must be notified as soon as possible of the time for commencement of construction or work, and immediately upon completion. If pipelines across Federal project channels are covered by the permit, the Area Engineer should be informed of the date the pipelines are to be placed in time for him to arrange for an inspector to be present.
6. All material changes in location or plans must be submitted promptly to the District Commander for approval before construction is begun.
7. Permits should not be considered as an approval of design features of any structure authorized or an implication that such structure is adequate for the purpose intended.

DISTRICT COMMANDER  
GALVESTON DISTRICT  
CORPS OF ENGINEERS

## NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Park Board of Trustees		File Number: SWG-2007-01025	Date: 11/20/09
Attached is:			See Section Below
X	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A	
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	B	
	PERMIT DENIAL	C	
	APPROVED JURISDICTIONAL DETERMINATION	D	
	PRELIMINARY JURISDICTIONAL DETERMINATION	E	

**SECTION I -** The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at <http://www.usace.army.mil/inet/functions/cw/ceewo/reg/> or Corps regulations at 33 CFR Part 331.

**A: INITIAL PROFFERED PERMIT:** You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

**B: PROFFERED PERMIT:** You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

**C: PERMIT DENIAL:** You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

**D: APPROVED JURISDICTIONAL DETERMINATION:** You may accept or appeal the approved jurisdictional determination (JD) or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

**E: PRELIMINARY JURISDICTIONAL DETERMINATION:** You do not need to respond to the Corps regarding the preliminary JD. The preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.



**SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT**

**REASONS FOR APPEAL OR OBJECTIONS:** (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

**ADDITIONAL INFORMATION:** The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

**POINT OF CONTACT FOR QUESTIONS OR INFORMATION:**

If you have questions regarding this decision and/or the appeal process you may contact:

Lisa Lathem, Regulatory Specialist  
CESWG-PE-RE, P.O. Box 1229  
Galveston, Texas 77553-1229

Telephone: 409-766-3949; FAX: 409-766-6301

If you only have questions regarding the appeal process you may also contact:

James E. Gilmore, Appeal Review Officer  
CESWD-PDS-O, 1100 Commerce Street, Suite 831  
Dallas, Texas 75242-1317

Telephone: 469-487-7061; FAX: 469-487-7190

Email: James.E.Gilmore@usace.army.mil

**RIGHT OF ENTRY:** Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation, and will have the opportunity to participate in all site investigations.

\_\_\_\_\_  
Signature of appellant or authorized agent.

Date:

Telephone number:

DEPARTMENT OF THE ARMY PERMIT

Permittee Park Board of Trustees for the City of Galveston

Permit No. SWG-2007-01025

Issuing Office Galveston District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: To perform beach nourishment, adding an offshore sand borrow site in the East Beach area, and adding several additional methods of sand removal and renourishment including: (1) use of a hydraulic dredge to excavate the sand, which would then be pumped through a pipe to a temporary dredge material placement area on the beach and subsequently trucked to the beach; (2) use of a hopper dredge to excavate the sand, which would then be pumped through a pipeline and placed directly on the beach; (3) use of a hydraulic dredge to excavate the sand, which would then be pumped through a pipeline and placed directly on the beach. The renourishment effort will result in construction of a sand berm that extends a maximum of 400 feet wide from the high tide line and slopes at a 30:1 angle down into the Gulf of Mexico. The project will be conducted in accordance with the attached plans, in 11 sheets, Attachment A in 6 sheets, Attachment B in 41 sheets and Attachment C in 19 sheets.

Project Location: The borrow site to be added is adjacent to the South Jetty, just off of the east end of Galveston Island, in Galveston County, Texas. This borrow site can be located on the USGS quadrangle map entitled: Galveston, Texas approximate coordinates: Lat: 29.3373° N, Long: 94.7161° W. The placement areas that will receive borrowed material can be located on the USGS quadrangle maps entitled: Galveston, Texas and Lake Como, Texas. These placement areas extend 5.8 miles west from the terminal end of the seawall to the Galveston Island State Park coordinates in NAD 83 (meters): Lat: 29.2423° N, Long: 94.8690° W to the east boundary of the Galveston Island State Park, Galveston County, Texas.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on 31 December 2014. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The permittee understands and agrees that if future operations by the United States require the removal, relocation or other alteration of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers (Corps), to remove, relocate or alter the structural work or obstructions caused thereby without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.
2. The permittee shall establish a 50-meter buffer around anomalies M1, M2, M3, M5, M7, M9, M10, M11, M12, M13, and M14 and a 10-meter buffer around anomaly M4 as described and coordinated with the Texas State Historic Preservation Officer in the reports entitled *Marine Remote-Sensing Survey of the Proposed Galveston South Jetty Sand Borrow Site, Galveston County, Texas*, prepared by PBS&J and dated April 2008 and *Interim Letter Report West Galveston Island End of Seawall Beach Nourishment Archeological Investigation for the South Jetty Sand Source, Galveston County, Galveston Bay, Texas*, prepared by PBS&J for Texas General Land Office dated July 2009. No project activities shall occur within the buffered areas.
3. The permittee must comply with Attachment A (Methodology for Handling Dead/Stranded Sea Turtles-West Galveston Island Beach Nourishment Project).
4. This permit does not authorize you to take an endangered species. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (ESA) [e.g. an ESA Section 10 permit, or a Biological Opinion (B.O.) under ESA Section 7, with "incidental take" provisions with which you must comply]. The enclosed United States Fish and Wildlife Service (USFWS) B.O. contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the B.O. Your authorization under this permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached B.O., which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the B.O., where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute noncompliance with your permit. The USFWS is the appropriate authority to determine compliance with the terms and conditions of its B.O., and with the ESA. The B.O. is included in this permit as Attachment B.
5. The permittee must comply with Attachment C [Conditions for Hopper Dredging Navigation Channels (Maintenance) and Borrow Areas in the Galveston District].

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

- a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
- b. This permit does not grant any property rights or exclusive privileges.
- c. This permit does not authorize any injury to the property or rights of others.
- d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

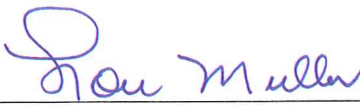
- a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
- b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
- c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

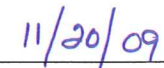
- d. Design or construction deficiencies associated with the permitted work.
  - e. Damage claims associated with any future modification, suspension, or revocation of this permit.
4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.
5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:
- a. You fail to comply with the terms and conditions of this permit.
  - b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
  - c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.


Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.


  
(PERMITTEE)

  
(DATE)

**PARK BOARD OF TRUSTEES FOR THE CITY OF GALVESTON**

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

  
(DISTRICT ENGINEER)  
**JANET THOMAS BOTELLO, LEADER  
CENTRAL EVALUATION UNIT  
FOR COLONEL DAVID C. WESTON**

  
(DATE)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

\_\_\_\_\_  
(TRANSFEREE)

\_\_\_\_\_  
(DATE)

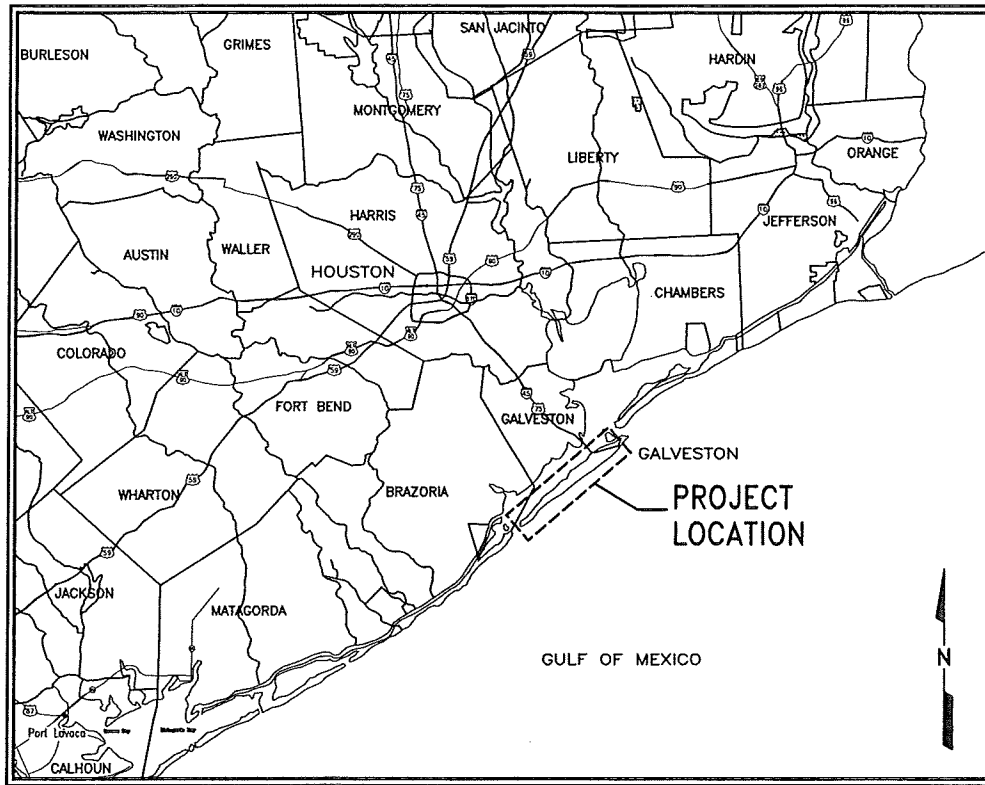
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THIS DOCUMENT IS RELEASED FOR PERMIT PURPOSES  
ONLY AND IS NOT INTENDED TO BE USED FOR  
BIDDING OR CONSTRUCTION.

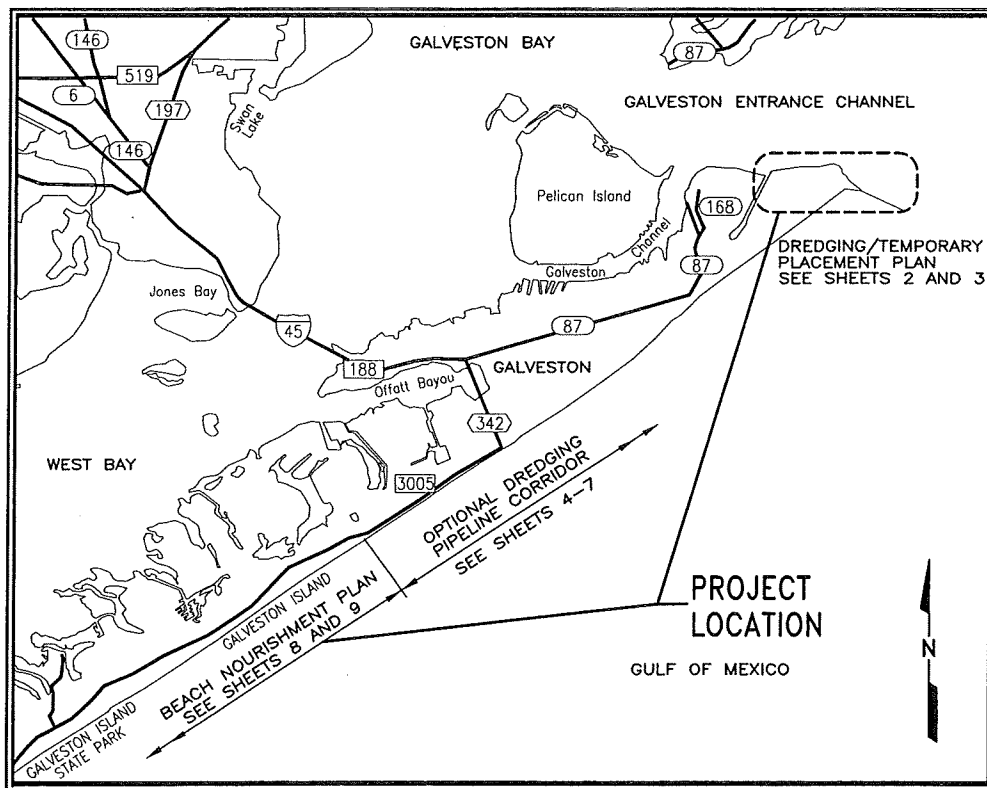
ENGINEER: GERALD J. HAUSKE JR.

REGISTRATION NO.: 80749

DATE: 5/23/08



VICINITY MAP



LOCATION MAP

ACTIVITY: SOUTH JETTY DREDGING FOR BEACH NOURISHMENT

APPLICANT: PARK BOARD OF TRUSTEES OF CITY OF GALVESTON

DATE: 06/07

REV. DATE: 5/23/08

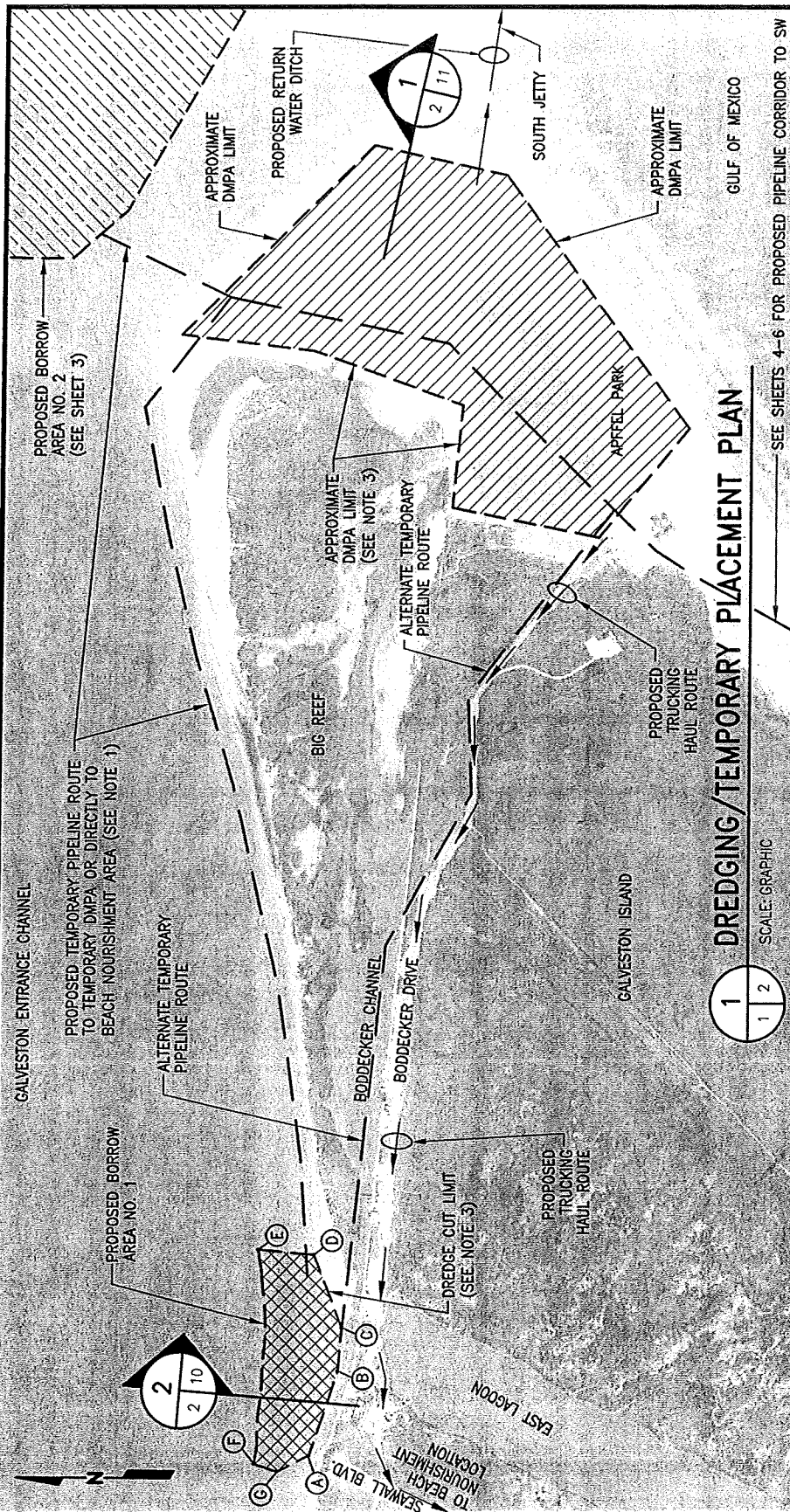
VERTICAL DATUM: NAVD'88

**HDR**

**SHINER MOSELEY  
AND ASSOCIATES, INC.**

555 N. Carancahua, Suite 1650  
Corpus Christi, Texas 78478

SWG - 2007 - 01025 SHEET 1 of 11



# NOTES:

- DREDGED MATERIAL WILL BE TRANSPORTED TO BEACH NOURISHMENT AREA BY ANY OF THE FOLLOWING METHODS:  
A. PIPELINE TRANSPORT TO TEMPORARY DMPA AND SUBSEQUENT TRUCKING TO BEACH  
B. SUBSEQUENT TRUCKING WITH HYDRAULIC PUMP-OUT TO BEACH  
C. PIPELINE TRANSPORT DIRECTLY TO BEACH
- ALL COORDINATES ARE IN FEET BASED ON LAMBERT GRID, TEXAS DATE: 5/23/08 SOUTH CENTRAL ZONE, NAD'83 (1993).
- TEMPORARY DMPA WILL ONLY BE CONSTRUCTED IF DREDGED MATERIAL IS TRUCKED TO BEACH NOURISHMENT AREA. TEMPORARY DMPA LIMIT WILL BE SEAWARD OF THE LINE OF VEGETATION. TEMPORARY DMPA (INCLUDING CONTAINMENT LEVEES) WILL NOT BE REMOVED/EXCAVATED BELOW EXISTING BEACH PROFILE (EL. +2.5' NAVD '88).
- SOUTHEAST LIMIT OF DREDGE CUT FOR PROPOSED BORROW AREA NO. 1 WAS ESTABLISHED, APPROVED, AND SURVEYED ON 9-6-01 WITH USAGE, USFWS, TPWD, GLO, AND NMGS DURING AN ON-SITE VISIT.

BORROW AREA NO. 1 COORDINATES (BOTTOM OF CUT)		
POINT	NORTHING	EASTING
(A)*	13,694,044	3,321,680
(B)*	13,693,874	3,322,178
(C)*	13,693,851	3,322,435
(D)	13,694,019	3,322,867
(E)	13,694,348	3,322,900
(F)	13,694,368	3,321,637
(G)	13,694,233	3,321,589

\* APPROXIMATE LOCATION - TOP OF DREDGE CUT 50' MIN. FROM & JETTY

# LEGEND:

DMPA	DREDGED MATERIAL PLACEMENT AREA
PROPOSED BORROW AREA NO. 1	
PROPOSED BORROW AREA NO. 2 (SEE SHEET 3)	
PROPOSED TEMPORARY DMPA	

THIS DOCUMENT IS RELEASED FOR PERMIT PURPOSES ONLY AND IS NOT INTENDED TO BE USED FOR BIDDING OR CONSTRUCTION.  
ENGINEER: GERALD J. HAUSKE JR.  
REGISTRATION NO.: 80749  
DATE: 5/23/08

ACTIVITY: SOUTH JETTY DREDGING FOR BEACH NOURISHMENT

APPLICANT: PARK BOARD OF TRUSTEES OF CITY OF GALVESTON

DATE: 06/07

REV. DATE: 5/23/08

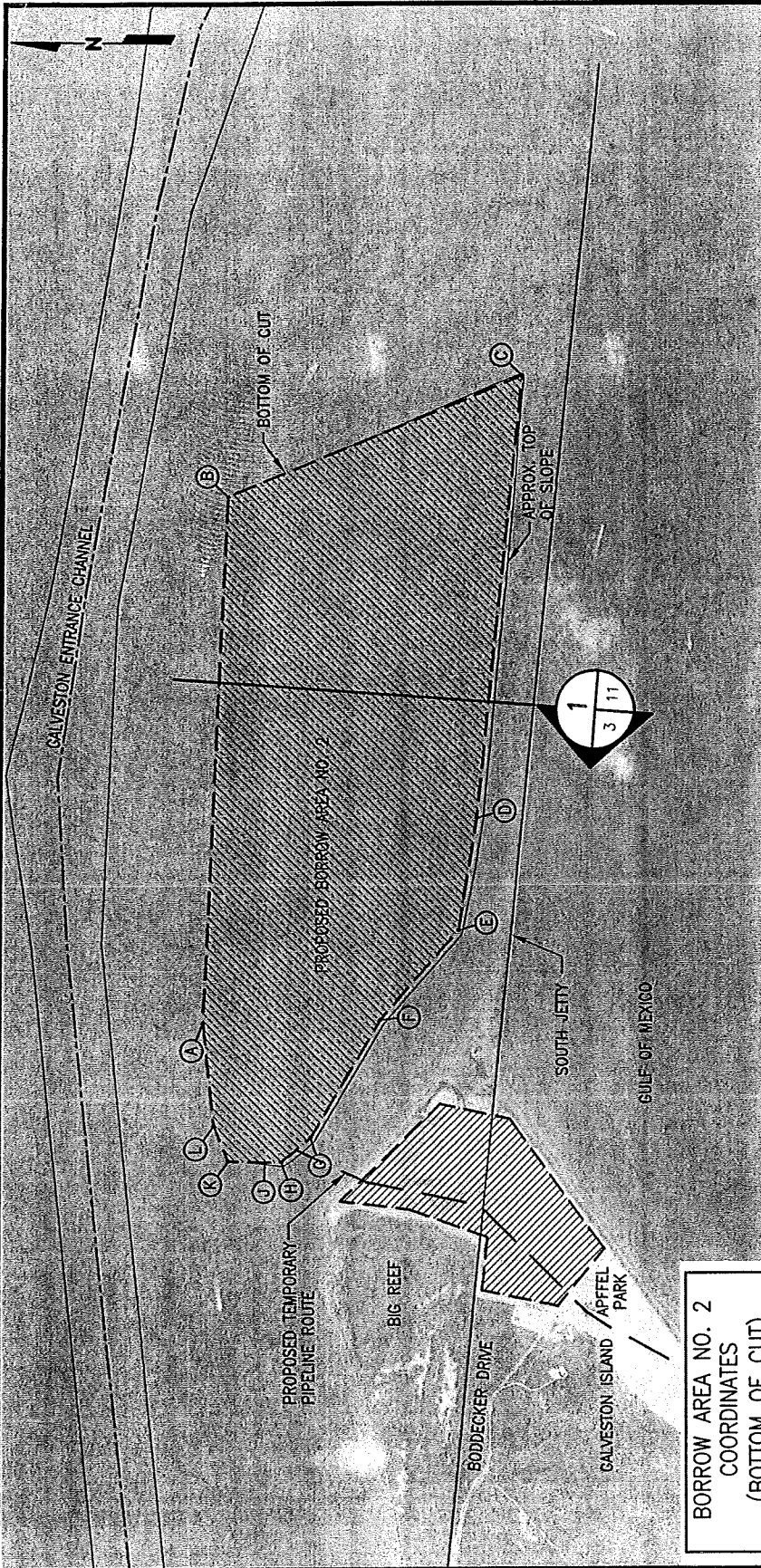
VERTICAL DATUM: NAVD'88

**HDR** | **SHINER MOSELEY AND ASSOCIATES, INC.**

555 N. Carancahua, Suite 1650  
Corpus Christi, Texas 78478

SWG-2007-01025 SHEET 2 of 11





**BORROW AREA NO. 2  
COORDINATES  
(BOTTOM OF CUT)**

POINT	NORTHING	EASTING
(A)	13,696,434	3,330,395
(B)	13,696,162	3,336,429
(C)	13,692,769	3,337,805
(D)	13,693,282	3,332,723
(E)	13,693,492	3,331,448
(F)	13,694,395	3,330,426
(G)	13,695,190	3,329,078
(H)	13,695,521	3,328,798
(J)	13,695,713	3,328,795
(K)	13,696,135	3,328,811
(L)	13,696,306	3,329,220

\* APPROXIMATE LOCATION - TOP OF DREDGE CUT 500' MIN. FROM Q JETTY

## PROPOSED BORROW AREA NO. 2

THIS DOCUMENT IS RELEASED FOR PERMIT PURPOSES ONLY AND IS NOT INTENDED TO BE USED FOR BIDDING OR CONSTRUCTION.

ENGINEER: GERALD J. HAUSKE JR.  
REGISTRATION NO.: 80749  
DATE: 5/23/08



SCALE: GRAPHIC

### LEGEND:

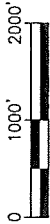
- DMPA DREDGED MATERIAL PLACEMENT AREA
- PROPOSED TEMPORARY DMPA
- PROPOSED BORROW AREA NO. 2

### NOTES:

1. REFER TO NOTES ON SHEET 2.
2. ALL COORDINATES ARE IN FEET BASED ON LAMBERT GRID, TEXAS SOUTH CENTRAL ZONE, NAD'83 (1993).

### HOPPER DREDGING REQUIREMENTS:

1. SPECIAL CONDITIONS WILL BE DEVELOPED UPON COMPLETION OF FORMAL SECTION 7 CONSULTATION FOR ENDANGERED SPECIES



ACTIVITY: SOUTH JETTY DREDGING FOR BEACH NOURISHMENT

APPLICANT: PARK BOARD OF TRUSTEES OF CITY OF GALVESTON

DATE: 06/07

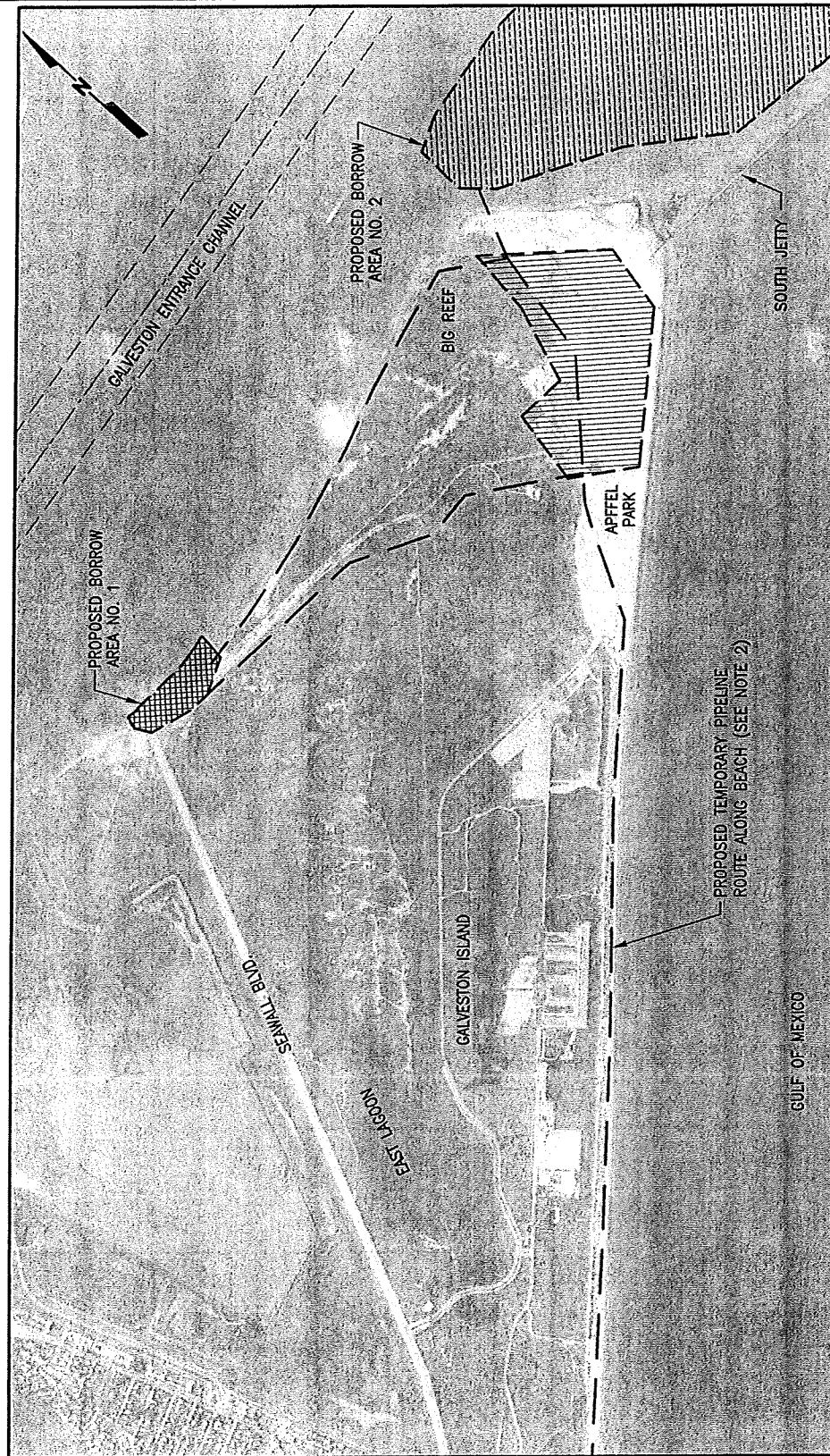
REV. DATE: 5/23/08

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**HDR** | **SHINER MOSELEY AND ASSOCIATES, INC.**

555 N. Carancahua, Suite 1650  
Corpus Christi, Texas 78478

SWG-2007-01025 SHEET 3 of 11



MATCHLINE SEE SHEET 5

## TEMPORARY PIPELINE ROUTE



SCALE: GRAPHIC

### LEGEND:

	DMPA	DREDGED MATERIAL PLACEMENT AREA
	PROPOSED BORROW AREA NO. 1	
	PROPOSED BORROW AREA NO. 2 (SEE SHEET 3)	
	PROPOSED TEMPORARY DMPA	
	PROPOSED TEMPORARY PIPELINE ROUTE	

THIS DOCUMENT IS RELEASED FOR PERMIT PURPOSES ONLY AND IS NOT INTENDED TO BE USED FOR BIDDING OR CONSTRUCTION.

ENGINEER: GERALD J. HAUSKE JR.

REGISTRATION NO.: 80749

DATE: 5/23/08

### NOTES:

1. OFFSHORE PIPELINE ALONG SEAWALL WILL BE SUBMERGED WITHIN PROPOSED CORRIDOR AND MARKED IN ACCORDANCE WITH U.S. COAST GUARD REQUIREMENTS.

2. PIPELINE ON BEACH WILL BE PLACED LANDWARD OF THE MHW LINE.

ACTIVITY: SOUTH JETTY DREDGING FOR BEACH NOURISHMENT

APPLICANT: PARK BOARD OF TRUSTEES OF CITY OF GALVESTON

DATE: 06/07

REV. DATE: 5/23/08

VERTICAL DATUM: NAVD'88

**HDR** | **SHINER MOSELEY AND ASSOCIATES, INC.**

555 N. Carancahua, Suite 1650  
Corpus Christi, Texas 78478

SWG-2007-01025 SHEET 4 of 11





# TEMPORARY PIPELINE ROUTE

SCALE: GRAPHIC



## NOTES:

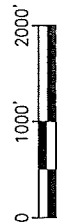
1. OFFSHORE PIPELINE ALONG SEAWALL WILL BE SUBMERGED WITHIN PROPOSED CORRIDOR AND MARKED IN ACCORDANCE WITH U.S. COAST GUARD REQUIREMENTS.
2. PIPELINE ON BEACH WILL BE PLACED LANDWARD OF THE MHW LINE.

THIS DOCUMENT IS RELEASED FOR PERMIT PURPOSES ONLY AND IS NOT INTENDED TO BE USED FOR BIDDING OR CONSTRUCTION.

ENGINEER: GERALD J. HAUSKE JR.

REGISTRATION NO.: 80749

DATE: 5/23/08



ACTIVITY: SOUTH JETTY DREDGING FOR BEACH NOURISHMENT

APPLICANT: PARK BOARD OF TRUSTEES OF CITY OF GALVESTON

DATE: 06/07

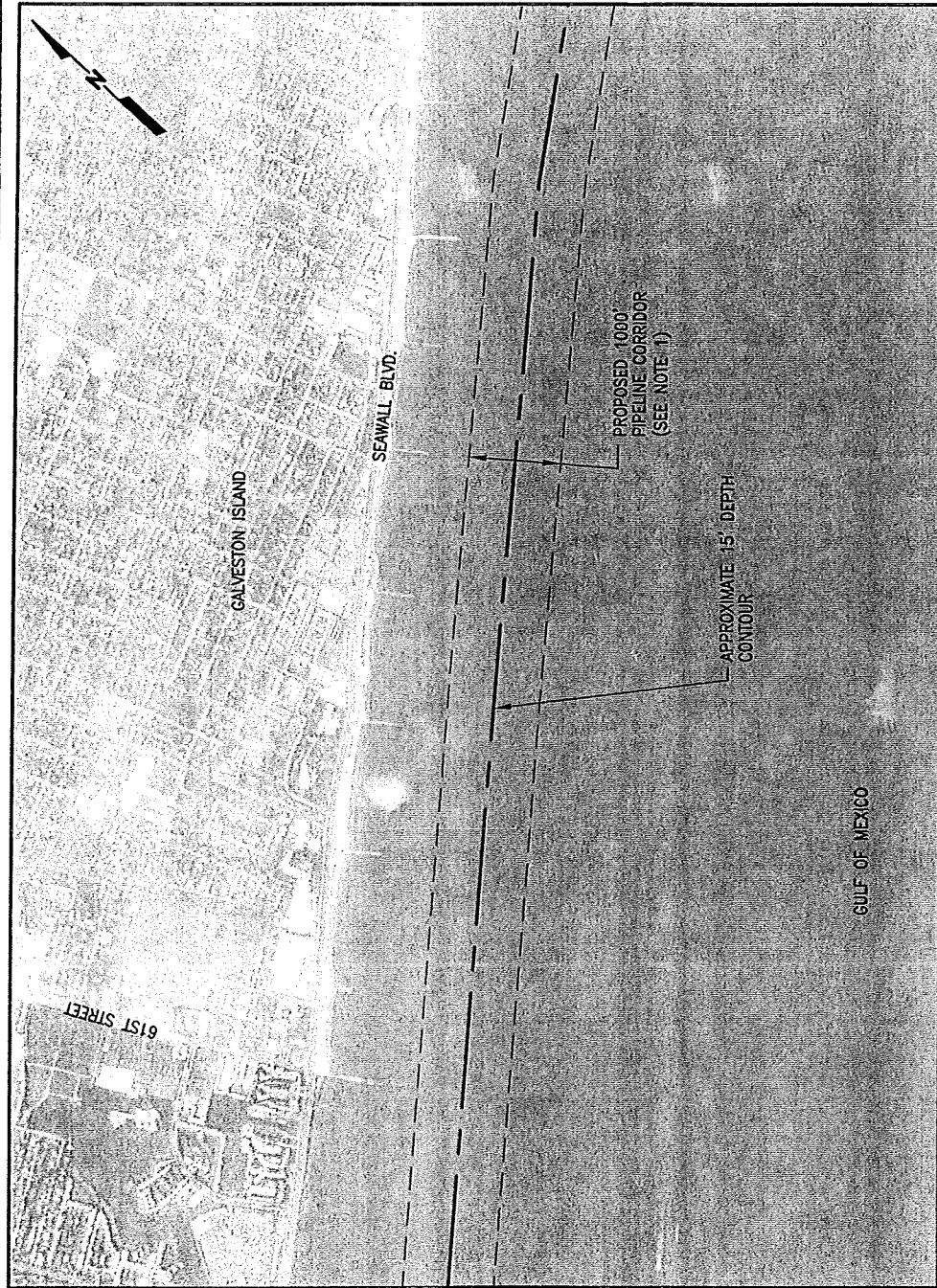
REV. DATE: 5/23/08

VERTICAL DATUM: NAVD'88

**HDR** | **SHINER MOSELEY AND ASSOCIATES, INC.**

555 N. Carancahua, Suite 1650  
Corpus Christi, Texas 78478

SWG-2007-01025 SHEET 5 of 11



# TEMPORARY PIPELINE ROUTE

SCALE: GRAPHIC



## NOTES:

1. OFFSHORE PIPELINE ALONG SEAWALL WILL BE SUBMERGED WITHIN PROPOSED CORRIDOR AND MARKED IN ACCORDANCE WITH U.S. COAST GUARD REQUIREMENTS.
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ENGINEER: GERALD J. HAUSKE, JR.

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DATE: 5/23/08

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APPLICANT: PARK BOARD OF TRUSTEES OF CITY OF GALVESTON

DATE: 06/07

REV. DATE: 5/23/08

VERTICAL DATUM: NAVD'88

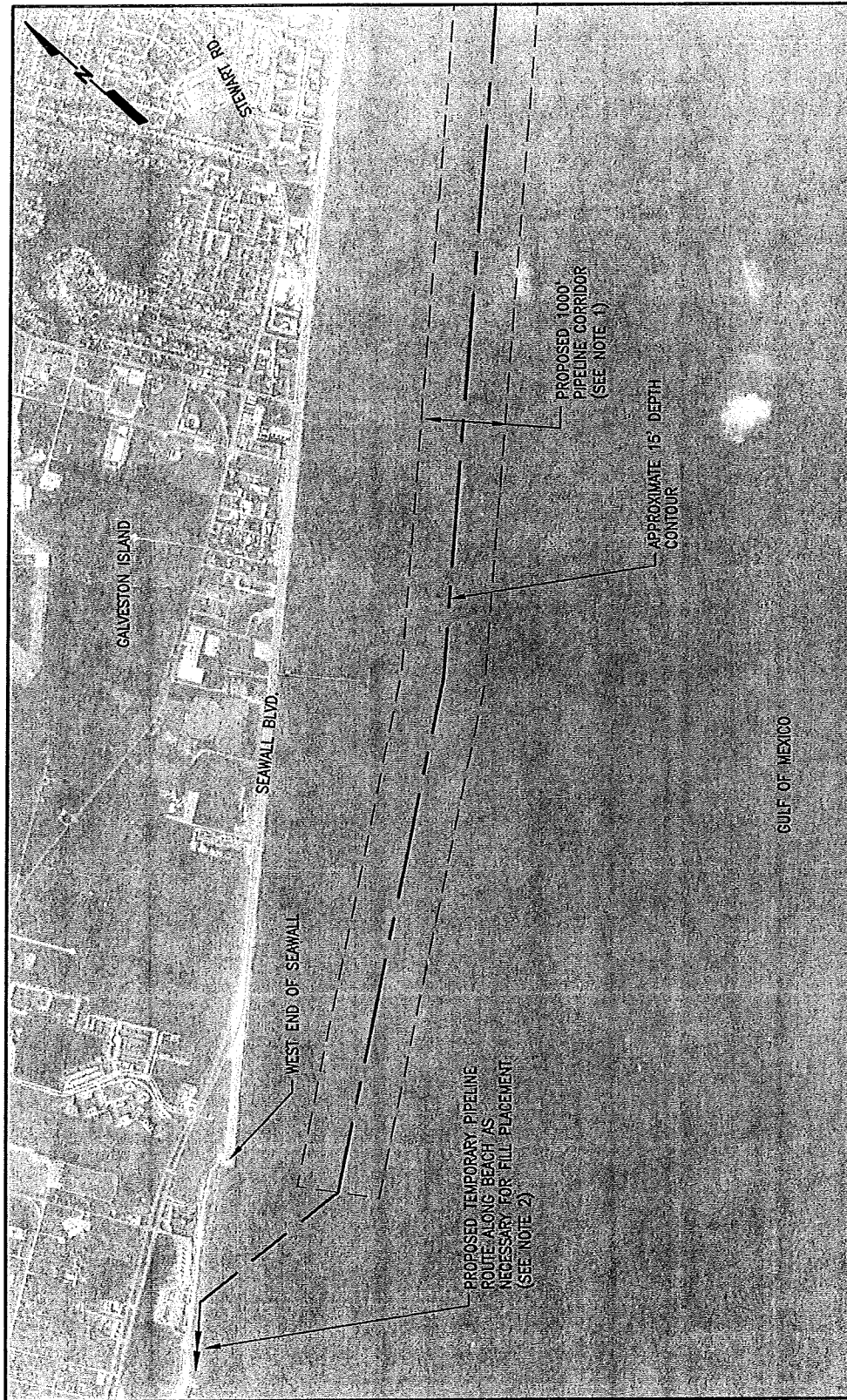


**SHINER MOSELEY AND ASSOCIATES, INC.**

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Corpus Christi, Texas 78478

SWG-2007-01025 SHEET 6 of 11

MATCHLINE SEE SHEET 6



# TEMPORARY PIPELINE ROUTE



SCALE: GRAPHIC

## NOTES:

1. OFFSHORE PIPELINE ALONG SEAWALL WILL BE SUBMERGED WITHIN PROPOSED CORRIDOR AND MARKED IN ACCORDANCE WITH U.S. COAST GUARD REQUIREMENTS.
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ENGINEER: GERALD J. HAUSKE, JR.

REGISTRATION NO.: 80749

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APPLICANT: PARK BOARD OF TRUSTEES OF CITY OF GALVESTON

DATE: 06/07

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VERTICAL DATUM: NAVD'88



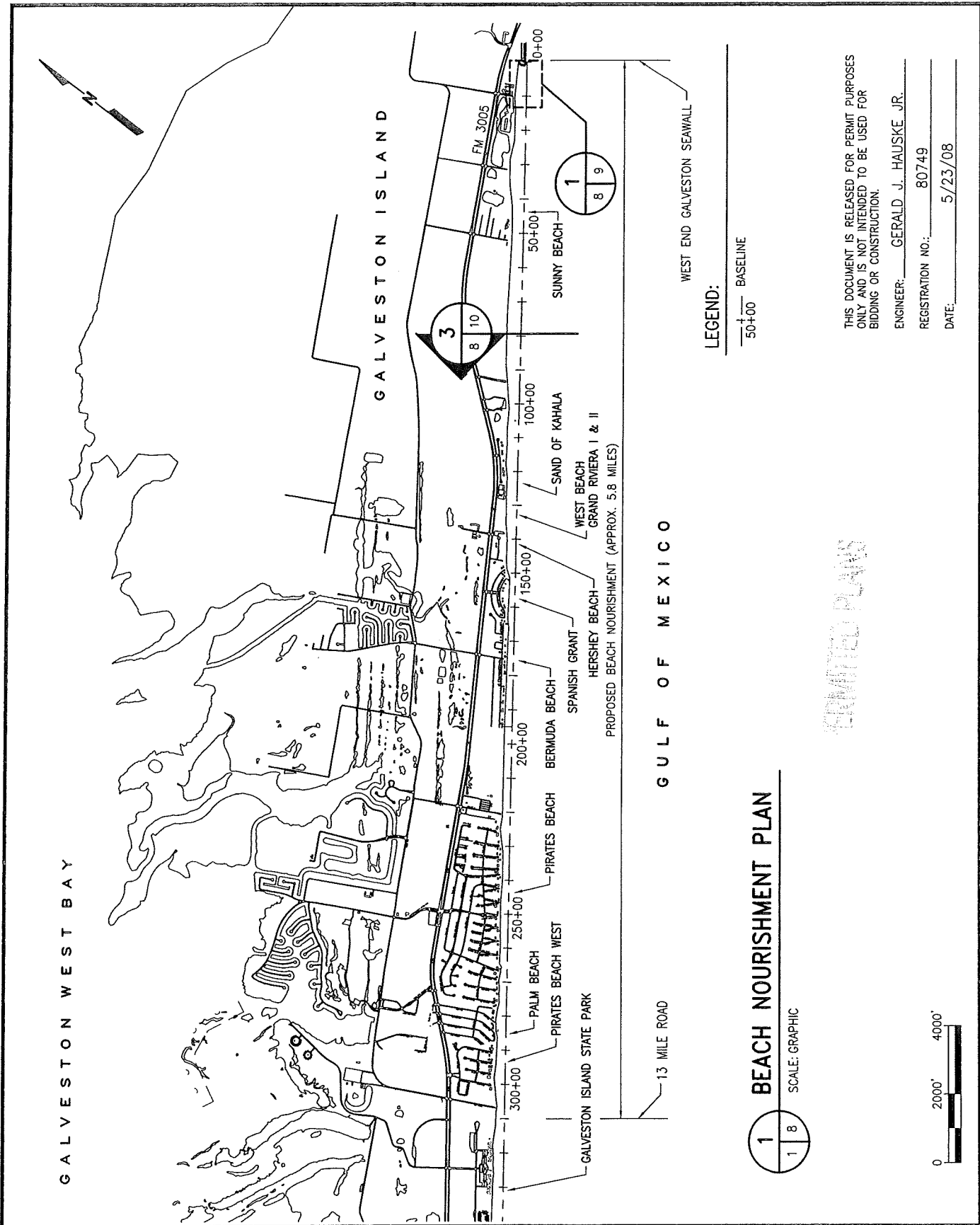
**SHINER MOSELEY AND ASSOCIATES, INC.**

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Corpus Christi, Texas 78478

SWG-2007-01025 SHEET 7 of 11



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ACTIVITY: SOUTH JETTY DREDGING FOR BEACH NOURISHMENT

APPLICANT: PARK BOARD OF TRUSTEES OF CITY OF GALVESTON

DATE: 06/07

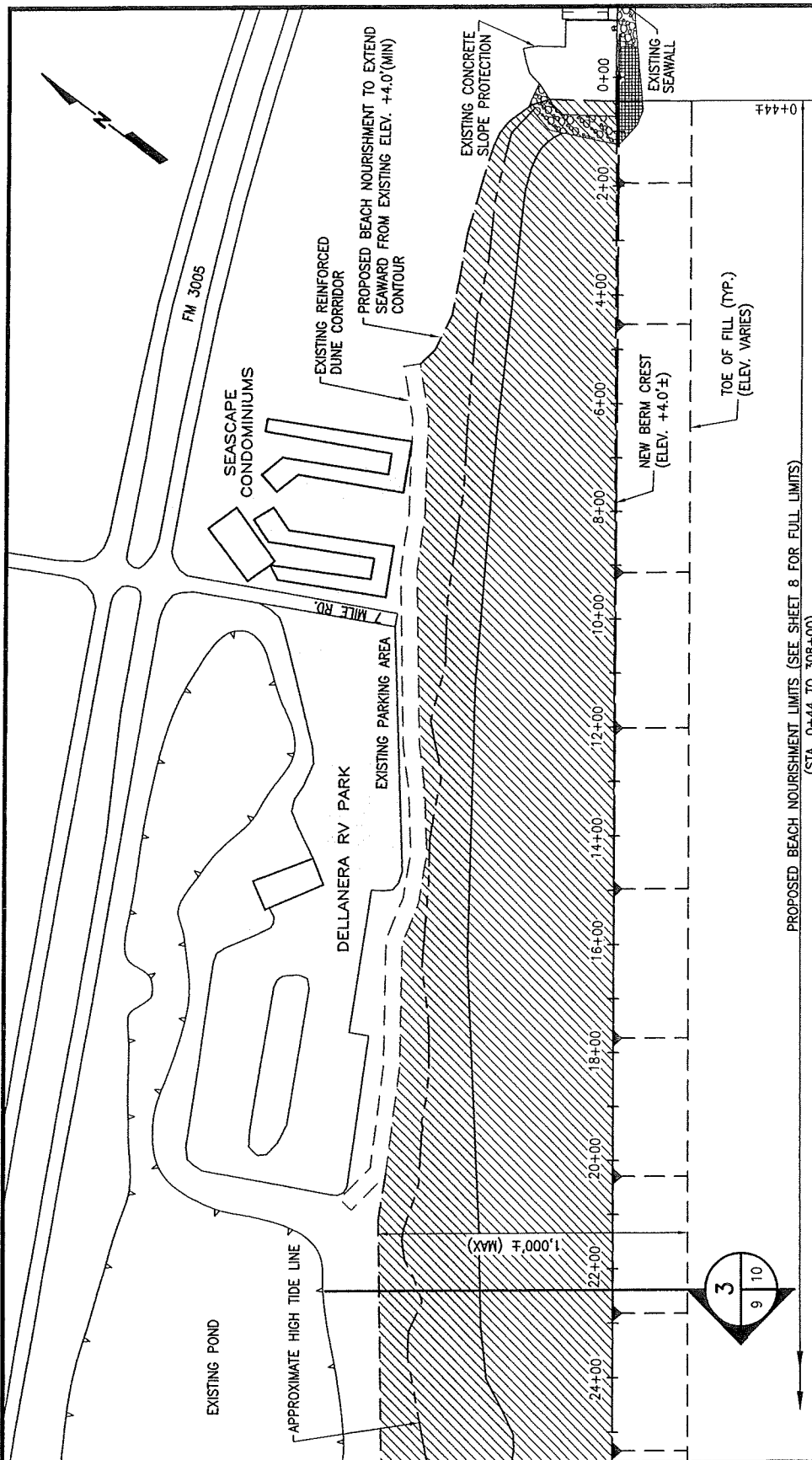
REV. DATE: 5/23/08

VERTICAL DATUM: NAVD'88

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555 N. Carancahua, Suite 1650  
Corpus Christi, Texas 78478



SW/G-2007-01025 SHEET 8 of 11



PROPOSED BEACH NOURISHMENT LIMITS (SEE SHEET 8 FOR FULL LIMITS)  
(STA. 0+44 TO 308+00)

GULF OF MEXICO

LEGEND:

-  PROPOSED BEACH NOURISHMENT AREA
-  APPROXIMATE EXISTING HIGH TIDE LINE

## 1 BEACH NOURISHMENT PLAN

SCALE: GRAPHIC

THIS DOCUMENT IS RELEASED FOR PERMIT PURPOSES ONLY AND IS NOT INTENDED TO BE USED FOR BIDDING OR CONSTRUCTION.

ENGINEER: GERALD J. HAUSKE JR.

REGISTRATION NO.: 80749

DATE: 5/23/08

NOTES:

1. ALL ELEVATIONS REFER TO NAVD'88

ACTIVITY: SOUTH JETTY DREDGING FOR BEACH NOURISHMENT

APPLICANT: PARK BOARD OF TRUSTEES OF CITY OF GALVESTON

DATE: 06/07

REV. DATE: 5/23/08

VERTICAL DATUM: NAVD'88

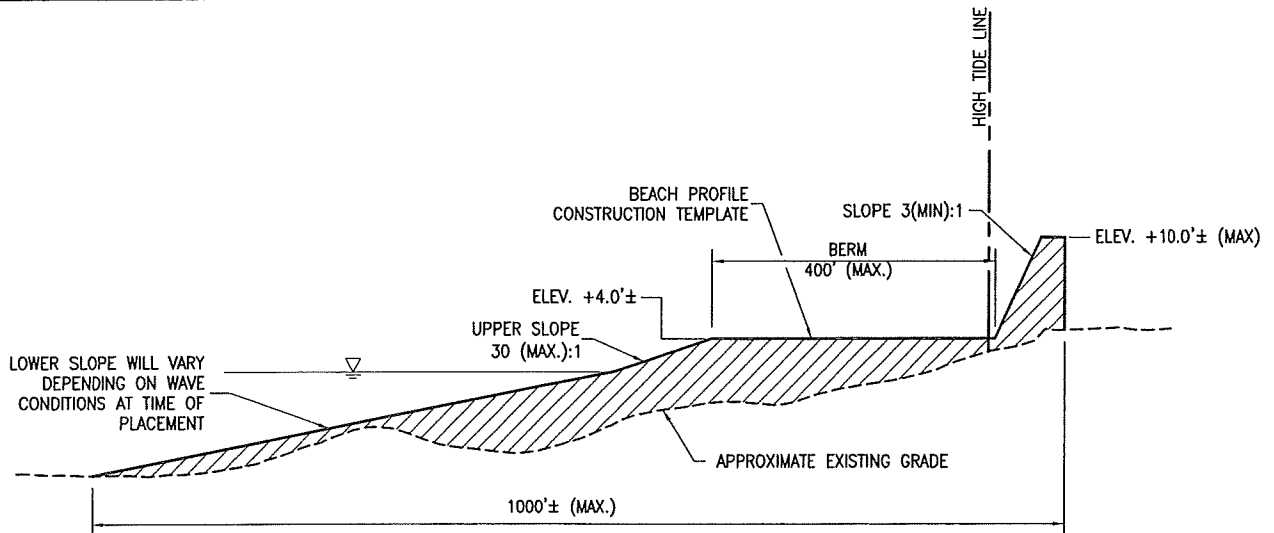
**HDR**

**SHINER MOSELEY  
AND ASSOCIATES, INC.**

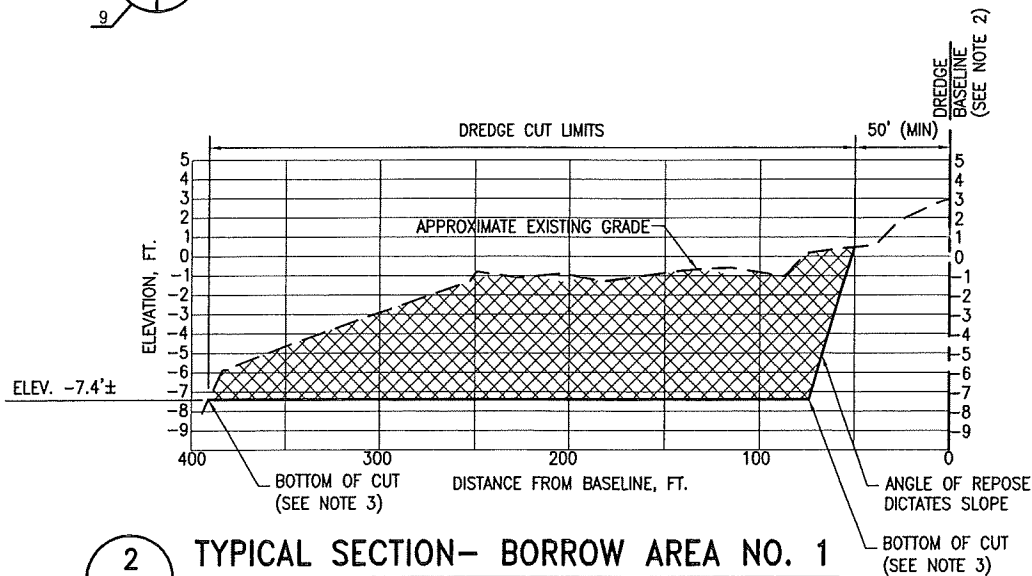
555 N. Carancahua, Suite 1650  
Corpus Christi, Texas 78478

SWG-2007-01025 SHEET 9 of 11

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**3 TYPICAL BEACH PROFILE CONSTRUCTION TEMPLATE**  
SCALE: N.T.S.



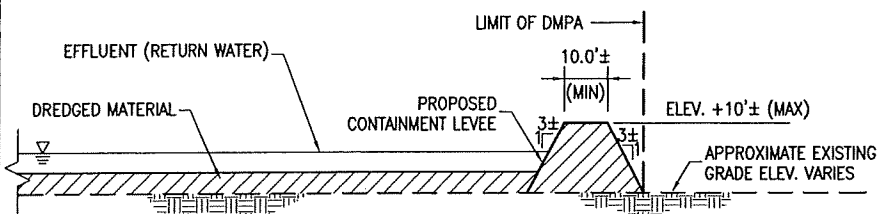
**2 TYPICAL SECTION- BORROW AREA NO. 1**  
SCALE: N.T.S.

THIS DOCUMENT IS RELEASED FOR PERMIT PURPOSES ONLY AND IS NOT INTENDED TO BE USED FOR BIDDING OR CONSTRUCTION.

ENGINEER: GERALD J. HAUSKE JR.

REGISTRATION NO.: 80749

DATE: 5/23/08



**1 TYPICAL SECTION- DMPA CONTAINMENT LEVEE**  
SCALE: N.T.S.

**LEGEND:**

- DMPA DREDGED MATERIAL PLACEMENT AREA
- PROPOSED BORROW MATERIAL
- PROPOSED FILL MATERIAL

**NOTES:**

1. ALL ELEVATIONS REFER TO NAVD'88.
2. DREDGE BASELINE IS APPROXIMATE CENTERLINE OF EXISTING SOUTH JETTY.
3. REFER TO SHEET 2 FOR BOTTOM OF CUT COORDINATES AT BORROW AREA NO. 1.

ACTIVITY: SOUTH JETTY DREDGING FOR BEACH NOURISHMENT

APPLICANT: PARK BOARD OF TRUSTEES OF CITY OF GALVESTON

DATE: 06/07

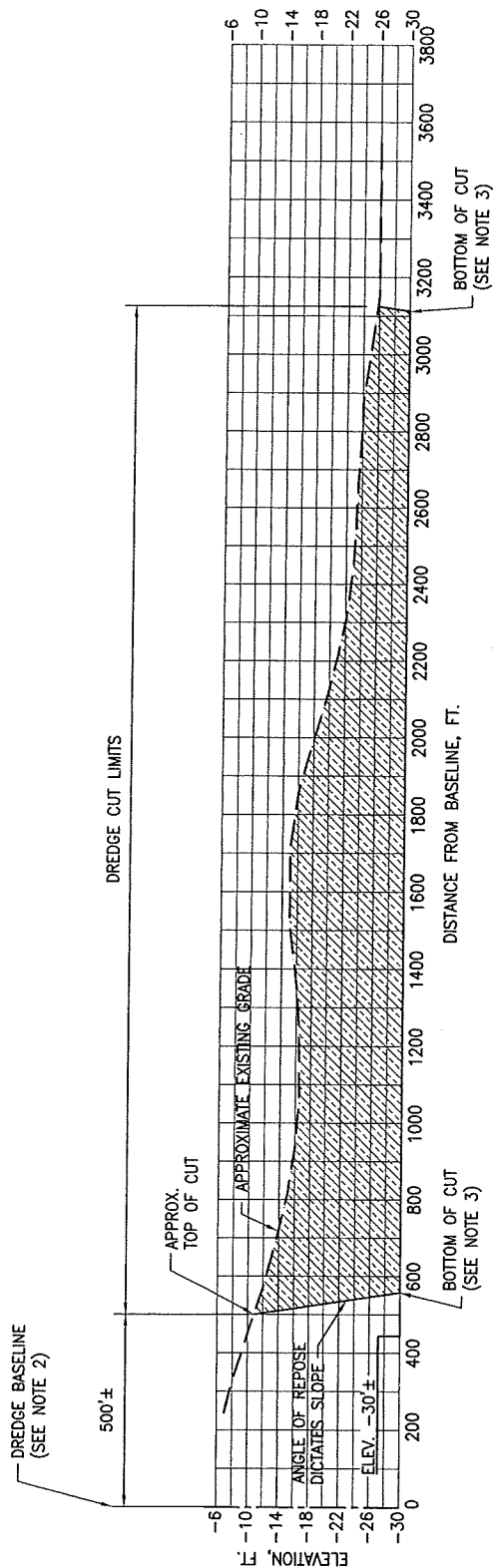
REV. DATE: 5/23/08

VERTICAL DATUM: NAVD'88

**HDR SHINER MOSELEY AND ASSOCIATES, INC.**

555 N. Carancahua, Suite 1650  
Corpus Christi, Texas 78478

SWG-2007-01025 SHEET 10 of 11



## 1 TYPICAL SECTION - BORROW AREA NO. 2

SCALE: N.T.S.

### LEGEND:



### NOTES:

1. ALL ELEVATIONS REFER TO NAVD'88.
2. DREDGE BASELINE IS APPROXIMATE CENTERLINE OF EXISTING SOUTH JETTY.
3. REFER TO SHEET 3 FOR BOTTOM OF CUT COORDINATES AT BORROW AREA NO. 2.

THIS DOCUMENT IS RELEASED FOR PERMIT PURPOSES ONLY AND IS NOT INTENDED TO BE USED FOR BIDDING OR CONSTRUCTION.

ENGINEER: GERALD J. HAUSKE, JR.

REGISTRATION NO.: 80749

DATE: 5/23/08

ACTIVITY: SOUTH JETTY DREDGING FOR BEACH NOURISHMENT

APPLICANT: PARK BOARD OF TRUSTEES OF CITY OF GALVESTON

DATE: 06/07

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**SHINER MOSELEY  
AND ASSOCIATES, INC.**

555 N. Carancahua, Suite 1650  
Corpus Christi, Texas 78478

SWG-2007-01025 SHEET 11 of 11

Bryan W. Shaw, Ph.D., *Chairman*  
Buddy Garcia, *Commissioner*  
Carlos Rubinstein, *Commissioner*  
Mark R. Vickery, P.G., *Executive Director*



## TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

November 17, 2009

Ms. Janet T. Botello  
U.S. Army Corps of Engineers  
Galveston District CESWG-PE-RE  
P.O. Box 1229  
Galveston, Texas 77553-1229

Re: USACE Permit Application Number SWG-2007-01025

Dear Ms. Botello:

This letter is in response to the Statement of Findings (SOF) dated November 13, 2009, for the Joint Public Notice dated June 11, 2008, on the Park Board Trustees for the City of Galveston proposed application to amend their existing beach nourishment permit by adding two offshore borrow source areas to the existing East Beach borrow sites and expand the current beach nourishment boundaries to an area extending 5.8 miles from the west end of the seawall to the Galveston Island State Park. The borrow areas to be added are adjacent to the South Jetty, just off of the East end of Galveston Island, in Galveston County, Texas.

The Texas Commission on Environmental Quality (TCEQ) has reviewed the public notice and related application information along with the SOF. On behalf of the Executive Director and based on our evaluation of the information contained in these documents, the TCEQ certifies that there is reasonable assurance that the project will be conducted in a way that will not violate water quality standards.

The method of sand removal will either be done by hydraulic dredging with material pumped through pipes to a temporary dredge material placement area and subsequently trucked to the beach, or Hopper dredging with hydraulic pumping out of the hopper and pipeline transport to the beach, or hydraulic dredging with pipeline transport to the beach. The re-nourishment sand placement will construct a sand berm a maximum of 400 feet wide from the high tide line and sloping at a 30:1 slope into the Gulf of Mexico.

The TCEQ has reviewed this proposed action for consistency with the Texas Coastal Management Program (CMP) goals and policies in accordance with the regulations of the Coastal Coordination Council and has determined that the proposed action is consistent with the applicable CMP goals and policies.



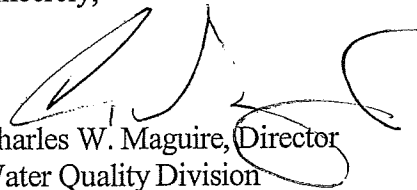
Ms. Janet T. Botello  
U.S. Army Corps of Engineers  
USACE Permit Application Number SWG-2007-01025  
Page 2  
November 17, 2009

This certification was reviewed for consistency with the CMP's development in critical areas policy {Title 31, Texas Administrative Code (TAC), Chapter (§) 501.23} and dredging and dredged material disposal and placement policy {31 TAC §501.25}. This certification complies with the CMP goals {31 TAC §501.12(1, 2, 3, 5)} applicable to these policies.

No review of property rights, location of property lines, or the distinction between public and private ownership has been made, and this certification may not be used in any way with regard to questions of ownership.

If you require additional information or further assistance, please contact Ms. Lili Murphy, Water Quality Assessment Section, Water Quality Division (MC-150), at (512) 239-4596.

Sincerely,



Charles W. Maguire, Director  
Water Quality Division  
Texas Commission on Environmental Quality

CWM/LM/sp

Attachment

ccs: Mr. Gerald Hauske, HDR Engineering, 555 North Carancahua Street, Suite 1650, Corpus Christi, Texas 78478-0010  
Mr. Ben Rhame, Secretary, Coastal Coordination Council, P.O. Box 12873, Austin, Texas 78711-2873

Ms. Janet T. Botello  
Attachment 1 – Dredge and Fill Certification  
USACE Permit Application Number SWG-2007-01025  
Page 1 of 3  
November 17, 2009

**WORK DESCRIPTION:** As described in the public notice dated June 11, 2008, and the November 13, 2009, Environmental Assessment and Statement of Findings.

**SPECIAL CONDITIONS:** None

**GENERAL:** This certification, issued pursuant to the requirements of Title 30, Texas Administrative Code, Chapter 279, is restricted to the work described in the [Enter date of the SOF], Environmental Assessment and Statement of Findings and shall be concurrent with the Corps of Engineers (COE) permit. This certification may be extended to any minor revision of the COE permit when such change(s) would not result in an impact on water quality. The Texas Commission on Environmental Quality (TCEQ) reserves the right to require full joint public notice on a request for minor revision. The applicant is hereby placed on notice that any activity conducted pursuant to the COE permit which results in a violation of the state's surface water quality standards may result in an enforcement proceeding being initiated by the TCEQ or a successor agency.

**STANDARD PROVISIONS:** These following provisions attach to any permit issued by the COE and shall be followed by the permittee or any employee, agent, contractor, or subcontractor of the permittee during any phase of work authorized by a COE permit.

1. The water quality of wetlands shall be maintained in accordance with all applicable provisions of the Texas Surface Water Quality Standards including the General, Narrative, and Numerical Criteria.
2. The applicant shall not engage in any activity which will cause surface waters to be toxic to man, aquatic life, or terrestrial life.
3. Permittee shall employ measures to control spills of fuels, lubricants, or any other materials to prevent them from entering a watercourse. All spills shall be promptly reported to the TCEQ by calling the State of Texas Environmental Hotline at 1-800-832-8224.
4. Sanitary wastes shall be retained for disposal in some legal manner. Marinas and similar operations which harbor boats equipped with marine sanitation devices shall provide state/federal permitted treatment facilities or pump out facilities for ultimate transfer to a permitted treatment facility. Additionally, marinas shall display signs in appropriate locations advising boat owners that the discharge of sewage from a marine sanitation device to waters in the state is a violation of state and federal law.
5. Materials resulting from the destruction of existing structures shall be removed from the water or areas adjacent to the water and disposed of in some legal manner.
6. A discharge shall not cause substantial and persistent changes from ambient conditions of turbidity or color. The use of silt screens or other appropriate methods is encouraged to confine suspended particulates.
7. The placement of any material in a watercourse or wetlands shall be avoided and placed there only with the approval of the Corps when no other reasonable alternative is available. If work within a wetland is unavoidable, gouging or rutting of the substrate is prohibited. Heavy equipment shall be placed on mats to protect the substrate from gouging and rutting if necessary.

Ms. Janet T. Botello  
Attachment 1 – Dredge and Fill Certification  
USACE Permit Application Number SWG-2007-01025  
Page 2 of 3  
November 17, 2009

8. Dredged Material Placement: Dredged sediments shall be placed in such a manner as to prevent any sediment runoff onto any adjacent property not owned by the applicant. Liquid runoff from the disposal area shall be retained on-site or shall be filtered and returned to the watercourse from which the dredged materials were removed. Except for material placement authorized by this permit, sediments from the project shall be placed in such a manner as to prevent any sediment runoff into waters in the state, including wetlands.
9. If contaminated spoil that was not anticipated or provided for in the permit application is encountered during dredging, dredging operations shall be immediately terminated and the TCEQ shall be contacted by calling the State of Texas Environmental Hotline at 1-800-832-8224. Dredging activities shall not be resumed until authorized by the Commission.
10. Contaminated water, soil, or any other material shall not be allowed to enter a watercourse. Noncontaminated stormwater from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.
11. Storm water runoff from construction activities that result in a disturbance of one or more acres, or are a part of a common plan of development that will result in the disturbance of one or more acres, must be controlled and authorized under Texas Pollutant Discharge Elimination System (TPDES) general permit TXR150000. A copy of the general permit, application (notice of intent), and additional information is available at: [http://www.tceq.state.tx.us/nav/permits/wq\\_construction.html](http://www.tceq.state.tx.us/nav/permits/wq_construction.html) or by contacting the TCEQ Storm Water & Pretreatment Team at (512) 239-4671.
12. Upon completion of earthwork operations, all temporary fills shall be removed from the watercourse/wetland, and areas disturbed during construction shall be seeded, ripped, or given some other type of protection to minimize subsequent soil erosion. Any fill material shall be clean and of such composition that it will not adversely affect the biological, chemical, or physical properties of the receiving waters.
13. Disturbance to vegetation will be limited to only what is absolutely necessary. After construction, all disturbed areas will be revegetated to approximate the pre-disturbance native plant assemblage.
14. Where the control of weeds, insects, and other undesirable species is deemed necessary by the permittee, control methods which are nontoxic to aquatic life or human health shall be employed when the activity is located in or in close proximity to water, including wetlands.
15. Concentrations of taste and odor producing substances shall not interfere with the production of potable water by reasonable water treatment methods, impart unpalatable flavor to food fish including shellfish, result in offensive odors arising from the water, or otherwise interfere with reasonable use of the water in the state.
16. Surface water shall be essentially free of floating debris and suspended solids that are conducive to producing adverse responses in aquatic organisms, putrescible sludge deposits, or sediment layers which adversely affect benthic biota or any lawful uses.

Ms. Janet T. Botello  
Attachment 1 – Dredge and Fill Certification  
USACE Permit Application Number SWG-2007-01025  
Page 3 of 3  
November 17, 2009

17. Surface waters shall be essentially free of settleable solids conducive to changes in flow characteristics of stream channels or the untimely filling of reservoirs, lakes, and bays.
18. The work of the applicant shall be conducted such that surface waters are maintained in an aesthetically attractive condition and foaming or frothing of a persistent nature is avoided. Surface waters shall be maintained so that oil, grease, or related residue will not produce a visible film of oil or globules of grease on the surface or coat the banks or bottoms of the watercourse.
19. This certification shall not be deemed as fulfilling the applicant's/permittee's responsibility to obtain additional authorization/approval from other local, state, or federal regulatory agencies having special/specific authority to preserve and/or protect resources within the area where the work will occur.

## **Attachment A**

### **Methodology for Handling Dead/Stranded Sea Turtles**

#### **West Galveston Island Beach Nourishment Project**

1. If a dead or stranded sea turtle is found on the beach during nourishment activities, the observer should immediately contact the NOAA Fisheries Office in Galveston (409-766-3670) for recovery and salvage of live or dead sea turtles. The observer will then call the U.S. Fish and Wildlife Service's Clear Lake Ecological Services Field Office (281-286-8282) and the Texas Sea Turtle Stranding Coordinator, Dr. Donna Shaver-National Park Service/Padre Island National Seashore (361-9494-8173).
2. The observer will mark the location of the dead or stranded turtle by placing flagging around the perimeter of the area.
3. The observer should fill out a stranding form (Stranding Form is attached) to the best of their abilities, and provide the form to NOAA Fisheries. The form should clearly identify that the turtle was a direct take of beach re-nourishment activities (if this is the case). Information included on the stranding form is as follows:
  - a. The observer will record his/her name, address, and telephone number.
  - b. The stranding date will be recorded (month/day/year).
  - c. The observer will record the stranding location in reference to the closest town or landmark. Include county, state, or other relevant geographical breakdown, as well as latitude and longitude. The observer should note whether the stranding was located inshore (bays, estuaries, or passes and their beaches) or offshore (oceans and their beaches).
  - d. If the observer is knowledgeable of turtle species, he/she should record the species of the dead/stranded turtle. If the observer is not sure of the species, he/she should indicate that the turtle is "unidentified" and not guess at the species type.
  - e. The sex of the turtle should be recorded, if easily observed.

- f. The condition of the turtle should be recorded as follows: 0 = Alive; 1 = Fresh dead; 2 = moderately decomposed; 3 = severely decomposed; 4 = Dried carcass; 5 = Skeleton and bones only.
- g. The final disposition of the turtle should be recorded, as follows: 1 = Painted and left on beach; 2 = Buried, on beach/off beach; 3 = Salvaged specimen, all or part; 4 = Pulled up on beach or dune; 5 = Unpainted, left on beach; 6 = Alive, left on beach; 7 = Alive, taken to holding facility; 8 = Left floating, not recovered; 9 = Disposition unknown. If the shell is painted, indicate what color.
- h. Any visible tags should be recorded as follows: The type of tag (metal, plastic, etc.), tag number, tag position, tag return address, and disposition of tag. A sketch of tag location should also be drawn. All four flippers should be checked for tags. In addition, the observer should look for PIT tags, coded wire tags, and living tags and record the aforementioned information.
- i. Remarks regarding tar or oiling, gear or debris entanglement, wounds or mutilation, propeller damage, epibiota, papillomas, and emaciation, abnormalities, and other causes of injury should be noted.
- j. Measurements should be taken as follows: straight length/width; curved length/width). Information should be recorded in either centimeters or inches. The approximate weight of the turtle should also be recorded.
- k. Any other relevant information should be recorded.

## INSTRUCTIONS FOR COMPLETING STSSN STRANDING REPORT FORMS

**OBSERVER'S NAME/ADDRESS/ PHONE:** This is the person who handled the turtle in the field. Please give an address and phone number where you can be reached in the event we need to contact you for clarification of the reported data.

**STRANDING DATE:** This is the date the stranded turtle was first reported or encountered. If you did not investigate until a later date, please note that in the remarks section at the bottom of the form. "Turtle Number by Day" is used to keep track of more than one turtle investigated on a single day by the same volunteer – your first turtle of the day is 01, second of the same day is 02, etc. Please notify the state coordinator within 24 hours for any strandings you document and check the box describing how the coordinator was notified.

**SPECIES:** Use the species identification key on the back of the form to positively determine species. If you are not positive of the species identification, check "Unidentified", please do not guess. Check boxes to indicate if photos were taken and if the state coordinator verified species. The state coordinator may verify species based on photos taken and submitted with the stranding report form.

**SEX:** Check appropriate box(es). Sea turtles cannot be sexed externally until they are mature adults. If the turtle is not adult-sized (generally at least 92 cm straight length for loggerheads and green turtles, 60 cm straight length for Kemp's ridleys, 80 cm straight length for hawksbills and 130 cm curved length for leatherbacks) then you should check "immature, undetermined" if the turtle is not necropsied. Some males may begin to mature at slightly smaller sizes than those listed above and tail length should be documented if it is being used to externally sex a turtle.

**STRANDING LOCATION:** Check "Offshore" if the turtle was found on an ocean beach or "Inshore" if the turtle was in a bay, river, sound, inlet, etc. Give a detailed descriptive location of the stranding using a reference point that can be found on a NOAA navigation chart. Local names or landmarks not found on most charts do not help pinpoint a location. **Good reference points are inlets, fishing piers, light houses, water tanks, etc.** Latitude/Longitude – if you have a GPS unit or are familiar with latitudes and longitudes and you have a navigation chart, please include the latitude/longitude of the stranding location. If you cannot provide accurate lat/longs, please leave this space blank. It then becomes even more important to provide a location description than can be pinpointed on a chart.

**CONDITION:** Check the box that best describes the stranding. If the turtle seems intermediate between two stages of decomposition, pick the one that fits best. Fresh dead turtles should have no foul smell; moderately decomposed turtles smell bad, but skin and scutes are intact or are only beginning to peel, internal organs are still distinguishable; severely decomposed turtles smell very bad with scutes lifting or gone and skin beginning to peel or liquefy, internal organs beginning to liquefy, hard to distinguish individual organs; dried carcasses, leathery, internal organs completely decomposed.

**FINAL DISPOSITION:** Check the box(es) next to the number that best describes what was done with the stranding after it was documented on the beach. Provide additional information regarding salvaged specimens. Record what rehabilitation facility live turtles were taken to.

**TAGS: Contact state coordinator before disposing of any tagged animal!!**

Flipper tags – check all flippers on all species and record information; note also if tag scars are seen.

PIT tags – scan front flippers and shoulder areas of all species (see PIT tag scanning protocol for specific instructions).

Coded wire tag scan – currently only being placed in front flipper region of Kemp's ridleys (see wire tag scanning protocol for specific instructions). Both front flippers and associated shoulder and "armpit" areas of all Kemp's ridleys should be salvaged for later scanning if a magnetometer is not available).

Living tags – check all Kemp's ridleys for light-colored areas on the dark carapace. Living tags are tissue transplants of the plastron onto the carapace which grow with the turtle and were used to

SWG-2007-01025

Sheet 4 of 6

mark headstarted turtles to distinguish between different ages. If you suspect a living tag is present the entire carcass should be salvaged. In most cases, Kemp's ridleys with living tags were also marked with external flipper tags, PIT tags and coded wire tags as well. The Cayman Turtle Farm has also used living tags on some green turtles to distinguish age and a couple of these have been documented by the STSSN; these turtles should have external flipper tags or tag scars as well.

CARAPACE MEASUREMENTS: Use calipers to obtain straight measurements and/or flexible, non-metal measuring tape to obtain curved measurements. Measurement points are noted on drawings on left side of form. Circle units of measure – centimeters or inches; if units are not circled we cannot include measurements in the database.

REMARKS SECTION AT BOTTOM OF FORM: Mark wounds/abnormalities on the diagrams at left and describe in detail. The more information you include, the easier it will be for us to code the record. Use the back of the data sheet to continue your remarks if needed. Always note anything unusual about a stranding event.



SPECIES IDENTIFICATION

head	carapace	plastron
2 pairs of prefrontal scales	scutes imbricated (overlapping) 4 lateral scutes	4 inframarginal scutes without pores
Hawksbill - <i>Eretmochelys imbricata</i>		
1 pair of prefrontal scales	4 lateral scutes lower jaw serrated	4 inframarginal scutes without pores
Green turtle - <i>Chelonia mydas</i>		
more than 1 pair of prefrontal scales	5 lateral scutes	4 inframarginal scutes with pores
Kemp's ridley - <i>Lepidochelys kempi</i>		
more than 1 pair of prefrontal scales	6 or more lateral scutes 6 or more vertebral scutes	4 inframarginal scutes with pores
Olive ridley - <i>Lepidochelys olivacea</i>		
more than 1 pair of prefrontal scales	5 lateral scutes	3 inframarginal scutes without pores
Loggerhead - <i>Caretta caretta</i>		
no scales	ridges	no scutes
Leatherback - <i>Dermochelys coriacea</i>		

Please use an envelope and mail original form to:

DR. DONNA SHAVER  
TEXAS STSSN COORDINATOR  
PADRE ISLAND NATIONAL SEASHORE  
P.O. BOX 181300  
CORPUS CHRISTI, TX 78480-1300

# SEA TURTLE STRANDING AND SALVAGE NETWORK – STRANDING REPORT

## OBSERVER'S NAME / ADDRESS / PHONE:

First \_\_\_\_\_ M.I. \_\_\_\_\_ Last \_\_\_\_\_

Affiliation \_\_\_\_\_

Address \_\_\_\_\_

Area code/Phone number \_\_\_\_\_

## STRANDING DATE:

Year 20\_\_\_\_ Month \_\_\_\_ Day \_\_\_\_

Turtle number by day \_\_\_\_

*State coordinator must be notified within 24 hrs; this was done by* ☐ phone (361)949-8173 x226

☐ email ☐ fax (361)949-9134

## SPECIES: (check one)

- ☐ CC = Loggerhead  
☐ CM = Green  
☐ DC = Leatherback  
☐ EI = Hawksbill  
☐ LK = Kemp's Ridley  
☐ LO = Olive Ridley  
☐ UN = Unidentified

*Check Unidentified if not positive. Do Not Guess.*

Carcass necropsied? ☐ Yes ☐ No

Photos taken? ☐ Yes ☐ No

Species verified by state coordinator? ☐ Yes ☐ No

## SEX:

- ☐ Undetermined  
☐ Female ☐ Male

Does tail extend beyond carapace?

☐ Yes; how far? \_\_\_\_\_ cm / in  
☐ No

How was sex determined?

- ☐ Necropsy  
☐ Tail length (adult only)

## STRANDING LOCATION: ☐ Offshore (Atlantic or Gulf beach) ☐ Inshore (bay, river, sound, inlet, etc)

State \_\_\_\_\_ County \_\_\_\_\_

Descriptive location (be specific) \_\_\_\_\_

Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

## CONDITION: (check one)

- ☐ 0 = Alive  
☐ 1 = Fresh dead  
☐ 2 = Moderately decomposed  
☐ 3 = Severely decomposed  
☐ 4 = Dried carcass  
☐ 5 = Skeleton, bones only

## FINAL DISPOSITION: (check )

☐ 1 = Left on beach where found; painted? ☐ Yes\* ☐ No(5)

☐ 2 = Buried: ☐ on beach / ☐ off beach;  
 carcass painted before buried? ☐ Yes\* ☐ No

☐ 3 = Salvaged: ☐ all / ☐ part(s), what/why? \_\_\_\_\_

☐ 4 = Pulled up on beach/dune; painted? ☐ Yes\* ☐ No

☐ 6 = Alive, released

☐ 7 = Alive, taken to rehab. facility, where? \_\_\_\_\_

☐ 8 = Left floating, not recovered; painted? ☐ Yes\* ☐ No

☐ 9 = Disposition unknown, explain \_\_\_\_\_

*\*If painted, what color? \_\_\_\_\_*

## TAGS: Contact state coordinator before disposing of any tagged animal!!

Checked for flipper tags? ☐ Yes ☐ No

**Check all 4 flippers.** If found, record tag number(s) / tag location / return address

PIT tag scan? ☐ Yes ☐ No

If found, record number / tag location

Coded wire tag scan? ☐ Yes ☐ No

If positive response, record location (flipper)

Checked for living tag? ☐ Yes ☐ No

If found, record location (scute number & side)

## CARAPACE MEASUREMENTS: (see drawing)

### Using calipers

Circle unit

Straight length (NOTCH-TIP) \_\_\_\_\_ cm / in

Minimum length (NOTCH-NOTCH) \_\_\_\_\_ cm / in

Straight width (Widest Point) \_\_\_\_\_ cm / in

### Using non-metal measuring tape

Circle unit

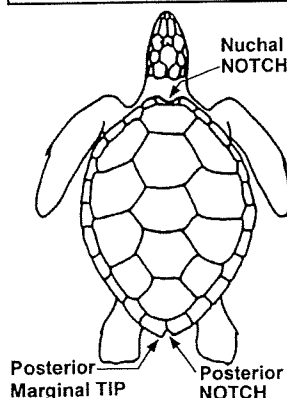
Curved length (NOTCH-TIP) \_\_\_\_\_ cm / in

Minimum length (NOTCH-NOTCH) \_\_\_\_\_ cm / in

Curved width (Widest Point) \_\_\_\_\_ cm / in

Circle unit

Weight ☐ actual / ☐ est. \_\_\_\_\_ kg / lb



Mark wounds / abnormalities on diagrams at left and describe below (note tar or oil, gear or debris entanglement, propeller damage, epibiota, papillomas, emaciation, etc.). **Please note if no wounds / abnormalities are found.**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Division of Ecological Services  
17629 El Camino Real #211  
Houston, Texas 77058-3051  
281/286-8282 FAX 281/488-5882



September 30, 2009

Fred L. Anthamatten  
Chief, Regulatory Branch  
Department of the Army  
Galveston District, Corps of Engineers  
P.O. Box 1229  
Galveston, Texas 77553-1229

Consultation No. 21410-2008-F-0257

Dear Mr. Anthamatten:

This transmits the United States (U.S.) Fish and Wildlife Service's (Service) biological opinion on the proposed issuance of U.S. Army Corps of Engineers (Corps) permit SWG-2007-01025 authorizing the Park Board of Trustees of the City of Galveston to perform beach nourishment on Galveston Island, Galveston County, Texas using beach quality sand, and the effects of the proposed on-shore permit actions on the endangered Kemp's ridley sea turtle (*Lepidochelys kempii*), threatened loggerhead sea turtle (*Caretta caretta*), threatened piping plover (*Charadrius melodus*), and piping plover designated critical habitat unit TX-35, in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. §1531 et seq.). Your March 26, 2009 request for formal consultation was received on March 30, 2009.

The Corps determined that on-shore actions of the proposed project would have no effect on the endangered Attwater's greater prairie chicken (*Tympanuchus cupido attwateri*), bald eagle (*Haliaeetus leucocephalus*) and endangered Eskimo curlew (*Numenius borealis*). The bald eagle was removed from the list of threatened and endangered species on August 8, 2007 (72 FR 37346). For your information, no coordination or contact with the Service is necessary for no effect determinations nor does the Service concur with no effect determinations. The Corps also determined that on-shore actions of the proposed project may affect, but are not likely to adversely affect, the endangered brown pelican (*Pelecanus occidentalis*), endangered green sea turtle (*Chelonia mydas*), endangered hawksbill sea turtle (*Eretmochelys imbricate*), and endangered leatherback sea turtle (*Dermochelys coriacea*). The Service concurs with the Corp's determination that the on-shore actions of the proposed project as described are not likely to adversely affect the brown pelican, or the green, hawksbill and leatherback sea turtles. This concurrence is based on a review of the project information and Service files.

This biological opinion is based on information provided in the March 2009 *Biological Assessment of Potential Impacts to Threatened and Endangered Species, West Galveston Island*



*Beach Nourishment Project, Galveston County, Texas*; meetings, telephone calls and e-mails between the applicant, their consultant(s), the Corps and the Service; and other sources of information. A complete administrative record of this consultation is on file at the Clear Lake Ecological Services Field Office in Houston, Texas.

## **BIOLOGICAL OPINION**

### **CONSULTATION HISTORY**

September 19, 2007	Public Notice for Permit Application No. SWG-2007-1025 issued by the Corps regarding the Park Board of Trustees of the City of Galveston's proposed beach nourishment on Galveston Island.
October 22, 2007	Service comment letter responding to the Public Notice regarding concerns for listed species (sea turtles and piping plovers) and advising the Corps to make a section 7 determination.
January 23, 2008	Joint Evaluation Meeting with the Corps and other resource agencies in which the applicant(s) and the Corps stated their desire to pursue formal section 7 consultation.
June 6, 2008	Revised Public Notice for Permit Application No. SWG-2007-1025 issued by the Corps regarding the Park Board of Trustees of the City of Galveston's proposed beach nourishment on Galveston Island.
July 26, 2008	Service sent e-mail stating that comments provided October 22, 2007 in response to the previous Public Notice remain valid.
September 13, 2008	Hurricane Ike, a strong category two storm, hits the upper Texas coast, including Galveston Island.
February 4, 2009	Service received a letter dated February 2, 2009 initiating formal section 7 consultation for SWG-2007-1025, along with a biological assessment of potential impacts to listed species.
March 3, 2009	Service requested additional information, clarification, and revisions to the biological assessment via e-mail to the Corps.
March 30, 2009	Service received a letter and biological assessment dated March 26, 2009 with the requested clarifications and revisions from the Corps.
April 30, 2009	Service, Corps and applicant(s) meet to discuss clarifications/revisions to the biological assessment and conservation measures that could be incorporated to reduce the project's effects on listed species.
May 18, 2009	Service sent letter to the Corps acknowledging receipt of all information needed to proceed with formal section 7 consultation and that the biological opinion will be completed by September 30, 2009.

## **DESCRIPTION OF PROPOSED ACTION**

The proposed action, issuance of Department of the Army (DA) permit SWG-2007-1025 pursuant to Section 404 of the Clean Water Act, would authorize the Park Board of Trustees of the City of Galveston to perform beach nourishment on Galveston Island using beach quality sand. Beach nourishment would begin at the west end of Galveston Seawall and extend westward a maximum of six miles to the eastern boundary of Galveston Island State Park on Galveston Island, Galveston County, Texas. Beach quality sand used for beach nourishment would be obtained from a submerged borrow area adjacent to the South Jetty along the Galveston Ship Channel near Galveston Island, Galveston County, Texas. Project maps and plans are located in Appendix A (Corps 2009). It is anticipated that work will continue 24 hours a day, seven days a week until beach nourishment is complete.

The methods used for removal of sand from the borrow site and subsequent placement within the project area would include: 1) use of a hydraulic dredge to excavate the sand, which would then be pumped through pipes to a temporary dredge material placement area (DMPA) on the beach at Apfel Park and subsequently trucked to the nourishment area; 2) use of a hydraulic dredge to excavate the sand, which would then be pumped through a temporary pipeline and placed directly on the beach; or 3) use of a hopper dredge to excavate the sand, which would then be pumped through temporary pipelines and transported directly onto the beach nourishment area.

The temporary DMPA will be constructed only if dredged material is to be trucked to the beach nourishment area. The DMPA will consist of a temporary containment levee that will allow the sediment to separate from the water before it is used for nourishment. The water will then be returned to the Gulf of Mexico as effluent. The temporary pipeline routes would follow existing roads, be placed along the existing beach landward of the mean high water line, and/or be submerged off-shore in a 1000-foot corridor parallel to the shoreline. The submerged pipeline would be marked in accordance with U.S. Coast Guard requirements.

The beach nourishment would result in the construction of a sand berm that extends a maximum of 400 feet wide from the high tide line and slopes at a 30 to 1 angle down into the Gulf of Mexico, using approximately 2,000,000 cubic yards (cy) of sand. The proposed beach profile template would provide an additional 165 feet of beach width from the dune line to the +2.5 foot NAVD contour. Design life for the nourishment would be approximately six to seven years, depending on storm impacts. However, the nourishment is expected to require maintenance at areas subject to high erosion, such as immediately west of the seawall, resulting in the placement of an additional 50,000 to 75,000 cy/year of sand during the five year term of the permit. For the purposes of this biological opinion, maintenance activities refer to the addition of beach quality sand, as needed, in high erosion areas and the reduction of scarping within the action area during the term of the permit. However, grooming and/or raking the nourished beach would not be considered maintenance, and the effects of these activities were not evaluated.

The permit, if issued, would be valid for a period of five years. Any changes, additions or modifications to the permit, or any work conducted by the applicant or others in addition to the permitted activities, are not covered by this biological opinion.

It is important to note that this biological opinion only evaluates the effects of the proposed on-shore permit actions on those species under the Service's jurisdiction. The Service has jurisdiction for protecting sea turtles in inland waters and on the nesting beaches. The National

Marine Fisheries Service (NMFS) has jurisdiction for protecting sea turtles in the marine environment. Therefore, only those proposed actions that take place on land (beach sand placement, the temporary DMPA, and the land-based pipeline) were evaluated for effects to sea turtles. The Corps is working with NMFS to evaluate the effects of the proposed dredging on sea turtles in the water.

### **Action Area**

The action area includes approximately six linear miles (approximately 73 acres) of beach proposed for nourishment on Galveston Island, from the west end of the Galveston Seawall to the eastern boundary of the Galveston Island State Park. In addition, the action area includes the temporary DMPA that would be established at Apfel Park on Galveston Island.

### **Conservation Measures**

When used in the context of the Act, “conservation measures” represent actions pledged in the project description, correspondence and/or meetings that the action agency or the applicant will implement to further the conservation or recovery of the species under review. Such measures should be closely related to the action and should be achievable within the authority of the action agency. Since conservation measures are part of the proposed action, their implementation is required under the terms of the consultation. The Corps and the Park Board of Trustees of the City of Galveston have proposed the following conservation measures:

- 1) The Park Board of Trustees of the City of Galveston will have all construction workers trained by qualified personnel to recognize protected species, including piping plovers, sea turtles and their tracks. Workers will also be trained on the avoidance and minimization measures required during nourishment activities.
- 2) The Park Board of Trustees of the City of Galveston will provide the Corps with the name of a single point of contact (POC) responsible for communicating, monitoring and reporting on endangered species issues during the project. The POC and/or endangered species monitor(s) will be on-site to ensure piping plovers are not affected by beach nourishment activities. The POC and/or monitor(s) will ensure that loafing and/or resting piping plovers are not in the project area during nourishment activities. The POC and/or monitor(s) will check under and around vehicles, heavy equipment and dredge pipes before they are moved. The POC and/or monitor(s) should be aware that piping plovers are especially vulnerable during periods of cold temperature and when they are roosting at night, and extra care should be taken at these times. Construction workers will immediately notify the POC and/or monitor(s) if listed species occur in the immediate project area.
- 3) Material placed on the beach will be beach quality sand consistent in grain size, color and composition with the existing beach, and free of hazardous contaminants.
- 4) Sand will be placed and maintained at a gradual slope to minimize scarping.
- 5) After initial project construction, all mud or wind tidal flats and/or project sites seaward of the mean high tide line will be restored to pre-construction slope or contours, and all ruts leveled.

- 6) Materials and equipment required for the project will be staged in upland areas and transported as needed to the proposed work sites.
- 7) Construction vehicles will access the beach from public roads closest to the work sites to reduce unnecessary vehicle traffic on the beach. Temporary drive-overs constructed of beach-quality sand at these access points will be for work site access only.
- 8) The number of vehicles transiting from upland areas to the project sites will be kept to a minimum, all vehicles will use the same pathways, and access will be confined to the immediate project areas. Construction/nourishment activities will occur from the landward side of the beach nourishment area whenever possible, and no work will continue after dark.
- 9) A public outreach project will be developed and implemented to educate residents and beachgoers about nesting sea turtles and wintering piping plovers.
- 10) Placement of sand material for beach nourishment will be conducted, when possible, outside of the sea turtle nesting season of March 15 to October 1. If beach nourishment activities occur during the sea turtle nesting season, the following conservation measures will also be implemented:
  - a) The Park Board of Trustees of the City of Galveston will ensure that daily turtle patrols of the proposed beach nourishment area are conducted before beginning beach nourishment activities each day, after work concludes each day, and other such times as deemed necessary by the turtle monitors. This includes areas extending from the west end of the Galveston Seawall west to the eastern boundary of the Galveston Island State Park. A qualified monitor will be onsite during beach nourishment activities. If a sea turtle or nest is located, beach nourishment activities will immediately cease within 100 feet of the nest or turtle, and the monitor will call 1-866-TURTLE-5 and notify the Service's Clear Lake Field Office (281-286-8282). Beach nourishment activities will not resume within 100 feet of the nest site or turtle until authorization is received to do so. Information regarding the qualifications of the independent qualified monitor will be submitted to the Galveston District Corps prior to starting work in the permitted area.
  - b) All turtles, turtle nests, or turtle eggs found during beach nourishment activities will be safeguarded until they can be re-located by properly permitted individual(s). Ruts and berms created by beach nourishment equipment will be smoothed out daily.
  - c) The Park Board of Trustees of the City of Galveston will immediately notify the Galveston District Corps (409-766-3985), the Service's Clear Lake Field Office (281-286-8282), and the St. Petersburg Office of the National Marine Fisheries Service (727-551-5767) of any injury or death of a listed species during beach nourishment activities.
  - d) Work crews will be required to attend annually a half-day training session coordinated by the Park Board of Trustees of the City of Galveston with the Service and/or NMFS to learn how to identify nesting sea turtles and what actions should be

taken if turtles are observed. This training will include an overview and handouts with photographs of all listed species workers might encounter in the project area. Documentation of this training, including a list of attendees, will be submitted to the Galveston District Corps prior to starting work in the permit area.

- e) Use of night lights will be minimized, directed toward the construction activity area, and shielded from view outside of the construction activity area.

## **STATUS OF THE SPECIES AND CRITICAL HABITAT**

Five species of sea turtles are found in U.S. waters and nest on U.S. beaches: leatherback, hawksbill, loggerhead, green and Kemp's ridley. The leatherback, hawksbill and green sea turtles rarely nest in the southeastern U.S., but offshore waters are important feeding, resting, and migratory corridors. All are known to nest in Texas. Only the Kemp's ridley and loggerhead are known to nest in the vicinity of the proposed action area. The Texas sea turtle nesting season is from March 15 to October 1 each year.

### **Kemp's Ridley Sea Turtle**

#### **Species Description**

The Kemp's ridley sea turtle was listed as endangered throughout its entire range on July 28, 1978 (43 FR 32800). Kemp's ridleys are the smallest of the sea turtles, reaching about 2 feet (0.6 meters) in length and weighing up to 75-100 pounds (34-45 kilograms). The adult has an unusually broad, heart-shaped, keeled upper shell that is serrated behind the bridge or midsection, almost as wide as it is long, and is usually olive-gray. The upper shell has five pairs of scales or plates along the sides. In the bridge hooking the lower shell to the upper shell, there are four infra-marginal plates, each perforated by a pore. The lower shell is a light, yellowish color. The head has two pairs of prefrontal scales. The Kemp's ridley has a triangular-shaped head with a somewhat hooked beak with large crushing surfaces. Juveniles have a dark-charcoal colored shell that changes to olive-green or gray with age.

#### **Critical Habitat**

Critical habitat has not been designated for this species.

#### **Distribution and Abundance**

Kemp's ridleys occur in the Gulf of Mexico and along the Atlantic coast of the U.S., with nesting locations concentrated on coastal areas of Rancho Nuevo, Mexico. Approximately 99.9 percent of known nests are found on the coastal beaches of Tamaulipas and Veracruz, with approximately 10,000 nests protected in 2005, 12,000 nests protected in 2006, 15,000 nests protected in 2007 (Dr. D. Shaver, National Park Service, personal communication 2008), and 18,000 nests protected in 2008 (T. Shearer, Fish and Wildlife Service, personal communication 2009).

#### **Habitat**

Habitat includes areas that shelter the turtle from high winds and waves, with forage habitats that include seagrass, oyster reefs, sandy bottoms, mud bottoms, and rock outcroppings. Their diet consists primarily of crabs, shrimp, snails, sea urchins, sea stars, fish and occasionally marine plants (TPWD 1995). Preferred habitat for this species is shallow coastal and estuarine waters



where crabs are found, and they occur in the bays on the middle and upper Texas coast with regularity.

### **Life History**

Nesting occurs primarily on beaches around Rancho Nuevo, Tamaulipas, Mexico, from April to June each year; however, Kemp's ridley nests have been recorded in Mexico as early as March and as late as August (Dr. D. Shaver, National Park Service, personal communication 2004). During preferred nesting conditions, which are precipitated by strong winds, the females come ashore, often in groups called "arribadas." Kemp's ridleys are predominately daytime nesters. Although some females breed annually, this species is considered to nest biannually and may nest as many as three times in a single season (Service and NMFS 1992), with an average of 2.5 clutches per season. Clutch size averages between 100-110 eggs. Hatchlings emerge after approximately 50 days of incubation. Sexual maturity is believed to be reached between 10 to 15 years of age. Some fidelity to nesting sites has been shown by Kemp's ridleys, both within one nesting season, and between nesting seasons (Dr. D. Shaver, National Park Service, personal communication 2003; Burchfield, et. al. 2002). If conditions are unsuitable on a nesting beach or the female is disturbed, she may return to the water and attempt to nest elsewhere within several kilometers of the first site. The disturbance could also cause her to switch nesting beaches entirely (Dr. D. Shaver, National Park Service, personal communication 2004). After the nesting season, adults migrate to feeding areas in the Gulf of Mexico and remain there until the next reproductive season. Hatchlings that successfully emerge from the nest and enter the ocean are essentially pelagic for approximately two years (Ernst et. al. 1994).

### **Population Dynamics**

Kemp's ridley sea turtle numbers have precipitously declined since 1947, when more than 40,000 nesting females were estimated in a single arribada (Service and NMFS 1992). The nesting population produced a low of 702 nests in 1985 (Service and NMFS 1992). Since the mid-1980s, the number of nests laid in a season has been steadily increasing, primarily due to nest protection efforts and implementation of regulations requiring the use of turtle excluder devices (TEDs) in commercial fishing trawls. Today, the population of Kemp's ridleys appears to be in the early stages of recovery (Dr. D. Shaver, National Park Service, personal communication 2008).

### **Reasons for Listing/Threats to Survival**

Several factors contributed to the decline of sea turtle populations along the Atlantic and Gulf coasts, including commercial over-utilization of eggs and turtle parts, incidental catches during commercial fishing operations, disturbance of nesting beaches by coastal housing, marine pollution, and entanglement and ingestion of debris (Service and NMFS 1992). Additional threats are expanding human populations adjacent to important nesting beaches, degradation of coastal foraging habitats, and the potential effects of global warming on sex ratios (NMFS and Service 2007).

### **Recovery Efforts**

Conservation efforts to lessen threats include protection of major nesting beaches, use of TEDs in commercial fishery trawls, regulations for limiting incidental take among fisheries, and management of favorable coastal and marine habitat (NMFS and Service 1991b). Each year, Kemp's ridley nests at Rancho Nuevo and other major nesting beaches in the Mexican states of

Tamaulipas and Vera Cruz are actively protected from human and mammalian predation, resulting in increased hatching success rates.

In 1978, a cooperative project involving the National Park Service's Padre Island National Seashore (PAIS), NMFS, the Service, the Texas Parks and Wildlife Department, the Gladys Porter Zoo (Brownsville, TX), and Mexican federal and state agencies was initiated to re-establish a nesting colony of Kemp's ridley sea turtles in the U.S. Eggs were collected in Mexico from 1978 to 1988 and transported to PAIS for incubation. Hatchlings were released onto the beach, allowed to enter the water, and then immediately recaptured and raised in "head start" facilities in Galveston, Texas for approximately 9 to 11 months before being released into the Gulf of Mexico.

In 1986, the National Park Service initiated a program to detect, monitor, and protect sea turtle nests at PAIS. Detection involves patrols to look for nesting activity, public education, and investigation of reports from patrols, beach workers, and the public. Patrol efforts involving multiple federal, state, local, university and non-governmental agencies are now conducted on most Texas beaches from April 1 to July 15 each year.

Since 1996, some turtles experimentally imprinted to Padre Island or otherwise head-started have returned to PAIS and the nearby vicinity to lay eggs (Shaver 1997, 1998, 1999a, 1999b; Shaver and Caillouet 1998). However, the majority of Kemp's ridley sea turtles that nest in Texas each year are from wild stock.

### **Loggerhead Sea Turtle**

#### **Species Description**

The loggerhead sea turtle was listed as threatened throughout its entire range on July 28, 1978 (43 FR 32800). Loggerheads have a large head with blunt, powerful jaws. The upper shell and flippers are a reddish-brown color with a yellow lower shell. The upper shell has five pairs of costal scutes or plates in the middle of the shell, with the first touching the plate just behind the head. Adults grow to an average weight of about 200 pounds (90.7 kilograms). Hatchlings lack the reddish tinge and vary from light to dark brown dorsally. Both pairs of flippers are dark brown above and have distinct white margins. The plastron and other ventral surfaces are dull, yellowish tan.

#### **Critical Habitat**

Critical habitat has not been designated for this species.

#### **Distribution and Abundance**

Loggerheads occur in temperate and tropical waters of both hemispheres. This species is widely distributed and can be found in inland waters as well as hundreds of miles offshore. It is known to occur in waters off of Alabama, American Samoa, California, Connecticut, Delaware, Florida, Georgia, Guam, Hawaii, Louisiana, Massachusetts, Maryland, Northern Mariana Islands, Mississippi, North Carolina, New Jersey, New York, Oregon, Puerto Rico, Rhode Island, South Carolina, Texas, Virginia, Virgin Islands, Palau, and other beaches along tropical and temperate seas.

Loggerheads nest in the continental U.S. from Texas to Virginia, although the major nesting concentrations are found in Florida, Georgia, South Carolina and North Carolina. About 80 percent of loggerhead nesting in the continental southeastern U.S. occurs in six Atlantic coast Florida counties: Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward (NMFS and Service 1991b).

Total estimated loggerhead nesting in the southeastern U.S. is approximately 50,000 to 70,000 nests per year (NMFS and Service 1991b). From a global perspective, the southeastern U.S. nesting aggregation of loggerhead sea turtles is important to the survival of the species and is second in size to nesting in Oman, in the Arabian Sea (Ehrhart 1989; NMFS and Service 1991b; Ross 1995). The status of the Oman colony has not been evaluated recently, but its location makes it vulnerable for disruptive events such as catastrophic oil spills, a cause for considerable concern (Meylan, et. al. 1995). The loggerhead nesting aggregations in Oman, the southeastern U.S., and Australia account for about 88 percent of nesting worldwide (NMFS and Service 1991b).

### **Habitat**

This species inhabits the continental shelves, estuarine environments, bays, lagoons, salt marshes, ship channels and mouths of large rivers along the Atlantic, Pacific, and Indian oceans. Loggerheads are omnivorous (Ernst et. al. 1994). Although the loggerhead's diet includes a variety of marine invertebrates (sponge and jellyfish) and plants, it primarily feeds on mollusks (scallops, shellfish and queen conch), crustaceans (crabs and shrimp), and sargassum plants. Loggerheads may scavenge fish or fish parts or ingest fish incidentally in some circumstances (NMFS and Service 1991b).

### **Life History**

Most loggerhead hatchlings originating from continental U.S. beaches are believed to lead a pelagic existence in the currents of the North Atlantic Ocean, perhaps for as long as 10 to 12 years, and are best known from the eastern Atlantic. Post-hatchlings have been found floating at sea in association with sargassum rafts. Once they reach a certain size, juvenile loggerheads move to coastal areas in the western Atlantic where they become benthic feeders in lagoons, estuaries, bays, river mouths, and shallow coastal waters. Juveniles occupy coastal feeding grounds for a decade or more before maturing and making their first reproductive migration. Females will return to their natal beach to nest.

Loggerheads are predominantly nocturnal nesters. The continental U.S. nesting season extends from about May through August. Preferred nest sites are sloping beaches 1.5 to 2.5 feet above the waterline. They are known to nest from one to seven times within a nesting season (mean is about 4.1 nests per season) at intervals of approximately 14 days. Mean clutch size varies from about 100 to 125 eggs along the southeastern U.S. coast (NMFS and Service 1991b). Incubation ranges from about 45 to 95 days, depending on incubation temperatures, but averages 55 to 60 days for most clutches in Florida. Hatchlings generally emerge at night. Female loggerheads can nest every 1 to 7 years, but nesting intervals of 2 to 3 years are the most common. Age at sexual maturity is believed to be between 25 to 30 years.

Predation of hatchlings and young turtles is assumed to be significant, and predation of subadult through adult stage turtles is assumed to be less common (NMFS and Service 1991b). Stancyk (1982) however, reported predators of juvenile and adult turtles include at least six species of

sharks, killer whales, sea bass and grouper. Tiger sharks appear to be the principal predator of subadult and adult turtles.

### **Population Dynamics**

The population of loggerheads declined in the continental U.S. in recent years, but most of that decline occurred prior to 1979. There has been no significant decline in recent years (Turtle Expert Working Group 1998; 2000). Loggerheads take approximately 25 to 30 years to mature so the effects of population decline might not be apparent on nesting beaches for many decades.

### **Reasons for Listing/Threats to Survival**

Threats to loggerhead populations include loss or degradation of nesting habitat from coastal development and beach armoring, beach nourishment, disorientation of hatchlings by beachfront lighting, excessive nest predation by native and non-native predators, degradation of foraging habitat, marine pollution and debris, watercraft strikes, disease, and incidental take from channel dredging, commercial trawling, longline, and gill net fisheries (NMFS and Service 1991b).

There is particular concern regarding incidental take of juvenile loggerheads in the eastern Atlantic by longline fishing vessels from several countries. The fluctuating migratory patterns of loggerhead sea turtles make longline fishing a concern for numerous countries, some of which lack regulations regarding impacts towards the species.

### **Recovery Efforts**

Conservation efforts to lessen threats include protection of major nesting beaches; improvements to TEDs; regulations for incidental take among fisheries; and management of favorable coastal and marine habitat (NMFS and Service 1991b). In addition, the National Park Service program at PAIS initiated in 1986 to detect, monitor, and protect Kemp's ridley nests has been expanded to include the four other species of sea turtles that occur along the Texas coast.

### **Piping Plover**

For the purpose of this action, discussions will be focused on the Texas wintering piping plover population and its designated critical habitat.

### **Species Description**

The piping plover was federally listed as endangered in the Great Lakes watershed, and as threatened elsewhere in its range, on January 10, 1986 (50 FR 50726). The piping plover is a small North American shorebird approximately 7 inches (17.7 centimeters) long with a wingspread of about 15 inches (38.1 centimeters). Breeding birds have white underparts, light beige back and crown, white rump, and black upper tail with a white edge. In flight, each wing shows a single, white wing stripe with black highlights at the wrist joints and along the trailing edges. Breeding plumage characteristics are a single black breastband, which is often incomplete, and a black bar across the forehead. The black breastband and brow bar are generally more pronounced in breeding males than females. The legs and bill are orange in summer, with a black tip on the bill (Service 2003).

### **Critical Habitat**

Critical habitat on the wintering grounds was designated July 10, 2001 (66 FR 36038). That designation included 137 areas along the coasts of North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas, to provide sufficient wintering habitat to

support the piping plover at the population level and geographic distribution necessary for recovery of that species. A total of approximately 165,211 acres (66,881 hectares) and/or 1,798.3 miles (2,891.7 kilometers) were designated. There were 37 critical habitat units [approximately 62,454 acres (25,285 hectares), 797.3 miles (1,283.8 kilometers)] designated in Texas. These areas were believed to contain the essential physical and biological elements for the conservation of wintering piping plovers, and the physical features necessary for maintaining the natural processes that provide appropriate foraging, roosting, and sheltering habitat components.

The primary constituent elements for critical habitat are found in geologically dynamic coastal areas that contain intertidal (between annual low tide and annual high tide) sand beaches, sand and mud flats, associated dune systems, and flats above annual high tide. The primary constituent elements for the wintering population of the piping plover are:

- 1) Intertidal sand beaches, including sand flats or mudflats, between annual low tide and annual high tide, with no or very sparse emergent vegetation for feeding. In some cases, these flats may be covered or partially covered by a mat of blue-green algae.
- 2) Un-vegetated or sparsely vegetated sand, mud, or algal flats above annual high tide for roosting. Such sites may have debris or detritus, and may have micro-topographic relief offering refuge from high winds and cold weather.
- 3) Surf-cast algae for feeding.
- 4) Sparsely vegetated back beach, which is the beach area above mean high tide seaward of the dune line; or in cases where no dunes exist, seaward of a delineating feature such as a vegetation line, structure, or road. Back beach is used by plovers for roosting and refuge during storms.
- 5) Spits, especially sand, running into water for foraging and roosting.
- 6) Un-vegetated washover areas with little or no topographic relief for feeding and roosting. Washover areas are formed and maintained by the action of hurricanes, storm surges, or the extreme wave actions.
- 7) Natural conditions of sparse vegetation and little or no topographic relief mimicked in artificial habitat types (e.g. dredge spoil sites).

On March 20, 2006, the Texas General Land Office challenged the designation of 19 units of critical habitat along the Texas coast (Units 3, 4, 7, 8, 9, 10, 14, 15, 16, 17, 18, 19, 22, 23, 27, 28, 31, 32, and 33). On 26 July 2006, the United States District Court, Victoria County, Texas ruled the Service must vacate, re-evaluate and reconsider the designation of these units. The Service revised the designation of critical habitat for wintering piping plovers in Texas in 18 specific units. The Final Rule re-designating critical habitat for the wintering piping plover in Texas was published in the Federal Register May 19, 2009 (74 FR 23476), and became effective on June 18, 2009. All areas designated as critical habitat in Texas are currently occupied and contain sufficient primary constituent elements to support at least one life history function.

### **Distribution and Abundance**

Piping plovers breed only in North America within three geographic regions that encompass three distinct breeding populations: the Northern Great Plains, the Great Lakes, and the Atlantic Coast. The winter ranges of the different breeding populations overlap, making it impossible to distinguish the source population of a wintering bird unless it has been banded or marked on the breeding grounds. The piping plover's primary winter range is along the Atlantic and Gulf coasts from North Carolina to Mexico, and into the Bahamas and West Indies (Service 1985). Southward migration to the wintering grounds along the southern Atlantic coast and Gulf of Mexico shoreline extends from late July, August, and September. Individuals can be found on their wintering grounds throughout the year, but sightings are rare in May, June, and early July (Service 2003).

### **Habitat**

In most areas, wintering piping plovers depend on a mosaic of sites distributed through the landscape, as the suitability of a particular site for foraging or roosting is dependent on local weather and tidal conditions (Drake 1999). Plovers move among sites as environmental conditions change. In general, wintering piping plovers forage mostly on benthic invertebrates, insects, and crustaceans found within the intertidal areas of ocean beaches, washover areas with no or very sparse emergent vegetation, mudflats, sandflats, wrack lines; and shorelines of coastal ponds, lagoons or salt marshes. Roosting areas may be un-vegetated or sparsely vegetated and may have debris, detritus, or micro-topographic relief offering refuge to plovers from high winds and cold weather.

### **Life History**

Behavioral observations of piping plovers on the wintering grounds suggest that they spend the majority of their time foraging (Nicholls and Baldassarre 1990, Drake 1999, Service 2003). In general, wintering piping plovers forage mostly on benthic invertebrates, insects, and crustaceans found within the intertidal areas of ocean beaches; washover areas with no or very sparse emergent vegetation, mudflats, sandflats, wrack lines; and shorelines of coastal ponds, lagoons or salt marshes. Roosting areas may be un-vegetated or sparsely vegetated and may have debris, detritus, or micro-topographic relief offering refuge to plovers from high winds and cold weather. When not foraging, plovers undertake various maintenance activities such as roosting, preening, bathing, aggressive encounters (with other piping plovers and other species), and moving among available habitat locations (Zonick and Ryan 1996). Individual plovers tend to return to the same wintering sites year after year (Nicholls and Baldassarre 1990, Drake 1999, Service 2003).

### **Population Dynamics**

The Texas coast is a major wintering area for piping plovers, and may provide habitat for about 55 percent of birds found during winter censuses (Nicholls and Baldassarre 1990, Haig and Plissner 1993, Drake 1999, Elliott-Smith et. al. 2009). Since piping plovers spend 55 to 80 percent of their annual cycle associated with wintering areas, factors that affect their well being on the wintering grounds could substantially affect their survival and recovery (Service 1996). A consistent finding of all analyses of the demographic factors affecting the persistence and/or extinction of piping plover populations is that vulnerability to extinction is greatly increased by even small declines in survival rates (Melvin and Gibbs 1994; Plissner and Haig 2000a). Modeling by Melvin and Gibbs (1994), for example, postulated approximately four-fold increases in the likelihood of extinction of the Atlantic Coast piping plover population when

survival rates of adults and juveniles declined by as little as 5 and 10 percent, respectively, and other parameters were constant.

### **Reasons for Listing/Threats to Survival**

Threats to piping plover populations and habitat are similar on the breeding and wintering ranges. Habitat destruction and degradation are pervasive and have reduced physically suitable habitat. Human disturbance and predators further reduce breeding and wintering habitat quality and affect survival. Contaminants, as well as genetic and geographic consequences of small population size, pose additional threats to piping plover survival and reproduction (Service 2003).

A variety of human-caused disturbance factors have been noted that may affect plover survival or utilization of wintering habitat. Those factors include human disturbance such as recreational activities, inlet and shoreline stabilization projects, dredging of inlets that can affect spit formation, beach maintenance and nourishment, and pollution (Nicholls and Baldassarre 1990, Haig and Oring 1985, Haig and Plissner 1993). In some areas, natural erosion of barrier islands may also result in habitat loss.

### **Recovery Efforts**

The Atlantic Coast Piping Plover Recovery Plan (Service 1996) calls for the protection of all known wintering habitat by preventing habitat degradation and disturbance, including direct and indirect impacts of shoreline stabilization, navigation projects, development, disturbance by recreationists and their pets, and contamination and degradation due to oil or chemical spills. Factors that must be considered include: (1) disturbance depleting the birds' energy reserves, and (2) effects on prey availability that may last long after the completion of a given action. The Great Lakes and Northern Great Plains Piping Plover Recovery Plan (Service 1988) and the Recovery Plan for the Great Lakes Piping Plover (Service 2003) also call for protecting wintering piping plovers and managing their habitats to promote survival and recovery.

Adult survival is key to the continued and long term existence of the piping plover and to stepwise improvement toward meeting its recovery criteria. Protecting the wintering grounds allows adult piping plovers to maintain adequate body reserves so they survive the winter and can migrate back to nest in the spring. Broad management actions on the wintering grounds include protection of resting areas, designation of important shorebird wintering sites and regular shorebird surveys.

### **ENVIRONMENTAL BASELINE**

The environmental baseline includes past and present impacts of all federal, state, or private actions in the action area; the anticipated impacts of all proposed federal actions in the action area that have undergone formal or early section 7 consultation; and the impact of state and private actions that are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

### **Status of the Species within the Action Area**

The action area includes approximately six linear miles (approximately 73 acres) of beach proposed for nourishment on Galveston Island and the temporary DMPA at Apfel Park on Galveston Island, Galveston County, Texas.



### **Kemp's Ridley Sea Turtle**

The majority of Kemp's ridley sea turtles nest on the coastal beaches of the Mexican states of Tamaulipas and Veracruz, although a very small number of Kemp's ridleys consistently nest along the Texas coast. Historic nesting frequency on the south Texas coast is poorly known and only six Kemp's ridley sea turtles were documented prior to 1979 (Shaver and Caillouet 1998). However, 921 sea turtle nests were found on the Texas coast between 1979 and 2009; 846 were Kemp's ridley nests, 478 of which were found at PAIS (Dr. D. Shaver, National Park Service, personal communication 2009).

In 2002, Kemp's ridley sea turtles were documented nesting on Galveston Island and surrounding areas on the upper Texas coast, defined as the area from Matagorda Peninsula northward to Sabine Pass. In every subsequent year, Kemp's ridleys have nested on the upper Texas coast. In 2009, a record 197 Kemp's ridley nests were found in Texas, sixteen of which were on the upper Texas coast (Shaver 2009).

There have been 37 Kemp's ridley sea turtle nests recorded on Galveston Island since 2002. Two Kemp's ridley nests were confirmed in 2002, one nest in 2003, two nests in 2004, seven nests in 2005, nine in 2006, seven in 2007, six in 2008, and three in 2009 (Landry 2009, Shaver 2009). Fourteen of the Kemp's ridley nests found on Galveston Island from 2002-2009 have been in the area proposed for beach nourishment under DA permit SWG-2007-1025.

The entire 6-mile area proposed for beach nourishment, along with the beach area near the DMPA at Apfel Park, should be considered suitable habitat for nesting Kemp's ridley sea turtles.

### **Loggerhead Sea Turtle**

A majority of nesting loggerhead sea turtles in the U.S. are found in Florida. However, loggerheads occasionally nest on the Texas coast. Hildebrand (1981) suggested that loggerhead nesting along the Texas coast has occurred within the last 300 years, but the earliest loggerhead nest that he was able to confirm for Texas was found in 1977.

Of the 921 sea turtle nests found on the Texas coast between 1979 and 2009, 46 were loggerhead nests, 33 of which were found at PAIS, with only two found on the upper Texas coast (Dr. D. Shaver, National Park Service, personal communication 2009).

There have been no confirmed loggerhead nests found within the area proposed for beach nourishment. Therefore, while it is possible that a loggerhead could nest in the action area, the probability is fairly low.

### **Piping Plover**

The piping plover is a regular winter resident along the upper Texas coast (Haig and Oring 1985, Haig and Plissner 1993). Piping plovers begin arriving in July, with some late-nesting birds arriving in September. A few individuals can be found throughout the year but sightings are rare in late May, June, and early July. They begin leaving in late February to migrate back to the breeding sites, and by late May most birds have left (Haig and Elliott-Smith 2004).

Piping plovers may use the approximately six miles of beach proposed for nourishment for foraging, resting or loafing. The proposed DMPA located at Apfel Park is adjacent to designated critical habitat for the wintering piping plover, Texas Unit-35. Piping plovers may use this critical habitat unit for foraging, resting or sheltering.

The exact number of piping plovers that winter in Texas, and on Galveston Island, is unknown. However, an international piping plover winter census counted 1,904 wintering piping plovers in Texas in 1991, 1,333 in 1996 and 1,042 in 2001 (Haig and Plissner 1993, Plissner and Haig 2000b, Haig et. al. 2005). In 2006, a range-wide census was again conducted for breeding and wintering plovers. The 2006 wintering census consisted of one-time counts by qualified observers during a designated two-week period of time (January 23-February 6, 2006). The 2006 wintering piping plover census recorded a total of 3,884 individual plovers range-wide, with 2,090 individuals recorded in Texas and 114 individuals recorded on Galveston Island (Elliott-Smith et. al. 2009).

It is important to note that the presence or absence of piping plovers at any given location or time of year cannot be determined by this type of census, which is limited to a single observation within a specific period of time. Piping plovers may occur throughout the action area in varying numbers and concentrations depending on annual population fluctuations, time of year, and local weather and tidal conditions.

The entire 6-mile area proposed for beach nourishment, along with the beach area at Apfel Park proposed for the temporary DMPA, should be considered suitable habitat for wintering piping plovers.

### **Piping Plover Critical Habitat**

Designated critical habitat (Texas Unit-35) for the wintering piping plover is located adjacent to Apfel Park. This unit consists of beach and sand flats on the north, west, and east shore of Big Reef, down to mean low, low water. The South Jetty is not included. The area is currently managed by the City of Galveston. This unit includes lands known as wind tidal flats that are infrequently inundated by seasonal winds (66 FR 36038).

### **Factors Affecting Species Environment within the Action Area**

Galveston Island is a barrier island located along the upper Texas coast in the Gulf of Mexico. Barrier islands are traditionally dynamic systems, with wind, waves, storms, tidal and longshore currents moving sand along the beach (Britton and Morton 1989). Galveston Island, like much of the upper Texas coast, has been experiencing severe beach erosion in recent years. Hurricane Ike, a strong category two storm, made landfall on the upper Texas coast on September 13, 2008, increasing erosion on Galveston Island. Hurricane Ike caused an average of 136 feet of erosion between the west end of the Galveston seawall and the eastern boundary of Galveston Island State Park, with some areas receding up to 280 feet (Corps 2009).

A wide range of past, present and ongoing beach disturbance activities occur within the proposed action area. As storms and hurricanes have eroded Galveston beaches, nourishment activities have attempted to widen them. Nourishment activities can change the sediment color and composition, and may alter coastal processes. Beach nourishment occurred in the action area, albeit on a smaller scale, in 2003 under a previous Corps permit.

Beach scraping and raking has increased in frequency in recent years; beach cleaning can artificially steepen beaches, and change sediment distribution patterns. Artificial dune systems are often constructed and maintained to protect beachfront structures. Excessive recreational use of beaches and flats may make these habitats unsuitable to the species that use these areas.

Residential development and recreational activities such as walking, jogging, walking unleashed pets, and operating vehicles on the beach increases the potential for wintering piping plovers to be impacted by loss of habitat, or could cause interference in roosting, resting and foraging activities. These types of activities could also disrupt sea turtle nesting habitat and activities.

### **Summary**

Nesting Kemp's ridley sea turtles and wintering piping plovers are known to occur in the action area. Loggerhead sea turtles may nest in the area, but no nests have been recorded in the action area to-date. Galveston Island has been experiencing increased erosion in recent years, erosion that was exacerbated by the recent hurricane. Disturbances such as beach nourishment and beach raking are relatively common in the action area, and the adjacent uplands have already been partially developed for residential housing.

### **EFFECTS OF THE ACTION**

Under section 7(a)(2) "effects of the action" refers to the direct and indirect effects of an action on a species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action. The effects of the proposed action are added to the environmental baseline to determine the future baseline that serves as the basis for the determination in this biological opinion. The impacts discussed below are the Service's evaluation of the direct and indirect effects of the proposed action. Indirect effects are those caused by the proposed action that occur later in time, but are still reasonably certain to occur (50 CFR 402.02). The Service has determined that there are no interrelated or interdependent actions apart from the action under consideration.

### **Kemp's Ridley and Loggerhead Sea Turtles**

#### **Beneficial Effects**

Beach nourishment on approximately 6 miles of beach could provide additional nesting habitat for Kemp's ridley and loggerhead sea turtles, particularly in light of the severe erosion that occurred in the action area as a result of Hurricane Ike. In addition, the project would provide an opportunity to educate the public on the importance of beach habitats for nesting sea turtles.

#### **Direct Effects**

Schroeder (1994) found that even under the best of conditions, experienced sea turtle nest surveyors can misidentify about seven percent of nesting attempts as false crawls, in which a female turtle comes ashore to nest but returns to the water without digging a nest or laying eggs. Weather, tides, and offroad recreational vehicle tracks can obscure sea turtle tracks, especially after night nesting and before morning surveys. Turtle patrollers and/or monitors locate nests primarily by searching for the tracks left in the sand and locating females during their nesting activity. However, nesting turtles do not always leave visible tracks on the beach, particularly in areas with very hard packed sand, very soft and blowing sand, and thick seaweed. The passage of heavy equipment or construction vehicles could remove sea turtle tracks, making it difficult

for the monitor to find a nest for investigation and protection. Therefore, even when turtle monitors are employed, sea turtles, hatchlings or eggs could be harmed by construction activities.

#### *Burial of Sea Turtles, Eggs, or Hatchlings*

Deposition of sand for beach nourishment on approximately 6 miles of beach could harm adult female sea turtles that emerge and attempt to nest in the action area during nourishment activities, but remain undetected by sea turtle monitors and/or construction crews. Likewise, undetected nests could be buried by sand, crushing fragile eggs or limiting the ability of hatchlings to climb out of the nest and reach the ocean.

#### *Collisions with Heavy Equipment and Vehicles*

Operation of heavy equipment on the beach can crush nesting turtles, stranded turtles, hatchlings, and eggs (Mann 1977; NMFS and Service 1991a, 1991b, 1992, 1993; Ernest et al. 1998). Sea turtles on the beach at some stage of nesting may be difficult to see, and may be hit by vehicles or heavy equipment. Hatchlings may emerge at night or early in the morning from in-situ nests missed by sea turtle monitors. Because of their extremely small size, live hatchlings on the beach during the day are vulnerable to being run over.

#### *Compaction of Undetected Nests*

Mann (1977) reported that driving directly above incubating egg clutches can cause sand compaction, which may decrease nest success and directly kill pre-emergent hatchlings and eggs potentially by physical crushing or collapse of the nest chamber. Vehicles can also compact the sand, making it more difficult or impossible for nesting turtles to excavate a nest cavity. This can lead to increased false crawls and nests with shallow egg chambers (Fletemeyer 1996). Compaction could also make it more difficult for hatchlings to emerge from an undetected nest. Many factors, including speed, weight, and size of the vehicle, the timing of the event with respect to the incubation period, the depth of the eggs/hatchlings (below grade) at the time of impact, and the physical characteristics of the nest itself, will influence whether or not, and the extent to which, mortality or injury occurs. Further, there is no established relationship between the cumulative number of times a particular nests has been run over and the extent and duration of the mortality or injury event. Also confounding this analysis are other factors that may affect the viability of any particular sea turtle nest. For example, tidal inundation, storm events, predation, and accretion/erosion of sand could negatively influence a sea turtle nest deposited in areas where beach driving also occurs (NMFS and Service 1991a; 1991b; 1992; 1993).

For these reasons, it is not possible to quantify the negative harmful effects heavy equipment or construction vehicles could have on undetected nests in the action area.

#### *Entrapment of Hatchlings in Vehicle Tire Ruts and Berms*

It is reported that vehicular ruts and berms create obstacles for hatchlings moving from the nest to the ocean. Upon encountering a vehicle rut, hatchlings may be disoriented along the vehicle track rather than crossing over it to reach the water. Apparently, hatchlings become diverted not because they cannot physically climb out of the rut (Hughes and Caine 1994), but because the sides of the track cast a shadow and the hatchlings lose their line of sight to the ocean horizon. Hatchlings detoured along vehicle ruts are at greater risk to vehicles, predators, fatigue and desiccation. If trapped for a period of time, this could cause them to weaken, become inverted, or succumb due to predation, disorientation, crushing, or dehydration (Hosier et al. 1981; Fletemeyer 1996; Ernest et al. 1998). The depth and slope of the ruts influence the amount of

impact, with deeper and more steeply sloped ruts causing a greater impact. Hosier et al. (1981) found that 3.9 to 5.9 inch (10 to 15 centimeter) deep tracks may serve as a significant impediment to loggerhead hatchlings. Berms may also create a barrier for adult nesting turtles and impact them by making them come ashore to nest and then abandon the nesting attempt or choose a less than suitable nesting area.

#### *Vibration and Noise Impacts on Adults and/or Eggs*

Vibrations and noise caused by heavy equipment, construction vehicles or temporary pipelines on the beach could frighten nesting turtles, harassing them, and possibly leading to a false crawl (NMFS and Service 1991a, 1991b, 1992; Ernest et al. 1998). Vibrations could also harm incubating eggs, but these effects are difficult to assess due to a lack of scientific data.

#### *Lighting*

Work lights can disorient loggerhead sea turtles that nest at night, possibly leading to an increase in false crawls. Lights can also disorient Kemp's ridley and loggerhead hatchlings from undiscovered nests; they could crawl in the wrong direction rather than enter the sea. This can make hatchlings more vulnerable to crushing, predation, and dehydration (NMFS and Service 1991a, 1991b; Fletemeyer 1996). It is unlikely that adult Kemp's ridleys, which are primarily daytime nesters, will be directly affected by artificial work lights.

#### **Indirect Effects**

Indirect effects are caused by or result from the proposed action, are later in time, and are reasonably certain to occur.

#### *Change in Beach Sediment Composition*

Sediments surrounding the egg chamber largely influence the incubation environment of the clutch. Temperature, moisture content, and gas exchange, all extremely important factors in the development of sea turtle embryos, are influenced by sediment characteristics (Ackerman et al. 1985). Thus, hatching success, emerging success, sex ratios, and hatchling fitness (size and vitality) may be different in compact sediments than in more loosely configured sediments of comparable grain size. Minute changes in the composition of beach sediment may affect sea turtle nesting frequency and success. Over time, these types of changes could result in the nourished beach becoming less suitable for use by nesting sea turtles and/or negatively impact the eggs and hatchlings.

#### *Increased Beach Use and Residential Development*

Beach nourishment in the action area would result in a wider beach profile, which would almost certainly encourage residential development in nearby upland areas. Additional residential development would increase the number of beach visitors to the area, increase recreational use in the action area (increasing vehicles, pedestrians, pets, and predators), and possibly expand beach grooming practices into additional areas. Beach maintenance activities such as raking and blading can modify sea turtle habitat by compacting the sand, unstablizing the dunes, creating ruts, berms and escarpments and also providing additional vehicle access points to the beach. Increased lighting from these developments may affect sea turtles nesting on the nearby beach. Beach nourishment would also undoubtedly lead to increased public use that is unrelated to residential development in the area.

## **Piping Plover**

### **Beneficial Effects**

The project would provide an opportunity to educate the public on the importance of beach habitats for wintering piping plovers, primarily through the development and implementation of a public outreach program by the Park Board of Trustees of the City of Galveston.

### **Direct Effects**

#### *Harm and Harassment from Construction Activities*

Heavy equipment, construction vehicles and temporary pipelines placed and operated on the beach could pose a hazard to roosting piping plovers, especially during cold temperatures or at night. The deposition of sand on approximately six miles of beach and the construction of the DMPA at Apfel Park would temporarily affect the suitability of this area for wintering piping plovers. Benthic invertebrate and crustacean communities that piping plovers forage on would be temporarily disrupted, and the noise, human activity and lighting associated with nourishment activities would result in harassment of the plovers.

### **Indirect Effects**

#### *Increased Residential Development*

Beach nourishment in the action area would result in a wider beach profile, which would almost certainly encourage public use and residential development in nearby upland areas. Additional residential development would increase the number of beach visitors to the area, increase recreational use in the action area (increasing vehicles, pedestrians, pets, and predators), and possibly expand beach grooming practices into additional areas. Beach maintenance activities such as raking and blading can modify wintering piping plover habitat by removing debris, affecting prey species, and providing additional vehicle access points to the beach.

### **Critical Habitat Analysis**

#### **Piping Plover Critical Habitat, Unit TX-35**

This biological opinion does not rely on the regulatory definition of “destruction or adverse modification” of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statutory provisions of the Act to complete the following analysis with respect to critical habitat.

In this biological opinion, the key factor related to the adverse modification determination is whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the wintering piping plover and would retain the current ability for the physical and biological features to be functionally established. Activities that may destroy or adversely modify critical habitat are those that alter the physical and biological features to an extent that appreciably reduces the conservation value of all proposed and designated critical habitat for the winter piping plover.

The primary constituent elements (PCEs) determined essential for conservation of wintering piping plovers are those habitat components that support foraging, roosting, and sheltering and the physical features necessary for maintaining the natural processes that support these habitat

components. The PCEs for wintering ground critical habitat are found in geologically dynamic coastal areas that contain intertidal sand beaches and sand and mud flats (between annual low tide and annual high tide), associated dune systems, and flats above annual high tide.

The proposed DMPA at Apfel Park is adjacent to critical habitat unit TX-35. The effects of the DMPA on critical habitat unit TX-35 would be limited to temporary harassment and/or displacement of wintering piping plovers that may otherwise use the area. Heavy equipment, beach vehicle traffic, and construction personnel activities at the DMPA may temporarily displace plovers, causing them to move to other suitable nearby locations where these activities are not occurring; noise and human disturbance at the DMPA may temporarily and unintentionally harass plovers in the critical habitat unit. However, the beach surrounding the DMPA will be restored to pre-construction condition following completion of the beach nourishment, and the DMPA is not expected to alter the PCEs of the critical habitat unit.

### **Summary**

The proposed project could benefit Kemp's ridley and loggerhead sea turtles by providing additional nesting habitat, and could benefit these sea turtles and wintering piping plovers through public education and outreach. However, direct effects to sea turtles may occur from burial of sea turtles, eggs, or hatchlings; collisions with heavy equipment or vehicles; compaction of undetected nests; vibration and noise impacts on adults and/or eggs; entrapment of hatchlings in vehicle tire ruts and berms; and lighting. Indirect effects to sea turtles may occur from changes in beach sediment composition, increased public use and residential development. Direct effects to piping plovers may occur in the form of harassment due to construction activities, and indirect effects could result in increased residential development. The overall effect on designated wintering piping plover critical habitat is expected to be minimal.

### **CUMULATIVE EFFECTS**

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Beach nourishment in the action area would result in a wider beach profile, which would almost certainly make residential development or re-development in nearby upland areas more desirable. Additional development or other activities occurring within the action area may occur with or without Federal authorization. Continued development may further increase the number of beach users to the area (increasing vehicles, pedestrians, pets, and predators) which will have associated effects to listed species within the action area. Increased lighting from development may affect sea turtle nesting habitat on the beachfront; increased predators associated with people may affect wintering piping plovers.

Some officials with the City of Galveston indicate that this project could make it difficult for the City to prevent development from moving closer to the Gulf. It is uncertain how the nourishment project would affect the Texas General Land Office's public beach boundary, currently marked at the line of vegetation or at 200 feet from the mean low tide line. The beach nourishment could theoretically move this line 100 feet or more closer to the Gulf. This would undoubtedly cause an increase in development in these areas, increased conflicts with piping plovers and sea turtles, and an increased demand for beach nourishment projects.



## **CONCLUSION**

After reviewing the current status of the Kemp's ridley sea turtle, the loggerhead sea turtle, and the piping plover; the environmental baseline for the action area; the effects of the issuance of DA permit SWG-2007-1025; and the cumulative effects; it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the Kemp's ridley sea turtle, the loggerhead sea turtle, and the piping plover, and is not likely to destroy or adversely modify designated critical habitat.

### **Kemp's Ridley Sea Turtle**

The Service finds that the proposed action is not likely to jeopardize the Kemp's ridley sea turtle for the following reasons:

1. Although the number of Kemp's ridley nests in Texas has steadily increased in recent years, the majority of Kemp's ridley sea turtles continue to nest on beaches in the Mexican states of Tamaulipas and Vera Cruz. The number of Kemp's ridley nests found in Texas (197 in 2009) is significantly lower than the number of nests in Mexico (approximately 18,000 in 2008).
2. The conservation measures proposed by the Corps and the Park Board of Trustees of the City of Galveston will reduce the likelihood that nesting Kemp's ridleys, their eggs or hatchlings are harmed during beach nourishment.

### **Loggerhead Sea Turtle**

The Service finds that the proposed action is not likely to jeopardize the loggerhead sea turtle for the following reasons:

1. Very few loggerhead sea turtles have nested in Texas in recent years, and there have been no recorded loggerhead nests in the action area. The state of Florida has significantly more nests every year than any other state in the U.S.
2. The conservation measures proposed by the Corps and the Park Board of Trustees of the City of Galveston will reduce the likelihood that nesting loggerheads are harmed during beach nourishment.

### **Piping Plover**

The Service finds that the proposed action is not likely to jeopardize the wintering piping plover for the following reasons:

1. Beach nourishment and the establishment of the DMPA would result in temporary harassment of piping plovers in and adjacent to the action area. However, the proposed action would not permanently alter the suitability of these areas for wintering piping plovers.

2. The conservation measures proposed by the Corps and the Park Board of Trustees of the City of Galveston will reduce the likelihood that wintering piping plovers are harmed during beach nourishment.

### **Piping Plover Critical Habitat**

The Service finds that the proposed action is not likely to destroy or adversely modify designated critical habitat for the following reasons:

1. The effects of the project on critical habitat unit TX-35 would be limited to temporary harassment and/or displacement of wintering piping plovers that may otherwise use the area, causing them to move to other suitable nearby locations.
2. The DMPA will be restored to pre-construction condition following completion of the project, and the PCEs of the critical habitat unit will not be affected.

The conclusions of this biological opinion are based on full implementation of the project as described in the "Description of the Proposed Action" section of this document, including any Conservation Measures that were incorporated into the project design.

### **INCIDENTAL TAKE STATEMENT**

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be undertaken by the Corps so that they become binding conditions of any grant or permit issued to the Park Board of Trustees of the City of Galveston, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require the Park Board of Trustees of the City of Galveston to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps or Park Board of Trustees of the City of Galveston must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement. [50 CFR §402.14(i)(3)].

## AMOUNT OR EXTENT OF TAKE ANTICIPATED

### *Kemp's Ridley Sea Turtle*

From 2002-2009, fourteen (14) Kemp's ridley nests have been confirmed on Galveston Island in the area proposed for beach nourishment under DA permit SWG-2007-1025. The Park Board of Trustees of the City of Galveston has committed to monitoring beach nourishment activities during the sea turtle nesting season. However, Kemp's ridleys often cover themselves with sand while nesting and can be very difficult to see. In addition, even experienced sea turtle nest surveyors can misidentify about seven percent of nesting attempts as false crawls (Schroeder 1994) and Kemp's ridley nests in the action area may not be found by monitors.

Therefore, the Service anticipates one adult Kemp's ridley sea turtle and the eggs and/or hatchlings from three undiscovered or in-situ nests will be taken as a result of this proposed action over the 5-year term of the permit. The incidental take is expected to be in the form of harassment, injury and/or death from: burial of sea turtles, eggs, or hatchlings; collisions with heavy equipment or vehicles; compaction of undetected nests; vibration and noise impacts on adults and/or eggs; and entrapment of hatchlings in vehicle tire ruts and berms.

The Service anticipates that incidental take of hatchlings and eggs will be difficult to detect for the following reasons: (1)(a) turtle nests are difficult to find, (b) natural factors, such as rainfall, wind, and tides may obscure crawls, and (c) human-caused factors, such as pedestrian traffic, may obscure crawls, resulting in nests being destroyed because they were missed during the monitoring surveys; (2) the total number of hatchlings per undiscovered nest is unknown; (3) the reduction in percent hatching and emerging success per nest over an undisturbed nest site is unknown; (4) an unknown number of females may avoid the project beaches and be forced to nest in less optimal areas; and (5) lights may disorient an unknown number of hatchlings and cause death. However, the level of take of Kemp's ridley sea turtle adults, nests, hatchlings and eggs can be anticipated because: (1) 14 Kemp's ridley sea turtle nests were documented within the action area from 2002 to 2009; and (2) there is documentation of 13 Kemp's ridley nests outside the action area that were not detected by turtle patrols and hatched in-situ.

### *Loggerhead Sea Turtle*

The Service anticipates harassment, in the form of noise and human disturbance, of one loggerhead sea turtle due to beach nourishment and construction activities over the 5-year term of the permit. Effects on these species are expected to be temporary and non-lethal.

### *Piping Plover*

The Service anticipates harassment, in the form of noise and human disturbance, of an unknown number of piping plovers due to beach nourishment and construction activities. Effects on these species are expected to be temporary and non-lethal.

## EFFECT OF THE TAKE

In the accompanying biological opinion, the Service has determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

## **REASONABLE AND PRUDENT MEASURES**

Pursuant to section 7(b)(4) of the Act, the following reasonable and prudent measure(s) are necessary and appropriate to minimize the amount of incidental take of Kemp's ridley sea turtles, loggerhead sea turtles and piping plovers:

As detailed in the project description, the Corps and the Park Board of Trustees of the City of Galveston have agreed on conservation measures to avoid and minimize the project's impacts to sea turtles and piping plovers. The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize the impact of incidental take on sea turtle species and to assist the Service in improving methods to minimize impacts of incidental take on these listed species.

1. The Corps and Park Board of Trustees of the City of Galveston shall establish and implement a protocol to notify the Service immediately of direct take of a sea turtle, excavated eggs, or an undetected nest.

## **TERMS AND CONDITIONS**

In order to be exempt from the prohibitions of section 9 of the Act, the Corps and the Park Board of the City of Galveston must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. In the event that activities result in the direct take (killing, harming, or maiming) of a sea turtle, hatchling, and/or eggs, the person(s) responsible for monitoring sea turtles shall notify the Service's Clear Lake Ecological Services Field Office (281/286-8282) and Dr. Donna Shaver (National Park Service/PAIS), and the Texas Sea Turtle Stranding Coordinator (361/949-8173, ext. 226). A standard methodology for handling dead or stranded sea turtles will be developed, and will include contacting the Service and the Sea Turtle Stranding Coordinator.. This methodology shall be directed at determining the cause of death and ensuring that relevant data is recorded. The finder has the responsibility to ensure that evidence intrinsic to the specimen is not disturbed.
2. The Corps will submit a summary report annually to the Service's Clear Lake Ecological Services Field Office. The Corps summary report should include conservation measures implemented during project activities, the success of such measures, any incidents that may have occurred, and any recommendations on improvements to those measures. Reports should be sent to: U.S. Fish and Wildlife Service, Clear Lake Ecological Services Field Office, ATTN: Field Supervisor, 17629 El Camino Real Suite 211, Houston, Texas 77058.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

## CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

For the benefit of nesting sea turtles and wintering piping plovers, the Service recommends the following:

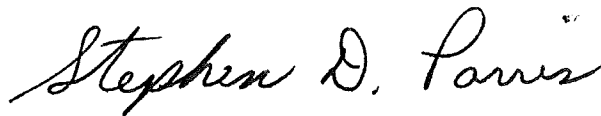
1. Work with the Service to design and fund a research program to determine the long-term effects of beach nourishment activities on sea turtle nesting success and/or wintering piping plover critical habitat components.

## REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in your request for issuance of SWG-2007-1025. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The Service appreciates the Corps' efforts to identify and minimize effects to listed species from this project. For further information please contact staff biologist Catherine Yeargan or Edith Erfling at 281/286-8282. Please refer to the consultation number Consultation No. 21410-2008-0257 in future correspondence concerning this project.

Sincerely,



Stephen D. Parris  
Field Supervisor, Clear Lake ES Field Office

cc:

Texas State Administrator, U.S. Fish and Wildlife Service, Austin, Texas  
Regional Director, ATTN: Assistant Regional Director, Ecological Services, Albuquerque, NM  
Anne Hecht, U.S. Fish and Wildlife Service, Piping Plover Coordinator, Region 5  
Sandy MacPherson, U.S. Fish and Wildlife Service, Sea Turtle Coordinator, Region 4  
Lisa Lathem, U.S. Corps of Engineers, Galveston District, Galveston, Texas

## LITERATURE CITED

- Ackerman, R.A., R.C. Seagrave, R. Dmi'el, and A. Ar. 1985. Water and heat exchange between parchment-shelled reptile eggs and their surroundings. *Copeia* 1985:703-711.
- Britton, J.C. and B. Morton. 1989. *Shore Ecology of the Gulf of Mexico*. University of Texas Press, Austin, Texas, U.S.A.
- Burchfield, P., J. L. Pena, and B. Arroyo. 2002. Report on the Mexico/United States of America population restoration project for the Kemp's Ridley sea turtle (*Lepidochelys kempii*) on the coasts of Tamaulipas and Veracruz, Mexico.
- Drake, K.R. 1999. Movements, habitat use, and survival of wintering piping plovers. MS Thesis. Texas A&M University-Kingsville. 82 pp.
- Ehrhart, L. M. 1989. A status review of the loggerhead turtle, *Caretta caretta*, in the Western Atlantic. Pages 122-139 in L. Ogren, F. Berry, K. Bjorndal, H. Kumpf, R. Mast, G. Medina, H. Reichart, and R. Witham, eds. *Proceedings of the Second Western Atlantic Turtle Symposium*. NOAA Technical Memorandum. NMFS-SEFC-226.
- Elliott-Smith, E., Haig, S.M., and Powers, B.M., 2009, Data from the 2006 International Piping Plover Census: U.S. Geological Survey Data Series 426, 332 p.
- Ernst, C.H., J.E. Lovich, and R.W. Barbour. 1994. Kemp's ridley or Atlantic ridley. Pages 74-82 in N.P. Dutro, editor. *Turtles of the United States and Canada*. Smithsonian Institution Press, Washington, D.C., USA.
- Ernest, R.G., R.E. Martin, and K.A. Duhring. 1998. Beach Driving and Sea Turtles: What Kind of Risk? In: *Proceedings of the Seventeenth Annual Symposium on Sea Turtle Biology and Conservation*, March 4-8, 1997, Orlando, Florida, p. 50-53. S.P. Epperly and J. Braun (compilers). NOAA Tech. Memo. NMFS-SEFSC-415.
- Fletemeyer, J.R. 1996. Guest editorial: The shot heard around the world—Volusia Sea Turtle Suit. *Marine Sea Turtle Newsletter* 72: 16-17.
- Haig, S.M. and L.W. Oring. 1985. The distribution and status of the piping plover throughout the annual cycle. *Journal of Field Ornithology* 56:334-345.
- Haig, S.M., and J.H. Plissner 1993. Distribution and abundance of Piping Plovers: results and implications of the 1991 international census. *Condor* 95:145-156.
- Haig, S.M., and E. Elliott-Smith. 2004. Piping Plover. In A. Poole (eds.), *The Birds of North America Online*. Ithaca: Cornell Laboratory of Ornithology; Retrieved from The Birds of North American Online database:  
[http://bna.birds.cornell.edu/BNA/account/Piping\\_Plover/](http://bna.birds.cornell.edu/BNA/account/Piping_Plover/).

- Haig, S.M., Ferland, C.L., Cuthbert, F.J., Dingleline, J., Goossen, J.P., Hecht, A., and McPhillips, N., 2005, A complete species census and evidence for regional declines in Piping Plovers: *Journal of Wildlife Management*, v. 69, p. 160-173.
- Hildebrand, H.H. 1981. A historical review of the status of sea turtle populations in the western Gulf of Mexico. In: *Biology and Conservation of Sea Turtles*, November 26-30, 1979. Washington, D.C., p. 447-453. K. Bjorndal (editor). Smithsonian Institution Press, Washington, D.C.
- Hosier, P.E., M. Kochhar, and V. Thayer. 1981. Off-road vehicle and pedestrian track effects on the sea-approach of hatchling loggerhead turtles. *Environmental Conservation* 8(2): 158-161.
- Hughes, A.L., and E.A. Caine. 1994. The effect of beach features on hatchling loggerhead sea turtles. Page 237 in *Proceedings of the Fourteenth Annual Symposium on Sea Turtle Biology and Conservation*, March 1B5, 1994, Hilton Head, South Carolina. National Oceanic and Atmospheric Administration, Technical Memorandum NMFS-SEFSC-351.
- Landry, A.M. 2009. Upper Texas coast *Kemp's ridley* nest data. Unpublished data.
- Mann, T.M. 1977. Impact of developed coastline on nesting and hatchling sea turtles in southeastern Florida. Unpublished M.S. Thesis. Florida Atlantic University, Boca Raton.
- Melvin, S.M. and J.P. Gibbs. 1994. Viability analysis for the Atlantic Coast population of piping plovers. Unpublished report to the U.S. Fish and Wildlife Service, Sudbury, Massachusetts. 16 pp.
- Meylan, A., B. Schroeder, and A. Mosier. 1995. Sea turtle nesting activity in State of Florida 1979-1992. Florida Marine Research Publications Number 52, St. Petersburg, Florida. 51pp.
- National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1991a. Recovery Plan for U.S. Population of Atlantic Green sea turtle (*Chelonia mydas*). National Marine Fisheries Service, Washington, D.C. 52 pp.
- National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1991b. Recovery plan for U.S. population of loggerhead turtle (*Caretta caretta*). National Marine Fisheries Service, Washington, D.C. 64pp.
- National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1992. Recovery Plan for Leatherback Turtles (*Dermochelys coriacea*) in the U.S. Caribbean, Atlantic, and Gulf of Mexico. National Marine Fisheries Service, Washington, D.C. 65 pp.
- National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1993. Recovery Plan for Hawksbill Turtles (*Eretmochelys imbricate*) in the U.S. Caribbean Sea, Atlantic Ocean, and Gulf of Mexico. National Marine Fisheries Service, St. Petersburg, Florida. 52 pp.



- National Marine Fisheries Service and U.S. Fish and Wildlife Service. 2007. Kemp's ridley sea turtle (*Lepidochelys kempii*) 5-year review: summary and evaluation. National Marine Fisheries Service Silver Spring, MD and U.S. Fish and Wildlife Service, Albuquerque, NM. 50 pp.
- Nicholls, J.L. and G.A. Baldassarre. 1990. Habitat associations of piping plovers wintering in the United States. *Wilson Bulletin* 102:581-590.
- Plissner J.H. and S.M. Haig. 2000a. Metapopulation models for piping plovers (*Charadrius melodus*). *Biological Conservation* 92:163-173.
- Plissner, J.H., and Haig, S.M., 2000b, Status of a broadly-distributed endangered species: Results and implications of the Second International Piping Plover Census: *Canadian Journal of Zoology*, v. 78, p. 1-12.
- Ross, J.P. 1995. Historical decline of loggerhead, ridley, and leatherback sea turtles. In: *Biology and Conservation of Sea Turtles*, pp 185-195 K. A. Bjorndal, ed. Smithsonian Institution
- Schroeder, B.A. 1994. Florida index nesting beach surveys: Are we on the right track? Pages 132-133 in Bjorndal, K.A., A.B. Bolten, D.A. Johnson, and P.J. Eliazar (compilers). *Proceedings of the 14th Annual Symposium on Sea Turtle Biology and Conservation*. NOAA Technical Memorandum NMFS-SEFSC-351. Press, Washington, D.C.
- Shaver, D.J. 1997. Kemp's ridley turtles from an international project return to Texas to nest. In: *Proceedings of the Sixteenth Annual Gulf of Mexico Information Transfer Meeting*, December 10-12, 1996, New Orleans, Louisiana, p. 38-40. University of New Orleans, Office of Conference Services (compiler). U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region MMS 97-0038.
- Shaver, D.J. 1998. Kemp's ridley sea turtle nesting on the Texas coast, 1979-1996. In: *Proceedings of the Seventeenth Annual Symposium on Sea Turtle Biology and Conservation*, March 4-8, 1997, Orlando, Florida, p. 91-94. S.P. Epperly and J. Braun (compilers). NOAA Tech. Memo. NMFS-SEFSC-415.
- Shaver, D.J. 1999a. Kemp's ridley sea turtle project at Padre Island National Seashore, Texas. In: *Proceedings of the Seventeenth Annual Gulf of Mexico Information Transfer Meeting*, December 16-18, 1997, New Orleans, Louisiana, p. 342-347. M. McKay and J. Nides (editors). U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, MMS 99-042.
- Shaver, D.J. 1999b. Padre Island National Seashore Kemp's ridley sea turtle project and sea turtle strandings 1998 report. U.S. Department of the Interior, U.S. Geological Survey. 58 pp.
- Shaver, D.J., and C.W. Caillouet, Jr. 1998. More Kemp's ridley turtles return to south Texas to nest. *Marine Turtle Newsletter* 82:1-5
- Shaver, D.J. 2009. Texas coast *Kemp's ridley* nesting data. Unpublished data.

- Stancyk, S. 1982. Non-human predators of sea turtles and their control. In: K. A. Bjorndal ed. Biology and conservation of sea turtles. pp 139-152, Smithsonian Institution Press, Washington, D. C.
- Texas Parks and Wildlife Department. 1995. Endangered and threatened animals of Texas their life history and management. Texas Parks and Wildlife Press. ISBN: 1-885696-04-03.
- Turtle Expert Working Group. 1998. An assessment of the Kemp's ridley (*Lepidochelys kempii*) and loggerhead (*Caretta caretta*) sea turtle populations in the western North Atlantic. NOAA Technical Memorandum.
- Turtle Expert Working Group. 2000. Assessment update for the Kemp's ridley and loggerhead sea turtle populations in the western North Atlantic. NOAA Technical Memorandum NMFS-SEFSC-444.
- U.S. Army Corps of Engineers. 2009. Biological assessment of potential impacts to threatened and endangered species, West Galveston Island Beach Nourishment Project, Galveston County, Texas.
- U.S. Fish and Wildlife Service. 1985. Endangered and threatened wildlife and plants: Determination of endangered and threatened status for the piping plover: Final rule. Federal Register 50(238):50726-50734.
- U.S. Fish and Wildlife Service. 1988. Great Lakes and Northern Great Plains Piping Plover Recovery Plan. Twin Cities, MN. 160 pp.
- U.S. Fish and Wildlife Service. 1996. Piping plover (*Charadrius melodus*), Atlantic Coast population, revised recovery plan. Hadley, Massachusetts. 258 pp.
- U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Great Lakes Piping Plover (*Charadrius melodus*). Ft. Snelling, Minnesota. Viii+141pp.
- U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1992. Recovery Plan for the Kemp's Ridley Sea Turtle (*Lepidochelys kempii*). National Marine Fisheries Service, St. Petersburg, Florida. 40 pp.
- Zonick, C. and M. Ryan. 1996. The ecology and conservation of piping plovers (*Charadrius melodus*) wintering along the Texas Gulf Coast. Department of Fisheries and Wildlife, University of Missouri, Columbia, Missouri 65211. 1995 Annual Report. 49 pp.

CONDITIONS FOR HOPPER DREDGING  
NAVIGATION CHANNELS (MAINTENANCE) AND BORROW AREAS  
IN THE GALVESTON DISTRICT  
November 2009

1. The Permittee shall advise the U.S. Army Corps of Engineers (COE), Galveston District, Regulatory Branch, Chief of Compliance Section (Chief) in writing and electronically at least 10 days prior to beginning the dredging, providing the location or locations at which a dredge or dredges will be placed on the work. The Permittee's dredging contractor's name, phone number, and address, including any inspector's contact name and phone number, must be provided to the Chief prior to any work. The Permittee shall provide the Chief written notification of project completion immediately upon completion of the work.

2. All terms and conditions set forth in the "National Marine Fisheries Service (NMFS) November 19, 2003, Gulf of Mexico Regional Biological Opinion (GRBO) to the U.S. Army Corps of Engineers (COE) on Hopper Dredging of Navigation Channels and Borrow Areas in the U.S. Gulf of Mexico" and Revision 2 to the GRBO, issued January 9, 2007, applicable to the COE Galveston, New Orleans, Mobile, and Jacksonville Districts; and the "U.S. Army Corps of Engineers Management Protocol for Effective Implementation of the National Marine Fisheries Service Regional Biological Opinion for Hopper Dredging Gulf of Mexico, 29 December 2006", will be adhered to and implemented, including the requirement for onboard NMFS-approved protected species observers. A copy of the biological opinion and the COE protocol for the Gulf of Mexico can be viewed on the Engineer Research and Development Center (ERDC) web site at the following link:  
<http://el.erdc.usace.army.mil/seaturtles/refs-bo.cfm>.

3. A pre-dredging inspection of the hopper dredge will be performed by the COE Galveston District inspector in accordance with the protocol entitled "COE Sea Turtle Inspection Checklist for Hopper Dredges for COE projects or COE/Army Permitted Projects". The checklist can be viewed on the following web site:

<http://el.erdc.usace.army.mil/seaturtles/docs/deflector-checklist.pdf>

The Permittee shall ensure that all corrective actions proposed by the COE as a result of the pre-dredging hopper dredge

inspection are implemented or addressed, and that dredging is not initiated prior to receiving COE approval to proceed.

4. *Hopper Dredging:* Hopper dredging activities in Gulf of Mexico waters from the Mexico-Texas border to Key West, Florida, up to one mile into rivers shall be completed, whenever possible, between December 1 and March 31, when sea turtle abundance is lowest throughout Gulf coastal waters.

5. *Non-hopper Type Dredging:* Pipeline or hydraulic dredges, because they are not known to take turtles, must be used whenever possible between April 1 and November 30 in Gulf of Mexico waters up to one mile into rivers. This should be considered particularly in channels such as those associated with Galveston Bay, where lethal takes of endangered Kemp's ridley sea turtles have been documented during summer months, and Aransas Pass, where large numbers of loggerheads may be found during summer months. If the Permittee conducts any hopper dredging during the period between April 1 and November 30 in Gulf of Mexico waters up to one mile into rivers, with authorization by a Department of the Army permit, the Permittee shall provide the Chief a complete written explanation of why alternative dredges (dredges other than hopper dredges) were not used.

6. *Silent Inspector (SI) System:* Monitoring of dredging projects using the SI system shall be implemented by the Permittee. All hopper dredges shall be equipped with the Silent Inspector (SI) system for hopper dredge monitoring. The Permittee's SI system must have been certified by the SI Support Center within one calendar year prior to the initiation of the dredging/disposal. Questions regarding certification should be addressed to the SI Support Center at 1-877-840-8024. Additional information about the SI System can be found at <https://si.usace.army.mil>. The Permittee is responsible for ensuring that the SI system is operational throughout the dredging and disposal project and that project data are submitted to the SI National Support center in accordance with the specifications provided at the aforementioned website. The data collected by the SI system shall, upon request, be made available to the Corps of Engineers Galveston District, Regulatory Branch, Chief of Compliance Section (Chief).

7. *Observers:* During dredging operations, the Permittee shall ensure that NMFS-approved protected species observers shall be aboard the hopper dredges to monitor the hopper bin, screening, dragheads, and waters for the presence of sea turtles and their remains. Observer coverage shall be sufficient for 100 percent

monitoring (24hr/day) and shall be conducted year-round. During transit to and from the disposal area, the observer shall monitor from the bridge during daylight hours for the presence of endangered species during the period December through March. During dredging operations, while dragheads are submerged, the observer shall continuously monitor the inflow and overflow screening for turtles and/or turtle parts. Upon completion of each load cycle, dragheads shall be monitored as the draghead is lifted from the sea surface and is placed on the saddle in order to assure that sea turtles that may be impinged within draghead are not lost and un-accounted for. Observers shall physically inspect dragheads and inflow and overflow screening/boxes for threatened and endangered species take. Observer(s) shall remove debris from the screens with the assistance of the ship's crew.

a. *Monitoring Reports:* The results of the monitoring shall be recorded on the appropriate observation sheets. There is a sheet for each load, a daily summary sheet, and a weekly summary sheet. In addition, there will be a post-dredging summary sheet. Observations sheets will be completed regardless of whether any takes of sea turtles occur. In the event of any sea turtle take by the dredge, appropriate incident reporting forms shall be completed. Additionally, all specimens shall be photographed with a digital camera. These photographs shall be attached to respective reports for documentation. Dredging of subsequent loads shall not commence until all appropriate reports are completed from the previous dredging load to ensure completeness and thoroughness of documentation associated with the incidental take. Reports shall be submitted to the COE within 24-hours of the take. Copies of the forms shall be legible. Observer forms may be accessed on the ERDC web site indicated in Condition Number 3.

b. *NMFS-approved Protected Species Observer(s):* NMFS-approved firms shall provide and manage the NMFS-approved protected species observers (ESOs) for hopper dredging. A list of acceptable firms can be obtained by contacting the NMFS Southeast Regional Office, Protected Resources Division in St. Petersburg, Florida. The main contact is Mr. Eric Hawk; he can be reached at [eric.hawk@noaa.gov](mailto:eric.hawk@noaa.gov) or at 727-824-5312.

c. *Digital Photographs:* The Permittee's Contractor shall provide a digital camera, with an image resolution

capability of at least 300 dpi, in order to photographically report all incidental takes, without regard to species, during dredging operations. Immediately following the incidental take of any threatened or endangered species, images shall be provided, via email, CD, or DVD to the Chief in a .JPG or .TIF format and shall accompany incidental take forms. The nature of takings shall be fully described in the incidental take forms including references to photographs.

8. *Conditions Requiring Relocation Trawling:* Handling of sea turtles captured during relocation trawling in association with hopper dredging projects in Gulf of Mexico navigation channels and sand mining areas shall be conducted by NMFS-approved protected species observers. A Plan for Sea Turtle Relocation Trawling, which must be in compliance with the Reasonable and Prudent Measures found in the GRBO, shall be submitted by the Permittee to the Chief, followed by the initiation of relocation trawling undertaken by the Permittee where any of the following conditions are met: two or more turtles are taken in a 24-hour period in the project; four or more turtles are taken in the project; 75 percent of the incidental take limits, including per species limits, specified in Section 8.1 of the GRBO has previously been met; or as directed by the Chief. During relocation trawling, sea turtles shall be captured with trawl nets to temporarily reduce or assess the abundance of sea turtles during, and in the 0-3 days immediately preceding, a hopper dredging or bed-leveling project in order to reduce the possibility of lethal hopper dredge or bed-leveler interactions, subject to the following conditions:

- a. Relocation trawling and relocation activity in the dredging area must be initiated within 48 hours of direction to do so from the Chief. Trawling shall be conducted for a period of 24 hours each day except that if dredging operations cease for a period of 12 hours or more, relocation trawling shall be conducted a minimum of 4 hours prior to resuming of dredging operations. Relocation trawling shall continue until suspended by the Chief. The trawler shall be equipped with two 60-foot flat-style trawling nets fabricated from 8-inch mesh (stretch). The nets shall be fitted with mud rollers and floats as specified in the Turtle Trawl Nets Specifications at:  
<http://www.saj.usace.army.mil/Divisions/Engineering/DOCS/CAD/D/appentit/01355/turnets.doc> . Trawl nets that are damaged shall be repaired or replaced. If two (2) separate trawlers

are required by the Chief, they shall operate side-by-side, as much as practicable. If multiple dredges are utilized, the trawler(s) shall be used for each dredge actively performing dredging operations. If the dredging operations are coordinated so that only one (1) dredge is actively dredging, trawler(s) shall be required for only that dredge. The trawler(s) shall be positioned ahead of the hopper dredge and as close to the hopper dredge as safely possible to give maximum coverage ahead of the dredging cut. The dredge and trawler(s) shall work closely together to implement techniques and procedures that will minimize the opportunity for turtles to enter the dredging path between the trawler(s) and dredge.

- b. The Permittee shall engage the services of a NMFS-approved Sea Turtle Trawling and Relocation Supervisor who shall provide researchers and nets to capture and relocate sea turtles, conduct Sea Turtle Risk Assessment (described below), and conduct any initiated sea turtle relocation trawling. The Permittee must submit the names of the approved Sea Turtle Trawling and Relocation Supervisor to the Chief. This Supervisor and any researchers will be wholly funded by the Permittee.
- c. *Trawl Time*: Trawl tow-time duration shall not exceed 30 minutes (doors in - doors out) and trawl speeds shall not exceed 3.0 knots.
- d. *Handling During Trawling*: Sea turtles captured pursuant to relocation trawling shall be handled in a manner designed to ensure their safety and viability, and shall be released over the side of the vessel, away from the propeller, and only after ensuring that the vessel's propeller is in the neutral, or disengaged, position (i.e., not rotating). Resuscitation guidelines are attached as Appendix IV of Revision 2 to the GRBO, see the Web site link in Condition Number 2.
- e. *Captured Turtle Holding Conditions*: Turtles may be held briefly for the collection of important scientific measurements, prior to their release. Captured sea turtles shall be kept moist, and shaded whenever possible, until they are released, according to the requirements of Condition Number 8.g., below.



- f. *Scientific Measurements*: When safely possible, all turtles shall be measured (standard carapace measurements including body depth), tagged, weighed, and a tissue sample taken prior to release. Any external tags shall be noted and data recorded into the observer's log. Only NMFS-approved protected species observers or observer candidates in training under the direct supervision of a NMFS-approved protected species observer shall conduct the tagging/measuring/weighing/tissue sampling operations. NMFS-approved protected species observers may conduct more invasive scientific procedures (e.g., blood letting, laparoscopies, and gastric lavages, mounting satellite or radio transmitters, etc.) and partake in or assist in "piggy back" research projects but only if the observer holds a valid federal sea turtle research permit (and any required state permits) authorizing the activities, either as the permit holder, or as designated agent of the permit holder, and has first notified NMFS' Southeast Regional Office, Protected Resources Division.
- g. *Take and Release Time During Trawling*: Turtles shall be kept no longer than 12 hours prior to release and shall be released not less than 3 (three) nautical miles (nmi) from the dredge site. If two or more released turtles are later recaptured, subsequent turtle captures shall be released not less than 5 (five) nmi away. If it can be done safely and without injury to the turtle, turtles may be transferred onto another vessel for transport to the release area to enable the relocation trawler to keep sweeping the dredge site without interruption.
- h. *Injuries and Incidental Take Limits*: Any protected species injured or killed during or as a consequence of relocation trawling shall count toward the Gulf-wide limit for injurious or lethal takes during relocation trawling. Minor skin abrasions resulting from trawl capture are considered non-injurious. Injured sea turtles shall be immediately transported to the nearest sea turtle rehabilitation facility.
- i. *Turtle Flipper External Tagging*: All sea turtles captured by relocation trawling shall be flipper-tagged prior to release with external tags which shall be obtained prior to the project from the University of Florida's Archie Carr Center for Sea Turtle Research. Revision 2 to the GRBO serves as the permitting authority for any NMFS-approved protected

species observer aboard these relocation trawlers to flipper-tag with external-type tags (e.g., Inconel tags) captured sea turtles. Columbus crabs or other organisms living on external sea turtle surfaces may also be sampled and removed under this authority.

- j. *PIT Tagging*: Revision 2 to the GRBO serves as the permitting authority for any NMFS-approved protected species observer aboard a relocation trawler to PIT-tag captured sea turtles. PIT tagging of sea turtles is not required to be done, if the NMFS-approved protected species observer does not have prior training or experience in said activity; however, if the observer has received prior training in PIT tagging procedures, then the observer shall PIT tag the animal prior to release (in addition to the standard external tagging:

Sea turtle PIT tagging must be performed in accordance with the protocol detailed at NMFS' Southeast Fisheries Science Center's Web page: <http://www.sefsc.noaa.gov/seaturtlefisheriesobserve rs.jsp>. (See Appendix C on SEFSC's "Fisheries Observers" Web page).

PIT tags used must be sterile, individually-wrapped tags to prevent disease transmission. PIT tags should be 125-kHz, glass-encapsulated tags-the smallest ones made. Note: If scanning reveals a PIT tag and it was not difficult to find, then do not insert another PIT tag; simply record the tag number and location, and frequency; if known. If for some reason the tag is difficult to detect (e.g., tag is embedded deep in muscle, or is a 400-kHz tag), then insert one in the other shoulder.

- k. *Other Sampling Procedures*: All other tagging and external or internal sampling procedures (e.g., blood letting, laparoscopies, anal and gastric lavages, mounting satellite or radio transmitters, etc.) performed on live sea turtles are not permitted unless the observer holds a valid sea turtle research permit authorizing the activity, either as the permit holder or as the designated agent of the permit holder.
- l. *PIT-Tag Scanning and Data Submission Requirements*: All sea turtles captured by relocation trawling or dredges shall be thoroughly scanned for the presence of PIT tags prior to

release using a multi-frequency scanner powerful enough to read multiple frequencies (including 125-, 128-, 134-, and 400-kHz tags) and read tags deeply embedded in muscle tissue (e.g., manufactured by Trovan, Biomark, or Avid). Turtles whose scans show they have been previously PIT tagged shall nevertheless be externally flipper tagged. Sea turtle data collected (PIT tag scan data and external tagging data) shall be submitted to NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center, Attn: Lisa Belskis, 75 Virginia Beach Drive, Miami, Florida 33149. All sea turtle data collected shall be submitted in electronic format within 60 working days of project completion to [Lisa.Belskis@noaa.gov](mailto:Lisa.Belskis@noaa.gov) and [Sheryan.Epperly@noaa.gov](mailto:Sheryan.Epperly@noaa.gov). Sea turtle external flipper tag and PIT tag data generated and collected by relocation trawlers shall also be submitted to the Cooperative Marine Turtle Tagging Program (CMTTP), on the appropriate CMTTP form, at the University of Florida's Archie Car Center for Sea Turtle Research.

- m. *Handling Fibropapillomatose Turtles*: NMFS-approved protected species observers are not required to handle or sample viral fibropapilloma tumors if they believe there is a health hazards to themselves and choose not to. When handling sea turtles infected with fibropapilloma tumors, observers must either: 1) Clean all equipment that comes in contact with the turtle (tagging equipment, tape measures, etc.) with mild bleach solution, between the processing of each turtle or 2) maintain a separate set of sampling equipment for handling animals displaying fibropapilloma tumors or lesions.

9. *Trawling Report and Final Report*: The results of each trawl shall be recorded on Sea Turtle Trawling Report Forms developed for this purpose; see the website listed in Condition Number 3. Water temperature measurements shall be taken in degrees Celsius at the water surface and at the mid-depth each 8 hours for the duration of the project using a laboratory thermometer. The latitude and longitude shall be recorded, and the waterway mileage as applicable, corresponding to each temperature reading. Weather conditions shall be recorded from visual observations and instruments on the trawler. Weather conditions, air temperature, wind velocity and direction, sea state-wave height, and precipitation shall be recorded. Time of High and low tides shall also be recorded. A Final Report shall be prepared and submitted to the Chief upon completion of dredging that summarizes the results and includes all forms, total trawling

times, number of trawls, and number of captures. Sea turtle sampling data shall be recorded on Sea Turtle Tagging and Relocation Report Forms found on the website provided in Condition Number 3.

*10. Requirement and Authority to Conduct Tissue Sampling for Genetic Analysis:* The GRBO Revision 2 serves as the permitting authority for any NMFS-approved protected species observer aboard a relocation trawler or hopper dredge to tissue-sample live- or dead-captured sea turtles without the need for an ESA section 10 permit. All live or dead sea turtles captured by relocation trawling and hopper dredging shall be tissue-sampled prior to release. Sea turtle tissue samples shall be taken in accordance with NMFS' Southeast Fisheries Science Center's (SEFSC) procedures for sea turtle genetic analyses (Appendix II of Revision 2 of the GRBO). The Permittee shall insure that tissue samples taken during the dredging project are collected and stored properly and mailed within 60 days of the completion of their dredging project to: NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center, Attn: Lisa Beliskis, 75 Virginia Beach Drive, Miami, Florida 33149.

*11. Suspension of Dredging and Relocation Trawling.* If nets become torn or the equipment breaks down causing the trawler to leave the area where dredging is underway, the dredge may continue to operate for up to 48 hours, as long as no turtles are taken and subject to the discretion of the Chief after COE coordination with the NMFS as required. Similarly, if there are dangerously high seas that can cause the trawler to leave the dredging area, the dredge may continue to operate as long as no turtles are taken and as directed by the Chief after COE coordination with the NMFS as required.

*12. Dredging operations shall cease immediately* anytime an incidental sea turtle take (both lethal and non-lethal takes) occurs as a result of dredging activities, and the Permittee shall immediately notify the Chief and the Galveston District Point of Contact (POC) to the Corps of Engineers Gulf Regional Biological Opinion Executive Advisory Group (EAG) that an incidental take has occurred. The Sea Turtle Incidental Take Data Form, found at the website provided in Condition Number 3, will be filled out by the NMFS-approved protected species observer and sent to the Chief by fax (409-766-6301) within 24 hours. A risk assessment will be performed by the Permittee or its designated consultant and the results provided to the Chief for risk assessment consultation to determine the appropriate

action, including the implementation of sea turtle conservation measures that must be immediately taken. The risk assessment will include a review of the circumstances which contributed to the take, a review of the Silent Inspector (SI) data, and a physical inspection of the dredge and its operating procedures. A risk management plan prepared by the COE will address what occurred and provide required changes to the hopper dredge operations in order to minimize the likelihood of additional sea turtle takes and to ensure compliance with the terms and conditions of the GRBO. The risk management plan will be provided to the Permittee. E-mail notification of documentation and recommendations will be sufficient. Dredging may resume at the direction of the Chief, after any corrections, as determined by the risk assessment and included in the risk management plan as necessary to reduce lethal takes, have been implemented.

13. *Take Reporting:* NMFS-approved Protected Species Observer reports of incidental take (live or dead) by hopper dredges, or lethal take by a relocation trawler, must be faxed or e-mailed to NMFS' Southeast Regional Office [fax: (727)-824-5309; email: [takereport.nmfs@noaa.gov](mailto:takereport.nmfs@noaa.gov)], and to the Chief and the Galveston District POC to the EAG by onboard NMFS-approved Protected Species Observers within 24 hours of any sea turtle, or other listed species, take observed.

14. *Sea Turtle Sighting Reports:* Any take concerning a sea turtle, or sighting of any injured or incapacitated sea turtle shall be reported immediately to the Chief and to the Galveston District POC to the EAG.

15. *Disposition of Sea Turtles or Turtle Parts*

a. *Turtles Taken by Hopper Dredge*

(1) *Dead turtles* - Upon removal of sea turtle and/or parts from the draghead or screening, NMFS-approved Protected Species Observers shall take photographs as to sufficiently document major characteristics of the turtle or turtle parts including but not limited to dorsal, ventral, anterior, and posterior views. For all photographs taken, a backdrop shall be prepared to document the dredge name, observer company name, contract title, Department of the Army permit number, time, date, species, load number, location of dredging, and specific location taken (draghead, screening, etc.). Carcass/turtle parts shall also be scanned for flipper and

Passive Integrated Transponder (PIT) tags. Any identified tags shall be recorded on the "Sea Turtle Incidental Take Form" that is included in the "Endangered Species Observer Program Forms" located on the web site indicated in Condition Number 3. Sea turtle tissue samples shall be taken in accordance with NMFS' Southeast Fisheries Science Center's (SEFSC) procedures for sea turtle genetic analyses (Appendix II of Revision 2 of the GRBO). The Permittee shall ensure that tissue samples taken during the dredging project are collected and stored properly and mailed within 60 days of the completion of their dredging project to: NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center, Attn: Lisa Belskis, 75 Virginia Beach Drive, Miami, Florida 33149. Turtle parts which cannot be positively identified to species on board the dredge or barge(s) shall be preserved by the Observer(s) for later identification. After all data collection is complete, the sea turtle/parts should be marked (spray paint works well), weighted down and disposed of in accordance with the direction of the Chief.

(2) *Live Turtles* - NMFS-approved Protected Species Observer(s) shall measure, weigh, scan for PIT tags, tag (Iconel flipper and PIT tags (if PIT tag not located during scan, and only if observer is qualified to tag using PIT tags)), tissue sample, and photograph any live turtle(s) incidentally taken by the dredge. Sea turtle tissue samples shall be taken in accordance with NMFS' Southeast Fisheries Science Center's (SEFSC) procedures for sea turtle genetic analyses (Appendix II of Revision 2 of the GRBO). The Permittee shall ensure that tissue samples taken during the dredging project are collected and stored properly and mailed within 60 days of the completion of their dredging project to: NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center, Attn: Lisa Belskis, 75 Virginia Beach Drive, Miami, Florida 33149. Observer(s) (or their authorized representative) shall coordinate with the Chief to transport, as soon as possible, the live turtle(s) taken by the dredge to an approved rehabilitation facility.

*b. Turtles Taken by Relocation Trawler*

(1) *Live Turtles* - At least one (1) crewmember, who possesses the required permits for handling endangered species, experienced in sea turtle capture or is a NMFS-

approved Protected Species Observer, shall be on board the trawler during the trawl and act as the sea turtle trawling and relocation supervisor. Only a NMFS-approved Protected Species Observer or observer candidate in training under the direct supervision of a NMFS-approved Protected Species Observer shall conduct the sampling operations of tagging, measuring, weighing and collecting tissue samples from turtles. Each turtle that is captured shall be identified to species and age class (juvenile, sub-adult, adult), digitally photographed, scanned for PIT tags, measured, tagged (Inconel flipper tag and PIT tag, if one not located by scan, and only if observer is qualified to tag using PIT tags), tissue sampled, and released, and the data recorded on the "Sea Turtle Tagging and Relocation Report" found in the web site noted in Condition Number 3. External tags shall also be noted and data recorded into the observer's log. Turtles shall be released at locations at least 3 nautical miles (nmi) away from the project area, at time intervals designated by the Sea Turtle Trawling and Relocation Supervisor who is proficient in the viable handling and relocating of sea turtles.

*Weight/Size Measurements and Tissue Collection.* Turtles shall be measured, tagged, weighed, and tissue sampled when safely possible, prior to release. Turtle measurements shall be recorded and shall include, at a minimum, weight when possible, straight-line length, straight-line width, body depth, and tail length. Turtles shall be tagged with NMFS No. 681 Inconel tags in each of the front flippers and PIT tags according to NMFS protocol (found at [http://www.sefsc.noaa.gov/PDFdocs/Appendix C Tagging.pdf](http://www.sefsc.noaa.gov/PDFdocs/Appendix%20C%20Tagging.pdf)). Aseptic conditions shall be maintained for tags and tag attachment. Sea turtle tissue samples shall be taken in accordance with NMFS' Southeast Fisheries Science Center's (SEFSC) procedures for sea turtle genetic analyses (Appendix II of Revision 2 of the GRBO). The Permittee shall insure that tissue samples taken during the dredging project are collected and stored properly and mailed within 60 days of the completion of their dredging project to: NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center, Attn: Lisa Belaskis, 75 Virginia Beach Drive, Miami, Florida 33149.

(2) *Dead Turtles* - Any turtle found dead in the nets during relocation trawling efforts shall be digitally photographed, measured, weighed (if possible), scanned for



tags, and tissue sampled. The carcass should be marked (spray paint works well), weighted down and disposed of in accordance with the direction of the Chief.

*Weight/Size Measurements and Tissue Collection.* Turtles shall be measured, and weighed. Turtle measurements shall be recorded and shall include, at a minimum, weight when possible, straight-line length, straight-line width, body depth, and tail length. The Carcass shall also be scanned for flipper and PIT tags. Any identified tags shall be recorded on the "Sea Turtle Incidental Take Form" that is included in the Endangered Species Observer Program Forms located on the web site indicated in Condition Number 3. Sea turtle tissue samples shall be taken in accordance with NMFS' Southeast Fisheries Science Center's (SEFSC) procedures for sea turtle genetic analyses (Appendix II of Revision 2 of the GRBO). The Permittee shall ensure that tissue samples taken during the dredging project are collected and stored properly and mailed within 60 days of the completion of their dredging project to: NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center, Attn: Lisa Belkis, 75 Virginia Beach Drive, Miami, Florida 33149.

16. *Report Submission.* The Permittee's Contractor shall maintain a log detailing all incidents, including sightings, collisions with, injuries, or killing of sea turtles occurring during the project. The data shall be recorded on forms available on the web site indicated in Condition Number 3. All data in original form shall be forwarded directly to U.S. Army Corps of Engineers, Galveston District, Regulatory Branch (PE-RC), P. O. Box 1229, Galveston, Texas 77553-1229, within 10 days of collection and copies of the data shall be supplied to the Galveston District POC to the EAG. Following project completion, a written report summarizing the above incidents and sightings shall be submitted to the following:

U.S. Army Corps of Engineers, Galveston District  
Compliance Section Chief (PE-RC)  
P.O. Box 1229 Galveston, TX 77553-1229  
kenny.jaynes@usace.army.mil  
FAX: 409-766-6301

U.S. Army Corps of Engineers, Galveston District  
Chief, Environmental Section (CESWG-PE-PR)  
P.O. Box 1229  
Galveston, TX 77553-1229

carolyn.e.murphy@usace.army.mil  
FAX: 409-766-3064

Galveston District POC to the EAG  
Mr. Rob Hauch  
robert.g.hauch@usace.army.mil  
PHONE: 409-766-3913  
FAX: 409-766-3064

National Marine Fisheries Service  
Protected Species Management Branch  
263 13th Avenue South  
St. Petersburg, Florida 33701  
Mr. Eric Hawk  
eric.hawk@noaa.gov  
PHONE: 727-824-5312

17. *Hopper Dredge Equipment.* Hopper dredge dragheads shall be equipped with rigid sea turtle deflectors that are rigidly attached. No dredging shall be performed by a hopper dredge without a rigid sea turtle deflector device approved by the Chief. The Permittee shall electronically submit drawings showing the proposed device and its attachment to the Chief. These drawings shall include the approach angle for any and all depths to be dredged during the dredging. A copy of the approved drawings and calculations shall be available on the vessel during the dredging. The rigid sea turtle deflector device shall be maintained in operational condition for the entire dredging operation.

a. *Sea Turtle Deflecting Draghead Design:*

(1) The leading V-shaped portion of the deflector shall have an included angle of less than 90 degrees. Internal reinforcement shall be installed in the deflector to prevent structural failure of the device. The leading edge of the deflector shall be designed to have a plowing effect of at least 6-inch-depth when the draghead is being operated. Appropriate instrumentation or indicator shall be used and kept in proper calibration to ensure the critical "approach angle". (Information Only Note: The design "approach angle" or the angle of lower draghead pipe relative to the average sediment plane is very important to the proper operation of a deflector. If the lower draghead pipe angle in actual dredging conditions varies tremendously from the design angle of approach

used in the development of the deflector, the 6-inch plowing effect does not occur. Therefore, every effort should be made to ensure this design "approach angle" is maintained with the lower dragpipe.)

(2) If adjustable depth deflectors are installed, they shall be rigidly attached to the draghead using either a hinged aft attachment point or an aft trunnion attachment point in association with an adjustable pin front attachment point or cable front attachment point with a stop set to obtain the 6-inch plowing effect. This arrangement allows fine-tuning the 6-inch plowing effect for varying depths. After the deflector is properly adjusted there shall be NO openings between the deflector and the draghead that are more than 4 inch by 4 inch.

(3) *Paint Test Inspection of Draghead:* The Permittee shall ensure the performance of draghead paint tests to ensure turtle deflector equipment is operating properly. Testing shall be performed as a minimum on a weekly basis and: immediately following a failed paint test; turtle take incident; following equipment modifications including: dragheads, turtle deflector, link modifications, and other parts of the dredging apparatus, and; when directed by the Chief as necessary to verify compliance with specified requirements. Photographic documentation of deflector paint test results shall be provided when testing is performed in the absence of a Galveston District COE inspector. General procedures for paint test are as specified below.

*Equipment Preparation:*

Vertical markings shall be placed on the entire length of the abrasive resistant doubler plate. Fluorescent orange paint shall be used to paint vertical strips the entire height of the abrasive resistant doubler plate with 6-inch spacing on center for the entire length of the deflector.

*Test Procedure:*

The deflector shall have a minimum plow depth of 6 inches measured vertically. The deflector shall be in contact with channel bottom for a period of 2 to 3 minutes for coarse sediments and 4 to 6 minutes for fine sediments, then promptly inspected.

*Test Results:* A paint test shall receive a pass if paint strips indicate wear from sediment scour for a minimum height of 6 inches for the leading edge of the deflector.

*Test Documentation:* The Permittee's dredge operator shall document the following paint test information and submit to the Chief with signature verifying results:

- Load number
- Time of paint test and date
- Duration of paint test
- Material type
- Observed plow depth of the leading edge of the deflector during the paint test
- Gimbale angle during paint test
- Test result: pass or fail
- Failed test: document corrective action taken for re-test.
- Photo documentation of deflector paint test results.

- b. *Screening:* The Permittee shall ensure that screening and/or baskets with no greater than 4-inch by 4-inch openings is installed over the hopper inflow(s) and overflow(s), and that the screening and/or baskets shall provide 100 percent screening of the hopper inflow(s) and overflow(s). The method selected shall depend on the construction of the dredge used, and the Permittee shall electronically submit drawings showing the proposed screening and/or baskets to the Chief. No dredging work shall be allowed to commence until approval of the screening and/or baskets has been granted by the Chief. The screening and/or baskets shall remain in place throughout the performance of the work, and shall be maintained in operational condition for the entire dredging operation. Any variation of the inflow and overflow screening opening size must be justified from a technical perspective and approved by the Chief prior to initiation; if the draghead is clogging and reducing production substantially, the Permittee may request that the COE determine, in consultation with NMFS-approved protected species observer(s) and the draghead operator, that the draghead is clogging and reducing production substantially. With prior approval by the COE after coordination with the NMFS for each sequential modification, the inflow screens may be modified sequentially: mesh size may be increased to 6-inch by 6-inch, then 9-inch by 9-inch, then 12-inch by 12-inch

openings. Clogging should be greatly reduced with these flexible options; however, if there is further clogging, the Permittee may request COE prior approval to remove the inflow screening altogether and provide effective 100 percent overflow screening, in which case the Permittee must provide with their request to the COE details of how effective 100 percent overflow screening will be achieved. With COE approval and effective 100 percent overflow screening, the inflow screening can then be completely removed. (Information Only Note: The NMFS believes that this flexible, graduated-screen option is necessary, since the need to constantly clear the inflow screens will increase the time it takes to complete the project and therefore increase the exposure of sea turtles to the risk of impingement or entrainment. Additionally, there are increased risks to sea turtles in the water column when the inflow is halted to clear screens, since this results in clogged intake pipes, which may have to be lifted from the bottom to discharge the clay by applying suction.)

The Permittee shall ensure the installation and maintenance of floodlights suitable for illumination of the baskets and screening to allow the observer to safely monitor the hopper basket(s) and screening during non-daylight hours or other periods of poor visibility. Safe access shall be provided to the inflow and outflow baskets and/or screens to inspect for turtles, turtle parts, or damage.

18 *Hopper Dredge Operation:*

a. The Permittee shall ensure that the hopper dredge is operated to minimize the possibility of taking sea turtles and to comply with the requirements stated in the Incidental Take Statement provided by the NMFS in their Biological Opinion.

b. The turtle deflector device and inflow screens shall be maintained in operational condition for the entire dredging operation.

c. *Dredging Pumps:* Standard operating procedure shall be that dredging pumps shall be disengaged by the operator when the dragheads are not firmly on the bottom, to prevent impingement or entrainment of sea turtles within the water column. This precaution is especially important during the cleanup phase of dredging operations when the draghead

frequently comes off the bottom and can suck in turtles resting in the shallow depressions between the high spots the draghead is trimming off. When initiating any dredging, suction through the dragheads shall be allowed just long enough to prime the pumps, and then the dragheads must be placed firmly on the bottom. When lifting the dragheads from the bottom, suction through the dragheads shall be allowed just long enough to clear the lines, and then must cease. Pumping water through the dragheads shall cease while maneuvering or during travel to/from the disposal area. (Information Only Note: Optimal suction pipe densities and velocities occur when the deflector is operated properly. If the required dredging section includes compacted fine sands or stiff clays, a properly configured arrangement of teeth may enhance dredge efficiency, which reduces total dredging hours, and "turtle takes." The operation of a draghead with teeth must be monitored for each dredged section to ensure that excessive material is not forced into the suction line. When excess high-density material enters the suction line, suction velocities drop to extremely low levels causing conditions for plugging of the suction pipe. Dredge operators should configure and operate their equipment to eliminate all low-level suction velocities. Pipe plugging in the past was easily corrected, when low suction velocities occurred, by raising the draghead off the bottom until the suction velocities increased to an appropriate level. Pipe plugging cannot be corrected by raising the draghead off the bottom. Arrangements of teeth and/or the reconfiguration of teeth should be made during the dredging process to optimize the suction velocities).

d. Raising the draghead off the bottom to increase suction velocities is not acceptable. The primary adjustment for providing additional mixing water to the suction line should be through water ports. To insure that suction velocities do not drop below appropriate levels, the Permittee's Dredging Inspector shall monitor production meters throughout the job and adjust primarily the number and opening sizes of water ports. Water port openings on top of the draghead or on raised standpipes above the draghead shall be screened before they are utilized on the dredging project. If a dredge section includes sandy shoals on one end of a tract line and mud sediments on the other end of the tract line, the equipment shall be adjusted to eliminate draghead pick-ups to clear the

suction line.

e. During turning operations the pumps must either be shut off or reduced in speed to the point where no suction velocity or vacuum exists.

f. These operational procedures are intended to stress the importance of balancing the suction pipe densities and velocities in order to keep from taking sea turtles.

19. *Dredge Lighting*: From March 15 through October 31, sea turtle nesting and emergence season, all lighting aboard hopper dredges and hopper dredge pumpout barges operating within 3 nmi of sea turtle nesting beaches shall be limited to the minimal lighting necessary to comply with U.S. Coast Guard and OSHA requirements. All non-essential lighting on the dredge and pumpout barge shall be minimized through reduction, shielding, lowering, and appropriate placement of lights to minimize illumination of the water to reduce potential disorientation effects on female sea turtles approaching the nesting beaches and sea turtle hatchlings making their way seaward from their natal beaches. Shielded low-pressure sodium vapor lights are highly recommended for lights that cannot be eliminated.

20. *Hardground Buffer Zones*: All dredging in sand mining areas will be designed to ensure that dredging will not occur within a minimum of 400 feet from any significant hardground areas or bottom structures that serve as attractants to sea turtles for foraging or shelter. NMFS considers a significant hardground in a project area to one that, over a horizontal distance of 150 feet, has an average elevation above the sand of 1.5 feet or greater, and has algae growing on it. Walls of federally-maintained navigation channels, and jetties and other such man-made structures, are not considered hardgrounds.