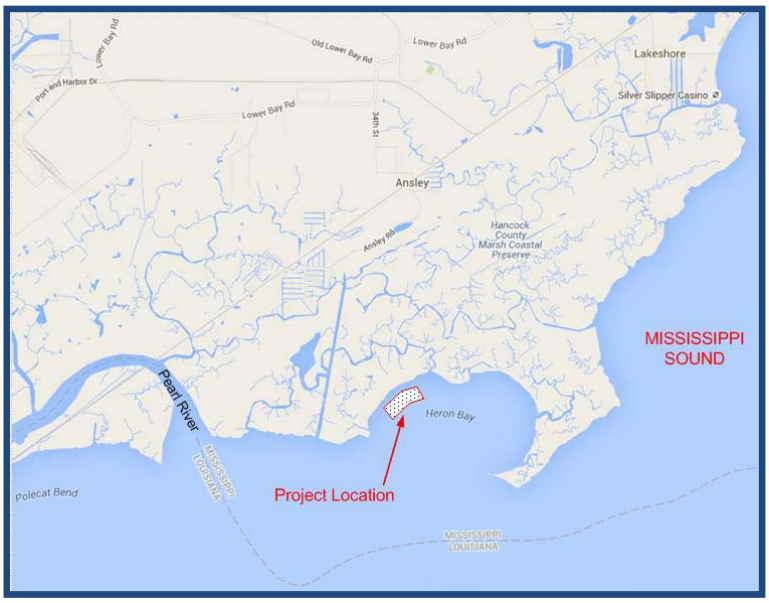
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
HANCOCK COUNTY MARSH LIVING SHORELINE

PHASE 4: HERON BAY SUBTIDAL REEF

HANCOCK COUNTY, MISSISSIPPI



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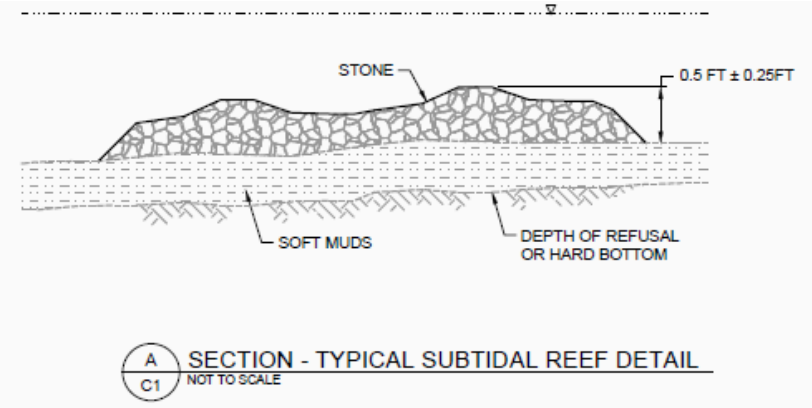

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STATE OF MISSISSIPPI
5/5/2016

FC&E Engineering, LLC
Water • Soils • Air • Compliance

ANCHOR QEA

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

May 5, 2016

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INVITATION FOR BIDS

Project: **MDEQ – HANCOCK COUNTY MARSH LIVING SHORELINE**

PHASE 4 – HERON BAY SUBTIDAL REEF

Contracting Agency: **Mississippi Department of Environmental Quality**

To: **Prospective Bidders**

1.0 PURPOSE AND STATEMENT OF WORK

The Mississippi Department of Environmental Quality ("MDEQ", "Agency", or "State") is seeking sealed bids for the MDEQ – HANCOCK COUNTY MARSH LIVING SHORELINE PROJECT: PHASE 4 – HERON BAY SUBTIDAL REEF (the "Project"). The Project requirements are detailed in Sections 1 through Section 9 of this Invitation for Bids and Attachments A to Attachment I.

This Project is solicited by MDEQ as part of the Phase 3 Early Restoration Plan and Environmental Assessment prepared by the Deepwater Horizon Natural Resource Trustees in response to the April 20, 2010, Deepwater Horizon Oil Spill incident. The Project is administered by MDEQ and funded through the Framework for Early Restoration Addressing Injuries Resulting from the Deepwater Horizon Oil Spill between the natural resource trustees and BP Exploration and Production, Inc. ("BP"). The Project includes the construction of 46 acres of subtidal reef in Heron Bay.

The Project requirements are detailed in this Invitation for Bids and the Contract Documents. The Contract Documents include the Section 00 52 15 Agreement, the MDEQ Standard Contract Terms and Conditions (Attachment F), the Specifications (Divisions 01, 31 and 35, and the Appendices), the Contract Drawings, and this Invitation for Bids (including Attachments A through I), together with any addendum that may be issued through the solicitation process. Following award of the Contract, the Contract Documents will also include the Contractor's Bid, the Notice of Award, the Notice to Proceed, the bonds required for this Project, the insurance certificates and endorsements required for this Project, and any addenda, Change Orders or modifications that may be issued. The Section 00 52 15 Agreement may be referred to as the "Agreement" or the "Contract" throughout the Contract Documents.

MDEQ is seeking bidders with qualifications, experience, equipment, and labor for the work detailed herein. The selected bidder shall complete all work as specified in the Contract Documents as defined in Article 7 of the Section 00 52 15 Agreement ("Work").

The Contract will be awarded to the lowest responsible/responsive bidder whose bid meets the requirements and criteria set forth in this Invitation for Bids. The "lowest responsible/responsive bidder" is the one who supplies the lowest price for the Work as specified on the Bid Form attached hereto as Attachment "D" and meets all requirements of Section 2.8, Minimum Bid Requirements, and Section 2.11, Standards of

Responsibility. MDEQ reserves the right to accept or reject any or all bids. The successful contractor shall have prior experience furnishing, deploying and placing large quantities of stone necessary to construct a subtidal reef and shall list that experience in Attachment A, List of Prior Experience.

The Contract Documents may be examined at the office of Covington Civil and Environmental, LLC located at 2510 14th St., STE 1010, Gulfport, MS 39501, (228) 396-0486. The Contract Documents may also be examined at the office of the Mississippi Department of Environmental Quality, 515 E. Amite St., Jackson, MS 39201, (601) 961-5171.

To obtain a downloadable copy of the Contract Documents for this Project, please visit www.restore.ms, email melanie_green@deq.state.ms.us, or call 601.961.5270.

If the funds anticipated for this Project are, at any time, not forthcoming or insufficient, MDEQ reserves the right to terminate the Project and to not award a contract or to discontinue the Project, without damage, penalty, cost, or expenses to MDEQ of any kind whatsoever.

2.0 SUBMISSION INSTRUCTIONS, REQUIREMENTS, CONDITIONS, DEADLINES AND NOTICES FOR BIDS

2.1 Issuing Office

This Invitation for Bids is issued for the State of Mississippi by MDEQ. MDEQ reserves the right, without qualifications to reject all bids not meeting minimum requirements and to exercise its discretion and apply its judgment with respect to any bid submitted.

2.2 Pre-Bid Meeting

A Pre-Bid Meeting will be held at 1:00 p.m., May 10, 2016 at the following location:

Hilton Garden Inn Gulfport
14106 Airport Road
Gulfport, MS 39503

Attendance at the Pre-Bid Meeting is not a mandatory requirement for submitting a bid.

2.3 Deadline

Bids must be submitted with one (1) original, five (5) copies and one PDF copy on a flash drive or CD. **All bids must be received by MDEQ no later than 11:00 a.m., June 1, 2016.** All bids received after the deadline will be returned unopened. If a bid is to be mailed, bidders should use certified mail with a return receipt guaranteed. MDEQ will not be responsible for mail delays or lost mail.

Bids must be labeled as follows:

MDEQ – Hancock County Marsh Living Shoreline Project
Phase 4 – Heron Bay Subtidal Reef

Mississippi Department of Environmental Quality
Attention: Melanie Green
South Regional Office
1141 Bayview Avenue, Suite 208
Biloxi, MS 39530

Bidder's name: _____

Bidder's legal address: _____

Certificate of Responsibility No._____

SEALED BID – DO NOT OPEN

Bids will be opened in the presence of two (2) or more procurement officials. All written bids shall be recorded and maintained as a public record. Bids will be opened publicly and read aloud at 11:15 a.m., June 1, 2016, at the MDEQ office located at 1141 Bayview Avenue, Suite 208, Biloxi, Mississippi, 39530.

Each bid must be accompanied by a Bid Bond provided by a surety licensed to operate in the State of Mississippi by the Mississippi Department of Insurance in the amount of five percent (5%) of the total bid as a bid security naming MDEQ as the beneficiary. The Bid Bond shall be duly executed by the bidder, the surety, and a registered agent. Each Bid Bond must be accompanied by an appropriate Power of Attorney. Once the Contract has been executed by the successful bidder, the specified time has elapsed so that bids may be withdrawn, or all bids have been rejected, the Bonds of the unsuccessful bidders will be returned. The Bid Bond of the successful bidder will be retained until the Payment Bond and Performance Bond have been executed and approved, and the Contract has been executed, in accordance with Section 2.21 of this Invitation for Bids, after which it will be returned. If the apparent lowest responsible/responsive bidder fails to provide the appropriate Payment Bond, Performance Bond, Tax Bond, insurance certificates or does not execute the Agreement, the Bidder will forfeit his or her Bid Bond.

2.4 Force Majeure Event

If MDEQ is closed for any reason, including but not limited to: Acts of God, strikes, lockouts, riots, acts of war, epidemics, governmental regulations superimposed after the fact, fire, earthquakes, hurricanes, tropical storms, floods, or other natural disasters (the "Force Majeure Events"), which closure prevents the delivery of Bids by the advertised deadline, the bid submission deadline shall take place the next business day that MDEQ shall be open and at the previously advertised time. The new date and time of the bid submission deadline, as determined in accordance with this section, shall not be

advertised, and all bidders, upon submission of a bid proposal, shall be deemed to have knowledge of and shall have agreed to the provisions of this section. Bids shall be received by MDEQ until the new date and time of the bid deadline as set forth herein. **MDEQ shall not be held responsible for the receipt of any bids for which the delivery was attempted and failed due to the closure of MDEQ as a result of a Force Majeure Event.** Each bidder shall be required to ensure the delivery and receipt of its bid by MDEQ prior to the new date and time of the bid submission deadline.

2.5 Nonresident Bidder

In accordance with Miss. Code Ann. § 31-3-21(3), in the letting of public contracts, preference shall be given to resident bidders, and a nonresident bidder domiciled in a state having laws granting preference to local contractors shall be awarded Mississippi public contracts only on the same basis as the nonresident bidder's state awards contracts to Mississippi contractors bidding under similar circumstances; and resident bidders actually domiciled in Mississippi, be they corporate, individuals, or partnerships, are to be granted preference over nonresidents in awarding of contracts in the same manner and to the same extent as provided by the laws of the state of domicile of the nonresident. **When a nonresident bidder submits a bid for a public project, he shall attach thereto a copy of his resident state's current law pertaining to such state's treatment of nonresident contractors. Any bid submitted by a nonresident bidder which does not include the nonresident contractor's current state law shall be rejected and not considered for award. In order to clarify that no law exists, the bidder will include with the bid a statement on letterhead and signed by the same person who signs the *Bid Form* stating that no preference laws exist in that state.**

2.6 MAGIC

Effective July 1, 2014, the State of Mississippi requires vendors to register in Mississippi's Accountability System for Government Information and Collaboration ("MAGIC") for the State to execute a contract and/or pay for services/products. (*See* Attachment E).

2.7 Minority and Women Businesses

MDEQ's policy is to promote participation of Minority Business Enterprises (MBE) and Women Business Enterprises (WBE) in the contracts let by MDEQ. The intent of the following provision is to encourage contractors to involve such businesses in a meaningful role in the provision of services under this solicitation.

(A) Accordingly, contractors and their subcontractors will abide by the following steps to encourage participation by MBE and WBE:

(1) Including MBE and WBE on solicitation lists;

(2) Assuring that MBE and WBE are solicited whenever they are potential sources;

(3) Dividing total requirements, when economically feasible, into small tasks or quantities to permit maximum participation of MBE and WBE;

(4) Establishing delivery schedules, where the requirements of the work permits, which will encourage participation by MBE and WBE;

(5) Using the services and assistance of the Small Business Administration and the Office of Minority Business Enterprise of the U.S. Department of Commerce or Mississippi Development Authority's Minority Business Small Business Development Division, as appropriate; OR satisfying the self-certification requirements of this section where appropriate, and

(6) Including these steps in any subcontracts awarded under the Contract.

(B) If applicable, the bidder shall supply MDEQ with proof of bidder's and bidder's subcontractor's minority status by providing the following:

(1) Certification by the Small Business Administration and the Office of Minority Business Enterprise of the U.S. Department of Commerce;

(2) Certification by the Mississippi Development Authority's Minority Business Certification Program; or

(3) Self-Certification through Notarized affidavit of the MBE/WBE documenting that said business is:

(a) Wholly owned or majority controlled by a minority or woman; and

(b) Has been doing business in Mississippi for a period of at least six months prior to the provision of work under this Contract.

(C) Bidder shall supply MDEQ with the following two lists, which shall be included as an attachment to the Bid (but which will not be included in the thirty (30) page limit):

(1) A list of MBE/WBE firms specifically solicited for participation in the bidder's response to this Invitation for Bids, to include the MBE/WBE company name, contact information, type of work solicited, estimated percentage of contract value solicited to be performed by each MBE/WBE, and each solicited MBE/WBE firm's proof of minority status, as set forth above; and

(2) A list of MBE/WBE firms selected and proposed for participation as a subcontractor in bidder's response to this Invitation for Bids, to include the MBE/WBE subcontractor's company name, contact information, type of work to be performed, estimated percentage of contract value to be performed by each MBE/WBE subcontractor, and the MBE/WBE firm subcontractor's proof of minority status, as set forth above.

2.8 Minimum Bid Requirements

Bids shall contain the following minimum information:

A. One (1) original and five (5) copies shall be submitted along with one pdf copy on a CD or flash drive.

B. Fully completed and/or executed copies of Attachments A, C, and D, attached hereto.

C. The written information for a responsibility determination in accordance with Section 2.11, Standards of Responsibility, in this Invitation for Bids.

D. A copy of bidder's current Certificate of Responsibility issued by the State of Mississippi for the type of work to be performed under this Invitation for Bids, pursuant to Miss Code Ann. § 31-3-21(1). **The Certificate of Responsibility number must appear on the exterior of the bid envelope.**

E. A copy of the bidder's current Certificate of Good Standing from the Mississippi Secretary of State.

F. If the bidder is a non-resident contractor, a copy of bidder's **current** state bidder preference law pertaining to that State's treatment of non-resident contractors, pursuant to Miss. Code Ann. § 31-3-21(3) or a statement on letterhead and signed by the same person who signs the *Bid Form* stating that no preference laws exist in that state. The State of Residency of a contractor shall be the same as the corporate office as reported by the Mississippi Secretary of State's office.

G. A Certificate of Commitment to Comply with the obligation to provide an employment plan pursuant to Miss. Code Ann. § 31-5-37, which is attached hereto as Attachment I. A copy of § 31-5-37 is attached hereto as Attachment G. A copy of the employment plan that must be submitted within seven (7) days of the award is attached hereto as Attachment H, which shall include the following:

   1. The types of jobs involved in the public works Project;
   2. The skill level of the jobs involved in the Project;
   3. Wage information on the jobs involved in the Project;
   4. The number of vacant positions that the bidder needs to fill;
   5. How the bidder will recruit low wage and unemployed individuals for job vacancies;
   6. Such other information as may be required by the Mississippi Department of Employment Security; and
   7. Proof of Registration with the Mississippi Department of Employment Security for taxation in accordance with the provisions of Title 71.

H. The MBE/WBE solicitation and proposed participation lists addressed in Section 2.7, subpart (C)(1) and (2) of this Invitation for Bids.

I. A Bid Bond in the amount of five percent (5%) of the bid amount naming MDEQ as the beneficiary and meeting the requirements of Section 2.3 of this Invitation for Bids.

2.9 Response to Inquiries

All questions regarding this Invitation for Bids must be submitted in writing to Melanie Green via email at **melanie_green@deq.state.ms.us,** by **fax at (601) 961-5715,** or by mail to **515 Amite Street, Jackson, Mississippi 39201** and must be received by MDEQ by the end of business 5:00 p.m. CST, May 19, 2016. Questions submitted after

this date will not be considered. Bidders shall provide an email address or fax number for MDEQ to direct the consolidated "question and answer" document. MDEQ answers will be provided in writing and transmitted via email or fax to all prospective bidders who are known to have requested and received a copy of the bid package. Only answers transmitted in this manner will be considered official and valid by MDEQ. No negotiations, decisions, or actions shall be initiated by any bidder as a result of any verbal discussion with any State or Agency representative.

2.10 Proprietary Information/Mississippi Public Records Act

Bids will be made available for inspection only after award of the Contract. For this reason, proprietary material should be clearly labeled as such. The classification of an entire bid as proprietary or trade secret is not acceptable and may result in rejection of the bid. Requests to review proprietary information will be handled in accordance with state law and applicable procedures. All disclosures of bid information to interested parties will be made in compliance with MDEQ policies and procedures established in accordance with the Mississippi Public Records Act of 1983, Miss. Code Ann. §§ 25-61-1 et seq., and exceptions found in Miss. Code Ann. §§ 25-61-9 and 79-23-1.

2.11 Standards of Responsibility

Factors that will be considered in determining whether the standard of responsibility has been met include whether a bidder has:

A. A satisfactory record of relevant experience (5 points)

On Attachment A, provide references and contact information for, at a minimum, five (5) previous projects of like nature to the work solicited under this Invitation for Bids. Like nature projects may include the following:

i. Construction of subtidal reefs, aqueous coastal breakwaters, diversion walls or other marine structures using stone as the primary construction material.
ii. Loading and unloading barges
iii. Working with barges and cranes in shallow coastal waters
iv. Compliance experience with environmental permits associated with working on projects in coastal areas similar to the Mississippi Sound.

B. A commercial working-knowledge in shallow coastal waters similar to the Mississippi Sound (5 points)

Describe previous experience working in shallow coastal water similar to those found in the Mississippi Sound within the past five (5) years that would be similar to the work solicited under this Invitation for Bids.

C. A satisfactory record of integrity (5 points)

Provide, at a minimum, five (5) references and contact information for persons and/or firms familiar with the business integrity of the bidder.

D. A satisfactory record of performance (5 points)

Provide a listing of all projects within the past five (5) years and identify all such projects that resulted in construction claims associated with defective work, defaulted or required action by the bonding company. A bidder will not be penalized for claims won by the Bidder.

Bidders should submit a written narrative of ten (10) pages or less for factors B and C, above, and the burden is on the prospective bidder to thoroughly demonstrate their responsibility in the above-listed categories. The written narrative pages should be numbered in consecutive order. Attachments A, C, and D will not count against the page number of such written narrative. Any bidder with an overall score of eight (8) points or below, or a score of two (2) points or below in any individual category, on the above Standards of Responsibility will be deemed non-responsible and will be rejected**.**

The bidder shall be experienced in work of the type and character defined in the Invitation for Bids. Further, the bidder must have a current Certificate of Responsibility and the classification of contractor's kind of work or projects for which the bidder is qualified shall be so stated in the Certificate of Responsibility. If a bidder fails to supply the requested information concerning responsibility, MDEQ shall base the determination of responsibility upon any available information or may find the bidder non-responsive.

Bidders should clearly mark any information considered to be a trade secret or proprietary data and should expressly request the nondisclosure of same.

Following an evaluation and determination as to which bidders are both responsive and responsible, an award will be made to the lowest bidder in accordance with this Invitation for Bids.

2.12 Waiver of Informalities or Rejection of Bids

MDEQ may waive any informalities or minor defects, or reject any and all bids. Any bid may be rejected in whole or in part when such rejection is determined to be in the best interest of MDEQ. Waivers, when granted, shall in no way modify the Invitation for Bids requirements or excuse a party from full compliance with the Invitation for Bids specifications and other requirements if the party is awarded the Contract. Reasons for rejecting a bid include, but are not limited to:

A. Failure to comply with the requirements of the Invitation for Bids and any of its Addenda.

B. Bidder is in arrears on existing contracts with MDEQ or another governing authority or state agency.

C. Bidder is, anticipates being, or has been within the last five (5) years in litigation or arbitration with MDEQ or another governing authority of a state agency.

D. Bidder has defaulted on a previous contract.

E. The bid contains unauthorized amendments to the requirements of the Invitation for Bids.

F. The bid is conditional or qualified.

G. The bid is incomplete or contains irregularities, which make the bid indefinite or ambiguous.

H. The bid is not signed by an authorized representative of the party.

I. The bid contains false or misleading statements or references.

J. The bidder is determined to be non-responsible.

K. The bid ultimately fails to meet the announced requirements of the State in some material aspect.

L. The bid price is clearly unreasonable.

M. The bid is not responsive, i.e., does not conform in all material aspects to the Invitation for Bids.

N. The work or materials offered in the bid is unacceptable by reason of its failure to meet the requirements of the specifications or permissible alternative or other acceptability criteria set forth in the Invitation for Bids.

2.13 Disposition of Bids

All submitted bids become the property of the State of Mississippi.

2.14 Conditions of Solicitation

The release of this Invitation for Bids does not constitute an acceptance of any offer, nor does such invitation in any way obligate MDEQ to execute a contract with any party. MDEQ reserves the right to accept, reject, or negotiate any or all offers on the basis of the evaluation criteria contained within this document. The final decision to execute a contract with any party rests solely with MDEQ.

Before preparing the bid, all parties should note:

A. MDEQ accepts no responsibility for any expenses incurred by the bidder in the preparation and presentation of an offer. Such expenses shall be borne exclusively by the bidder.

B. The award of a contract for any bid is contingent upon the following:

    1) Favorable evaluation of the bid;
    2) Availability of funds; and
    3) Approval of the Public Procurement Review Board.

C. Contracted parties will be required to assume full responsibility for all specified services, materials, labor and equipment, and may subcontract only as specified in Attachment F, “MDEQ Standard Contract Terms and Conditions,” herein.

2.15 Withdrawal of Bids

Any bid may be withdrawn prior to the above-scheduled time for the submission of bids or authorized postponement thereof. Further, no bidder may withdraw a bid within ninety (90) days after the actual date of the bid opening.

2.16 Bid Modification Requests

Any requests to modify bids must be submitted in writing by the primary bidder. All requests for modification must be submitted prior to the submission deadline for the receipt of the sealed bids.

2.17 Addenda to Bid Specifications

MDEQ reserves the right to issue addenda to this Invitation for Bids. If an addendum becomes necessary, MDEQ will provide copies of the addendum to all persons known to have requested a copy of the bid package via the www.restore.ms email, mail, or fax.

2.18 Acknowledgement of Addendum

Bidders shall acknowledge receipt of any addendum to the Invitation for Bids and/or the Contract Documents by signing and returning the addendum with the bid and by identifying the addendum number and date in the space provided for this purpose on the Bid Form attached hereto as Attachment "D." The acknowledgement must be received by MDEQ by the time and at the place specified for receipt of sealed bids.

2.19 Information Regarding References

The bidder understands and agrees that MDEQ reserves the right to request information relative to references.

2.20 Performance, Payment, and Tax Bonds

Within seven (7) calendar days after receipt of the Notice of Award and Contract, the successful contractor shall execute and deliver to MDEQ performance and payment bonds pursuant to Miss. Code. Ann. § 31-5-51, each in the amount of one hundred percent (100%) of the Contract Price, payable to the Mississippi Department of Environmental Quality but conditioned for the prompt payment of all persons supplying labor or material used in the prosecution of the Work under the Contract, with a surety qualified to do business in Mississippi and listed on the United States Treasury Department's list of acceptable sureties and approved by MDEQ, which shall be required for the faithful performance of the Contract. MDEQ shall be named as the indemnitee in the Performance Bond.

A Tax Bond, pursuant to Miss. Code Ann. § 31-5-3, securing the prompt payment of taxes, licenses, assignments, contributions, damages, penalties, and interest thereon incurred in connection with the performance of the Contract shall be provided to MDEQ before commencing Work under the Contract.

Attorneys-in-fact who sign Payment Bonds, Performance Bonds, and Tax Bonds must file with each Bond a certified and effective dated copy of their power of attorney.

2.21 Award of Contract

If MDEQ makes an award for the Project, MDEQ will do so within ninety (90) days after opening the bids. Should there be any reason why the Contract cannot be awarded within ninety (90) days after bid opening, the time may be extended by written mutual agreement between MDEQ and the successful bidder. The Notice of Award shall be accompanied by the Contract. Actions taken by a bidder prior to final execution of such Contract will be at the bidder's OWN RISK and MDEQ will not be liable for such action. The party to whom the Contract is awarded will be required to execute the Contract and obtain the Performance Bond and Payment Bond within seven (7) calendar days from the date when Notice of Award is delivered to the bidder and the Tax Bond shall be provided prior to commencing work under the Contract. In case of failure of the bidder to execute the Contract or submit other required documents, MDEQ may award the Contract to the next lowest and best responsible/responsive bidder whose bid meets the requirements and criteria set forth in this Invitation for Bids, without relieving the bidder initially selected for award and its bonding company providing the Bid Bond from their liability to MDEQ for such failure.

Within thirty (30) days of receipt of an acceptable Performance Bond, an acceptable Payment Bond, and the Contract signed by the party to whom the Contract was awarded, MDEQ shall sign the Contract. When the Contract is fully executed, an executed duplicate of the Contract shall be returned to the bidder. Should MDEQ not execute the Contract within thirty (30) days from receipt of an acceptable Performance Bond, an acceptable Payment Bond and the Contract, the bidder may, by Written Notice, withdraw bidder's signed Contract. Such notice of withdrawal shall be effective upon receipt of the notice by MDEQ.

Subject to receipt of an acceptable Tax Bond, , a Notice to Proceed is anticipated to be issued in July 2016.

2.22 Equal Opportunity

Contracts, grants, loans, purchases and all other financial transactions are administered by MDEQ equally to all without regard to race, color, creed, sex, religion, national origin, disability, or age. In addition, the bidder understands that MDEQ is an equal opportunity employer and maintains a policy that prohibits unlawful discrimination based on race, color, creed, sex, age, national origin, physical handicap, disability, or any other unlawful consideration. During the term of the Contract, the contractor must strictly adhere to this policy in its employment practices and provision of services.

2.23 Applicable Laws

The bidder is responsible for complying with all applicable federal, state, and local laws and regulations.

2.24 Governing Law

This solicitation and any resulting contract shall be governed in all respects by the laws of the State of Mississippi, and any litigation with respect thereto shall be brought in the appropriate state or federal courts located in Jackson, Hinds County, Mississippi.

2.25 Certification of Independent Price Determination

Bidder shall execute, notarize and attach the Bidder Statement of Compliance (Attachment C) to its Bid, certifying that the prices submitted in response to the solicitation have been arrived at independently and without any consultation, communication or agreement (for the purpose of restricting competition) with any other bidder or competitor relating to those prices, the intention to submit a bid, or the methods or factors used to calculate the prices proposed.

2.26 Procurement Regulations

Any resulting contract shall be governed by the applicable provisions of the Public Procurement Review Board Regulations.

2.27 Contract Documents

Bidders are advised that this Invitation for Bids, any issued Addenda and related Contract Documents (including the Specifications and Drawings) and their bid, should it be accepted, will become part of the final Contract. In the event of any *conflict* between the terms appearing in the Contract Documents, the provisions of Article 7 of the Agreement included in this Invitation for Bids shall apply to resolve the conflict.

3.0 PERIOD OF PERFORMANCE

The period of performance for this Contract ("Contract Time") shall commence upon issuance of a Notice to Proceed by MDEQ. A Notice to Proceed is anticipated to be issued in July 2016. The successful contractor will be allowed a total of 120 calendar days to complete the installation of the 46 acre subtidal reef. The successful contractor must begin work within seven (7) calendar days of any such Notice to Proceed. Liquidated Damages in the amount of $4,000/day shall be assessed for each day the Work is not complete beyond the allowed 120 calendar days.

4.0 INSURANCE REQUIREMENTS

The successful contractor shall maintain during the time of the Contract the liability insurance coverage required by Section 31 of the MDEQ Standard Contract Terms and Conditions, or shall require its subcontractors to maintain said coverage, related to the work of the successful contractor and in connection with the Contract.

5.0 RELATIONSHIP OF PARTIES

All parties expressly understand and agree that MDEQ enters into a contract with a contractor based on the work performed pursuant to the Contract and not based on an employer-employee relationship or a joint venture relationship. For all purposes under this Contract:

The successful contractor shall not be deemed in any way, directly or indirectly, expressly, or by implication, to be an employee of MDEQ. The successful contractor will be an independent contractor.

6.0 CONTRACT ADMINISTRATION

The Contract awarded subsequent to this solicitation shall be administered by MDEQ. The MDEQ Engineer for this Project is as follows:

FC&E Engineering, LLC (by mail)
P.O. Box 1774
Brandon, MS 39043

7.0 COMPENSATION

Compensation for the Work performed pursuant to the Contract will be in the form of unit prices and lump sum basis as defined in the Bid Form. Payment Applications may be submitted on a monthly basis in accordance with the **Agreement** (Section 00 52 15).

8.0 CONTRACT TERMS AND CONDITIONS

The awarded Contract will include, but is not limited to, the MDEQ Standard Contract Terms and Conditions, a copy of which is attached hereto as Attachment F.

9.0 LIST OF ATTACHMENTS AND FORMS

The following are included as attachments to this Invitation for Bids.

Attachment A – List of Prior Experience

Attachment B – Map of Proposed Project Area

Attachment C – Bidder Statement of Compliance

Attachment D – Bid Form

Attachment E – Instructions for MAGIC

Attachment F – MDEQ Standard Contract Terms and Conditions

Attachment G – A copy of Miss. Code Ann. § 31-5-37, §31-5-33 and §31-7-305

Attachment H – Mississippi First Act – Employment Plan Form for Public Works Projects

Attachment I – Certificate of Commitment to Comply with Miss. Code Ann. § 31-5-37

Section 00 52 15 – Agreement

Division 01 Specifications

Division 31 Specifications

Division 35 Specifications

Appendices A – M

Contract Drawings

Attachment A
List of Prior Experience

The Bidder must complete this Attachment to include its prior experience in the type of work solicited under this Invitation for Bids.

Date Work Performed: _____

Agency: _____

Agency Contact Name: _____

Agency Contact Phone Number:_____

Name of Project: _____

Address of Project: _____

Scope of Project: _____

Client Name: _____

Client Phone Number: _____

Work Performed by Bidder [ ] or Subcontractor [ ]

If subcontractor, list subcontractor name: _____

Date Work Performed: _____

Agency: _____

Agency Contact Name: _____

Agency Contact Phone Number: _____

Name of Project: _____

Address of Project: _____

Scope of Project: _____

Client Name: _____

Client Phone Number: _____

Work Performed by Bidder [ ] or Subcontractor [ ]

If subcontractor, list subcontractor name: _____

Attachment A (continued)

Date Work Performed: _____

Agency: _____

Agency Contact Name: _____

Agency Contact Phone Number:_____

Name of Project: _____

Address of Project: _____

Scope of Project: _____

Client Name: _____

Client Phone Number: _____

Work Performed by Bidder [ ] or Subcontractor [ ]

If subcontractor, list subcontractor name: _____

Date Work Performed: _____

Agency: _____

Agency Contact Name: _____

Agency Contact Phone Number: _____

Name of Project: _____

Address of Project: _____

Scope of Project: _____

Client Name: _____

Client Phone Number: _____

Work Performed by Bidder [ ] or Subcontractor [ ]

If subcontractor, list subcontractor name: _____

Attachment A (continued)

Date Work Performed: _____

Agency: _____

Agency Contact Name: _____

Agency Contact Phone Number:_____

Name of Project: _____

Address of Project: _____

Scope of Project: _____

Client Name: _____

Client Phone Number: _____

Work Performed by Bidder [ ] or Subcontractor [ ]

If subcontractor, list subcontractor name: _____

Date Work Performed: _____

Agency: _____

Agency Contact Name: _____

Agency Contact Phone Number: _____

Name of Project: _____

Address of Project: _____

Scope of Project: _____

Client Name: _____

Client Phone Number: _____

Work Performed by Bidder [ ] or Subcontractor [ ]

If subcontractor, list subcontractor name: _____

Attachment B
Map of Proposed Project Area

Attachment C

Bidder Statement of Compliance

State of _____

County of _____

I,_____, individually, and in my capacity as _____ of _____ (Bidder), being first duly sworn, on oath depose and state the following on behalf of the company:

Bidder's Representation Regarding Contingent Fees

The bidder represents as a part of such bidder's bid that such bidder has not retained any person or agency on a percentage, commission, brokerage, or other contingent arrangement to secure this contract.

Bidder's Non-Collusion Certification

The Bidder, nor any of its officers, partners, owners, agents, representatives, employees, suppliers, subcontractors, or parties in interest have not in any way colluded, conspired, or agreed directly or indirectly with any other Bidder, supplier, subcontractor, firm, or person to:

a) fix prices or prices in the attached Bid or for other Bidders;
b) fix or make arrangements to restrict land use availability or lease/rental prices for this Bid or for other Bidders; or
c) fix any overhead, profit or cost elements for this Bid or for other Bidders

Bidder History, Debarment and Suspension Representations

Bidder certifies that Bidder and its corporate officers, principal owners, managers, auditors, and others in a position of administering governmental funds:

a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any governmental department or agency;

b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction;

c) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

d) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in b) and c) above; and

e) Have not within a three-year period preceding this application/ proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

Bidder's Representation of No Improper Influence

Bidder further certifies, to the best of its knowledge and belief, that:

a) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this contract, Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions will be completed and submitted.

No Conflict of Interest

Bidder further certifies that, to the best of its knowledge and belief, there are no present or currently planned interests (financial, contractual, organizational, or otherwise) relating to the work to be performed under any contract or task order resulting from this Bid that would create any actual or potential conflict of interest (or apparent conflicts of interest) (including conflicts of interest for immediate family members: spouses, parents, children) that would impinge on its ability to render impartial, technically sound, and objective assistance or advice or result in it being given an unfair competitive advantage. In this clause, the term ''potential conflict'' means reasonably foreseeable conflict of interest. Bidder further certifies that it has and will continue to exercise due diligence in identifying and removing or mitigating, to the State's satisfaction, such conflict of interest (or apparent conflict of interest). The Bidder further certifies that it has no conflict of interest with respect to MDEQ or the work to be performed (as set forth in the Invitation for Bids and accompanying Bid documents).

By submission of this bid, I have agreed to adhere to **all conditions and requirements**, as set forth in MDEQ's Invitation for Bids and Contract Documents, including all the terms and conditions in the Contract Documents. I further understand that my failure to comply with all requirements and qualifications will result in disqualification of my bid relative to this procurement action. I have submitted appropriate documentation and completed Contract

form(s) as necessary to substantiate this evaluation. If inadequate, my bid will not meet the bid requirements and will be evaluated as "Not Meeting Specifications."

MDEQ reserves the right to reject any and/or all bids and to waive any minor informalities.

Please accept this as my/our formal bid proposal for the complete specifications in all areas as specified by MDEQ.

All of the foregoing is true and correct:

Bidder:_____

Date: _____

Authorized Signature: _____

Name:_____
Typed/Printed

Title:_____

SWORN TO AND SUBSCRIBED before me, this the _____ day of _____, 20_____.

_____

NOTARY PUBLIC

My Commission Expires: [SEAL]

_____

Attachment D
Bid Form
Hancock County Marsh Living Shoreline Phase 4: Heron Bay Subtidal Reef

1. BID RECIPIENT

This Bid is submitted by _____ (hereinafter called "Bidder") doing business as a _____ (insert "a corporation," "an individual" applicable; if a corporation, indicate state of incorporation; or a "joint venture") to:

Mississippi Department of Environmental Quality
Attention: Melanie Green
South Regional Office
1141 Bayview Avenue, Suite 208
Biloxi, Mississippi 39530

The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into a Contract with Mississippi Department of Environmental Quality (hereinafter called "MDEQ") in the form included in the Invitation for Bids to perform all Work as specified or indicated in the Contract Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.

2. BIDDER'S ACKNOWLEDGEMENTS

Bidder accepts all of the terms and conditions of the Invitation for Bids, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for ninety (90) days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of MDEQ.

3. BIDDER'S REPRESENTATIONS

In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Contract Documents, including the Invitation for Bids and the following addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date
_____	_____
_____	_____
_____	_____

B. Bidder has reviewed the requirements to bid this Project and become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and is satisfied as to all laws and regulations that may affect cost, progress, and performance of the Work.

D. Bidder has considered the information known to Bidder; information commonly known to contractors doing business in the locality of the work site; information and observations obtained from visits to the work site; the Invitation for Bids; and the site-related reports and drawings identified in the Invitation for Bids with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) the Bidder's safety precautions and programs.

E. Based on the information and observations referred to above, Bidder does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Contract Documents.

F. Bidder is aware of the general nature of work to be performed at the site that relates to the Work as indicated in the Contract Documents.

G. Bidder has given MDEQ written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Contract Documents (including, but not limited to, the Drawings and Specifications), and the written resolution thereof by MDEQ is acceptable to Bidder.

H. The Invitation for Bids is generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

I.

4. BID FORM INSTRUCTIONS

All blank spaces for the bid prices must be filled in ink or typewritten, and this Bid Form must be fully completed and executed when submitted. Alterations and erasures of the entries made by bidder shall be initialed by the individual who signed this Bid Form. Bids shall state the legal name of bidder and be signed by the person or persons legally authorized to bind bidder to a contract. Bids submitted by a corporation shall indicate state of incorporation and bear a corporate seal. Bids submitted by an agent of a bidder shall have a current power of attorney attached that certifies the agent's authority to bind the bidder.

Measurement and payment procedures corresponding to the Bid Form can be found in **Section 00 52 15** Agreement and **Section 01 20 00** Measurement and Payment Procedures, and **Section 01 29 00** Payment Procedures of the Contract Documents.

Schedule of Prices

Item No.	Description of Item	Unit of Measure	Quantity	Price/Unit	Total
1	Mobilization and Demobilization	LS	1		
	Written Total_____				
2	Environmental Compliance	LS	1		
	Written Total_____				
3	Placement of Subtidal Reef Stone	Ton	81,000		
	Written Total_____				

Total Bid for Hancock County Marsh Living Shoreline Phase 4: Heron Bay Subtidal Reef

Total Bid $ _____

Written Total Bid

Note: Bids shall include sales tax and all other applicable taxes and fees. All blanks shall be filled in. Total amount of Bid shall be the sum of the Items. Contract Award will be made according to the Invitation for Bids. In case of discrepancy between the sum of the items and Total Amount of Bid, the sum of the items shall be considered to be the Total Amount of Bid. Award will be made to only one Bidder based upon the Base Bid as applicable from this Bid Form and determination of the lowest and best, responsive, responsible bidder according to the Invitation for Bids.

1. The Bidder agrees that the Work shall be completed within the Contract Time as stipulated in the Agreement.

2. The following documents are attached to and made a condition of this Bid:

    a. Bid Security (surety bond, cashier's check, or certified check);

    b. Power of Attorney (For Surety Bond only);

    c. Authority to Execute Contract (any corporate employee other than the president or vice-president); and

d. A list of all subcontractors, surveyors and suppliers associated with this Bid.

The undersigned, having read and understood the Contract Documents and examined the Project site and adjoining areas, and being familiar with the obstacles and conditions that will affect proposed Work, hereby offers and agrees to furnish all labor, equipment and materials and to perform all the Work required for the **Hancock County Marsh Living Shoreline Phase 4 – Heron Bay Subtidal Reef** project in accordance with the Contract Documents and at the prices stated in the preceding Schedule of Prices above.

This Bid is submitted by: **PLEASE COMPLETE APPROPRIATE SECTION BELOW**

If Bidder is:

An Individual

Name _____
(typed or printed):

By:_____
(Individual's Signature)

Doing business as: _____

State Contractor License No. _____

Bidder's Business Address: _____

_____

_____

Phone No. _____ Fax No. _____

Email: _____

Submitted on _____, 20_____

A Partnership

Partnership Name: _____
(typed or printed)

By: _____
(Signature of General Partner – attach evidence of authority to sign)

Name: _____
(typed or printed)

State Contractor License No. _____

Bidder's Business Address: _____

_____

_____

Phone No. _____ Fax No. _____

Email: _____

Submitted on _____, 20_____

A Corporation

Corporation Name: _____

(Seal)

State of Incorporation: _____

Type (General Business, Professional, Service, Limited Liability):_____

By: _____
(Signature, attach evidence of authority to sign)

Name: _____
(typed or printed)

Title: _____
(Corporate Seal)

Attest: _____

Date of Qualification to do business in Mississippi is ___/___/___.

State Contractor License No. _____

Bidder's Business Address: _____

_____

_____

Phone No. _____ Fax No. _____

Email: _____

Submitted on _____, 20_____

A Joint Venture

Name of Joint Venture: _____

First Joint Venture Name: _____
(Seal)

By: _____
(Signature of first Joint Venture Partner, attach evidence of authority to sign)

Name: _____
(typed or printed)

Title: _____
(Each Joint Venture Partner must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

State Contractor License Nos. (ALL Joint Venturers). _____

_____

Bidder's Business Address: _____

_____

_____

Phone No. _____ Fax No. _____

Email: _____

Submitted on _____, 20_____

Attachment E
Instructions for MAGIC

TO: Vendors for the State of Mississippi

FROM: Mississippi Department of Environmental Quality
Office of Administrative Services

SUBJECT: Instructions to register as Supplier

Effective July 1, 2014, the State of Mississippi requires vendors to register in MAGIC for the State to execute a contract and/or pay for services/products.

Please complete the online registration at this address:

http://www.mmrs.state.ms.us/vendors/Supplier_(Vendor)_Self-Service.shtml

Should you have any questions concerning the registration process, please call the Department of Finance and Administration at 601-359-3538.

Thank you for your time and attention to this matter.

Mississippi Department of Environmental Quality
Office of Administrative Services

Attachment F
MDEQ Standard Contract Terms and Conditions

APPLICABLE TO ALL WORK

1. Availability of Funds.

It is expressly understood and agreed that the obligation of MDEQ to proceed under this agreement is conditioned upon the appropriation of funds by the Mississippi State Legislature and the receipt of state and/or federal funds. If the funds anticipated for the continuing fulfillment of the agreement are, at any time, not forthcoming or insufficient, either through the failure of the federal government to provide funds or of the State of Mississippi to appropriate funds or the discontinuance or material alteration of the program under which funds were provided or if funds are not otherwise available to MDEQ, MDEQ shall have the right upon ten (10) working days written notice to the Contractor, to terminate this agreement without damage, penalty, cost or expenses to MDEQ of any kind whatsoever. The effective date of termination shall be as specified in the notice of termination.

2. Representatives.

For all matters pertaining to the Work, unless otherwise provided, MDEQ will be represented by its Executive Director, or a designated representative, in all administrative matters and by the designated "Engineer" in all technical matters. When MDEQ is referenced singularly in these Standard Contract Terms and Conditions, it shall be construed to include MDEQ's Executive Director and its designated representative(s) for the Project.

Before commencement of the Work, Contractor shall notify MDEQ and Engineer of the name of the person(s) ("Contractor's Representative") who shall be on-site at all times when the Work is being performed, who shall directly superintend the Work and shall be the duly authorized Representative of Contractor empowered to make decisions for, and on behalf of Contractor, and to execute Change Orders on behalf of Contractor, and to whom orders and directions by MDEQ and Engineer to Contractor may be given.

At all times when any performance of the Work at any site is being conducted by any employee or representative of the Contractor or his subcontractors, the Contractor shall have a Contractor's Representative present at each site who has the capability of receiving instructions in the English language, fluently speaks the English language and can explain the work operations to persons performing the Work in the language that those performing the Work are capable of understanding. MDEQ or its designated Engineer shall have the right to determine whether the proposed representative has sufficient technical and bilingual capabilities, and the Contractor shall immediately replace any individual not acceptable to MDEQ or its designated Engineer.

3. Authority of Engineer.

If designated by MDEQ, the designated Engineer shall decide any and all questions which may arise as to (1) the quality or acceptability of materials furnished and the Work

performed, (2) the manner of performance of the Work, and (3) interpretation of technical matters within the Contract Documents.

4. Authority to Contract.

Contractor warrants (a) that it is a validly organized business with valid authority to enter into this agreement; (b) that it is qualified and registered to do business and is in good standing in the State of Mississippi; (c) that entry into and performance under this Agreement is not restricted or prohibited by any loan, security, financing, contractual, or other agreement of any kind, and (d) notwithstanding any other provision of this Agreement to the contrary, that there are no existing legal proceedings, either voluntary or otherwise, which may adversely affect its ability to perform its obligations under this Contract.

5. Employment Status.

Contractor shall, at all times, be regarded as and shall be legally considered an independent Contractor and shall at no time act as an agent for MDEQ. Nothing contained herein shall be deemed or construed by MDEQ, Contractor, or any third party as creating the relationship of principal and agent, master and servant, partners, joint ventures, employer and employee, or any similar such relationship between MDEQ and Contractor. Neither the method of computation of fees or other charges nor any other provision contained herein nor any acts of MDEQ or Contractor hereunder creates, or shall be deemed to create a relationship other than the independent relationship of MDEQ and Contractor.

Contractor's personnel shall not be deemed in any way, directly or indirectly, expressly or by implication, to be employees of MDEQ. Neither Contractor nor its employees shall, under any circumstances, be considered servants, agents, or employees of MDEQ, and MDEQ shall be at no time legally responsible for any negligence or other wrongdoing by Contractor, its servants, agents, or employees. MDEQ shall not withhold from the Contract payments to Contractor any federal or state unemployment taxes, federal or state income taxes, Social Security tax, or any other amounts for benefits to Contractor. Further, MDEQ shall not provide to Contractor any insurance coverage or other benefits, including Worker's Compensation, normally provided by MDEQ or the State for its employees.

6. Contractor's Personnel.

MDEQ shall, throughout the life of the Contract, have the right of reasonable rejection and approval of staff or subcontractors assigned to the Work by Contractor. If MDEQ reasonably rejects staff or subcontractors, Contractor must provide replacement staff or subcontractors satisfactory to MDEQ in a timely manner and at no additional cost to MDEQ. The day-to-day supervision and control of Contractor's employees and subcontractors is the sole responsibility of Contractor. Contractor must receive pre-approval from MDEQ prior to subcontracting with any company and/or individual not listed as a subcontractor in the bid submittal. The Request to Subcontract form is attached in Appendix L.

7. Drug-Free Work Force.

A. The Contractor agrees to institute and maintain a program for achieving the objective of a drug-free work force. MDEQ and the Engineer will not be responsible for implementing, overseeing or enforcing the Contractor's drug free work force program.

B. Contractor programs shall include the following, or appropriate alternatives:

i. Employee assistance programs emphasizing high level direction, education, counseling, rehabilitation, and coordination with available community resources;

ii. Supervisory training to assist in identifying and addressing illegal drug use by Contractor employees;

iii. Provision for self-referrals as well as supervisory referrals to treatment with maximum respect for individual confidentiality consistent with safety and security issues;

iv. Provision for identifying illegal drug users, including testing on a controlled and carefully monitored basis. Employee drug testing programs shall be established taking account of the following:

a. The Contractor shall establish a program that provides for testing for the use of illegal drugs by employees in sensitive positions. The extent of and criteria for such testing shall be determined by the Contractor based on considerations that include the nature of the Work being performed under the Contract, the employee's duties, and efficient use of Contractor resources, and the risks to health, safety, or national security that could result from the failure of an employee adequately to discharge his or her position.

b. In addition, the Contractor may establish a program for employee drug testing

1. When there is a reasonable suspicion that an employee uses illegal drugs;
2. When an employees has been involved in an accident or unsafe practice;
3. As part of or as a follow-up to counseling or rehabilitation for illegal drug use; or
4. As part of a voluntary employee drug testing program.

c. The Contractor may establish a program to test applicants for employment for illegal drug use.

C. Contractor shall adopt appropriate personnel procedures to deal with employees who are found to be using drugs illegally. Contractor shall not allow any employee to remain on duty or perform in a sensitive position who is found to use illegal drugs until such times as the Contractor, in accordance with procedures established by the Contractor, determines that the employee may perform in such a position.

D. The provisions of this section pertaining to drug testing program shall not apply to the extent that they are inconsistent with state or local law.

8. Notification of Ownership Changes.

A. Contractor shall make the following notifications in writing:

i. When Contractor becomes aware that a change in its ownership has occurred, or is certain to occur, that could result in changes in the valuation of its capitalized assets in the accounting records, Contractor shall notify MDEQ within 30 days.

ii. Contractor shall also notify MDEQ within 30 days whenever changes to asset valuations or any other cost changes have occurred or are certain to occur as a result of a change in ownership.

iii. Contractor shall:

a. Maintain current, accurate, and complete inventory records of assets and their costs;

b. Provide MDEQ or its designated representative ready access to records reasonably related to the performance of the Work performed hereunder upon request;

c. Ensure that all individual and grouped assets, their capitalized values, accumulated depreciation or amortization, and remaining useful lives are identified accurately before and after each of Contractor's ownership changes; and

d. Retain and continue to maintain depreciation and amortization schedules based on the asset records maintained before each Contractor ownership change.

9. Examination of Site, Plans and Specifications.

It is the sole responsibility of Contractor to visit the site of the Work and to thoroughly examine the Contract Documents and to fully acquaint Contractor with the conditions to be encountered as to the character, quality and quantity of Work to be performed and materials to be furnished. Contractor shall fully understand the facilities, difficulties and restrictions that may be encountered in performing the Work.

By execution of the Contract, Contractor represents to MDEQ that Contractor has made the necessary examination referred to in the preceding paragraph and can perform the Work for the Contract Price.

Contractor is advised that any report or other information (hereafter called “Additional Information”) given to Contractor by MDEQ or Engineer or obtained by Contractor from the records of MDEQ (except for the Contract Documents) is not a part of the Contract unless specifically referenced to be used in conjunction with the Contract and is given

solely for the convenience of Contractor for whatever use Contractor may wish to make of it. It is expressly understood and agreed that MDEQ assumes no responsibility whatsoever in respect to the sufficiency or accuracy of the Additional Information or of any interpretations made thereof by any person. Availability or use of such Additional Information shall not be a waiver of Contractor's duty to examine the site of the Work, and Contractor is cautioned to make such independent investigation as Contractor deems necessary to satisfy Contractor as to the conditions to be encountered in the performance of the Work, including but not limited to: (1) conditions bearing upon transportation, disposal, handling and storage of materials; (2) the availability of labor, water, electric power and roads; (3) uncertainties of weather, tides or similar physical conditions at the site; (4) the conformation and conditions of the ground; and (5) other site conditions that may affect the Work performance.

10. Interpretation of Plans and Specifications.

Should it appear that the Work to be done, or any matter relative thereto, is not sufficiently detailed or explained in the Contract Documents, Contractor shall apply in writing to the Engineer for such further explanations as may be necessary for Contractor to accomplish the Work, and Contractor shall conform to such explanation or interpretation of the Contract by Engineer so far as may be consistent with the intent of the Contract Documents. In the event of doubt or question relative to the true meaning of the Contract Documents as explained or interpreted by the Engineer, reference shall be made to MDEQ, whose decision thereof shall be final.

In the event there is a discrepancy between the Specifications and the Plans or Drawings, the Drawings take precedence over the Specifications. In the event of any discrepancy between any Plans or Drawing and the figures written thereon, the figures shall be taken as correct.

11. Inspection.

MDEQ and Engineer or its designee shall at all times have access to the Work during construction and shall be furnished with every reasonable facility for obtaining full knowledge respecting the progress, workmanship and character of materials used and employed in the Work.

Whenever Contractor varies the period during which Work is carried on each day, Contractor shall give due notice to and obtain approval from MDEQ and Engineer so that proper inspection may be provided. Any Work done in the absence of Engineer or Engineer's designee will be subject to rejection.

The inspection of the Work shall not relieve Contractor of any of Contractor's obligations to fulfill the Contract as prescribed. Defective Work shall be made good, and unsuitable materials may be rejected, notwithstanding the fact that such defective Work and unsuitable materials have been previously overlooked by Engineer in inspection and accepted for payment.

12. Public Convenience and Safety.

Contractor shall so conduct its operations and Work as to cause the least possible obstruction and inconvenience to public traffic.

Contractor shall furnish, erect, and maintain such fences, barriers, lights, warning and directional signs as deemed necessary by Engineer to give adequate warning to the public at all times of the construction and of any dangerous conditions to be encountered as a result thereof, and Contractor shall also erect and maintain such signs as may be furnished by MDEQ.

All equipment shall be fully equipped with marine safety equipment as required by applicable state or federal law. Contractor shall have a program in place for inspecting and documenting the condition of equipment used on the Project and shall certify that the equipment is in compliance with applicable Occupational Safety and Health Administration (OSHA) and United States Coast Guard inspection requirements. A copy of such certification shall be submitted to MDEQ prior to mobilization.

13. Removal of Defective and Unauthorized Work.

All Work which is defective in its construction or deficient in any way of the requirements of the Contract, or Work done by Contractor that is considered by MDEQ to create a condition that threatens the health, safety, or welfare of the citizens and/or employees of the State of Mississippi or MDEQ, shall be remedied, or removed and replaced by Contractor in an acceptable manner, and no compensation will be allowed for such correction.

Any Work done beyond the Plans or Specifications, or established by Engineer, or any extra Work done without the written authority of MDEQ, will be considered as unauthorized and Contractor will not be compensated. Furthermore, any material that is deposited in places not designated or approved by the Engineer or MDEQ may be required to be removed, and the Contractor will be required to deposit such misplaced material where directed at his expense. Additional clean-up and environmental damage mitigation requirements may be directed by MDEQ. Such efforts will be entirely at the expense of the Contractor and any fines or penalties will be the responsibility of the Contractor.

Upon failure on the part of Contractor to comply forthwith with any order of MDEQ or Engineer made under the provisions of this Section or Sections 3 or 21, MDEQ shall have authority to cause the defective Work to be remedied, or removed and replaced, and unauthorized Work to be removed, and to deduct the costs thereof from any moneys due or to become due the Contractor.

14. Contractor's Responsibility for Work

Until written final acceptance of the Work by MDEQ, Contractor shall use all commercially reasonable means to secure and protect the Work from injury, loss or damage to all or any part thereof by an Act of God (including fire, flood, or hurricane) or from any other cause, whether arising from the execution of the Work, mobilization and demobilization or otherwise. Contractor shall rebuild, repair, restore and make good all damage to the Work or any portion thereof occasioned by Contractor's failure to use all commercially reasonable means to secure and protect the Work before final acceptance of the whole Work by MDEQ and shall bear the entire expense of such rebuilding, repair or restoration of the Work if the Contractor fails to employ such means.

15. Responsibility for Damage.

During the progress of the Work or any time before final acceptance, MDEQ and Engineer shall not be liable to Contractor for any loss or damage to the Work or any part thereof, or to any material or equipment used or to be used in performing the Work, or for injury or damage to any person (including workers) or damage to property from any cause.

Until Final Acceptance by MDEQ, protection of the Work and materials and equipment used thereon shall be the sole responsibility of Contractor.

16. Ownership of Documents and Work Products.

MDEQ shall own all documents, files, reports, work papers and working documentation, electronic or otherwise, created in connection with the Contract, except for Contractor's internal administrative and quality assurance files and internal documents. Contractor shall deliver such documents and work papers to MDEQ upon termination or completion of the Contract. The foregoing notwithstanding, Contractor shall be entitled to retain a set of such work papers for its files. Contractor shall be entitled to use such work papers only after receiving written permission from MDEQ and subject to any copyright protections.

Except as needed to perform hereunder, the Contractor is prohibited from use of the above described information and/or materials without the express written approval of MDEQ.

17. Copyrights.

Contractor agrees that MDEQ shall determine the disposition of the title to and the rights under any copyright by Contractor or employees on copyrightable material first produced or composed under this Contract. Further, Contractor hereby grants to MDEQ a royalty-free, nonexclusive, irrevocable license to reproduce, translate, publish, use and dispose of, and to authorize others to do so, all copyrighted (or copyrightable) work not first produced or composed by Contractor in the performance of this Contract but which is incorporated in the material furnished under the Contract. This grant is provided that such license shall be only to the extent Contractor now has, or prior to the completion of full final settlements of agreement may acquire, the right to grant such license without becoming liable to pay compensation to others solely because of such grant.

18. Record Retention and Access to Records.

Provided Contractor is given reasonable advance written notice and such inspection is made during normal business hours of Contractor, the State or any duly authorized representatives shall have unimpeded, prompt access to any of Contractor's books, documents, papers, and/or records which are maintained or produced as a result of the Project for the purpose of making audits, examinations, excerpts, and transcriptions. All records related to this Contract shall be retained by Contractor for three (3) years after final payment is made under this Contract and all pending matters are closed; however, if any audit, litigation or other action arising out of or related in any way to this Project is commenced before the end of the three (3) year period, the records shall be retained for

one (1) year after all issues arising out of the action are finally resolved or until the end of the three (3) year period, whichever is later.

19. Right to Audit.

Contractor shall maintain such financial records and other records as may be prescribed by MDEQ or by applicable federal and state laws, rules, and regulations. Contractor shall retain these records for a period of three (3) years after final payment or until they are audited by MDEQ, whichever event occurs first. These records shall be made available during the term of the Contract and the subsequent three-year period for examination, transcription, and audit by the Mississippi State Auditor's Office, its designees, or other authorized bodies.

20. Third Party Action Notification.

Contractor shall give MDEQ immediate notice in writing of any action or suit filed, and prompt notice of any claim made against Contractor by any entity that may result in litigation related in any way to the Contract.

21. Orders of Engineer.

Whenever it is desirable by the Engineer and MDEQ to give Contractor directions concerning the Work, orders will be given in writing to Contractor by delivery to Contractor's representative, or in the representative's absence, to Contractor's on-site superintendent or foreman in charge of the particular Work in reference to which the order is given, and such written orders shall be binding on Contractor and Contractor shall comply therewith.

Any provision of the Contract notwithstanding, all orders, directions or interpretations of the Engineer and MDEQ to Contractor shall be in writing and shall be given to Contractor promptly after requested by Contractor.

Contractor shall not be bound to follow any orders, directions or interpretations of Engineer that are not in writing. MDEQ shall not be liable to Contractor for Work performed by Contractor in reliance on verbal orders of Engineer and neither shall such reliance relieve Contractor from the responsibilities of Contractor set forth in the Contract.

If Contractor believes that the order issued by the Engineer entitles Contractor to a change in either the Contract Price or the Contract Time, or both, Contractor shall give Engineer and MDEQ written notice of a request for a change order within two (2) days after receipt of the order by the Engineer. The written request shall state the requested change in Contract Price, or extension of the Contract Time, and shall detail the basis for the request. Upon such a request, Contractor shall not be required to carry out the order of the Engineer pending the execution of a Change Order unless Contractor is otherwise directed in writing. If Contractor has requested a Change Order and is ordered to proceed with the Work before a Change Order is executed, such proceeding with the Work shall be without prejudice to the Contractor's right, if any, to request equitable adjustment or an extension of time.

22. Change Orders.

(A) Generally MDEQ may order changes in the services consisting of additions, deletions, or other revisions within the general scope of the Contract. No claims may be made by Contractor that the scope of the Project or of Contractor's services has been changed, requiring changes to the amount of compensation to Contractor or other adjustments to the Contract, unless such changes or adjustments have been made by written amendment to the Contract signed by MDEQ and Contractor. If Contractor believes that any particular work is not within the scope of the Project, is a material change, or will otherwise require more compensation to Contractor, Contractor must immediately notify MDEQ in writing of this belief. If MDEQ believes that the particular work is within the scope of the Contract as written, Contractor will be ordered to and shall continue with the Work as changed and at the cost stated for the services within the Contract.

(B) Procedures. The parties shall initiate a Change Order as follows:

i) Proposed by MDEQ/Engineer.

MDEQ or Engineer may initiate changes by submitting a proposed Change Order to Contractor. The request will include:

(1) Detailed description of the change, products, and location of the change in the Project;

(2) Supplementary or revised Drawings and Specifications;

(3) The projected time span for making the change and a specific statement as to whether overtime work is, or is not authorized;

(4) A specific period of time during which the requested price will be considered valid; and

(5) Such request is for information only, and is not an instruction to execute the changesor to stop Work in progress.

ii) Proposed by Contractor.

Contractor may initiate changes by submitting a written notice to MDEQ's Engineer, or directing to MDEQ in the absence of a designated Engineer, containing:

(1) Description of the proposed changes;

(2) Statement of the reason for making the changes;

(3) Statement of the effect on the Contract Sum and the Contract Time;

(4) Statement of the effect on the work of separate contractors; and

(5) Documentation supporting any change in Contract Sum or Contract Time, as appropriate.

(C) Documentation and information supporting Change Order.

i) The Contractor shall support each quotation for a lump-sum proposal, and for each unit price which has not previously been established, with sufficient substantiating data to allow MDEQ or its Engineer to evaluate the quotation.

ii) The Contractor will provide additional data to support time and cost computations:

(1) Labor required for Contractor and sub-contractors;

(2) Equipment required by Contractor and sub-contractors;

(3) Products and materials required by Contractor and sub-contractors, including the recommended sources of purchase and unit cost and the quantities required;

(4) Overhead (inclusive of insurance, bonds and taxes) and profit on labor by the Contractor and sub-contractors;

(5) Overhead (inclusive of insurance, bonds and taxes) and profit on equipment by the Contractor and sub-contractors;

(6) Credit for work deleted from Contract, similarly documented; and

(7) Justification for any change in Contract Time.

(D) Form of Change Order.

i) The party initiating the request for a Change Order shall prepare the request on a form provided by MDEQ.

ii) A Change Order will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change.

iii) A Change Order will provide an accounting of the adjustment in the Contract Sum and in the Contract Time.

iv) MDEQ and its Engineer, if designated for the Project, will sign and date the Change Order as authorization for the Contractor to proceed with the changes.

v) Contractor will sign and date the Change Order to indicate agreement with the terms therein.

vi) Changes in price will be based on:

(a) Unit prices already established in the Bid Form;

(b) Negotiated unit prices for items not previously established in the Bid Form; or

(c) Negotiated lump sum prices for items not previously established in the Bid Form.

vii) For negotiated unit or lump sum prices for items not previously established in the Bid Form, the total markup for profit and overhead for the Contractor, including all subcontractors and/or vendors shall not exceed fifteen percent (15%).

viii) Changes in Contract Time will be justified based on the Extension of Contract Time provision below.

(E) Final Summary Change Order.

i) At the conclusion of the Project, the Engineer will perform a final quantity estimate of all unit price items and submit final quantities to the Contractor for review and verification.

ii) After mutual acceptance of final quantities, the Engineer will prepare a summary Change Order that reflects all actual installed and accepted quantities.

iii) MDEQ and Contractor will sign and date the Final Summary Change Order to indicate their agreement with the terms therein.

i. Work Order Directive.

A Work Order Directive is a written order, instructions, or interpretations, signed by Engineer making minor changes in the Work not involving a change in Contract Sum or Contract Time.

23. Extension of Contract Time.

A. Time Extension

i) The time within which to complete the Contract shall be extended by MDEQ for a period of time, as may be reasonably necessary for Contractor to resume work, upon the occurrence of any of the following events: acts of God; strikes, lockouts, riots, acts of war, epidemics, fire, earthquakes, hurricanes, tropical storms, floods or other natural disasters (a “Force Majeure Event”).

ii) Notwithstanding the foregoing, subparagraph (i), the time within which to complete the Contract may be extended by MDEQ if any of the following two (2) requirements are met:

(1) The delay is the result of documented causes beyond the control of Contractor or its Subcontractors or suppliers, including, but not limited to, unusually severe weather conditions not giving rise to a Force Majeure Event; or

(2) Negotiated additional time for new work activities not included in the original Contract.

iii) In the circumstances described in either subparagraph (i) or (ii), Contractor shall notify the Engineer in writing within ten (10) days from the beginning of any such delay period of the cause of the delay and request an extension of the time within which to complete the Contract by reason of the delay and specify the length of such requested extension in accordance with the Change Order provisions above.

iv) MDEQ or its Engineer, upon investigation, may grant an increase in the Contract Time in accordance with the Change Order provisions above.

24. Modification or Amendment.

Modification, changes or amendments to the Contract may be made upon mutual agreement of the parties hereto. However, any change, supplement, modification or amendment of any term, provision or condition of the Contract must be in writing and signed by both parties hereto.

25. Release Prior to Final Payment.

Upon satisfactory completion of the Work performed under the Contract, as a condition before final payment under the Contract or as a termination settlement under the Contract, Contractor shall execute and deliver to MDEQ a release of all claims against MDEQ arising under, or by virtue of, the Contract by completing the Release of Claims form made an Appendix to the Invitation for Bids. Unless otherwise provided in the Contract, by state law or otherwise expressly agreed to by the parties in the Contract, final payment under the Contract or settlement upon termination of the Contract shall not constitute waiver of MDEQ's claims against Contractor or his sureties under the Contract or applicable performance and payment bonds.

26. Conflict of Interest.

Contractor shall immediately notify MDEQ in writing of any interests (financial, contractual, organizational, or otherwise) relating to the services to be performed under this Contract that would create any actual or potential conflict of interest (or apparent conflicts of interest) (including conflicts of interest for immediate family members: spouses, parents, children) with respect to MDEQ or the Project that would impinge on Contractor's ability to render impartial, technically sound, and objective assistance or advice or result in it being given an unfair competitive advantage. In this section, the term "potential conflict" means reasonably foreseeable conflict of interest. Contractor further certifies that it has and will continue to exercise due diligence in identifying and removing or mitigating, to MDEQ's satisfaction, such conflict of interest (or apparent conflict of interest). If such conflict cannot be resolved to MDEQ's satisfaction, MDEQ reserves the right to terminate this Contract per the Termination for Convenience section of this Contract.

27. Debarment and Suspension.

Contractor certifies to the best of its knowledge and belief that it, its corporate officers, principal owners, managers, auditors and others in a position of administering governmental funds:

A. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transaction by any federal department or agency or any political subdivision or agency of the State of Mississippi;

B. Have not, within a three year period preceding this Contract, been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state, or local) transaction or Contract under a public transaction;

C. Have not, within a three year period preceding this Contract, been convicted of or had a civil judgment rendered against them for a violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

D. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state or local) with commission of any of these offenses enumerated in subparagraphs B. and C. of this certification; and

E. Has not, within a three year period preceding this Contract, had one or more public transactions (federal, state, or local) terminated for cause or default.

28. Representation Regarding Contingent Fees.

Contractor represents that it has not retained a person to solicit or secure a State of Mississippi contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, except as disclosed in the Contractor's bid.

29. Representation Regarding Gratuities.

The bidder or Contractor represents that it has not violated, is not violating, and promises that it will not violate the prohibition against gratuities set forth in Section 6-204 (Gratuities) of the Mississippi Personal Service Contract Procurement Regulations.

30. Tax Bonds.

A Tax Bond securing the prompt payment of taxes, licenses, assignments, contributions, damages, penalties, and interest thereon incurred in connection with the performance of the Contract shall also be provided and approved by MDEQ prior to commencing Work under the Contract.

Attorneys-in-fact who sign Payment Bonds, Performance Bonds, and Tax Bonds must file with each Bond a certified and effective dated copy of their power of attorney.

31. Insurance Requirements.

Contractor shall maintain during the period of performance of the Contract the following liability insurance coverage and shall require its subcontractors to maintain said coverage, related to the work of the Contractor and in connection with the Contract.

(A) Workers' Compensation and Employer's Liability Insurance. This insurance shall protect Contractor against all claims under applicable state workers' compensation laws. Contractor shall also be protected against claims for injury, disease, or death of employees, which, for any reason, may not fall within the provisions of a workers' compensation law. The liability limits shall not be less than the required statutory limits for workers' compensation and employer's liability limits in the amount of One Million and 00/100 Dollars ($1,000,000.00). Contractor shall supply MDEQ endorsements from its carriers evidencing waiver of subrogation in favor of MDEQ.

(B) Longshore and Harbor Workers' Compensation Insurance. This insurance shall protect Contractor against all claims under the Jones Act, Death on the High Seas Act, Outer Continental Shelf Lands Act and Maritime Laws in which case minimum limits of Employers' Liability Insurance will be at least $1,000,000.00 per occurrence, including transportation, wages, maintenance and cure.

(C) Comprehensive General Liability Insurance. This insurance shall include bodily injury, property damage, contractual and other standard coverage contained in comprehensive general liability insurance, in an amount of not less than One Million and 00/100 Dollars ($1,000,000.00) per occurrence and Two Million and 00/100 Dollars ($2,000,000.00) aggregate.

(D) Contractors Pollution Liability Insurance. This insurance shall protect Contractor for claims for bodily injury and property damage stemming from pollution caused by the Contractor's work or equipment. This insurance shall also cover remediation costs stemming from pollution incidents resulting from the Contractor's operations and Work under this Contract. This insurance shall have minimum limits of at least $1,000,000.00 per occurrence and $2,000,000.00 in the aggregate.

(E) Auto Liability Insurance. This insurance shall be in the amount of not less than One Million and 00/100 Dollars ($1,000,000.00) Combined Single Limit to protect it from any and all claims arising from the use of the following: (1) Contractor's own automobiles and trucks; (2) hired and non-owned automobiles and trucks; and (3) automobiles and trucks owned by Contractors. The aforementioned is to cover use of automobiles and trucks on and off the site of the Project.

(F) Errors and Omissions/Professional Liability Coverage. This insurance shall be in the amount of not less than One Million and 00/100 Dollars ($1,000,000.00) per occurrence.

MDEQ, its Commissioners, officers, employees, agents and representatives, and the State of Mississippi shall be named as additional insureds on such policies. The Contractor shall provide that the insureds thereon waive subrogation against the State of Mississippi and the said agency and subdivisions thereof. The Contractor's respective policies shall provide primary coverage before any applicable policy otherwise covering MDEQ, and any insurance covering MDEQ shall be excess coverage over the Contractor's coverage. Endorsements so stating shall be provided to MDEQ by the Contractor. The policies shall also provide for all additional insureds to be provided with a minimum 30-day written notice prior to a cancellation or modification of each respective policy. While Contractor shall provide MDEQ with endorsements as set forth in this Section, the failure to do so, or the failure of the endorsements or insurance provided to conform to the Contract, does not constitute waiver or estoppels as to MDEQ of their respective legal and equitable rights, including but not limited to the right to enforce the terms of the Contract. These contractual insurance provisions are intended to be, and shall be interpreted to be, separate and independent contractual obligations from the contractual provisions addressing the indemnity of MDEQ by the Contractor. Upon execution of the Contract, the Contractor shall promptly furnish MDEQ

with certificates of insurance and endorsements showing the successful Contractor's compliance with the insurance provisions of this Section.

32. Indemnification.

To the fullest extent allowed by law, Contractor hereby agrees to defend, indemnify and hold harmless MDEQ, its Commissioners, Board Members, officers, employees, agents, and representatives, and the State of Mississippi from and/or against all claims, demands, liabilities, suits, actions, damages, losses, and costs of every kind and nature whatsoever, including, without limitation, court costs, investigative fees and expenses, and attorneys' fees, arising out of or caused by the Contractor and/or its partners, principals, agents, employees and/or Subcontractor's in the performance of or failure to perform this Agreement. In MDEQ's sole discretion, Contractor may be allowed to control the defense of any such claim, suit, etc. In the event Contractor defends said claim, suit, etc., Contractor shall use legal counsel acceptable to MDEQ; Contractor shall be solely responsible for all costs and/or expenses associated with such defense, and MDEQ shall be entitled to participate in said defense. Contractor shall not settle any claim, suit, etc., without MDEQ's concurrence, which MDEQ shall not unreasonably withhold. This indemnity obligation is intended to be, and shall be interpreted to be, a separate and independent contractual obligation from the contractual provisions addressing the requirements and placement of insurance, including, but not limited to, insurance covering MDEQ.

33. No Limitation of Liability.

Nothing in this Contract shall be interpreted as excluding or limiting any tort liability of Contractor for harm caused by the intentional or reckless conduct of Contractor or for damages incurred through the negligent performance of duties by Contractor or the delivery of products that are defective due to negligent construction.

34. Recovery of Money.

Whenever, under the Contract, any sum of money shall be recoverable from or payable by Contractor to MDEQ, the same amount may be deducted from any sum due to Contractor under the Contract or under any other Contract between Contractor and MDEQ. The rights of MDEQ are in addition and without prejudice to any other right MDEQ may have to claim the amount of any loss or damage suffered by MDEQ on account of the acts or omissions of Contractor.

35. Subcontracts.

Contractor acknowledges that it was selected by MDEQ to perform the services required hereunder based, in part, upon Contractor's special skills and expertise. Contractor shall not assign, subcontract, or otherwise transfer the Contract, in whole or in part, without the prior written consent of MDEQ, which MDEQ may, in its sole discretion, approve or deny without reason. Contractor must notify MDEQ in writing and submit a Request to Subcontract form using the form provided by MDEQ prior to assigning or subcontracting any portion of the Contract; and MDEQ, in its sole reasonable discretion, shall have the right to reject the letting of any such assignment or subcontract. Any attempted assignment or transfer of its obligations without such consent shall be null and void. No such approval by MDEQ of any subcontract shall be deemed in any way to provide for

the incurrence of any obligation of MDEQ in addition to the total fixed price agreed upon in the Contract. Subcontracts shall be subject to the terms and conditions of the Contract and to any conditions of approval that MDEQ may deem necessary.

36. Assignment.

Contractor shall not assign or otherwise transfer the obligation incurred on its part pursuant to the terms of the Contract without the prior written consent of MDEQ. Any attempted assignment or transfer of its obligations without such consent shall be null and void. All obligations and duties of either party under the Contract shall be binding on all successors in interest or assigns of such party.

37. Confidential Information.

A. Information Designated by Contractor as Confidential. Any disclosure of those materials, documents, data and other information, which Contractor has designated in writing as proprietary and confidential shall be subject to the provisions of Miss. Code Ann. §§ 25-61-9 and 79-23-1. As provided in this Contract, the personal or professional services to be provided, the price to be paid, and the term of the Contract shall not be deemed to be a trade secret or confidential commercial or financial information.

Any liability resulting from the wrongful disclosure of Confidential Information on the part of Contractor or its subcontractor shall rest with Contractor. Disclosure of any Confidential Information by Contractor or its subcontractor without the express written approval of MDEQ shall result in the immediate termination of this Contract.

B. Public Records. Notwithstanding any provision to the contrary contained herein, all Parties recognize that MDEQ is a public agency of the State of Mississippi and is subject to the Mississippi Public Records Act. Miss. Code Ann. §§ 25-61-1 *et seq*. If a public records request is made for any information provided to MDEQ pursuant to this Contract and designated by the Contractor in writing as trade secrets or other proprietary confidential information, MDEQ shall following provisions of Miss. Code Ann. §§ 25-61-9 and 79-23-1 before disclosing such information. MDEQ shall not be liable to Contractor for disclosure of information required by court order or required by law.

C. Disclosure of Confidential Information. In the event that either party to this Contract receives notice that a third party requests divulgence of Confidential Information or otherwise protected information and/or has served upon it a subpoena or other validly issued administrative or judicial process ordering divulgence of Confidential Information or otherwise protected information, that party shall promptly inform the other party and thereafter respond in conformity with such subpoena to the extent mandated by law. This section shall survive the termination or completion of this Contract. The parties agree that this section is subject to and superseded by Mississippi Code Annotated §§ 25-61-1 *et seq*.

D. Exceptions to Confidential Information. Contractor and the State shall not be obligated to treat as confidential and proprietary any information disclosed by the other party ("**Disclosing Party**") which is:

(1) Rightfully known to the recipient prior to negotiations leading to this Contract, other than information obtained in confidence under prior engagements;

(2) Generally known or easily ascertainable by nonparties to this Contract;

(3) Released by the Disclosing Party to any other person, firm, or entity (including governmental agencies or bureaus) without restriction;

(4) Independently developed by the recipient without any reliance on confidential information;

(5) Part or later becomes part of the public domain or may be lawfully obtained by the State or Contractor from any nonparty; or

(6) Disclosed with the Disclosing Party's prior written consent.

38. Temporary Suspension of Work

A. MDEQ or the United States Coast Guard or any other governmental agency with jurisdiction shall have the authority to suspend the Work wholly or in part, for such period as it may deem necessary due to: (1) unsuitable weather, (2) such other conditions as are considered unfavorable for the suitable prosecution of the Work. For these circumstances, the Contractor may be entitled to an adjustment in Contract Times if the delay prohibits the Contractor from completing the Work within the Contract Times but no increase in Contract Price. Any such suspension ordered by MDEQ shall be within its sole discretion.

B. MDEQ, Engineer, Army Corps of Engineers (COE), Environmental Protection Agency, NOAA or any other governmental agency with jurisdiction may temporarily suspend work for failure on part of Contractor or any Subcontractor to carry out orders given by Engineer pursuant to the Contract or to perform any provisions of the Work in the manner prescribed by the Contract and/or permits. Any such suspension by MDEQ shall be within its sole discretion. Contractor shall immediately cease Work upon such order of MDEQ's Executive Director or representative and shall not resume the Work until ordered in writing by MDEQ. Contractor shall not be entitled to additional time or increase in the Contract Price and waives any claim for damages as a result of any such suspension of work for these reasons.

39. Termination.

The Contract may be terminated as follows:

A. Termination Upon Bankruptcy or Default:

The Contract may be terminated in whole or in part by MDEQ upon written notice to Contractor, if Contractor should become the subject of bankruptcy or receivership proceedings, whether voluntary or involuntary, or upon the execution by Contractor of an assignment for the benefit of its creditors. In the

event of such termination, Contractor (or Bonding Company) shall be paid an amount for satisfactory work actually performed pursuant to the Contract, but in no case shall said compensation exceed the total Contract Price.

B. Termination for Convenience:

MDEQ may terminate the Contract, in whole or in part, for any reason after giving written notice to Contractor of such termination and specifying the effective date thereof, at least ten (10) days before the effective date of such termination. Contractor shall be paid an amount for satisfactory work actually performed in connection with the Contract, but in no case shall said compensation exceed the total Contract price.

Upon receiving notice of termination, Contractor shall incur no further obligations in connection with the terminated work, and on the date set in the notice of termination Contractor will stop work to the extent specified. Contractor shall also terminate outstanding orders and subcontracts as they relate to the terminated work. Contractor shall settle the liabilities and claims arising out of the termination of subcontracts and orders connected with the terminated work. MDEQ may direct Contractor to assign Contractor's right, title, and interest under terminated orders or subcontracts to MDEQ. Contractor must still complete the work not terminated by the notice of termination and may incur obligations as are necessary to do so.

C. Termination for Cause:

(i) Default. If Contractor refuses or fails to perform any of the provisions of this Contract with such diligence as will ensure its completion within the time specified in this Contract or any extension thereof or otherwise fails to timely satisfy the Contract provisions or commits any other substantial breach of this Contract, MDEQ may notify Contractor in writing of the delay or nonperformance. If delay or nonperformance is not cured in ten (10) days or any longer time specified in writing by the MDEQ officer or representative, MDEQ may terminate Contractor's right to proceed with the Contract or such part of the Contract as to which there has been delay or a failure to properly perform. In the event of termination in whole or in part, the procurement officer may procure similar supplies or services in a manner and upon terms deemed appropriate by MDEQ. Contractor shall continue performance of the Contract to the extent it is not terminated and shall be liable to MDEQ for excess costs incurred in procuring similar goods or services.

(ii) Contractor's Duties. Notwithstanding termination of the Contract and subject to any directions from MDEQ, Contractor shall take timely, reasonable, and necessary action to protect and preserve property in the possession of Contractor in which the State has an interest.

(iii) Compensation. Payment for completed services delivered and accepted by the State shall be at the Contract Price. The State may withhold from amounts due Contractor such sums as MDEQ deems to be necessary to protect the State against loss because of outstanding liens or claims of former lien holders and to

reimburse the State for the excess costs incurred in procuring similar goods and services.

(iv) Excuse for Nonperformance or Delayed Performance. Except with respect to defaults of subcontractors, Contractor shall not be in default by reason of any failure in performance of this Contract in accordance with its terms (including any failure by Contractor to make progress in the prosecution of the work hereunder which endangers such performance) if Contractor has notified MDEQ within 10 days after the cause of the delay and the failure arises out of causes such as: acts of God; acts of the public enemy; acts of the State and any other governmental entity in its sovereign or contractual capacity; fires; floods; epidemics; quarantine restrictions; strikes or other labor disputes; freight embargoes; or unusually severe weather. If the failure to perform is caused by the failure of a subcontractor to perform or to make progress and if such failure arises out of causes similar to those set forth above, Contractor shall not be deemed to be in default, unless the services to be furnished by the subcontractor were reasonably obtainable from other sources in sufficient time to permit Contractor to meet the Contract requirements. Upon request of Contractor, MDEQ shall ascertain the facts and extent of such failure. If MDEQ determines that any failure to perform was occasioned by any one or more of the excusable causes and that, but for the excusable cause, Contractor's progress and performance would have met the terms of the Contract, the delivery schedule be revised accordingly, subject to the rights of MDEQ under the section entitled "Termination for Convenience." (As used in this paragraph of this section, the term "subcontractor" means subcontractor at any tier.)

(v) Erroneous Termination for Default. If, after notice of termination of Contractor's right to proceed under the provisions of this section, MDEQ determines for any reason that the Contract was not in default under the provisions of this section or that the delay was excusable under the provisions of subparagraph (iv) (Excuse for Nonperformance or Delayed Performance) of this section, the rights and obligations of the parties shall be the same as if the notice of termination had been issued pursuant to such section.

Notwithstanding any of the foregoing provisions, Contractor shall not be relieved of liability to MDEQ for damages sustained by MDEQ by virtue of any breach of the Contract by Contractor, and MDEQ may withhold any payments to Contractor for the purpose of set off until such time as the exact amount of damages due MDEQ from Contractor are determined. MDEQ may also pursue any remedy available to it in law or in equity.

40. Use and Possession Prior to Completion.

A. MDEQ shall have the right to take possession of or use any completed or partially completed part of the Work. Before taking possession of or using any Work, the MDEQ or its designated Engineer shall furnish the Contractor a list of items of Work remaining to be performed or corrected on those portions of the Work that the MDEQ intends to take possession of or use. However, failure of the MDEQ or its Engineer to list any item of Work shall not relieve the Contractor of responsibility for complying

with the terms of the Contract Documents. MDEQ's possession or use shall not be deemed an acceptance of any Work under the Contract Documents.

B. While MDEQ has such possession or use, the Contractor shall be relieved of the responsibility for the loss of or damage to the Work resulting from MDEQ's possession or use. If prior possession or use by MDEQ delays the progress of the Work or causes additional expense to the Contractor, an equitable adjustment shall be made in the Contract Price or the Contract Time pursuant to the Change Order provisions above.

41. Antitrust.

By entering into this Contract, Contractor conveys, sells, assigns, and transfers to MDEQ all rights, titles, and interest it may now have, or hereafter acquire, under the antitrust laws of the United States and the State that relate to the services purchased or acquired by MDEQ under this Contract.

42. Procurement Regulations.

The Contract shall be governed by the applicable provisions of the Public Procurement Review Board Regulations.

43. Small, Minority and Women Businesses.

It is MDEQ's policy to solicit participation from small, minority and women businesses. Contractor shall ensure that reasonable efforts are made to utilize Minority Business Enterprises (MBE)/Women Business Enterprises (WBE). For any subcontracting not included in the original bid, the Contractor must follow the conditions listed in the section entitled "Minority and Women Businesses" of the Invitation for Bids.

44. Compliance with Miss. Code. Ann. § 31-5-37.

Pursuant to Miss. Code. Ann. § 31-5-37, from the date written notice of the contract award is received and until ten (10) business days after the receipt of the employment plan by the Mississippi Department of Employment Security ("MDES"), the Contractor and any subcontractor shall not hire any personnel to fill vacant positions for this project except residents of the State of Mississippi who are to be verified by MDES and/or those qualified individuals who are submitted by MDES. However, the Contractor or subcontractor is authorized to employ Mississippi residents to begin work immediately if such persons are verified by MDES after employment by the Contractor or subcontractor. During the ten (10) day period, the MDES shall submit qualified individuals to the Contractor to consider for the vacant positions. The Contractor shall review the individuals submitted by MDES before hiring individuals who are not submitted by MDES. The contract award shall be vacated if the Contractor fails to comply with the provisions of Miss. Code Ann. § 31-5-37.

45. E-Verification.

If applicable, Contractor represents and warrants that it will ensure its compliance with the Mississippi Employment Protection Act of 2008 and will register and participate in the

status verification system for all newly hired employees. Miss. Code Ann. §§ 71-11-1, *et seq*. The term "employee" as used herein means any person that is hired to perform work within the State. As used herein, "status verification system" means the Illegal Immigration Reform and Immigration Responsibility Act of 1996 that is operated by the United States Department of Homeland Security, also known as the E-Verify Program, or any other successor electronic verification system replacing the E-Verify Program. Contractor agrees to maintain records of such compliance. Upon request of the State of Mississippi and after approval of the Social Security Administration or Department of Homeland Security, when required, Contractor agrees to provide a copy of each such verification. Contractor further represents and warrants that any person assigned to perform services hereafter meets the employment eligibility requirements of all immigration laws. The breach of this Contract may subject Contractor to the following:

A. Termination of this Contract for services and ineligibility for any state or public Contract in Mississippi for up to three (3) years with notice of such cancellation/termination being made public;

B. The loss of any license, permit, certification or other document granted to Contractor by an agency, department or governmental entity for the right to do business in Mississippi for up to one (1) year; or

C. Both. In the event of such termination/cancellation, Contractor would also be liable for any additional costs incurred by the State due to Contract cancellation or loss of license or permit to do business in the State.

46. E-Payment.

Contractor agrees to accept all payments in United States currency via the State of Mississippi's electronic payment and remittance vehicle. MDEQ agrees to make payment in accordance with Mississippi law on "Timely Payments for Purchases by Public Bodies," Mississippi Code Annotated 31-7-301, et seq., which generally provides for payment of undisputed amounts by the agency within forty-five (45) days of receipt of invoice.

47. Pay Mode.

Payments by state agencies using the Statewide Automated Accounting System (SAAS) shall be made and remittance information provided electronically as directed by the State. These payments shall be deposited into the bank account of the Contractor's choice. The State, may in its sole discretion, require the Contractor to submit invoices and supporting documentation electronically at any time during the term of this Agreement. Contractor understands and agrees that the State is exempt from the payment of taxes. All payments shall be in United States currency.

48. Transparency.

This Contract, including any accompanying exhibits, attachments, and appendices, is subject to the "Mississippi Public Records Act of 1983" and its exceptions. See Miss.

Code Ann. §§ 25-61-1 *et seq.* and Miss. Code Ann. § 79-23-1. In addition, this Contract is subject to the provisions of the Mississippi Accountability and Transparency Act of 2008. Miss. Code Ann. §§ 27-104-151, *et seq*. Unless exempted from disclosure due to a court-issued protective order, a copy of this executed Contract is required to be posted to the Department of Finance and Administration's independent agency Contract website for public access at http://www.transparency.mississippi. Information identified by Contractor as trade secrets or other proprietary information, including confidential vendor information, or any other information which is required confidential by state or federal law or outside the applicable freedom of information statutes will be redacted. The personal or professional services to be provided, the price to be paid, and the terms of this Contract shall not be deemed to be a trade secret or confidential commercial or financial information.

49. Waiver.

Failure by MDEQ, at any time, to enforce the provisions of the Contract shall not be construed as a waiver of any such provisions. Such failure to enforce shall not affect the validity of the Contract or any part thereof or the right of MDEQ to enforce any provision at any time in accordance with its terms.

50. Governing Law.

The Contract shall be construed and governed in accordance with the laws of the State of Mississippi, without regard to its conflicts of laws, and the laws of the United States of America, and venue for the resolution of any dispute shall be brought in the appropriate state or federal court located in Jackson, Hinds County, Mississippi.

51. Compliance with Laws.

Contractor understands that MDEQ is an equal opportunity employer and therefore maintains a policy which prohibits unlawful discrimination based on race, color, creed, sex, age, national origin, physical handicap, disability, or any other consideration made unlawful by federal, state, or local laws. All such discrimination is unlawful and Contractor agrees during the term of the Contract that Contractor will strictly adhere to this policy in its employment practices and provision of work performed pursuant to the Contract. Contractor shall comply with, and all activities under this Agreement shall be subject to, all applicable federal, state, and local laws and regulations, as now existing and as may be amended or modified. Contractor shall immediately report in writing to MDEQ any discrepancy or inconsistency in the Contract Documents that appear to violate or be contrary to the then existing applicable federal, state and local laws. Contractor shall ensure that any person assigned to perform services hereunder meets the employment eligibility requirements of the immigration and naturalization laws including but not limited to the Immigration Reform and Control Act of 1986.

52. Reference to Statutes.

Whenever reference is made to the provision of any statute or law in the Contract Documents, such reference applies to any amendment or change in such statute or law now existing, but to become operative sometime after the signing of the Contract.

53. Captions.

The captions or headings in the Contract are for convenience only, and in no way define, limit or describe the scope or intent of any provision or section of the Contract.

54. Severability.

If any part of this Contract is declared to be invalid or unenforceable, such invalidity or unenforceability shall not affect any other provision of the agreement that can be given effect without the invalid or unenforceable provision, and to this end the provisions hereof are severable. In such event, the parties shall amend the agreement as necessary to reflect the original intent of the parties and to bring any invalid or unenforceable provisions in compliance with applicable law.

55. Disputes.

Before pleading to any judicial system at any level, Contractor must exhaust all administrative remedies. A written complaint must first be sent to the Executive Director of MDEQ. The decision of the Executive Director shall be reduced to writing and a copy thereof mailed or furnished to Contractor. Pending non-resolution of the complaint at this point, successive administrative remedies will include bringing the complaint before the Mississippi Commission on Environmental Quality pursuant to Mississippi Code Annotated Section 49-17-35 (Rev. 2003), with appeals from the Commission's decision following procedures as outlined in Miss. Code Ann. Section 49-17-41 (Rev. 2003).

For any disputed claim over $100,000, and as a prerequisite to the claim proceeding through MDEQ's administrative remedies and in court, a registered officer of the Contractor shall provide the following certification to MDEQ upon filing the initial written complaint with the Executive Director:

"I certify that the claim is made in good faith; that the supporting data are accurate and complete to the best of my knowledge and belief; that the amount requested accurately reflects the contract adjustment for which the Contractor believes MDEQ is liable; and that I am duly authorized to certify the claim on behalf of the Contractor."

56. Professional Fees and Expenses.

If MDEQ incurs attorneys' fees, costs or expenses (including, without limitation, court costs, investigative fees, engineering fees, accounting fees, and other professional service fees) in order to enforce any of the terms or conditions of this Contract or because of the breach of this Contract by the Contractor, MDEQ shall be entitled to recover its reasonable attorneys' fees, costs and such expenses from Contractor if MDEQ is the prevailing party (whether by suit, negotiation or settlement).

Miss. Code Ann. § 31-5-37

§ 31-5-37. Contractors submitting bids for public works projects utilizing specified funding required to submit employment plan with bid; contents of plan; review of individuals for vacant positions

(1) All public works projects utilizing funds received by state or local governmental entities resulting from a federally declared disaster or a spill of national significance, including damages, penalties, fines or supplemental projects paid or financed by responsible parties pursuant to a court order, negotiated settlement, or other instrument, including under any law distributing such fines and penalties including the federal Resources and Ecosystems Sustainability, Tourist Opportunities and Revived Economy of the Gulf Coast Act of 2011 (R.E.S.T.O.R.E.), the Oil Pollution Act of 1990 or the Federal Water Pollution Control Act or similar legislation, shall be subject to the hiring policies established by this section.

(2) Contractors submitting bids for public works projects that involve an expenditure of Five Thousand Dollars ($ 5,000.00) or more and that are financed, in whole or in part, through the use of funds described in subsection (1) of this section shall submit with their bid a certification that they will comply with the provisions of this section if they are awarded a contract. The contractor shall submit to the agency or governing authority that solicited the bid and the Mississippi Department of Employment Security an employment plan within seven (7) days after the award of the contract which shall include the following:

(a) The types of jobs involved in the public works project;

(b) The skill level of the jobs involved in the project;

(c) Wage information on the jobs involved in the project;

(d) The number of vacant positions that the contractor and any subcontractor needs to fill;

(e) How the contractor and any subcontractor will recruit, low-wage and unemployed individuals for job vacancies;

(f) Such other information as may be required by the Mississippi Department of Employment Security; and

(g) Proof of registration with the Mississippi Department of Employment Security for taxation in accordance with the provisions of Title 71.

(3) From the date written notice of the contract award is received and until ten (10) business days after the receipt of the employment plan by the Mississippi Department of Employment Security, the contractor and any subcontractor shall not hire any personnel to fill vacant positions necessary for the public works project except residents of the State of Mississippi who are to be verified by the Mississippi Department of Employment Security and/or those qualified individuals who are submitted by the Mississippi Department of Employment Security. For purposes of this subsection, the contractor or subcontractor is authorized to employ Mississippi residents to begin work immediately, and such persons are to be verified by the Mississippi Department of Employment

Security after employment by the contractor or subcontractor. During the ten-day period the Mississippi Department of Employment Security shall submit qualified individuals to the contractor to consider for the vacant positions. The contractor shall review the individuals submitted by the department before hiring individuals who are not submitted by the department. The contract award shall be vacated if the contractor fails to comply with the provisions of this subsection.

HISTORY: SOURCES: Laws, 2012, ch. 505, § 1; Laws, 2013, ch. 479, § 1, eff from and after passage (approved April 1, 2013.)

Miss. Code Ann. § 31-5-33

§ 31-5-33. Amount of retainage which may be withheld; exemptions

(1) In any contract for the construction, repair, alteration or demolition of any building, structure or facility awarded by the State of Mississippi, or any agency, unit or department of the State of Mississippi, or by any political subdivision thereof, which contract provides for progress payments in installments based upon an estimated percentage of completion with a percentage of the contract proceeds to be retained by the state agency, unit or department, or by the political subdivision or contractor pending completion of the contract, such retainage shall be five percent (5%), and the amount retained by the prime contractor from each payment due the subcontractor shall not exceed the percentage withheld by the state, or any agency, unit or department of the state, or by any political subdivision thereof, from the prime contractor.

On any contract as described herein, of which the total amount is Two Hundred Fifty Thousand Dollars ($ 250,000.00) or greater, or on any contract with a subcontractor, regardless of amount, five percent (5%) shall be retained until the work is at least fifty percent (50%) complete, on schedule and satisfactory in the architect's and/or engineer's opinion, at which time fifty percent (50%) of the retainage held to date shall be returned to the prime contractor for distribution to the appropriate subcontractors and suppliers. Provided, however, that future retainage shall be withheld at the rate of two and one-half percent (2 1/2%).

(2) The provisions of this section shall not apply to contracts let by the Mississippi Transportation Commission for the construction, improvement or maintenance of roads and bridges.

HISTORY: SOURCES: Laws, 1979, ch. 454, § 1; Laws, 1984, ch. 406, § 1; Laws, 2002, ch. 519, § 2, eff from and after July 1, 2002.

Miss. Code Ann. § 31-7-305

§ 31-7-305. Recordkeeping and notice requirements; time for mailing check in payment of invoice; time for payment in event of dispute; interest penalties.

(1) All public bodies of the state, including those which issue checks and those which file requisitions for payment with the State Fiscal Management Board, shall keep a record of the date of receipt of the invoice, dates of receipt, inspection and approval of the goods or services, date of issuing the check or date of filing the requisition for payment, as the case may be, and date of mailing or otherwise delivering the warrant or check in payment thereof. In the event that the State Fiscal Management Board mails or otherwise delivers the warrant directly to the claimant, pursuant to Section 7-7-35, Mississippi Code of 1972, the State Fiscal Management Board shall notify the public body of the date thereof. The provisions of this section are supplemental to the requirements of Sections 19-13-29, 21-39-7, 21-39-13 and 37-5-93, Mississippi Code of 1972.

(2) All public bodies that are authorized to issue checks in payment of goods and services and are not required to issue requisitions for payment to the State Fiscal Management Board shall mail or otherwise deliver such checks no later than forty-five (45) days after receipt of the invoice and receipt, inspection and approval of the goods or services; however, in the event of a bona fide dispute, the public body shall pay only the amount not disputed.

(3) If a warrant or check, as the case may be, in payment of an invoice is not mailed or otherwise delivered within forty-five (45) days after receipt of the invoice and receipt, inspection and approval of the goods and services, the public body shall be liable to the vendor, in addition to the amount of the invoice, for interest at a rate of one and one-half percent (1-1/2 %) per month or portion thereof on the unpaid balance from the expiration of such forty-five-day period until such time as the warrant or check is mailed or otherwise delivered to the vendor. The provisions of this paragraph shall apply only to undisputed amounts for which payment has been authorized. In the case of an error on the part of the vendor, the forty-five-day period shall begin to run upon receipt of a corrected invoice by the public body and upon compliance with the other provisions of this section. The various public bodies shall be responsible for initiating the penalty payments required by this subsection and shall use this subsection as authority to make such payments. Also, at the time of initiating such penalty payment, the public body shall specify in writing an explanation of the delay and shall attach such explanation to the requisition for payment of the penalty or to the file copy of the check issued by the public body, as the case may be.

(4) (a) In the event of a bona fide dispute as to an invoice, or any portion thereof, the dispute shall be settled within thirty (30) days after interest penalties could begin to be assessed, if it were not for the dispute.

(b) If a warrant or check, as the case may be, in payment of an invoice, subject to a prior dispute, is not mailed or otherwise delivered within thirty (30) days after settlement of the dispute, the public body shall be liable to the vendor, in addition to the amount of the invoice, for interest at a rate of one and one-half percent (1-1/2 %) per month or portion

thereof on the unpaid balance from the expiration of said thirty-day period until such time as the warrant or check is mailed or otherwise delivered to the vendor. At the time of initiating such penalty payment, the public body shall specify in writing an explanation of the delay and shall attach such explanation to the requisition for payment of the penalty or to the file copy of the check issued by the public body, as the case may be. The interest penalty prescribed in this paragraph shall be in lieu of the penalty provided in subsection (3).

END

ATTACHMENT H

Mississippi First Act – Employment Plan Form for Public Works Projects

This form may be digitally downloaded from

http://www.mdes.ms.gov/employers/mississippi-first-act-and-public-works-contracts-employment-plans/

Mississippi First Act
Employment Plan Form for Public Works Projects*

Project Number:

Bid Date:

Project Title:

Institution / Agency:

Please provide the information requested below regarding the contractor and its subcontractors.

1. List the types of jobs that will be involved in the project:

2. List the skill level of the jobs involved in the project:

3. List the wages for each job involved in the project:

4. List the number of vacant positions that will need to be filled for each job involved in the project:

5. Explain how low wage and unemployed individuals will be recruited for job vacancies:

6. Attach proof of registration with the Mississippi Department of Employment Security (MDES) for taxation purposes.

I certify that the information provided above is true and accurate to the best of my knowledge.

Contractor Name and Authorized Representative:

Title:

Date:

**Note: This form must be submitted if Miss. Code Ann 31-5-37 (Mississippi First Act) applies to the project.*

This law requires a contractor awarded a contract for a public works project utilizing specified funding to submit an employment plan to the public agency or authority that awarded the contract and to MDES.

Please submit a copy of your employment plan to MDES via fax at 601-321-6080
or via email at recoveryjobs@mdes.ms.gov.

Signature:

To sign digitally, click and add your digital signature above. You may also print and sign this by hand to fax.

This form may be digitally downloaded from

http://www.mdes.ms.gov/employers/mississippi-first-act-and-public-works-contracts-employment-plans/

ATTACHMENT "I"
Bidder Certificate of Commitment to Comply with Miss. Code Ann. § 31-5-37

State of _____

County of _____

I,_____, individually, and in my capacity as _____ of _____ (Bidder), being first duly sworn, on oath depose and state the following on behalf of the company:

Bidder represents as a part of such Bidder's bid that it will fully comply with the requirements of Miss. Code Ann. § 31-5-37 by submitting to the Mississippi Department of Environmental Quality and the Mississippi Department of Employment Security an employment plan within seven (7) days after the award of the Contract which shall include all of the information required in Miss. Code Ann. § 31-5-37(2)(a)-(g).

All of the foregoing is true and correct:

Bidder:_____

Date: _____

Authorized Signature: _____

Name:_____
Typed/Printed

Title:_____

SWORN TO AND SUBSCRIBED before me, this the _____ day of _____, 20_____.

_____
NOTARY PUBLIC

My Commission Expires: [SEAL]

_____

SECTION 00 52 15

AGREEMENT

This Agreement (hereinafter "Agreement" or "Contract") is entered by and between the Mississippi Department of Environmental Quality (hereinafter called "MDEQ" or "Agency") and _____ (hereinafter called "Contractor").

MDEQ and Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1 - WORK

Contractor shall complete all work as specified or indicated in the Contract Documents as defined in ARTICLE 7 below ("Work"). Contractor shall furnish all labor, materials, equipment, appliances, services, tools, bonds, insurance, taxes and other things necessary for the complete and timely performance of the Work. The Work is generally described as follows:

HANCOCK COUNTY MARSH LIVING SHORELINE, PHASE 4 – HERON BAY SUBTIDAL REEF ("Project") includes the construction of 46 acres of subtidal reef in Heron Bay. The major categories of Work include, but are not limited to, the following:

1. Mobilization and demobilization
2. Pre-construction bathymetric survey;
3. Installing subtidal reef stone;
4. Stone settlement monitoring and progress surveys; and
5. As-built surveys.

ARTICLE 2 - MDEQ AND ENGINEER

This is an MDEQ Project.

FC&E Engineering, LLC (hereinafter called "Engineer") is to act as MDEQ's representative, assumes all duties and responsibilities and has the rights and authority assigned to Engineer in accordance with the MDEQ Standard Contract Terms and Conditions, including Section 3 of same, in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 3 - CONTRACT TIME AND LIQUIDATED DAMAGES

3.01 The Contractor will commence and complete the construction of the Project within the period of performance defined in Section 3.01.

3.02 The performance period for this Contract has been established at 120 calendar days from issuance of the Notice to Proceed ("Contract Time"). The Contract Time is inclusive of anticipated adverse weather days.

3.03 Liquidated Damages. MDEQ and Contractor recognize that time is of the essence for this Agreement and that MDEQ may suffer financial loss if the Work is not completed within the time specified in Section 3.02 above, plus any extensions thereof allowed in accordance with the Section 23 - Extension of Contract Time provisions in the Standard Contract Terms and Conditions. The parties also recognize the delays, expense, and difficulties involved in proving the actual loss suffered by MDEQ if the Work is not completed on time. Accordingly, instead of requiring any such proof, MDEQ and Contractor agree that as liquidated damages for delay Contractor shall pay MDEQ $4,000 for each day that expires after the time specified

in Section 3.02, subject to any extensions granted.

ARTICLE 4 - COMPENSATION

The Contractor agrees to furnish all materials in place and to faithfully complete all said Work described by this Contract in good and workmanlike manner, strictly in accordance with said Contract Documents, Contract Drawings, and other requirements of the MDEQ, under the direct observation of and to the complete satisfaction of the MDEQ or its authorized representatives, and in accordance with the laws of the State of Mississippi, for which the MDEQ hereby agrees to pay, and the Contractor agrees to accept, a sum of money in current funds equal to the total value of the Work complete in place, computed by multiplying the final quantities of each item of Work by the Contract unit prices and the amounts established by the approved Schedule of Values for Lump Sum prices as stated in the Bid Form, attached hereto and made a part hereof which is estimated as being the sum of _____ _____ ($_____) ("Contract Sum" or "Contract Price") in full compensation for furnishing all materials, doing of all the Work described under the Contract, as well as all loss or damage, if any, arising out of the nature of the Work, .

ARTICLE 5 - PAYMENTS

5.01 Contractor shall submit Applications for Payment to Engineer in accordance with Section 47 of the MDEQ Standard Contract Terms and Conditions, Section 01 20 00 – Measurement and Payment Procedures of the Contract Documents, and Section 01 29 00 – Payment Procedures. Contractor will be paid for all Work satisfactorily completed on the basis of the number of units completed for Unit Price Work and the Schedule of Values for Lump Sum Work, minus retainage in accordance with Mississippi Code § 31-5-33 (Attachment G) and any liquidated damages in accordance with Article 3.03. All Application for Payments submitted by the Contractor, may be subject to audit by MDEQ and its representatives.

5.02 Contractor will be paid in arrears after the rendition of services on a monthly basis on presentation of a complete and certified Application for Payment to the Engineer for Work performed pursuant to the Schedule of Values and the Contractor's Bid. Pursuant to Mississippi Code § 31-5-33, retainage in the amount of five percent (5%) shall be withheld until the Project is certified by Contractor and the Engineer as being fifty percent (50%) complete, at which time fifty percent (50%) of the retainage shall be released to Contractor for proportional distributions to Contractor and its subcontractors of the retainage withheld through the first half of the Project. Following fifty percent (50%) completion of the Project, retainage shall be withheld in the amount of two and one-half percent (2.5%). The final payment and remaining retainage shall be paid to Contractor when the Project is certified by Contractor, MDEQ and its Engineer as having been completed. At no point shall the retainage withheld by Contractor from a subcontractor exceed the retainage withheld by MDEQ from Contractor. Contractor is not required by this section to withhold a retainage from its subcontractors, particularly those that have completed their portion of the Project.

5.03 Contractor shall provide the Engineer with a monthly Application for Payment by the 25th of each month. Applications for Payment must be approved by the Engineer prior to being submitted to MDEQ for payment. Payments will be made by MDEQ in accordance with Mississippi Code § 31-7-305 (Attachment G). All payments are subject to the availability of funding as stated in the Standard Contract Terms and Conditions.

5.04 Upon final completion and acceptance of the Work and completion of all punch list items from the Final Inspection and approval of Project closeout requirements as defined by Section 01 77 00 – Closeout Procedures, the Engineer will recommend final payment to MDEQ. Final Payment will be made by MDEQ, minus any liquidated damages in accordance with Mississippi Code § 31-7-305 which will be inclusive of withheld retainage in accordance with

Mississippi Code § 31-5-33.

ARTICLE 6 - CONTRACTOR'S REPRESENTATIONS

In order to induce MDEQ to enter into this Agreement Contractor makes the following representations:

6.01 Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Contract Documents.

6.02 Contractor has visited the site and become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, performance, or furnishing of the Work.

6.03 Contractor is familiar with and is satisfied as to all federal, state, and local laws and regulations that may affect cost, progress, performance, and furnishings of the Work.

6.04 Contractor has read and fully understands all requirements and conditions of all environmental permits that pertain to this Work.

6.05 Contractor has obtained all required insurance policies, payment bonds, tax bonds and performance bonds required by the Contract Documents.

6.06 Contractor has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site which have been identified as "additional information" in Section 9 of the MDEQ Standard Contract Terms and Conditions. Contractor does not consider that any additional examinations, investigations, explorations, tests, studies, or data are necessary for the performance and furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents.

6.07 Contractor is aware of the general nature of the Work to be performed by MDEQ and others at the site that relates to the Work as indicated in the Contract Documents.

6.08 Contractor has correlated the information known to Contractor, information and observations obtained from visits to the site, reports, and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.

6.09 Contractor has given MDEQ written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents and the written resolution thereof by MDEQ is acceptable to Contractor, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work. When said conflicts, errors, ambiguities, or discrepancies have not been resolved through interpretation or clarification by MDEQ for whatever reason, Contractor has included in its Bid the greater quantity or better quality of Work, or compliance with the more stringent requirement resulting in a greater cost; and such is included in the Contract Price.

ARTICLE 7 - CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between Agency and Contractor concerning the Work includes the:

1. Change Orders, Supplemental Agreements and/or other modifications to the Agreement

2. This Agreement
3. MDEQ Standard Contract Terms and Conditions
4. Contract Drawings
5. Specifications, including Division 00 through 35 and Appendices
6. Contractor's Bid, including all subparts and documents submitted therewith
7. Notice of Award
8. Notice to Proceed
9. Addenda to the Invitation for Bids
10. Invitation for Bids
11. Performance Bond
12. Payment Bond
13. Tax Bond
14. Insurance Certificates and Endorsements
15. All permits and environmental conditions pertaining to the Work.

The documents listed above are attached to this Agreement (except as expressly noted otherwise above). The Contract Documents may only be amended, modified, or supplemented as provided in Sections 22 through 24 of the MDEQ Standard Contract Terms and Conditions. In the event of a conflict in the provisions of the Contract Documents, the terms of the document listed first above shall control.

IN WITNESS WHEREOF, MDEQ and Contractor have signed this Agreement in triplicate. One counterpart each has been delivered to MDEQ, Contractor, and the Engineer.

This Agreement will be effective on _____, 20_____

(Which is the Effective Date of the Agreement)

MDEQ _____ CONTRACTOR _____

By _____ By _____

(CORPORATE SEAL)

Address for giving notices

_____

_____

Address for giving notices

_____

_____

Mississippi License No. _____

_____

(If Contractor is a corporation, attach evidence of authority to sign).

END OF SECTION 00 52 15

SECTION 01 20 00

MEASUREMENT AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes requirements to be used for the basis of measurement and payment. The Contractor shall receive and accept the compensation provided in the Bid Schedule as full payment for furnishing all materials, labor, tools, and equipment for performing all operations necessary to complete the Work under the Contract. Payment for all loss or damages arising from the nature of the Work, or from the action of the elements or any unforeseen difficulties, encountered during the Work until final acceptance by MDEQ will be the responsibility of the Contractor.

B. Bid prices for the various work items are to establish a total price for completing the Project in its entirety. The Contractor shall include in the Bid any item for which a separate pay item has not been established in the Bid Schedule to reflect the total price for completing the project in its entirety, as depicted on the Construction Drawings and specified herein. Unless there is a specific line item for administrative costs (e.g., Project Management, Quality Control, and Safety), allocate such costs proportionally across all line items. The Contractor must include all costs for this Project to complete all work, in total, designated in the construction drawings, specifications, and Bid Form.

1.02 SUBMITTALS

The following submittals shall be submitted in accordance with SECTION 01 33 00 – SUBMITTAL PROCEDURES.

A. Schedule of Values

1. The Contractor will submit a Schedule of Values on Contractor's standard form acceptable to MDEQ in PDF format for review and approval prior to the first Application for Payment. List payment items sequentially in the same order as they appear in the Bid Form.

2. Lump sum items are to have adequate breakdown of components to facilitate evaluating completeness for payment in accordance with SECTION 01 29 73 – SCHEDULE OF VALUES. Breakdown components shall appear directly under the payment item heading to which they apply.

3. The Contractor will revise the schedule to list approved Change Orders with each Application for Payment. The Contractor will submit revised Schedule of Values in accordance with this specification.

B. Construction Schedule

1. Within 10 calendar days after effective date of Contract, the Contractor shall prepare and submit, to the Engineer for approval, a construction schedule in the form of a progress chart. The Contractor shall indicate on the progress chart the bid items contained in the Contract showing the amount of the item and its relative weighted percentage of the total Contract. The Contractor may separate features of work under each item to show salient work elements such as procurement of materials, plants, and equipment, and supplemental work elements such as excavation, fill, etc. These salient features shall total to the cost and weighted percentages shown for the major bid item. When quantity variations impact

the weighted percentages of a separate item by five percent (5%) or more, the Contractor shall revise the contract progress charts to accurately reflect the impact of such variations.

2. Submit copies of the updated construction schedule to the Engineer for each Application for Payment. Changes that have occurred since the last update shall be clearly marked.

1.03 MEASUREMENT

A. Measurement for Payment for this Project is based upon completion of the Work in accordance with Construction Drawings and Specifications for each of the items. Field measurements will determine the percent complete of work components when listed on the approved Schedule of Values. Measurements will be made using linear, area, volumetric units, or by units quantity counts, as listed on the ATTACHMENT D – BID FORM for unit quantity items and at the Engineer's sole discretion for lump sum items.

B. The Contractor will take all measurements and compute quantities. The Engineer will verify measurements and quantities as appropriate.

C. The Contractor will assist the Agency by providing necessary equipment, workers, and survey personnel as required.

D. Measurement Devices:

1. Weigh Scales: Inspected, tested, and certified by the applicable State Weights and Measures department within the past year.

2. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.

3. Metering Devices: Inspected, tested, and certified by the applicable State department within the past year.

4. Measurement of Stone Tonnage using Barge Displacement Tables

a. If stone is delivered by barge, the weight (tonnage) for payment will be determined by barge displacement.

1) Suitably mark each barge with a displacement gaging location at or near each corner of the barge and two amidships on opposite sides. Mark each gaging location by a line perpendicular to the edge of the barge, 4 inches wide and 1 foot long, on both the deck and side of the barge at each location. For barges with rakes, place the displacement gaging lines at each corner of the box section between the rakes. If a barge has a box end or ends, place the gaging locations approximately 4 feet from the box end(s).

2) Measure the freeboard at the six gaging locations and determine the displacement by the use of "Standard Barge Table" from the average of these measurements.

3) Calculate the displacement before and after barge unloading; the difference between these values will be the measure of quantity delivered.

4) Load barges so that the readings taken at the gaging locations do not vary more than 1.5 feet port to starboard fore and aft and do not vary more than 0.5 foot port to starboard. If such is not the case, trim the barge by shifting the material until this limit is reached, before the measurement will be accepted. Calculate the draft from the average of all six readings weighting the readings of the middle gage at double those of the end gages: (G1 + G2 + 2xG3 + 2xG4 + G5 + G6) divided by 8 = average draft.

5) All barges used in transporting material shall be free of leaks that would render accurate gauging difficult. Provide facilities for inspecting the hold of each barge to determine whether leakage is occurring. Provide each barge with adequate pumping facilities, and if water is found to be accumulating in the hold, pump the barge dry before each gaging, both before and after unloading. Leave rejected and unacceptable material aboard the barge until after the final readings have been taken.

b. If barge tables are furnished for fresh water and if it is believed that barge displacement measurements made within the contract limits of the work are being taken in water that has salinity, the Contractor has the option of obtaining water samples and determining densities or unit weights of these samples.

1) Take these water samples in accordance with ASTM D3370 (Practice A - Grab Samples) at depths of 4 and 8 feet in the area where measurements are made.

2) Perform water sampling when the barges are measured for quantities, both when fully loaded and when empty.

3) Take water samples, as witnessed by the Engineer, with the use of "Polypro" 2000 ml water sampler, or equal. Determine densities as specified in ASTM D1429 (Method D-Hydrometer Method).

4) Testing shall be done for the Contractor by a certified testing laboratory, and test results certified by the laboratory.

5) After review and approval of the test results by the Engineer, the average of the densities obtained at 4 and 8 feet will be used as the suitable salt water conversion factor. In all calculations (both fully loaded and empty), the unit weight of 62.4 pounds per cubic foot will be used for fresh water.

E. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord, in feet and hundredths of a foot.

F. Measurement by Area: Measured by square dimension using mean length and width or radius, in feet and hundredths of a foot.

G. Measurement by Volume: Measured by cubic dimension using mean length, width, and height or thickness, in feet and hundredths of a foot.

H. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

1.04 BASIS FOR PAYMENT

A. Unless indicated on the Contract Documents, all work indicated on the Construction Drawings and specified in the Contract Documents shall be included in the Contract Sum indicated on the Bid Form.

B. Prices stated in the Bid Schedule shall include all costs and expenses for taxes (inclusive of applicable Contractor's tax per Miss. Code Ann. § 27-65-21), labor, equipment, materials, commissions, transportation charges and expenses, patent fees and royalties, labor for handling materials during inspection, together with any and all other costs and expenses for performing and completing the Work as depicted on the Construction Drawings and specified herein. The basis of payment for an item in the amount shown in the Bid Form shall be in accordance with the description of that item provided in this Section.

C. The Contractor's attention is again called to the fact that the quotations for the various items of work are intended to establish a total price for completing the Work in its entirety. Should the Contractor feel that the cost for any item of work has not been established by the Bid Form, the Contractor shall include the cost for that work in another applicable bid item, in order that the Bid for the project reflects the total price to be paid by the Agency for completing the Work in its entirety.

D. Changes in the Contract Price and Contract Time require prior authorization in writing from MDEQ and the Engineer, in the form of a Change Order. Refer to Section 22 of the MDEQ Standard Contract Terms and Conditions for Change Order Procedures. The Contractor is responsible for verification of all bid quantities and to report to the Engineer any discrepancies found prior to ordering materials and/or equipment for construction. Refer to Section 9 of the Standard Contract Terms and Conditions.

E. The various major items of Work will be paid for either by 1) the quantity of the actual Work completed by the Contractor and accepted by the Engineer multiplied by the unit price or 2) a pro rata amount based on the percentage complete of any lump sum bid item. The Work shall include all miscellaneous and ancillary items necessary to construct a complete and functional Project.

1.05 SCHEDULE OF VALUES

The below descriptions generally outline the scope of work required for those elements of the Work to be paid for under each item listed in the Schedule of Bid Items. The Contractor shall submit a Schedule of Values per SECTION 01 29 73 – SCHEDULE OF VALUES and shall be consistent with SECTION 01 33 00 – SUBMITTAL PROCEDURES.

1.06 PAYMENT ITEMS

A. Basis of Payment for Unit Price Items

1. Quantities indicated in ATTACHMENT D – BID FORM are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the Engineer determine payment.

2. If the actual Work requires more or fewer quantities than those quantities indicated, the Contractor will provide the required quantities at the unit prices contracted.

B. Basis of Payment for Lump Sum Items - Payment for lump sum items for this Project will be made at the lump sum price named in the Contract. The contract price shall constitute full compensation for each item, including all required labor, products, tools, equipment, plant, transportation, services and incidentals, erection, application or installation of an item of the Work, overhead, and profit as required to complete the item as indicated in the Construction Drawings and Specifications.

C. Progress Payments

1. Applications for Payment shall be submitted to MDEQ or the Engineer at the times specified in Paragraph 5.02 of the AGREEMENT (SECTION 00 52 15).

2. Progress payments will be made upon receipt and acceptance of the post-construction surveys. Surveys will be evaluated based on the design template, including elevations, alignments, and minimum lines and grades. The Contractor is required to have all payment surveys performed by a Mississippi-licensed professional surveyor.

3. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Engineer multiplied by a unit price of the item. Final payment for unit price Work will be accomplished by reconciliation Change Orders to adjust quantities at the end of the Project. Any material that is deposited in places not designated or approved by the Engineer or MDEQ may be required to be removed and the Contractor will be required to deposit such misplaced material where directed at his expense. Additional clean-up and environmental damage mitigation requirements may be directed by MDEQ. Such efforts will be entirely at the expense of the Contractor and any fines or penalties will be the responsibility of the Contractor.

4. No payment, partial, or complete, will be made for defective or rejected Work. The Contractor will not receive payment for any material placed outside of the horizontal or vertical limits of the placement limits shown and noted in the Construction Drawings and Specifications.

5. No separate payment will be made for additional labor and materials required for accomplishing the Project in its entirety, unless a Change Order has been submitted and executed by the Engineer and Agency. All labor, materials, and incidental costs shall be included for payment as part of the Bid and the Contract, under the several scheduled items of the Project.

1.07 DESCRIPTION OF WORK ITEMS AND SCHEDULE OF VALUES

A. The Work items are described in order to assist the Contractor in the preparation of the Bid and to assist the Engineer in the evaluation of Bids and progress payments during construction. The Contractor shall submit a Schedule of Values containing the work components of each bid item in their Bid for approval prior to the first Application for Payment for work in progress.

B. No separate payment will be made for any testing and/or surveying performed to complete the Work; costs for testing and/or surveying (as applicable), shall be included in the cost to complete the work item.

C. Submittals are considered part of the Contractor’s administrative and overhead costs. The Contactor will not be compensated separately for submittals required by these specifications or those listed on the Construction Drawings.

D. Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated there with shall be included in the applicable unit prices or lump-sum prices contained in the Bid Schedule.

E. For the purpose of the work items listed below, complete installation will mean the inclusion of preliminary surveying, preliminary photographic documentation, mobilization and demobilization, quality control documentation of materials, delivery of materials to the Project site, installation of materials and any ancillary components, photographic documentation, surveying during and after construction, and any overhead related items associated with Division 01 of the Contract Documents.

F. Below is a description of the Work listed in ATTACHMENT D – BID FORM. This description is not intended to be a complete and all-inclusive record of the required work items. Work includes but is not limited to the following:

1. Lump Sum Items
   a. **Mobilization and Demobilization (Bid Item No. 1)** - Payment for this item will be made as a lump sum (LS) for costs associated with or incidental to mobilization, demobilization, and establishment of initial project management and coordination. The Contractor shall breakdown the cost for Mobilization and Demobilization in the Schedule of Values for Engineer's approval prior to the first Application for Payment. Payment for Mobilization and Demobilization shall be in accordance with the following rules and schedule:
      1) No more than sixty percent (60%) of the entire lump sum amount will be payable to the Contractor upon completion of the mobilization subject to the following:
         a) No more than 25 percent (25%) of the entire lump sum amount can be claimed for reimbursement in the first Application for Payment.
      2) The remaining forty percent (40%) of the entire lump sum will be payable upon the completion of demobilization.
      3) Failure to justify the cost for Mobilization and Demobilization in the SECTION 01 29 73 – SCHEDULE OF VALUES to the satisfaction of the Agency will result in non-payment, as determined by the Agency.

   b. **Environmental Compliance (Bid Item No. 2)** - Payment for this item will be made as a lump sum (LS) for costs associated with or incidental to providing all services and compliance reporting for any environmental permit associated with this project and the specification requirements of SECTION 01 35 43 – ENVIRONMENTAL PROTECTION. Payment for Environmental Compliance shall be spread out in equal payments over the project construction schedule in accordance with SECTION 01 29 73 – SCHEDULE OF VALUES. The Contractor shall breakdown the cost for Environmental Compliance in the Schedule of Values for the Engineer's approval prior to the first Application for Payment.

2. Unit Price Items

   a. **Stone Installation (Bid Item No. 3)** - Payment will be made as a unit price (TON) for costs associated with or incidental to all stone installation. The price shall include all labor, equipment, materials, transporting, handling, operational costs, and surveys required to complete the stone installation to final slopes and grades as shown in the Construction Drawings. See and SECTION 35 32 16 – SUBTIDAL REEF.

1.08 DEFECTIVE WORK

A. The remediation, removal, or replacement of defective work is addressed by SECTION 13 of the STANDARD CONTRACT TERMS AND CONDITIONS (ATTACHMENT F).

1.09 NON-PAYMENT

A. Notwithstanding any of the foregoing, payment will not be made for any of the following:

1. Products wasted or disposed of in a manner that is not acceptable.

2. Products determined as unacceptable before or after placement.

3. Products damaged in transit, during handling, or due to improper storage.
4. Products not completely unloaded from the transporting vehicle.
5. Products placed beyond the lines and levels of the required Work.
6. Products remaining on hand after completion of the Work.
7. Removing, demolishing, and disposing of rejected Work.
8. Loading, hauling, and disposing of rejected Products.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

A. Requesting Progress Payment - Provide hard copies of supporting invoices and quantity measurements to support all requested earnings. Ensure that sum of payment activities do not exceed contract award funding amounts.

END OF SECTION 01 20 00

SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements necessary to prepare and process applications for payments.

1.02 RELATED SECTIONS

A. Sections 25 and 47 of the Standard Contract Terms and Conditions

B. Section 00 52 15 – Agreement

C. Section 01 31 00 – Project Management and Coordination

D. Section 01 32 00 – Construction Progress Documentation

E. Section 01 32 33 – Photographic Documentation

F. Section 01 33 00 – Submittal Procedures

G. Section 01 77 00 – Closeout Procedures

1.03 SUBMITTALS

A. Submit six (6) paper copies and one searchable PDF file of the Application for Payment to Engineer by the 25th of each month in accordance with the requirements set forth in Section 00 52 15 – Agreement and Section 01 33 00 – Submittal Procedures.

1.04 FORMAT AND DATA REQUIRED

A. Submit applications typed on the Application for Payment form provided by the Agency/MDEQ, with itemized data typed on 8-1/2" x 11" white paper continuation sheets.

B. Provide itemized data on continuation sheet:

1. Format, schedules, line items and values: Those of the Schedule of Values accepted by Agency's Representative.

1.05 PREPARATION OF EACH PROGRESS APPLICATION FOR PAYMENT

A. Application Form:

1. Fill in required information, including information for Change Orders executed prior to date of submittal of application.

2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.

3. Execute certification with signature of a responsible officer of Contractor.

B. Continuation Sheets:

1. Fill in total list of all scheduled component items of Work, with item number and scheduled dollar value for each item.

2. Fill in dollar value in each column for each scheduled line item when work has been performed or products stored.

3. List each Change Order executed prior to date of submission, at the end of the continuation sheets.

4. Calculate the retainage amount in accordance with Mississippi Code 31-5-33 (Attachment G). See Article 5, Paragraph 5.02 in Section 00 52 15 – Agreement for retainage requirements.

5. Calculate the total amount due by subtracting the retainage and any liquidated damages from the total earned and previously paid.

1.06 SUBSTANTIATING DATA FOR PROGRESS APPLICATION FOR PAYMENTS

A. Contractor shall submit suitable information, including the following, with a cover letter identifying:

1. Project;

2. Application number and date;

3. Updated Construction Schedule in accordance with Section 01 32 00 – CONSTRUCTION PROGRESS DOCUMENTATION;

4. Construction Photographs in accordance with Section 01 32 33 – PHOTOGRAPHIC DOCUMENTATION; and

5. All Environmental Compliance documentation in accordance with Section 01 35 43 – ENVIRONMENTAL PROTECTION and all issued permits associated with this project.

B. Submit one copy of data and cover letter for each copy of application.

1.07 PREPARATION OF APPLICATION FOR FINAL PAYMENT

A. Fill in Application form as specified for progress payments.

B. Use continuation sheet for presenting the final statement of accounting as specified in Section 01 77 00 – CLOSEOUT PROCEDURES.

C. Submit Release of Claims form.

1.08 SUBMITTAL PROCEDURE

A. Submit Application for Payment to Engineer FC&E Engineering, LLC at:

/ (by mail) FC&E Engineering, LLC
P.O. Box 1774
Brandon, MS 39043

/ (for direct delivery) FC&E Engineering, LLC
917 Marquette Road
Brandon, MS 39042

/ (by email) rtwitty@fce-engineering.com

B. Number: Six paper copies and one (1) searchable PDF copy of each Application.

C. When Engineer finds Application properly completed and correct, he/she will transmit certificate for payment to MDEQ.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION 01 29 00

SECTION 01 29 73

SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 SUMMARY

A. Procedure for submission of a certified Schedule of Values for review and approval by the Engineer and Agency/MDEQ.

1.02 RELATED SECTIONS

A. Attachment D – Bid Form

B. Section 01 20 00 - Measurement and Payment Procedures

C. Section 01 29 00 - Payment Procedures

1.03 SUBMITTAL

A. The Contractor shall provide a Schedule of Values in format similar to the Engineers Joint Contract Documents Committee (EJCDC) Schedule of Value Forms.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 PREPARATION

A. Upon receipt of the Notice of Award, Contractor shall commence preparation of a Schedule of Values for Lump Sum items in accordance with the Bid Form.

B. Schedule of Values format and content shall be approved by the Engineer and Agency prior to submittal of first payment request.

C. Contractor shall coordinate the preparation of a Schedule of Values with preparation of the Construction Schedule as set forth in Section 01 32 00 – CONSTRUCTION PROGRESS DOCUMENTATION. The corresponding values from the Bid Form shall match with the approved Schedule of Values.

D. Include the following Project identification on a certified Schedule of Values:

1. Project name and location;

2. Project Number;

3. Contract #;

4. Contractor name; and

5. Date of Submittal.

E. The Schedule of Values shall be in an Excel format, tabular form with separate columns and shall include the following items:

1. Related Specification Section and Division;

2. Description of Work;

3. Name of Subcontractor, manufacturer or supplier;

4. Dollar value, quantity and unit of measure of each line item; and

5. Percentage of Contract amount to nearest one-hundredth percent, adjusted to total 100%.

F. Provide a breakdown of the Contract Amount in enough detail acceptable to Engineer and Agency/MDEQ to facilitate continued evaluation of Application for Payment and progress reports.

G. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each Lump Sum line item.

H. Temporary facilities and other cost items that are not direct cost of actual work-in-place shall be shown as separate line items.

I. An approved certified Schedule of Values shall serve as the basis for the monthly certified Application for Payment.

J. If at any time, Agency determines, in its reasonable discretion, that the Schedule of Values does not approximate the actual cost being incurred by Contractor to perform the Work, Contractor shall prepare a revised Schedule of Values, which then shall be used as the basis for future progress payments. Without changing the Contract Amount, Agency reserves the right to require Contractor:

1. To increase or decrease amounts within the line items in the Schedule of Values; and

2. To conform the price breakdown to Agency accounting practice.

3.02 SUBMITTAL

A. Contractor shall submit six (6) paper copies, one (1) searchable PDF digital file and one (1) digital Excel file of the Schedule of Values for review and approval at least 14 days before the first Application for Payment.

B. Agency will review and if necessary, return the submitted Schedule of Values with summary comments noting items not in compliance with the requirements of the Contract Documents.

C. Contractor shall revise the submitted Schedule of Values and return six (6) paper copies and one (1) searchable PDF digital file and one (1) digital Excel file within three (3) days of receipt of summary comments.

END OF SECTION 01 29 73

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section addresses:

1. General requirements;
2. Preconstruction conference;
3. Request for Information (RFIs);
4. Schedule finalization meeting;
5. Progress meetings;
6. Pre-installation conferences; and
7. Final Inspection.

1.02 RELATED SECTIONS

A. Section 01 32 00 – Construction Progress Documentation

B. Section 01 33 00 – Submittal Procedures

C. Section 01 40 00 – Contractor Quality Control

D. Section 01 77 00 – Closeout Procedures

1.03 SUBMITTALS

A. Subcontract List: Prepare a digital, written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 10 days of Notice to Proceed, submit a list of key personnel assignments, including superintendent and other personnel for the Project. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including office and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in project meeting room, in temporary field office, and the Engineer/MDEQ construction trailer, if any. Keep list current at all times.

2. Changes in key personnel shall only occur with written permission of MDEQ. Engineer/MDEQ shall have the right of reasonable rejection and approval of staff as provided in Section 6 of the Standard Contract Terms and Conditions.

3. Engineer/MDEQ has the right to raise and discuss adverse issues about any staff or subcontractor employed by the Contractor.

1.04 PROJECT COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

2. Coordinate submittals, surveying, availability of equipment, delivery of materials to ensure efficient use of resources and time management.

3. Make adequate provisions to accommodate items scheduled for later installation.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for MDEQ and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule;

2. Preparation of the schedule of values;

3. Delivery and processing of submittals;

4. Progress meetings;

5. Pre-installation conferences; and

6. Project closeout activities.

1.05 REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI using the supplied form (attached at end of this specification).

1. All RFIs must be submitted by the Contractor. Engineer will return RFIs submitted to Engineer by other entities controlled by Contractor with no response.

2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

3. Do not use RFIs for any purpose other than to request additional information or interpretation of the Contract Documents.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name;

2. Project number;

3. Date;

4. Name of Contractor;

5. Name of Engineer;

6. RFI number, numbered sequentially;

7. RFI subject;

8. Specification Section number, title and related paragraphs, as appropriate;

9. Drawing number and detail references, as appropriate;

10. Field dimensions and conditions, as appropriate;

11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.

12. Contractor's signature; and

13. Attachments: Include sketches, descriptions, measurements, photos, product data, shop drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, location and/or station number, and details of the affected area or facilities impacted by the RFI.

C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Engineer.

1. Attachments shall be electronic files in searchable Adobe Acrobat PDF format.

D. Engineer's Action: Engineer will review each RFI, determine action required, and respond. Allow seven working days for Engineer's response for each RFI. RFIs received by Engineer after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for approval of Contractor's means and methods.
    d. Requests for coordination information already indicated in the Contract Documents.
    e. Requests solely for adjustments in the Contract Time or the Contract Sum.
    f. Requests for interpretation of Engineer’s actions on submittals.
    g. Incomplete RFIs or inaccurately prepared RFIs.

2. Engineer's action may include a request for additional information, in which case Engineer's time for response will date from time of receipt of additional information.

3. Engineer's action on RFI's that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Order request according to the Change Order procedures in Section 22 of the Standard Contract Terms and Conditions.

    a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Engineer in writing within 7 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:

1. Project name;

2. Name and address of Contractor;

3. Name and address of Engineer;

4. RFI number including RFIs that were returned without action or withdrawn;

5. RFI description;

6. Date the RFI was submitted; and

7. Date Engineer's response was received.

F. On receipt of Engineer's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Engineer within seven (7) days if Contractor disagrees with response.

1. Identification of related minor change in the Work, Work Change Order Directive, and Change Order request, as appropriate.

1.06 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting.

    a. Notify MDEQ and Engineer of scheduled meeting dates and times five (5) days in advance.
    b. The MDEQ and/or Engineer shall be permitted to attend meetings held at the Project Site.
    c. Representatives of contractors, subcontractors, and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

2. Agenda: Prepare the meeting agenda. Distribute the agenda to attendees.

3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes within five days of the meeting:

    a. To all participants in meetings;
    b. To MDEQ and Engineer; and
    c. Furnish 3 copies to Contractor.

4. Engineer will schedule and administer pre-construction meeting, regularly scheduled progress meetings, and specially called meetings throughout the progress of the Work. Engineer will:

    a. Prepare agendas for meetings, including items requested by MDEQ and Contractor;
    b. Notify MDEQ and Contractor five (5) days in advance of meeting date; and
    c. Preside at such meetings.

5. Contractor will schedule and administer pre-installation conferences. Contractor shall:

    a. Attend all meetings;
    b. Arrange for the attendance of Contractor's agents, employees, subcontractors, and suppliers as appropriate to the agenda; and
    c. Make physical arrangements for meetings.

B. PRECONSTRUCTION CONFERENCE

1. Engineer will schedule a conference after Notice of Award and before commencement of the Work.

2. Location: A central site, convenient for all parties

3. The representatives that should be in attendance include:

    a. MDEQ's Representative;
    b. Program Manager's Representative(s);
    c. Engineer and his professional consultants;
    d. Resident Project Representative;
    e. Contractor's Superintendent;
    f. Major Subcontractors;
    g. Major Suppliers; and
    h. Others as appropriate;

4. The agenda may include:

    a. Contractual matters;
    b. Submission of executed bonds and insurance certificates;
    c. Distribution of Contract Documents;
    d. Submission of list of subcontractors and suppliers, list of products, Schedule of Values, and progress schedule;
    e. Designation of key personnel representing the parties in Contract and the Engineer;
    f. Procedures and processing of field decisions, submittals, substitutions, applications for payments, cost proposal requests, Change Orders and Contract Closeout Procedures;
    g. Establishment of official date of Notice to Proceed (NTP);
    h. Establishment of mailing address and local office for the Contractor;
    i. Establishment of cut-off dates and payment request submittals;
    j. CQC plan as defined in Section 01 40 00 – Contractor Quality Control;
    k. Construction scheduling and updates;
    l. Construction photographs and video requirements;
    m. Off-shore inspections and off-shore access by Engineer, MDEQ and other regulatory agencies;
    n. Environmental permit compliance during construction;
    o. Critical work sequencing;
    p. Major material deliveries and priorities;
    q. Procedures for maintaining Record Documents;
    r. Use of Engineers/MDEQ's office facilities, including:

1) Office, work and storage areas;
2) MDEQ's requirements; and
3) Cleaning requirements;

s. Construction facilities, controls and construction aids;
t. Temporary utilities provided by Contractor;
u. All safety and first-aid procedures are responsibility of the Contractor;
v. Hurricane/Storm Preparedness Plan;
w. Security and housekeeping procedures as required by the MDEQ;
x. Procedures for testing; and
y. Providing electronic design files to the Contractor.

5. The Contractor shall bring to this conference the following items in either completed or draft form:

a. Accident Prevention Plan;
b. Activity Hazard Analysis;
c. Job Hazard Analysis for each employee classification;
d. Material Safety Data Sheets;
e. Letter appointing representatives;
f. List of Subcontractors;
g. Listing of First Aid and CPR trained personnel; and
h. Work Plan

C. SCHEDULE FINALIZATION MEETING

1. Contractor will schedule at least 10 days before submission of the first Application for Payment.

2. Location: A central site convenient for all parties

3. The representatives that should be in attendance include:

a. MDEQ's representative;
b. Engineer;
c. Contractor; and
d. Others, as appropriate.

4. The suggested agenda for this meeting is:

a. Schedule of Values;
b. Construction Schedule;
c. Submittal Schedule; and
d. Questions.

D. PROGRESS MEETINGS

1. Engineer will schedule and administer monthly meetings throughout progress of the Work.

2. Location of the Meetings: The project field office of the Contractor, or other locations arranged for by Contractor, convenient to all parties

3. The representatives that should be in attendance include:

a. MDEQ's Representative;
b. Engineer, and his professional consultants as needed;
c. Resident Project Representative;

d. Contractor's Superintendent;
e. Subcontractors as appropriate to the agenda;
f. Suppliers as appropriate to the agenda; and
g. Others, as appropriate.

4. The suggested agenda for this meeting is:

a. Review minutes of previous meetings;
b. Review unresolved issues from last meeting;
c. Safety; and
d. Contractor's Construction Schedule:

1) Review progress since the last meeting;
2) Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule;
3) Determine how behind schedule activities will be expedited; secure commitments from parties involved to do so;
4) Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time;
5) Identification of problems which impede planned progress;
6) Planned progress during succeeding work period; and
7) Make necessary revisions to construction schedule.

e. Review of submittals schedule and status of submittals;
f. Review of material delivery schedules;
g. Access;
h. Site Utilization;
i. Temporary facilities;
j. Maintenance of quality and work standards;
k. Status of RFIs;
l. Status of proposal request;
m. Pending changes;
n. Status of Change Orders;
o. Pending claims and disputes;
p. Documentation of information for payment request; and
q. Long-term weather conditions.

E. PRE-INSTALLATION CONFERENCES

1. When required in individual specification Section, Contractor will convene a pre-installation conference at work site prior to commencing work of the Section.

2. Contractor will require attendance of parties directly affecting, or affected by, work of the specific Section.

3. Contractor will notify Engineer at least four (4) days in advance of meeting date.

4. Contractor will prepare agenda, preside at conference, record minutes, and distribute copies within two (2) days after conference to participants, with two (2) copies to Engineer and MDEQ.

5. Review conditions of installation, preparation and installation procedures, and coordination with related work.

F. FINAL INSPECTION

1. Contractor shall notify the Engineer and MDEQ and certify that the Project is substantially complete and request a date and time for a Final Inspection.

2. Final Inspection will be conducted in accordance with the procedures identified in Section 01 77 00 CLOSEOUT PROCEDURES.

1.07 HAZARD ANALYSIS PLAN: THE FOLLOWING ADDITIONAL ITEMS WILL BE REQUIRED UNDER THE CONTRACT:

A. A Job Hazard Analysis is required for each person employed on this job. Prior to beginning the job, a Job Hazard Analysis shall be prepared by the Contractor. The analysis will address the hazards in each job classification and will present the procedures and safeguards necessary to provide a safe working environment for that employee. The Contractor shall provide a means to assure that each employee has an opportunity to provide input to his/her Job Hazard Analysis and proof of employee understanding by having the employee sign a copy of his/her analysis.

B. Contractor should assure an understanding on the part of employee and supervisor alike that no new task having potential as a hazard will be undertaken without thorough discussion between them to determine the safest means to accomplish the task. The Job Hazard Analysis will then be modified accordingly.

C. It is emphasized that areas of the Work site are not readily accessible and that several hours may pass before an individual can be transported from the Work site to a medical treatment facility. At least two employees per shift shall be qualified to administer First Aid and CPR. At least one person with First Responder Training should be available on site at all times.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

RFI Form

PROJECT: **HANCOCK COUNTY MARSH LIVING SHORELINE: PHASE 4 - Heron Bay Subtidal Reef**

INITIATED BY: Contractor RFI #:

DRAWING REFERENCE: DETAIL REFERENCE: SPEC REFERENCE:

DATE INITIATED: DATE RESPONSE REQUESTED: RELATED SCHEDULE ACTIVITY:

SUBJECT:

REQUEST FOR INFORMATION	DRAWING ATTACHED	YES:	NO:	PAGES:
Reviewed By CM or GC:				Date:

CONTRACTOR PROPOSED SOLUTION	COST IMPACT	YES:	NO:

RESPONSE	DRAWING ATTACHED	YES:	NO:	PAGES:

Response By (Engineer): Date:

Received By CM or GC: Date:

This document provides information or clarification only and does not constitute authorization or direction to proceed with additional work. If, in the opinion of the Contractor, the response impacts the Contract amount and/or time, the Contractor must advise Owner of such impact in writing within Ten (10) days of receipt. The Contractor's notice shall be accompanied and appropriately supported with justification, reasoning and references where the contract requirements have been exceeded due to the response to the RFI. Otherwise, the Response will stand and clarifications to the Contract Documents will not result in any increase or decrease in cost to the Owner.

END OF SECTION 01 31 00

SECTION 01 32 00

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during the performance of the Work, including the following:

1. Startup construction schedule;
2. Contractor's construction schedule;
3. Updated Construction schedule with updating report;
4. Daily construction reports;
5. Material location reports;
6. Site condition reports; and
7. Special reports.

1.02 RELATED DOCUMENTS

A. Section 01 29 00 - Payment Procedures

B. Section 01 31 00 – Project Management and Coordination

C. Section 01 32 23 – Surveys and Layout Data

D. Section 01 32 33 - Photographic Documentation

E. Section 01 33 00 – Submittal Procedures

F. Section 01 35 43 – Environmental Protection

G. Section 01 40 00 – Contractor Quality Control

H. Section 01 77 00 - Closeout Procedures

1.03 SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file;
2. Fully searchable PDF electronic file of schedule; and
3. Two (2) paper copies.

B. Startup construction schedule

1. Approval of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working electronic copy of schedule, as described in Section 2.03, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.

E. Updated Construction Schedule with Updating Report: Submit with Applications for Payment.

F. Daily Construction Reports: Submit at weekly intervals.

G. Material Location Reports: Submit at monthly intervals.

H. Site Condition Reports: Submit at time of discovery of differing conditions.

I. Special Reports: Submit at time of unusual event.

1.04 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.

2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice to Proceed (NTP) to date of final completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early or later completion date, unless specifically authorized by Change Order.

B. Activities: Treat each separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 30 days, unless specifically approved by Engineer.

2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule.

3. Submittal Review Time: Include review and resubmittal times indicated in Section 01 33 00 - SUBMITTAL PROCEDURES in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.

4. Substantial Completion: Indicate completion in advance of date established for substantial completion, and allow time for Engineer's administrative procedures necessary for certification of substantial completion.

5. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion. Final completion shall be within the Contract Time.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Work Restrictions: Show the effect of the following items (if applicable) on the schedule:

a. Coordination with existing construction;

b. Uninterruptible services;

c. Use of premises restrictions;

d. Provisions for future construction;

e. Seasonal variations; and

f. Environmental control.

2. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

a. Subcontract awards;

b. Submittals;

c. Fabrication;

d. Deliveries;

e. Installation;

f. Tests and inspections;

g. Adjusting;

h. Curing (if applicable); and

i. Startup and placement into final use and operation (if applicable).

3. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities.

D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed and final completion.

E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.

1. See Section 01 29 00 Payment Procedures for cost reporting and payment procedures.

F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update and submit in accordance with Section 01 31 00 – Project Management and Coordination. Summarize the following issues:

1. Unresolved issues;

2. Unanswered Requests for Information;

3. Rejected or unreturned submittals;

4. Notations on returned submittals; and

5. Pending modifications affecting the Work and Contract Time.

G. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

H. Critical Path Identification: The Critical Path Method (CPM) schedule should clearly identify all activities that are on the critical path.

2.02 STARTUP/MOBILIZATION CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Submit startup, horizontal, bar-chart-type construction schedule within 7 days of date established for the Notice to Proceed.

2.03 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule using Microsoft Project or similar software approved by the Agency within 21 days of date established for the Notice to Proceed. Base schedule on the startup construction schedule and additional information received since the start of Project. Approval of this comprehensive schedule is a condition precedent for payment.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.04 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. Date of Daily Report;

2. Shift detailed in the report;

3. List of subcontractors at Project site;

4. List of separate contractors at Project site;

5. Actual count of personnel at Project site;

6. Regulatory agency personnel at Project site;

7. Equipment utilized including production time and downtime at Project site;

8. Quantities of materials removed, delivered or placed including quantity of each stone material placed in the last 24 hours and quantity of each stone material placed to date for each site;

9. Description of activity performed including areas of placement, final shaping and grading for the last 24 hours for each stone type as applicable;

10. Environmental Compliance activities performed for the past 24 hours;

11. High and low temperatures and general weather conditions, including presence of rain or snow, high winds, high waves, high tide and low tide;

12. Description of any downtime, delay, quality control issue or schedule change;

13. Accidents – including, but not limited to incidents involving people or equipment (first-aid, near miss, OSHA recordable or lost time);

14. Meetings and significant decisions;

15. Unusual events (see special reports);

16. Stoppages, delays, shortages, and losses;

17. Emergency procedures;

18. Orders and requests of authorities having jurisdiction;

19. Change Orders received and implemented;

20. Construction Change Directives received and implemented; and

21. Substantial Completion authorized.

B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials in transit, delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items located away from Project site. Indicate the following categories for stored materials:

1. Material stored prior to previous report and remaining in storage;

2. Material stored prior to previous report and since removed from storage and installed; and

3. Material stored following previous report and remaining in storage.

C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.05 SPECIAL REPORTS

A. General: Submit special reports directly to Engineer within 1 day of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, and response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Agency in advance when these events are known or predictable.

PART 3 - EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.

1. In-House Option: Agency may waive the requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques.

2. Meetings: Scheduling consultant or Contractor’s skilled personnel shall attend meetings related to Project progress, alleged delays, and time impact.

B. Contractor's Construction Schedule Updating: At monthly intervals, with Application for Payment, update schedule to reflect actual construction progress and activities. Issue schedule minimum of 48 hours before each regularly scheduled progress meeting. No payment will be processed without an approved construction schedule.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting within 48 hours after such meeting.

2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.

3. As the Work progresses, indicate final completion percentage for each activity.

C. Distribution: Distribute copies of approved schedule to Engineer, Agency, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.

2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01 32 00

SECTION 01 32 23

SURVEYS AND LAYOUT DATA

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall furnish all labor, equipment, materials, and incidentals necessary to perform surveys required to perform the Work as detailed in the Construction Drawings. The Work includes, but is not limited to, preconstruction surveys, quality control surveys, progress and progress payment surveys, and as-built surveys and drawings.

1.02 RELATED SECTIONS

A. Section 01 20 00 - Measurement and Payment Procedures

B. Section 01 33 00 - Submittal Procedures

C. Section 01 35 43 - Environmental Protection

D. Section 35 32 16 - Subtidal Reef

E. Section 01 40 00 - Contractor Quality Control

1.03 SUBMITTALS

A. The following submittals shall be in accordance with SECTION 01 33 00 - SUBMITTAL PROCEDURES:

1. Survey Plan: The Contractor shall prepare and submit for approval by the Engineer a written Survey Plan, presenting the contract survey effort from start to completion. The Survey Plan shall cover, at a minimum, Contractor-conducted layout work (including baseline control) and the required surveys described in this SECTION. The Contractor's Survey Plan shall show a percentage breakdown of each type of survey phase (baseline, control, pre-construction, etc.) of the total survey effort for the job.

2. Pre-construction Bathymetric Survey: The Contractor shall submit the xyz survey data within 2 working days of data collection. The electronic files, in Portable Document Format (PDF) and CADD files, shall be submitted within 5 working days of data collection.

3. Progress Surveys: The Contractor shall submit the xyz survey data within 2 working days of data collection. PDF and CADD files shall be submitted within 5 working days of data collection.

4. Progress Payment Surveys: The Contractor shall submit xyz survey, PDF, and CADD files with the monthly Pay Application.

5. As-built Surveys: Upon project completion and before submitting the final Payment Application, the Contractor shall submit to the Engineer drawings showing as-built conditions of the site. The as-builts will highlight any deviations to the Construction Drawings and shall include the following:

a. Field changes of dimension and detail;

b. Changes made by Change Order or other Modifications;

c. Details not on original Project Drawings;

d. Pre- and Post-Construction 3D generated surfaces (by the equivalent CADD method for each pre- and post-construction surface); and

e. A plot of the actual pre- and post-construction cross-sections of rock layers plotted at the same station as and on top of the design cross-sections.

1.04 QUALITY ASSURANCE

A. The Contractor shall hire a third party independent surveyor licensed in the State of Mississippi to perform all pre-construction, progress payment, and as-built surveys.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 GENERAL

A. The Contractor is responsible for all surveying required for layout and performance of the Work. All pre-construction, progress payment, and as-built surveys shall be performed by an independent third party surveyor licensed in the State of Mississippi. All construction-related drawings, submittals, and as-builts, will be prepared by the Contractor in CADD and PDF formats.

B. The Contractor shall complete the layout of the Work and shall be responsible for all measurements.

C. The Contractor shall perform surveys of the stone installations. It is the intent of the surveys to have vertical and horizontal accuracies equivalent to land surveying. Cross-section surveys shall be performed prior to and after placement of the stone.

3.02 PRE-CONSTRUCTION BATHYMETRIC SURVEY

A. The Contractor must verify the location of all utilities prior (throughout the entire project length) to surveying and include the locations on the pre-construction survey submittal. The Contractor is strictly responsible for repair of any and all damages related to utilities as a result of this project construction.

B. Prior to construction, the Contractor shall perform a pre-construction bathymetric survey of the project area for Engineer approval.

C. The pre-construction bathymetric survey shall be collected using low frequency methods as prescribed by the U.S. Army Corps of Engineers Hydrographic Survey Manual EM 1110-2-1003 for soft sediments.

D. The Contractor shall collect cross-sections on 50-foot centers along the subtidal reef alignment. Each cross-section shall extend 100 feet outside the limits shown for the subtidal reef. The survey can be a combination of low-frequency bathymetric and real-time kinematic data, providing shots at 5-foot intervals. Sufficient closure points between sections shall be obtained to develop a 5-foot by 5-foot grid.

3.03 AS-BUILT SURVEYS

A. The as-built surveys shall encompass all of the daily cross-sections surveys of the completed reef. The as-built dataset shall be combined to show the most recent survey data of the area, including pre- and post-construction data. The submittal shall include six (6) hard copies, xyz data, and the electronic files in PDF submittal as well as original (native CADD) format approved by MDEQ.

END OF SECTION 01 32 23

SECTION 01 32 33

PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section addresses the requirement to take and produce construction record photographs during the course of the Work.

B. Digital Photography is required. Film photography is not acceptable.

C. Monthly construction progress photographs are required.

D. The employment of competent photographer to take construction record photographs periodically during course of the Work is required

1.02 RELATED DOCUMENTS

A. Section 01 29 00 – Payment Procedures

B. Section 01 77 00 – Closeout Procedures

1.03 STILL PHOTOGRAPHY REQUIRED

A. Take a minimum of five (5) daily photographs of construction activities as necessary to document daily construction progress. The intent is for digital photos to be kept as a project record.

B. Digital photographs shall be submitted on suitable electronic media or uploaded to project site server. Organization and files of pictures must be approved by Engineer.

C. Digital photographs shall be a resolution of 10 megapixels or greater.

D. Submitted digital media and photos become the property of Agency.

1.04 COSTS OF PHOTOGRAPHY

A. Contractor is responsible for the costs for specified photography and printing.

B. Parties requiring additional photography or prints will pay for them directly.

1.05 DELIVERY OF PHOTOS

A. Contractor will submit digital photos to the Engineer with monthly pay requests or within 15 days of photo date.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 TECHNIQUE

A. Presentation of Still Photography. The information/data provided with the digital still photography shall include:

1. Date of image;

2. Location of images by Station location as shown on the design drawings; and

3. Direction of image (N, S, NE, NW, SE, SW).

B. Exposure and Focus. The photography shall be taken with the appropriate exposure and focus.

3.02 VIEWS REQUIRED

A. Photographs shall be taken from locations to adequately illustrate the condition of construction and the state of the Project. Still photography images shall be taken of key construction activities from barge or inspection boat.

3.03 PROJECT RECORD

A. Contractor shall submit a binder of stored CD/DVDs containing digital photos for project records collated in chronological order of project with date headings for groups of photos or videos.

B. Contractor shall submit CD or DVD of all photos, grouped by date and location.

C. Engineer will distribute, after review:

1. One copy of each view to Agency;

2. One copy of each view to Engineer's file; and

3. One copy of each view returned to Contractor for inclusion in Project Record Document.

END OF SECTION 01 32 33

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data Samples, and other submittals.

1.02 RELATED DOCUMENTS

A. 01 29 00 – Payment Procedures

B. 01 32 00 – Construction Progress Documentation

C. 01 40 00 – Contractor Quality Control

D. 01 77 00 – Closeout Procedures

1.03 SUBMITTALS

A. Submittal Schedule: The Contractor shall submit a schedule of submittals, arranged in chronological order by dates required by the construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Engineer and additional time for handling and reviewing submittals required by those corrections.

1.04 QUALITY ASSURANCE

A. Coordination: The Contractor will coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity;

2. Submit submittal items required for each Specification Section concurrently;

3. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination;

    a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received;

4. Initial Review: Allow seven (7) working days for initial review of each submittal. Submittals which require coordination of subsequent submittals will not be reviewed until all pertinent submittals are provided;

5. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal;

6. Resubmittal Review: Allow seven (7) working days upon Engineer's receipt of resubmittal for review of each resubmittal;

7. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form;

8. Name file with submittal number or other unique identifier, including revision identifier – numbering system and identifiers will be mutually acceptable to the Contractor and MDEQ;

9. Transmittal Form for Electronic Submittals shall be in color format and be fully searchable: Use electronic form, containing the following information:

    a. Project name;
    b. Date;
    c. Name and address of Engineer;
    d. Name of Contractor;
    e. Name of firm or entity that prepared submittal;
    f. Names of subcontractor, manufacturer, and supplier;
    g. Category and type of submittal;
    h. Revision number of submittal along with submittal dates of previous submittals;
    i. Submittal purpose and description;
    j. Specification Section number and title;
    k. Related physical samples submitted directly;
    l. Indication of full or partial submittal;
    m. Remarks;
    n. Identify options requiring selection by the Agency/Engineer; and
    o. Identify on separate page any clarification required by the Engineer and any deviations from the Contract Drawings and Contract Documents;

10. Furnish at least six (6) copies and one (1) searchable PDF copy of each submittal to the Engineer. Provide additional submittals if additional copies are needed for suppliers or subcontractors. Copies of the submittal will be retained for the Engineer, Agency, with the remaining copies returned to the Contractor.

PART 2 - PRODUCTS

2.01 MATERIAL SUBMITTAL PROCEDURES

A. Shop Drawings: The Contractor shall prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products;
    b. Schedules;
    c. Compliance with specified standards;
    d. Notation of coordination requirements;
    e. Notation of dimensions established by field measurement;
    f. Relationship and attachment to adjoining construction clearly indicated; and
    g. Seal and signature of professional engineer if specified.

2. Identify shop drawing details by reference to sheet and detail, or schedule shown on contract drawings.

3. Make drawings accurate to a scale with sufficient detail to show the kind, size, arrangement and function of component materials and devices.

4. Minimum sheet size is 8.5” X 11”.

5. Fabrication drawing size shall be 11” X 17” which shall be folded to 8.5” X 11” size.

6. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.

7. Mark each copy of each submittal to show which products and options are applicable.

8. Include the following information, as applicable:

    a. Manufacturer's catalog cuts;
    b. Standard color charts; and
    c. Statement of compliance with specified referenced standards.

9. Submit Product Data before or concurrent with Samples.

10. Submit Product Data in the following format:

    a. Electronically; and
    b. Physical sample (such as geotextile fabric).

11. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

12. Identification: Attach label on unexposed side of Samples that includes the following:

    a. Generic description of Sample;
    b. Product name and name of manufacturer;
    c. Sample source;
    d. Number and title of applicable Specification Section; and
    e. Specification paragraph number and generic name of each item.

13. Provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.

14. Disposition: Maintain sets of approved Samples at Project site, available for quality control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

    a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    b. Samples not incorporated into the Work, or otherwise designated as Agency’s property, are the property of Contractor.

2.02 SCHEDULE OF VALUES SUBMITTAL

A. Contractor shall submit a Schedule of Values for all Lump Sum items in accordance with Specification 01 29 73 – SCHEDULE OF VALUES.

B. Approval of Schedule of Values must be approved by the Engineer/Agency prior to submittal of first payment request.

2.03 PAYMENT REQUEST

A. Six (6) paper copies and one (1) searchable PDF copy of each payment request must be submitted on the Application for Payment forms provided by or approved by the Agency.

B. Each payment request shall include the following:

1. Payment form provided by the Agency;

2. Updated Construction Schedule with updating report in accordance with Section 01 32 00 – CONSTRUCTION PROGRESS DOCUMENTATION;

3. Photographic Documentation in accordance with Section 01 32 33 – PHOTOGRAPHIC DOCUMENTATION; and

4. Documentation of Environmental Permit Compliance Reporting in accordance with Section 01 35 43 – ENVIRONMENTAL PROTECTION and any issued permits associated with this Project.

2.04 OTHER SUBMITTALS

A. The Contractor shall also provide the following submittals:

1. Certificates of insurance;
2. Surety bonds;
3. List of proposed subcontractors;
4. List of proposed products;
5. Construction Progress Schedule;
6. Submittal register;
7. Schedule of Values;
8. Health and safety plan;
9. Work plan;
10. Surveying Plan;
11. Quality control plan; and
12. Environmental Protection Plan.

B. Coordination Drawing Submittals: Comply with requirements specified in Section 01 31 00 – PROJECT MANAGEMENT AND COORDINATION.

C. Test and Inspection Reports and Schedule of Test and Inspection Submittals: Comply with requirements specified in Section 01 40 00 – CONTRACTOR QUALITY CONTROL.

D. Preliminary bathymetric surveys, stone settlement monitoring surveys, progress surveys and as-built surveys in accordance with Section 01 32 23 – SURVEYS AND LAYOUT DATA.

E. Closeout Submittals: Comply with requirements specified in Section 01 77 00 – CLOSEOUT PROCEDURES.

F. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

PART 3 - EXECUTION

3.01 CONTRACTOR'S REVIEW

A. Submittals: The Contractor shall review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents, note corrections and field dimensions, and mark with an approval stamp before submitting to Engineer.

B. Project Closeout and Maintenance Material Submittals: See requirements specified in Section 01 77 00 - CLOSEOUT PROCEDURES.

C. Approval Stamp: Prior to submitting submittals to Engineer and Agency, stamp each submittal with the submittal stamp. Each submittal must include:

1. Project Name;

2. Submittal Number and Revision Number;

3. Specification Section; and

4. Contractor's approval and statement certifying that submittal has been reviewed and checked and approved for compliance with the Contract Documents. Incomplete submittals will be returned to the Contractor.

D. Submittal Log to be Maintained by Contractor:

1. Maintain an accurate submittal log for duration of the Work showing current status of all submissions;

2. Show submittal number, section number, section title, submittal description dates and disposition of submittal; and

3. Make submittal log available to Engineer for Engineer's review upon request.

3.02 ENGINEER'S DUTIES

A. The Engineer will review submittals in accord with approved submission schedule, provided that each submittal has been called for by the Contract Documents and is stamped by Contractor as indicated above.

1. No extensions of time are allowed due to Engineer's delay in reviewing submittals unless all the following criteria are met:

a. Contractor has notified Engineer in writing that timely review of particular submittal in question is critical to the progress of the Work and Contractor has identified the requested submittal return date;

b. Engineer has failed to return submittal within fourteen (14) working days of receipt of the submittal or receipt of said notice, whichever is later;

c. Contractor demonstrates that delay in progress of the Work was directly attributable to Engineer's failure to return submittal within fourteen (14) working days; and

d. Contractor demonstrates that submittal was submitted on schedule and that submittal review is on an item that is on the critical path as defined by the construction schedule provided in Section 01 32 00 – CONSTRUCTION PROGRESS DOCUMENTATION.

2. No extensions of time are allowed due to delays in progress of the Work caused by rejection and subsequent resubmission of data, including multiple resubmissions.

3. Engineer's review shall not extend to means, methods, techniques, sequences, operations of construction, and safety precautions and programs incidental thereto. No information regarding these items will be reviewed whether or not included in submittals.

4. In the event that Engineer will require more than fourteen (14) working days to perform review, Engineer shall so notify Contractor.

B. The Engineer will review drawings and data submitted only for general conformity with Contract Documents.

1. Engineer's review of drawings and data returned marked "No Exceptions Taken" or "Exceptions Noted" does not indicate a thorough review of all dimensions, quantities, and details of material, equipment device or items shown;

2. Engineer's review does not relieve Contractor of responsibility for errors, omissions or deviations nor responsibility for compliance with the Contract Documents;

3. The Engineer will consider and review only those deviations from the Contract Documents clearly identified as such on the submittal and tabulated on the Contractor's transmittal sheet.

C. The Engineer may return submittals unviewed to Contractor for distribution or for resubmission when:

1. The submittal was previously returned to the Contractor and no apparent changes have been made to the original submittal;

2. The submittal was provided by a subcontractor, supplier or manufacturer; or

3. The submittal is not required by the specific technical specification or contract documents.

D. The Engineer will affix a stamp and indicate the approval for submittal or resubmission requirements with the following stamp:

□ NO EXCEPTIONS TAKEN □ EXCEPTIONS NOTED

□ REVISE & RESUBMIT □ REJECTED

This review was performed only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Modifications or comments made on the shop drawings and product data during this review do not relieve Contractor from responsibility for compliance with the requirements of the plans and specifications. Contractor is responsible for: dimensions and quantities; information that pertains solely to the fabrication processes or to the means, methods, of construction; coordination of the work of all trades.

Anchor QEA

Date_____ By_____

FC&E Engineering, LLC

Date_____ By_____

3.03 DISPOSITION OF SHOP DRAWINGS AND PRODUCT DATA

A. "No Exceptions Taken": Approved with No Corrections Noted

1. One copy sent to Agency;
2. One copy sent to Resident Project Representative;
3. One copy retained in Engineer's file;
4. Remaining copies returned to Contractor for his use;
    a. One copy to be kept on file at Contractor's office at job site;
    b. Remaining copies for Contractor's office file, suppliers, or subcontractors;
5. No corrections or comments noted on the submittal or on a Submittal Response Summary Sheet;
6. Issues or miscellaneous comments pertaining to other related items of the Work may be included in transmittal letter; and

7. Resubmission not required.

B. "Exceptions Noted": Approved with Corrections Noted:

1. One copy sent to Agency;
2. One copy sent to Resident Project Representative;
3. One copy retained in Engineer's file;
4. Remaining copies returned to Contractor for his use; and
5. Comply with corrections or comments as noted on the submittal or on a Submittal Response Summary Sheet.
6. Resubmission not required.

C. "Revise And Resubmit": Incorrect information provided or Significant Information Still Required:

1. One copy sent to Agency;
2. One copy sent to Resident Project Representative;
3. One copy retained in Engineer's file;
4. All remaining copies returned to Contractor for revision and re-submittal;
5. Copy of transmittal letter and/or Submittal Response Summary Sheet sent to Agency. A "No Exceptions Taken" or "Exceptions Noted" submittal will be forwarded to Agency after review per above disposition requirements;
6. Submittal is either: incorrectly annotated; specific comments need to be addressed and incorporated in re-submittal; and/or additional information may be required as noted on the submittal or on a Submittal Response Summary Sheet;
7. Submitted information may not include or address specific item required per the specification as identified on the submittal or on a Submittal Response Summary Sheet;
8. Specific information related to identified item may be required for final approval of submittal; and
9. Resubmission of entire submittal may be required or resubmission of specific item may be required as identified on the submittal or on a Submittal Response Summary Sheet.

D. "Rejected": Returned for Correction:

1. One copy sent to Agency;
2. One copy sent to Resident Project Representative;
3. One copy retained in Engineer's file;
4. All remaining copies returned to Contractor;
5. Copy of transmittal letter and/or Submittal Response sent to Agency;

6. Contractor required to resubmit complete submittal package in accordance with Contract Documents;

7. Submittal does not comply with provisions of Contract Documents as noted on the submittal or on a Submittal Response Summary Sheet; and

8. Resubmission required.

3.04 DISPOSITION OF SAMPLES

A. "No Exceptions Taken": Approved with No Corrections Noted:

1. One sample sent to Agency;

2. One sample sent to Resident Project Representative;

3. One sample retained in Engineer's file;

4. Acknowledgement: Copy of transmittal letter sent to Contractor; and

5. Resubmission not required.

B. "Exceptions Noted": Approved with Corrections Noted:

1. One sample sent to Agency;

2. One sample sent to Resident Project Representative;

3. One sample retained in Engineer's file;

4. Acknowledgement: Copy of transmittal letter sent to Contractor;

5. Work performed or products furnished to comply with exceptions noted in acknowledgement; and

6. Resubmission not required.

C. "Rejected": Returned for Correction:

1. One sample retained in Engineer's file;

2. Remaining samples sent to Contractor for resubmittal and compliance with the Contract Documents as noted in transmittal letter;

3. Copy of transmittal letter sent to Agency; and

4. Resubmission required.

END OF SECTION 01 33 00

SECTION 01 35 43

ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section covers prevention of environmental pollution and damage as the result of construction operations under this Contract and for those measures set forth in other technical requirements of the Contract Specifications. For the purpose of this Specification, environmental pollution and damage are defined as the presence of chemical, physical, or biological elements or agents, which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic, cultural, and/or historical purposes. The control of environmental pollution and damage requires consideration of air, water, and land resources, and includes management of visual aesthetics, noise, solid waste, radiant energy, and radioactive materials, as well as other pollutants.

B. Contractor shall establish and maintain quality control for environmental protection of all items set forth herein. Contractor shall record on Daily Construction Report (per **SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION**) or attachments thereto, any problems in complying with laws, regulations and ordinances, and corrective actions taken.

C. Contractor shall comply with all requirements under terms and conditions set forth in the following environmental permits and consultations authorized for this Project:

1. Mississippi Department of Marine Resources File No. DMR-140197 approved November 25, 2015 (Appendix A)
2. U.S. Army Corps of Engineers File No. SAM-2013-00088-MJF approved April 21, 2016 (Appendix B)
3. Mississippi Department of Environmental Quality File No. WQC-2015010 approved December 1, 2015 (Appendix C)
4. Endangered Species Act (ESA), the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act Consultations with Department of the Interior (DOI), United States Fish and Wildlife Services (USFWS) (Appendix D)
5. ESA Consultation with National Oceanic and Atmospheric Administration (NOAA), Protected Resources Division (PRD), Southeast Regional Office, NOAA Fisheries Service (Appendix E)
6. Magnusson-Stevenson Act (Essential Fish Habitat) Consultation with NOAA Habitat Conservation Division (Appendix F)
7. Marine Mammal Protection Act Consultation with USFWS Natural Resource Damage Assessment and Restoration (NRDAR) Office (Appendix G)
8. Tribal Consultations (Appendix H)
9. National Environmental Policy Act (NEPA) Documentation (Appendix I)
10. Permit Certification Letter (Appendix J)

D. Copies of the environmental permits and consultations are appended to these Contract Documents. The Contractor shall familiarize himself and his personnel and subcontractors with these and any other permits issued for this Project and comply with all requirements under the terms and conditions set forth therein. The Contractor shall be responsible for any fines resulting from violations of construction conditions set forth in the environmental permits. The Contractor shall include all costs for preparation and submittal of required reporting within each relative bid item. It is the Contractor's responsibility to obtain all other relevant federal, state, and local permits at no cost to the Agency. The Contractor shall be responsible for any delays and costs resulting from failure to comply with these and all federal, state, and local environmental protection laws and regulations.

1.02 RELATED SECTIONS

A. Section 01 20 00 – Measurement and Payment Procedures

B. Section 01 29 00 – Payment Procedures

C. Section 01 32 00 – Construction Progress Documentation

D. Section 01 33 00 – Submittal Procedures

E. Section 01 40 00 – Contractor Quality Control

F. Section 35 32 16 – Subtidal Reef

1.03 SUBMITTALS

A. The following submittals shall be submitted by the Contractor in accordance with **SECTION 01 33 00 - SUBMITTAL PROCEDURES**.

B. Environmental Protection Plan - Within ten (10) calendar days after the Notice of Award, the Contractor shall submit in writing an Environmental Protection Plan (EPP). Acceptance of the Contractor's plan shall not relieve the Contractor of its responsibility for adequate and continuing control of pollutants and other environmental protection measures. Acceptance of the plan is conditional and predicated on satisfactory performance during construction. The Engineer reserves the right to require the Contractor to make changes to the EPP or operations if the Engineer determines that environmental protection requirements are not being met. No physical work at the site shall begin prior to acceptance of the Contractor's Plan by the Engineer. The EPP shall include but not be limited to the following:

1. A list of federal, state, and local laws, regulations, and permits concerning environmental protection, pollution control, and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations and permits in addition to any required by this Contract.

2. Methods for protection of features and resources to be preserved within and adjacent to the work areas. The Contractor shall prepare a listing of methods to protect resources needing protection (i.e., upland and submerged vegetation, air and water quality, fish and wildlife, soil, historical, archeological, and cultural resources).

3. Procedures to be implemented to provide the required environmental protection and to comply with the applicable laws and regulations. The Contractor shall provide written assurance that immediate corrective action will be taken to correct pollution of the environment due to accident, natural causes, or failure to follow the procedure set out in accordance with the environmental protection plan.

4. The location of the solid waste disposal facility used for disposal of solid wastes resulting from this Project.

5. Drawings showing locations of any material storage areas, structures, sanitary facilities, fleeting areas, and stockpiles of excess materials for both on shore and off shore facilities.
6. Environmental monitoring plans for the job site, including land, water, air, and noise monitoring.
7. Methods for protecting surface and groundwater during construction activities, including how impacts to water quality will be minimized, including methods for monitoring water quality, best management practices (BMPs), and methods for monitoring and controlling turbidity.
8. Spill Prevention Plan. The Contractor shall specify all potentially hazardous substances to be used on the job site and intended actions to prevent accidental or intentional introduction of such materials into the air, ground, water, wetlands, or drainage areas. The plan shall specify the Contractor's provisions to be taken to meet federal, state, and local laws and regulations regarding labeling, storage, removal, transport, and disposal of potentially hazardous substances.
9. Spill Contingency Plan for cleaning up any spilled or released hazardous, toxic or petroleum material associated with any facilities used on this Project.
10. Work area plan showing the proposed activity in each portion of the area and identify the areas of limited use or non-use. The plan should include measures for marking the limits of use areas.
11. A statement identifying the Contractor's personnel who shall be responsible for implementation of the Environmental Protection Plan. The Contractor's personnel responsible shall report directly to the Contractor's top management and shall have the authority to act for the Contractor in all environmental protection matters.
12. Emergency contact information (office phone number, cell phone number, and e-mail address) for Contractor personnel, including the person responsible for environmental compliance for the Work, the on-site Construction Superintendent, the Project Manager, and other relevant parties.
13. Emergency contact information for the Agency and the Engineer (to be provided at the Preconstruction Meeting).
14. A Certification Letter must be signed acknowledging the Contractor has a copy of all environmental permits applicable to the project and understands the conditions in the permits. The Permit Certification Letter (see Appendix J) shall be attached to the Environmental Protection Plan.

C. Turbidity Monitoring Qualifications - Within ten (10) calendar days after the Notice of Award, the Contractor shall submit qualifications for the person that is designated as the turbidity monitor for the Project. The person must be familiar with both turbidity monitoring and construction techniques, have minimum 5 years experience in turbidity monitoring and have the authority to alter and/or shut-down operations if turbidity levels exceed the compliance standards established.

D. Turbidity Monitoring Reports - During construction, the Contractor shall submit the daily monitoring reports containing the turbidity data gathered with the Daily Construction Reports. Monitoring reports shall be submitted to the Engineer, Construction Quality Control (CQC) System Manager, and other parties as deemed necessary via e-mail on a daily basis. All reports shall contain the following information:

1. Time of day samples were taken;
2. Dates of sampling and analysis;

3. Depth of water body;
4. Depth of each sample;
5. Antecedent water conditions, including wind direction and velocity;
6. Tidal stage and direction of flow;
7. Water temperature;
8. Map indicating sampling locations and direction of flow;
9. Statement describing the methods used in collection, handling, storage, and analysis of the samples;
10. Statement by the individual responsible for implementation of the sampling program concerning the authenticity, precision, limits of detection, calibration of the meter and accuracy of the data; and
11. When samples cannot be collected, include an explanation in the report. If unable to collect sample due to severe weather conditions, include a copy of a current weather report from a reliable, independent source, such as an online weather service.

1.04 SUBCONTRACTORS

A. Assurance of compliance with this section by subcontractors will be the responsibility of Contractor.

1.05 TRAINING OF CONTRACTOR PERSONNEL IN POLLUTION CONTROL

A. Contractor shall train his personnel in all phases of environmental protection. The training shall include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, and installation and care of facilities to insure adequate and continuous environmental pollution control. Quality Control and supervisory personnel shall be thoroughly trained in the proper use of monitoring devices and abatement equipment, and shall be thoroughly knowledgeable of federal, state, and local laws, regulations, and permits as listed in the EPP submitted by Contractor. Quality Control personnel will be identified in the Quality Control Plan submitted in accordance with **SECTION 01 40 00 - CONTRACTOR QUALITY CONTROL**.

1.06 NONCOMPLIANCE

A. The Engineer or CQC System Manager, as defined in **SECTION 01 40 00 - CONTRACTOR QUALITY CONTROL,** will notify the Contractor of any observed noncompliance with the aforementioned federal, state, or local laws or regulations, permits and other elements of the Contractor's EPP. The Contractor shall, after receipt of such notice, inform the Engineer of proposed corrective action and take such action as may be approved. Corrective actions shall be in compliance with the aforementioned federal, state, or local laws or regulations, permits and other elements of the Contractor's EPP. If the Contractor fails to comply promptly, the Engineer may issue an order stopping all or part of the Work until satisfactory corrective action has been taken. No time extensions shall be granted or costs or damages allowed to the Contractor for any such suspension.

B. Monitoring of permit and/or regulation compliance by the Engineer is for the sole benefit of the Agency and shall not relieve the Contractor of the responsibility of knowing and complying with all local, state, and federal laws and regulations concerning the protection of environmental resources, nor does it relieve the Contractor of the responsibility of ensuring that all environmental permit requirements governing the project work are met.

C. The Contractor shall notify the Engineer immediately, in writing, of the occurrence of environmental incidents and also include in the Daily Construction Report in accordance with **SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION**.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 PROTECTION OF ENVIRONMENTAL RESOURCES

A. General - For Contract work, the Contractor shall comply with all applicable federal, state, and local laws and regulations. Contractor shall comply with all permit and consultation requirements (See Appendices A - I). Sections 3.02 – 3.10 include, but not are limited to conditions listed in Appendices A - I). The environmental resources within the project boundaries and those affected outside the limits of permanent work under this Contract shall be protected during the entire period of this Contract. Contractor shall confine his activities to areas defined by the Contract Drawings and Specifications. Prior to construction, Contractor shall stake out 'no work zone' boundary along breakwater alignment. Environmental protection shall be as stated in the following paragraphs. Failure to meet the requirements of these Specifications for environmental protection may result in Work stoppages or termination for default. No part of the time lost due to any such Work stoppages shall be made the subject of claims for extensions of time or for excess costs or damages by Contractor. If Contractor fails or refuses to promptly repair any damage caused by violation of provisions of the Contract Documents, the Agency may have the necessary Work performed and charge the cost thereof to Contractor.

3.02 PERMIT CONDITIONS – CORPS OF ENGINEERS PERMIT

B. In addition to environmental conditions listed in permit and consultation documents listed in 1.01C, contractor shall comply with Corp Permit Conditions presented in this section.

C. General Conditions

1. The Contractor must maintain the activity authorized by the Corps of Engineers Permit in good condition and in conformance with the terms and conditions of the permit. The Contractor is not relieved of this requirement if he abandons the permitted activity, although he may make a good faith transfer to a third party in compliance with the referenced permit. Should the Contractor wish to cease to maintain the authorized activity or should he desire to abandon it without a good faith transfer, he must obtain a modification of the permit from the U.S. Army Corps of Engineers (Corps), which may require restoration of the area.

2. If the Contractor discovers any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, he must immediately notify the Engineer of what he has found. The Engineer will notify the Corps and the Corps 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.

3. If a conditioned water quality certification has been issued for this project, the Contractor must comply with the conditions specified in the certification as special conditions to this permit.

4. The Contractor must allow representatives from the Corps 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 the permit.

D. Special Conditions

1. The Contractor shall comply with all requirements of the Mississippi Department of Environmental Quality 401 Water Quality Certification (WQC2015010) dated December 1, 2015 (Appendix C).

2. The Contractor shall comply with all requirements of the Mississippi Department of Marine Resources Coastal Zone Consistency Determination (DMR-140197) dated November 25, 2015 and modification dated February 5, 2016 (Appendix A).

3. Best management practices shall be implemented to minimize erosion, siltation damage to adjacent wetlands and waters of the United States, and submerged aquatic vegetation. Appropriate erosion and siltation control measures must be used and maintained in effective operating condition during construction. All temporary erosion control features shall remain in place until permanent stabilization measures have been completed and have become fully effective.

4. All excavation and fill activities shall be performed in a manner that minimizes disturbance and turbidity increases in "waters of the United States", wetlands, and submerged aquatic vegetation; and shall be retained in a manner to preclude its erosion into any adjacent wetlands, submerged aquatic vegetation, or waterway**.**

5. The project must be constructed in accordance with the description and plans presented.

6. This Department of Army (DA) permit does not authorize you to take an endangered species, in particular the Piping Plover, the Gulf sturgeon, and sea turtles (leatherback, Kemp's ridley, hawksbill, green, and loggerhead). If a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action reinitiation of consultation with NMFS-PRD and/or USFWS must take place. Therefore, within 1 hour of any of the above mentioned actions taking place the Contractor shall notify the Engineer of the event and/or finding. The enclosed (National Marine Fisheries Service) Formal Consultation Letter (April 11, 2014, F/SER31:JBH); Amendment Consultation Letter (September 26, 2014, F/SER31:JBH; and the undated NMFS Memorandum subject titled "Deepwater Horizon Early Restoration Phase III – Hancock County Marsh Living Shoreline Project: Re-Initiation of ESA Consultation" (undated 2016), contains mandatory terms and conditions to implement reasonable and prudent measures that are associated with your project. Your authorization under this DA permit is conditional upon your compliance with all of the mandatory terms and conditions associated with the enclosed Sea Turtle and Smalltooth Sawfish Construction Conditions, dated March 23, 2006; Measures for Reducing Entrapment Risk to Protected Species, revised May 22, 2012; and USFWS Standard Manatee Conditions for In-Water Work, dated 2011. Lack of compliance with these enclosed conditions would constitute non-compliance with your DA permit. The NMFS is the appropriate authority to determine compliance with the terms and conditions of these requirements (SER-2014-12925).

7. In order for the Coast Guard to give proper notice to the maritime community; the permitted owners, contractors, or responsible party(s) shall contact Coast Guard Sector Mobile Waterways Management Branch (spw), 1500 15th Street, Mobile, AL 36615 at (251) 441-5684 OR (251) 441-5720, 60 days prior to performing the proposed action. The permitted owners, contractors, or responsible party(s) must also install and maintain, at the permitted owners, contractors, or responsible party(s) expense, any safety lights, signs and signals required by the U.S. Coast Guard, through regulations or otherwise, on the permitted owners, contractors, or responsible party(s) fixed structures. To receive a U.S. Coast Guard Private Aids to Navigation marking determination, at no later than 30 days prior to the installation of any fixed structures in navigable waters and/or prior to

installation of any floating private aids to navigation, you are required to contact the Eighth Coast Guard District (dpw), 500 Poydras St. Suite 1230, New Orleans, LA 70130, (504)671-2328 or via email to: D8oanPATON@uscg.mil. For general information related to Private Aids to Navigation please visit the Eighth CG District web site at: http://www.uscg.mil/d8/waterways/PATON.Home.asp

8. The Contractor shall comply with all requirements and stipulations of the United Stated Department of the Interior, Fish and Wildlife Service Review under Section 106 of the National Historic Preservation Act (NHPA)(FWS/R4/DH NRDAR) dated March 14, 2016.

E. Further Information

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

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
(X) Section 10 of the Rivers and Harbors Act 1899 (33 U.S.C. 403).

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 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.

3.03 PRESERVATION AND RECOVERY OF HISTORIC, ARCHEOLOGICAL, AND CULTURAL RESOURCES

A. Inadvertent Discoveries - If, during construction activities, Contractor observes items that may have historic or archeological value, such observations shall be reported immediately to Engineer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. Contractor shall cease all activities that may result in the destruction of these resources and shall prevent his employees from trespassing on, removing, or otherwise damaging such resources.

B. Claims for Downtime due to Inadvertent Discoveries - Upon discovery and subsequent reporting of a possible inadvertent discovery of cultural resources, the Contractor shall seek to continue work well away from, or otherwise protectively avoiding, the area of interest, or in some other manner that strives to continue productive activities in keeping with the Contract. Should an inadvertent discovery be of the nature that substantial impact(s) to the work schedule are evident; such delays shall be coordinated with the Engineer.

C. Contractor shall be provided maps showing “no go zones” to be avoided during construction.

D. Environmental Protection Plan shall include training of the construction crews in the identification of potential cultural resources.

E. The Environmental Protection Plan shall provide construction crews procedures to be followed if cultural resources are identified.

3.04 PROTECTION OF WETLANDS

A. The Contractor shall protect all wetland adjacent to the work area from his operations. There shall be no storage of tools, materials (e.g., geotextile, rock) within wetlands, along the shoreline in the littoral zone, or elsewhere within waters of the state except as specified in the project Specifications and/or Drawings.

3.05 PROTECTION OF LAND RESOURCES

A. Before beginning any construction, Contractor shall identify all land resources to be preserved within Contractor's work area. Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and landforms outside of the project area without special permission from Engineer. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs.

B. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, the markers shall be visible. The Contractor shall convey to his personnel the purpose of marking and/or protection of all necessary objects.

C. Solid wastes (excluding clearing debris) shall be placed in containers that are emptied on a regular schedule. All handling and disposal shall be conducted to prevent contamination. The Contractor shall transport all solid waste off the properties within the project limits and dispose of it in compliance with federal, state, and local requirements for solid waste disposal. Discarded materials other than those that can be handled in the solid waste category will be handled as directed by the Engineer.

D. Fuel dispensers shall have a 4-foot square, 16-gauge metal pan with borders banded up and welded at corners right below the bib. Edges of the pans shall be 8-inch minimum in depth to ascertain that no contamination of the ground or water takes place. Pans shall be cleaned by an approved method immediately after every dispensing of fuel and wastes disposed of offsite in an approved area. Contractor shall select and implement controls and procedures to minimize leaking or spilling of fuels during fueling of vehicles or equipment. Should any spilling of fuel occur the Contractor shall immediately recover the contaminated ground and/or water and dispose of it offsite in an approved area.

E. Chemical waste shall be stored in corrosion resistant containers, removed from the work area and disposed of in accordance with Federal, state, and local regulations.

F. Discarded materials other than those that can be included in the solid waste category shall be handled as directed.

3.06 PROTECTION OF WATER RESOURCES

A. The Contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters. The Contractor shall conduct his operations in a manner to minimize erosion and turbidity, and shall conform to all water quality standards as required by the permits and all other relevant federal, state and local regulatory criteria. Special management techniques as set out below shall be implemented to control water pollution by the listed construction activities that are included in this Contract. In the event of unforeseen conditions, the Engineer may require the use of control features or methods other than those indicated or proposed by the Contractor.

B. No creosote material shall be used in construction.

C. No construction debris, refuse, or unauthorized fill material shall be allowed to enter coastal wetlands or waters.

D. Turbidity Control

1. Turbidity shall be monitored and conducted in accordance with permit requirements, Techniques described below, and in the approved EPP:

a. Turbidity Threshold Value - Turbidity shall not exceed a value of 50 nephelometric turbidity units (NTUs) above background outside of the limits of a 750 foot mixing zone. If a turbidity reading is more than 50 NTUs above the threshold reading, this will be a trigger to evaluate construction activities. Background reading shall mean a turbidity measurement in an area unimpacted by these construction activities.

b. If a turbidity measurement exceeds the standard established in paragraph a, the turbidity will be measured at the same location after 4 hours. If the turbidity measurement is confirmed, the Contractor shall implement BMPs as described in the approved EPP.

c. The Contractor shall perform turbidity monitoring on a frequency established in the approved EPP, but not less than daily.

d. Turbidity monitoring will resume on the approved schedule after BMPs are implemented. If the turbidity standard is exceeded after BMPs are implemented, the Contractor shall cease operations associated with the excessive turbidity or implement additional BMPs to reduce resuspension of sediment.

2. Delays in work due to the fault or negligence of the Contractor or the Contractor's failure to comply with the required turbidity requirements shall not be compensable.

E. Washing Water

1. Wastewaters directly derived from construction activities shall not be allowed to enter surface water areas.

F. For any land based operations, if any, the Contractor shall provide siltation fences, hay bales, and other means and materials to prevent the pollution streams, canals, lakes, ditches, rivers, and other water improvements including on-site retention containers/areas from siltation from leakage, erosion, run off, and other construction activities. Under no circumstances will material delivery trucks be cleaned out on Agency property. The Contractor is responsible for arranging for proper clean out facilities.

G. Oil and Fuel Spill Prevention

1. Contractor will prevent oil or other hazardous substances from entering the ground, drainage, or local bodies of water. Contractor will provide containment, diversionary structures, or equipment to prevent discharged oil from reaching a watercourse. Contractor will take immediate action to contain and clean up any spill of oily substances, petroleum products, and hazardous substances. Contractor will immediately report such spills to the Engineer. Contractor will provide one or more of the following preventive systems at each oil storage site. The provision of such preventive systems shall be approved by the Engineer prior to tank installation and use.

    a. All tanks located within the project area shall have secondary containment.

    b. Absorbent materials shall be capable of absorbing the contents of the largest single tank.

2. Oil or Fuel Storage Tank Installation: All storage tank installation shall be constructed so that a secondary means of containment is provided for the entire contents of the tanks installed. Dikes and other structures shall be positioned or located so as to provide a secondary containment identical to that required for non-mobile storage tanks. Storage tanks shall be located where they will not be subject to flooding or washout. When it is determined that the installation of containment structures or equipment to prevent discharged oil from reaching a watercourse is not practicable, a clear demonstration of such impracticability shall be submitted to the Engineer for approval prior to installation or use of the storage tank. The following shall also be provided to the Engineer for approval prior to installation use of the storage tank:

    a. An oil spill contingency plan, either contained within or separate from the EPP.

    b. A written certification of commitment of manpower, equipment, and materials required to expeditiously control and remove the discharge oil.

3. Liabilities: Contractor shall be liable for the damage caused by oil or fuel spills when it can be shown that the oil or fuel was discharged as a result of negligence or willful misconduct. The penalty for failure to report the discharge of oil or fuel shall be in accordance with state and federal laws.

3.07 PROTECTION OF FISH AND WILDLIFE RESOURCES

A. Contractor shall keep construction activities under surveillance, management, and control to minimize interference with, disturbance to, and damage of fish, shellfish beds, migratory birds and nests and wildlife. Species that require specific attention along with measures for their protection will be listed in Contractor's EPP prior to the beginning of construction operation. Project construction activities will be subject to a stop work order if a protected species is observed in the project footprint. Work will continue once the species leaves the area.

B. In the event that a threatened or endangered species is encountered because of construction activities, the Contractor shall cease all work and notify the Engineer. The Engineer will provide emergency contact information at the Pre-Construction Meeting.

C. Placement of signage pilings (if required) will be achieved by “driving” in lieu of “jetting” to reduce the disturbance of bottom sediments and bottom-dwelling organisms.

D. If any sea turtles are found to be present in the immediate project area during restoration activities, construction will be halted until species moves away from project.

E. Precautionary measures will include construction personnel education, proper use and selection of siltation barriers, use of “no wake/idle” speeds at all times while in the construction area or other shallow water areas, ceasing operation of construction equipment immediately if a sea turtle is seen within 50-ft radius of equipment, and reporting of turtle injuries.

F. When water temperatures are above 68F, the Contractor shall follow conditions a, b, c, and d of the *Standard Manatee Conditions for In-water Work* (http://myfwc.com/media/415448/manatee_stdcondin_waterwork.pdf). The Contractor shall report any collisions to the U.S. Fish and Wildlife Service (USFWS) or State trust resource agency. Temporary signs, if necessary, can be modified from the Florida Fish and Wildlife Conservation Commission’s template to reflect local conditions.

G. If Gulf sturgeon is observed in the project footprint, the Contractor shall cease all construction activities and may resume work once the species leaves the area.

H. If construction activities occur in the May to October window, the Contractor will be required to adhere to special conditions specified in NOAA’s Marine Fisheries Services’ (NMFS’s) *Sea Turtle and Smalltooth Sawfish Construction Conditions*, dated March 23, 2006 (http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/sea_turtle_and_smalltooth_sawfish_construction_conditions_3-23-06.pdf).

I. The Contractor shall follow the requirements outlined in *Measures for Reducing Entrapment Risk to Protected Species*, revised May 22, 2012 (http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/entrapment_bmps_final.pdf).

J. If a pre-construction nesting survey (performed by the Owner) for migratory birds and raptors shows evidence of nesting, the Contractor will be required to minimize noise and vibration near areas where foraging or resting migratory birds are encountered and limit construction to daylight hours only.

K. Work barges will be moored for overnight and weekends/holidays in areas where previous impacts have occurred (deployment areas).

L. All equipment to be used during the project, including personal gear, will be inspected and cleaned such that there is no observable presence of mud, seeds, vegetation, insects and other species.

M. Contractor shall implement the requirements set forth in the permits as described in Appendices A, B and C. Measures identified in the permits must be included in the Contractor’s EPP prior to the beginning of construction operations.

N. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service’s Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization at 1-888-806-1674.

O. If oyster shell is approved for use on this project, shell shall be obtained from commercial vendors that did not or will not impact the aquatic environments. Additionally, oyster cultch and vegetation will be treated or inspected to remove “non-target” species.

3.08 PROTECTION OF AIR RESOURCES

A. The Contractor shall keep construction activities under surveillance, management, and control to minimize pollution of air resources. All activities, equipment, processes and work operated or performed by the Contractor in accomplishing the specified construction shall be in strict accordance with the applicable air pollution standards of the State of Mississippi and all Federal emission and performance laws and standards.

B. Dust Control: For any land based operations, keep dust down at all times, including during nonworking periods. Sprinkle or treat, with dust suppressants, the soil at any staging areas, haul roads, and other areas disturbed by operations. Strictly adhere to applicable environmental regulations for dust prevention.

C. The Contractor shall minimize Green House Gas Emissions:

1. Shut down idling construction equipment, if feasible.
2. For any land based operations, locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
3. Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
4. Encourage the use of alternative fuels or power sources for generators at construction sites, such as propane or solar power, or use electrical power where practicable.
5. Contractor will minimize air pollution from the construction activities.
6. Burning of waste materials, rubbish, or other debris will not be permitted on or adjacent to the Site.
7. Tanks and containers of fuels and related products shall be controlled to minimize the emission of volatile organic compounds.

3.09 PROTECTION FROM SOUND INTRUSIONS

A. The Contractor shall keep construction activities under surveillance and control to minimize damage to the environment by noise and to comply with all federal, state, and local noise ordinances. The use of horns, bells or the use of whistle signals shall be held to a minimum necessary in order to ensure as safe and as quiet an operation as possible.

3.10 POST CONSTRUCTION CLEANUP

A. The Contractor shall clean up any area(s) used for construction to the satisfaction of the Engineer and Agency.

3.11 MAINTENANCE OF POLLUTION CONTROL FACILITIES

A. The Contractor shall, at his expense, provide routine maintenance of permanent and temporary erosion control features until the Project is completed and accepted. If such erosion control features must be reconstructed due to the Contractor's negligence, carelessness, or in the case of temporary erosion control features, failure by the Contractor to install permanent erosion control features as scheduled, such replacement shall be on the Contractor's expense.

B. If the Contractor through any construction activity degrades, destroys, or impacts the ground cover on any adjoining land or marsh areas shall be fully repaired and re-vegetated at the Contractor's expense.

END OF SECTION 01 35 43

SECTION 01 40 00

CONTRACTOR QUALITY CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. This section covers the establishment and operation of the Contractor's Quality Control (CQC) system. The Contractor shall coordinate activities and manage resources to construct the project conforming to the contract, on time and within budget.

B. Separate payment will not be made for providing and maintaining an effective CQC program, and all costs associated therewith shall be included the applicable prices contained in the Bid Form.

1.02. RELATED SECTIONS:

A. Section 01 20 00 – Measurement and Payment Procedures

B. Section 01 31 00 – Project Management and Coordination

C. Section 01 32 00 – Construction Progress Documentation

D. Section 01 33 00 – Submittal Procedures

E. Section 01 77 00 – Closeout Procedures

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. ASTM D-370 - Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

2. ASTM E-329 - Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.

1.04 SUBMITTALS

A. The following submittals shall be submitted by the Contractor in accordance with **SECTION 01 33 00 – SUBMITTAL PROCEDURES.**

1. Quality Control Plan - Within twenty (20) calendar days of Notice of Award, the Contractor shall submit the draft Contractor Quality Control (CQC) Plan for review and acceptance by MDEQ. The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. MDEQ will consider an interim plan for the first 30 days of operation. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

2. Registered Surveyor Qualifications - The Contractor shall submit the name and credentials of the third party Mississippi Registered Surveyor consultant and personnel who will be performing the surveying portions of the contract work for Engineer approval. The company and personnel shall show experience in this type of work. The submittal must provide the name and type of equipment used for the Project. All work shall be overseen by a registered professional surveyor.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in accordance with these specifications. The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both onsite and offsite, and shall be keyed to the proposed construction sequence. The site project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Engineer and/or MDEQ for non-compliance with quality requirements specified in the Contract. The site project superintendent shall mean the individual with the responsibility for the overall management of the project, including quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to MDEQ, and shall be responsible for all construction and construction related activities at the site.

3.02 QUALITY CONTROL PLAN

A. Content of the CQC Plan - The CQC Plan shall include, as a minimum, the following to cover all construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents:

1. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall perform his duties in tandem with those of report to the Project superintendent and with direct reporting responsibility to an officer of the prime Contractor and/or an individual not directly responsible for production. Additionally, a qualified Mississippi Registered Surveyor is required for all pre-construction, payment surveys, and as-built surveys.

2. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.

3. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the Contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to MDEQ.

4. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with **SECTION 01 33 00 - SUBMITTAL PROCEDURES**.

5. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. Laboratory facilities approved by MDEQ shall be used.

6. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

7. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

8. Reporting procedures, including proposed reporting formats.

9. A list of the definable features of work associated with this project. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the Coordination Meeting.

B. Acceptance of CQC Plan

1. Acceptance of the Contractor's CQC plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. Engineer reserves the right to require the Contractor to make changes to his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

C. Failure to Submit Acceptable CQC Plan

1. If the Contractor fails to submit an acceptable draft CQC plan within the time prescribed, construction SHALL NOT start. If an acceptable final plan is not submitted within a reasonable time, as determined by the Engineer, the Engineer may order the Contractor to stop work until such time as an acceptable plan has been submitted. Any such stop work order shall not be considered a suspension of work for an unreasonable period of time under Section 38 of the Standard Contract Terms and Conditions of MDEQ (Attachment F) and the Contractor shall not be entitled to pay adjustments as a result of the stop work order. Failure to comply with the above requirements within the time prescribed will be considered a condition endangering the performance of the Contract and may be considered grounds for termination of the Contract in accordance with Section 39 "TERMINATION" in the Standard Contract Terms and Conditions of MDEQ (Attachment F).

D. Notification of Changes

1. After acceptance of the CQC Plan, the Contractor shall notify MDEQ in writing of any proposed change. Proposed changes are subject to acceptance by MDEQ.

3.03 COORDINATION MEETING

A. After award of the Contract, but before physical work starts and before the acceptance by MDEQ of the CQC Plan, the Contractor shall meet with MDEQ and discuss the Contractor's quality control system. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with MDEQ's Quality Assurance. Minutes of the meeting shall be prepared by MDEQ and signed by both the Contractor and MDEQ. The minutes shall become a part of the Contract file. There may also be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.04 QUALITY CONTROL ORGANIZATION

A. General

1. The requirements for the CQC organization are a CQC System Manager and sufficient number of additional qualified personnel to ensure safety and contract compliance. The Safety and Health Manager shall receive direction and authority from the CQC System Manager and shall serve as a member of the CQC staff. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the Work and have complete authority and responsibility to take any action necessary to ensure Contract compliance. The CQC staff shall be subject to acceptance by MDEQ. The Contractor shall provide adequate office space, filing systems, and other resources as necessary to maintain an effective and fully functional CQC organization.

2. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be promptly furnished to the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to MDEQ.

B. CQC System Manager

1. The Contractor shall identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall have a minimum of eight (8) years of experience in related work shall have completed the course entitled "Construction Quality Management for Contractors" or equivalent. The course is periodically offered at the Mobile District United States Army Corps of Engineers.

2. This CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. The CQC System Manager shall be assigned as System Manager but may have duties as project superintendent in addition to quality control. An alternate for the CQC System Manager, having a minimum of three (3) years of experience, shall be identified in the plan to serve in the event of the primary CQC System Manager absence.

C. CQC Personnel

1. A staff shall be maintained under the direction of the CQC System Manager to perform all CQC activities. The staff must be of sufficient size to ensure adequate CQC coverage of all work phases, work shifts, and work crews involved in the construction. These personnel may perform other duties, but must be fully qualified by experience and technical training to perform their assigned CQC responsibilities and must be allowed sufficient time to carry out these responsibilities. The CQC plan will clearly state the duties and responsibilities of each staff member.

D. Organizational Changes

1. The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to MDEQ for acceptance.

E. Third Party Registered Surveyor Consultant

1. The Contractor shall obtain a qualified independent Mississippi Registered Surveyor to perform all layouts of the work, payment surveys, and as-built surveys required to carry out the Project Work. The Registered Surveyor should have at least 10 years of relevant bathymetric survey experience. Relevant experience shall include hydrographic and topographic surveying of soft sediments and rock structures in accordance with the U.S. Army Corps of Engineer standards.

2. The Registered Surveyor shall certify all field notes, computations, and all other records relating to surveys or layouts of the Work.

3. The Registered Surveyor must have appropriate equipment (i.e., heave, pitch, and roll compensator) to be able to work within inclement weather conditions.

3.05 CONTROL

A. Contractor Quality Control is the means by which the Contractor ensures that the construction, including that of subcontractors and suppliers, complies with the requirements of the Contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of the construction work as follows:

1. Preparatory Phase: This phase shall be performed prior to beginning work on each definable feature of Work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that portion of the Work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by MDEQ personnel until final acceptance of the Work.

b. A review of the contract drawings.

c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.

d. Review of provisions that have been made to provide required control inspection and testing.

e. Examination of the Work area to assure that all required preliminary Work has been completed and is in compliance with the Contract.

f. A physical examination of required materials, equipment, and sample Work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

g. A review of the appropriate activity hazard analysis to assure safety requirements are met.

h. Discussion of procedures for controlling quality of the Work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

i. A check to ensure that the portion of the plan for the Work to be performed has been accepted by MDEQ.

j. Discussion of the initial control phase.

k. MDEQ shall be notified at least 24 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet Contract Specifications.

2. Initial Phase: This phase shall be accomplished at the beginning of a definable feature of Work. The following shall be accomplished:

a. A check of Work to ensure that it is in full compliance with Contract requirements. Review minutes of the preparatory meeting.

b. Verify that facilities adequacy of controls to ensure full Contract compliance. Verify required control inspection and testing equipment are available and comply with testing standards.

c. Check test instruments calibration data against certified standards.

d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, are prepared in accordance with Contract requirements.

e. Results of tests and monitoring instruments, both passing and failing, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by Engineer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of test performed by an offsite or commercial test facility shall be provided directly to the Engineer. Failures to submit timely test reports as stated, or maintain adequate monitoring testing may result in nonpayment for related Work performed and disapproval of the test facility for this contract.

f. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards.

g. Resolve all differences.

h. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.

i. MDEQ shall be notified at least 24 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.

j. The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3. Follow-up Phase: Daily checks shall be performed to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of Work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of Work which may be affected by the deficient Work. The Contractor shall not build upon nor conceal non-conforming work.

B. Additional Preparatory and Initial Phases: Additional preparatory and initial phases shall be conducted on the same definable features of Work if: the quality of on-going Work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if Work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.06 COMPLETION INSPECTION

A. Punch-Out Inspection: Near the end of the Work, or any increment of the Work, the MDEQ or CQC Manager shall conduct an inspection of the Work. A punch list of items which do not conform to the approved Drawings and Specifications shall be prepared and included in the CQC documentation, as required by paragraph 3.07 DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify MDEQ that the Work is ready for “Pre-Final” inspection.

B. Pre-Final Inspection: The Engineer may perform a Pre-Final Inspection to verify that the Work is complete. The Contractor’s CQC Manager shall ensure that all items identified as needing completion or corrections have been addressed before requesting a Final Inspection. Any items noted on the Pre-Final Inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required shall be accomplished within the time slated for completion of the entire work or any particular increment thereof if the Project is divided into increments by separate completion dates.

C. Final Acceptance Inspection: The Contractor’s Quality Control Inspection personnel, plus the superintendent or other primary management person, and Engineer’s representative shall be in attendance at this inspection. Additional MDEQ personnel and other agencies may also be in attendance. The Final Acceptance Inspection will be formally scheduled by the Engineer based upon results of the Pre-Final inspection. Notice shall be given to the Engineer at least 14 days prior to the Final Acceptance Inspection and shall include the Contractor’s assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the Contract, will be complete and acceptable by the date scheduled for the Final Acceptance Inspection. Failure of Contractor to have all Work acceptably complete for this inspection will be cause for the Agency to bill the Contractor for the Agency’s additional inspection cost in accordance with **SECTION 01 77 00 CLOSEOUT PROCEDURES**.

3.07 DOCUMENTATION

A. The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be documented as described in **SECTION 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION**.

3.08 NOTIFICATION OF NONCOMPLIANCE

A. MDEQ will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the Work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, MDEQ may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

END OF SECTION 01 40 00

SECTION 01 52 00

CONSTRUCTION FACILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall furnish, install and maintain temporary field office and storage space, subsistence and communication infrastructure for MDEQ and the Engineer for the entire duration of the construction project. The MDEQ/Engineer office space will be located on the Construction Barge.

1.02 REQUIREMENTS FOR FACILITIES

A. The construction of the facilities shall be as follows:

1. Structurally sound, weather tight, with floors raised above flood stage.

2. At Contractor's option, portable or mobile buildings may be used. Mobile trailers may be used, when approved by the MDEQ, and shall be modified for office use.

3. A minimum area for Engineer/MDEQ office space on barges shall be the same square footage as those used by Contractor management staff.

4. Provided with all utilities such as drinking water, electricity, wastewater collection/disposal, telephone service, and internet service.

B. Furnishings

1. The MDEQ/Engineer office space shall be large enough to accommodate one person and include the following:

a. One (1) Office Desk, and two office chairs.

b. Metal file cabinets for document storage.

c. A secure locking door keyed to the MDEQ/Engineer.

d. Electricity, interior lights and exterior door lights for the duration of the project.

e. Internet access for the duration of construction period.

f. Bookshelves for storing manuals and other documents.

g. Access to a refrigerator.

h. Access to potable drinking water.

i. Wastebasket.

j. Access to fire extinguisher.

k. Access to first aid kit.

l. Automatic heating and cooling equipment sufficient to maintain office temperatures above 70 degrees in the winter and below 78 degrees in the summer. Heating and cooling equipment shall be reasonably quite when operating.

m. Access to a wash room with running water and a working sink and toilet.

n. Proper wastewater disposal.

2. Monthly meetings shall be held at the Contractor Field Office which shall be adequately sized to accommodate typical administrative and record keeping activities and located within 25 miles of construction area. At a minimum, the Contractors field office shall include the following::

a. Area adequate for administrative and record keeping activities.

b. Electricity, lighting and temperature control.

c. Telephone service.

d. A meeting room, table and chairs large enough to accommodate monthly progress meetings.

C. Services

1. The Contractor shall make all provisions and pay all installation fees, permitting fees, and other costs for the Field Office in order to provide power, water, sewer, telephone service, internet service, and exterior lights at the project site.

PART 2 - PRODUCTS

2.01 MATERIALS, EQUIPMENT, FURNISHINGS

A. The materials, equipment and furnishings of the facilities may be new or used, but must be serviceable, adequate for required purpose, and must not violate applicable codes or regulations.

PART 3 - EXECUTION

3.01 MAINTENANCE AND CLEANING

A. Contractor shall maintain office in first class condition for the duration of the Project. Furnish, replace and replenish light bulbs, toilet paper, paper towels, soap and other items required to maintain the office in a clean condition

B. Wash floor and clean washroom fixtures at least once each week. Wash windows when needed or when requested by MDEQ/Engineer. Sweep floor and dust furnishings daily.

END OF SECTION 01 52 00

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 REQUIREMENTS

A. Comply with requirements stated in the Agreement (Section 00 52 15), the Standard Contract Terms and Conditions (Attachment F of Invitation for Bids) and all Specifications of these Contract Documents.

1.02 RELATED SECTIONS

A. Section 01 33 00 –Submittal Procedures

B. Section 01 32 23 Surveys and Layout Data

C. Section 01 40 00 – Contractor Quality Control

1.03 CLOSEOUT PROCEDURES

A. Contractor will comply with requirements stated in these specifications for administrative procedures in closing out the Work.

B. Contractor will submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's inspection.

C. Contractor will provide submittals to Engineer/MDEQ that are required by governing or other authorities.

D. Contractor will submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.04 FINAL INSPECTION AND REMOVAL OF ALL CONSTRUCTION EQUIPMENT AND ANCILLARY FACILITIES.

A. When Contractor considers the Work is complete, he or she shall submit written certification that:

1. Contract Documents have been reviewed.

2. Work has requested for a final inspection and completed punch list in accordance with Paragraph 3.06 of Section 01 40 00 – CONTRACTOR QUALITY CONTROL.

B. When the Engineer finds that the Work is acceptable under the Contract Documents, he shall request the Contractor to make closeout submittals in accordance with Section 1.05 below.

C. In the event that the Final Inspection concludes that the construction progress does not meet completion status, the Contractor will be required to reimburse the MDEQ for all costs associated with the Final Inspection inclusive of payroll expenses of any engineer or regulatory agency staff involved, equipment rentals and any travel related expenses. Contractor may pay for these additional expenses directly to the MDEQ or have the expenses deducted from the final payment.

1.05 CONTRACTOR'S CLOSEOUT SUBMITTALS

Contractor will provide as closeout submittals the following:

A. Evidence of Payment and Release of Liens.

B. Final inspection reports by all regulatory agencies demonstrating the agencies' final approval.

C. At Contract close-out, deliver three (3) sets of Record Documents to MDEQ. Each set shall consist of a hard copy and an electronic copy of Record Documents.

D. Accompany submittal with transmittal letter in triplicate containing:

1. Date;

2. Project title and number;

3. Contractor's name and address;

4. Title and number of each Record Document; and

5. Signature of Contractor or his authorized representative.

1.06 PROJECT RECORD DOCUMENTS

A. Final Payment will not be made to Contractor until Contract Record Documents in accordance with Section 1.05 above are submitted and approved.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION 01 77 00

SECTION 35 32 16

SUBTIDAL REEF

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall furnish all labor, equipment, materials, and incidentals necessary to install the subtidal reef as described herein and in the Construction Drawings. The Work shall include, but not necessarily be limited to, purchase and installation of stone in Heron Bay as shown in the Construction Drawings.

1.02 RELATED SECTIONS

A. Section 01 20 00 - Measurement and Payment Procedures

B. Section 01 32 23 - Surveys and Layout Data

C. Section 01 33 00 - Submittal Procedures

D. Section 01 35 43 - Environmental Protection

1.03 REFERENCES

A. ASTM International:

1. ASTM C33 - Standard Specification for Concrete Aggregates

2. ASTM C97 - Standard Test Methods for Absorption and Bulk Specific Gravity Dimension Stone

3. ASTM C127 - Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate

4. ASTM C131 - Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

5. ASTM C295 - Standard Guide for Petrographic Examination of Aggregates for Concrete

6. ASTM D535-12 - Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

7. ASTM D75/D75M-14 - Standard Practice for Sampling Aggregates

8. ASTM D1141-98(2013) - Standard Practice for the Preparation of Substitute Ocean Water

9. ASTM D4791 - Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate

10. ASTM D5313/D5313M-12(2013) - Standard Test Method for Evaluation of Durability of Rock for Erosion Control Under Wetting and Drying Conditions

11. ASTM D5519-07 - Standard Test Methods for Particle Size Analysis of Natural and Man-Made Riprap Materials

1.04 SUBMITTALS

A. The following submittals shall be submitted in accordance with SECTION 01 33 00 - SUBMITTAL PROCEDURES:

B. Construction Work Plan: Prior to the start of construction, the Contractor shall provide a Construction Work Plan containing, at a minimum, the following:

1. Work sequencing and equipment:

a. Order and sequence in which work shall be performed.

b. Number, types, and capacity of equipment to be used.

c. Hours of operation.

d. Estimated schedule.

e. Procedures for placing materials and confirming thicknesses and grades are met.

2. Methods, procedures, and equipment addressing the following:

a. Installation method of stone.

b. Incremental loading to compress the existing foundation.

c. Survey methods for control of work and progress surveys.

d. Verification of design template.

e. Consolidation Monitoring and Output Format.

C. Source Material

1. At the pre-construction meeting, the Contractor shall submit quarry records including, but not limited to, the history of the quarry and the capability to produce the material to the required specifications.

2. The Contractor shall submit compliance test results at the time and tonnage limits specified in Part 2 of this Specification.

D. Quality Control Surveys: During construction, the Contractor shall provide interim surface elevation surveys (progress surveys and progress payment surveys) per SECTION 01 32 23 - SURVEYS AND LAYOUT DATA.

E. Daily Progress Report: The Contractor shall prepare and maintain a daily report of operations and furnish copies by noon the following day or as requested by the Agency as described in SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION.

F. Stop Work

1. The Agency and/or Engineer may elect to stop work activities at the Site in the event that the above submittals have not been submitted or are not of acceptable quality (as determined by the Agency or Engineer) and per the schedules specified herein in accordance with SECTION 01 33 00 - SUBMITTAL PROCEDURES. Any delays related to submittal approvals shall not allow the construction schedule to be extended and shall not be reason to increase the Contract price.

1.05 QUALITY CONTROL

A. The Contractor shall perform quality control surveys as specified in Paragraph 1.04 (C).

PART 2 - PRODUCTS

2.01 STONE MATERIALS

A. The Contractor shall make arrangements, pay royalties, and secure the permits for procurement, furnishing, and transporting stone. The Contractor shall vary the quarrying, processing, loading, and placing operations to produce the sizes and quality of stone specified. If the stone being furnished by the Contractor does not meet the requirements as specified herein, the Contractor shall furnish, at no additional cost to the Agency, other stone meeting these requirements.

B. Before stone is produced from a source for completion of the work under this Contract, the source of stone shall be approved by the Engineer and Agency. Approval of a stone source shall not be construed as a waiver of the right of the Agency to require the Contractor to furnish stone that complies as specified herein. Materials produced from localized areas, zones, or strata will be rejected when these materials do not comply as specified herein.

C. If requested, stone samples shall be provided to the Agency for testing. Stone from a proposed source or sources shall be tested by the Contractor for quality compliance as described below. Copies of the compliance testing for each gradation shall be provided to the Engineer for the initial review, and for each additional 20,000 tons before installation.

D. During the construction of the breakwater, the Contractor shall communicate closely with the Agency and Engineer on ordering and shipping of stone materials.

E. Stone shall meet the following minimum test requirements:

		TEST REQUIREMENTS
TEST	TEST METHOD	REQUIREMENTS
Specific Gravity (Bulk SSD)	ASTM C127	(2.60) minimum (2.75) maximum
Absorption	ASTM C127	(3.0%) average
Wetting and Drying	ASTM D5313[(1)]	No fracturing [(2)]
Abrasion loss	ASTM C131, ASTM D535-12	(40%) max. loss[(3)]
[(1)] The testing procedure used in ASTM D5313 shall include testing each sample in potable and in salt water prepared in accordance with ASTM D1141.		
[(2)] Weakening and loss of individual surface particles is permissible unless bonding of the surface grains softens and causes general disintegration of the surface material.		
[(3)] Stone that has a loss greater than the specified limit will be accepted if the Contractor demonstrates that the stone has a satisfactory service record that exceeds 10 years.		

F. In addition to the above tests, the stone shall be subjected to a Petrographic and X-ray Diffraction analysis in accordance with ASTM C295. The stone shall not contain expansive clays. Test procedure for Petrographic and X-ray Diffraction is performed according to ASTM C295, except for the following:

1. A colored microscope photograph shall be made of each stone type, including igneous, sedimentary, or metamorphic and the individual minerals within the stone type shall be identified by labels and arrows upon the photograph.

2. Detailed macroscopic and microscopic descriptions shall be made of the stone to include the entire mineral constituents, individual sizes, their approximate percentages and mineralogical histories. A description of stone hardness, texture, weathering, and durability factors shall be discussed. Pictures of the source wall within the quarry to show any layering and lithology shall be included.

G. A written summary of the suitability of the stone for the subtidal reef based on the Petrographic and X-ray diffraction tests and the abrasion loss (L.A. Rattler) shall be presented in the final laboratory report on stone quality.

H. The required gradations for stone to be used are as follows:

Size (inches)	Percent Passing (%)
4	100
3.5	90 – 95
2.5	20 – 60
1	0 – 10

2.02 SOURCE QUALITY CONTROL

A. Testing and analysis of materials shall be performed in accordance with applicable ASTM standards

B. When tests indicate that materials do not meet specified requirements, the Contractor shall remove and legally dispose of the unsuitable material off site and replace with suitable material, at no cost to the Agency.

PART 3 - EXECUTION

3.01 GENERAL

A. The Contractor shall perform a pre-construction survey via a third-party independent surveyor licensed in the State of Mississippi. The Contractor shall verify all existing elevations and grades prior to the start of construction. The Contractor shall establish a baseline and provide a layout for review before starting placement operations.

B. The Contractor will not be allowed to dredge access channels in order to construct the subtidal reef. In emergency situations (as determined by the Engineer and Agency), the Contractor, after approval from the Engineer and Agency, may dredge to remove equipment from the site, but must backfill the area after immediately following emergency response activities.

C. The Contractor shall construct the subtidal reef to the elevations and alignments shown on the Construction Drawings within the construction tolerances stated in these Specifications. The stone materials shall be placed and the surfaces shall be measured at adequate intervals to accurately delineate the surfaces of the layers. Stone shall be placed so that a well-graded mass is produced with a minimum practicable percentage of voids. The stonework shall be finished to the minimum lines and grades shown on the Construction Drawings, within the tolerances specified herein and as directed by the Engineer. Stone shall be placed evenly to compress the existing foundation. Unless the Engineer approves alternate construction methods in writing, all stone on slopes shall be placed in horizontal layers from the toe of the slope up toward the crest.

D. The height of the stone installation drop shall not be greater than that which may cause damage to the stone itself. When allowable drop heights are developed on site, between the Agency and Contractor, these heights shall be based on actual performance. The Contractor shall maintain the stone layer until accepted and if material is displaced or the surface damaged, replacement shall be made to the indicated lines and grades, at the Contractor's expense. Final surfaces of the finished stone shall be uniform, and shall follow the indicated lines and grades without continuous under- or over-building.

E. Material that escapes or is lost while loading, transporting, or placing stone, or which is deposited in areas other than shown on the Construction Drawings or approved in writing by the Agency or Engineer, shall be removed and re-deposited at the Contractor's expense and at no additional cost to the Agency.

3.02 INSTALLATION

A. The Contractor shall place the stone in a defined sequence that should be, in general, from east to west and then north to south. Each grid cell shall be a minimum of 18,000 square feet and not more than 22,000 square feet unless otherwise approved by the Agency in writing.

B. Additional reef stone (based on quality control surveys and as directed by the Engineer) shall be placed as needed to meet thicknesses required.

3.03 SURVEYS

A. All surveys shall be conducted in accordance with SECTION 01 32 23 - SURVEYS AND LAYOUT DATA.

3.04 TOLERANCES

A. Deviations in rock layer thicknesses from the design value shall not be greater than plus or minus 0.25 foot. Deviations below the design elevations shown on the Construction Drawings will be filled in accordance with this SECTION until either crest elevation or allowable deviation is achieved. The Contractor may be required to probe using a metal rod to determine if stone was placed over an area without revisiting that grid cell. The goal of this Work is to create an undulating surface with a 0.25-foot- to 0.75-foot-thick rock substrate, without exceeding the estimated tons of stone in the bid schedule.

3.05 ACCEPTANCE

A. Acceptance will be based on the approved stone source, compliance tests, barge displacement surveys, bathymetric surveys, and probe surveys performed by the Contractor per SECTION 01 20 00 - MEASUREMENT AND PAYMENT PROCEDURES and SECTION 01 32 23 - SURVEYS AND LAYOUT DATA. The Agency may perform field check tests and/or surveys to verify the Contractor’s barge displacement and/or topographic surveys. The Agency survey checks will govern any discrepancies.

END OF SECTION 35 32 16

APPENDIX A

Mississippi Department of Marine Resources File No. DMR-140197

STATE OF MISSISSIPPI
Phil Bryant
Governor

MISSISSIPPI DEPARTMENT OF MARINE RESOURCES
Jamie M. Miller, Executive Director

November 25, 2015

Mississippi Department of Environmental Quality
Attn: Mr. Richard Harrell
P.O. Box 2261
Jackson, MS 39225

RE: Permit DMR-140197

Dear Mr. Harrell:

Please find enclosed the original and one copy of the Permit issued to you by the Mississippi Commission on Marine Resources on November 17, 2015.

Please execute this Permit by signing both documents and returning the copy to the Department of Marine Resources.

The Department of Marine Resources has also coordinated a review of your project through the Coastal Program review procedures and determined that the project referenced above is consistent with the Mississippi Coastal Program, provided that you comply with the noted conditions.

If you have any questions regarding the Permit or this correspondence, please contact Willa Brantley with the Bureau of Wetlands Permitting at 228-523-4108 or willa.brantley@dmr.ms.gov.

Sincerely,

Jamie M. Miller

Jamie M. Miller
Executive Director
Mississippi Department of Marine Resources

JMM/wjb

Enclosures

cc: Ms. Alane Young, Covington Civil and Environmental, LLC

Ms. Maryellen Farmer, USACE
Ms. Florance Bass, OPC
Mr. Raymond Carter, SOS

Permit No.: DMR-140197
Type: Permit
Date: November 25, 2015

WHEREAS, application by: The Mississippi Department of Environmental Quality for a Permit under the provisions of Chapter 27, Mississippi Code of 1972, as amended, to perform certain works affecting the coastal wetlands of the State of Mississippi in the Mississippi Sound south of the Hancock County marshes from the mouth of the Pearl River to approximately 4 miles northeast of Heron Bay and including Heron Bay, south of Ansley, Hancock County, Mississippi, was approved by said State of Mississippi Commission on Marine Resources on November 17, 2015.

NOW THEREFORE, this Permit authorizes the above named applicant hereinafter called Permittee, to perform such works in adherence to the following conditions contained herein:

1. Approximately 28.1 acres of unvegetated waterbottoms shall be filled for the construction of a breakwater/high profile reef structure approximately 4 miles in length as indicated on the attached diagram (Figure 1). This breakwater shall conform to the design criteria listed in the chart below:

Breakwater Design Criteria	St. Joseph's Point Breakwater (eastern reach)
Total project length	Approx. 4 miles
Total project acreage	28.1 acres
Crest width	15.0 ft.
Base width	60 ft. (maximum)
Assumed bottom elevation	-3.5 NAVD 88 (MHHW)
Total structure height	5.0 to 8.5 ft.
Riprap volume	132,000 cubic yards
Thickness of material (riprap)	5.0 to 8.5 ft.
Estimated initial settlement	0.5 – 1.0 ft.
Design side slopes (Seaward Face)	5h:1v
Design side slopes (Landward Face)	3h:1v
Breakwater distance from shoreline	20 to 400 ft.
Reach of each breakwater	180 ft.
Design Crest Elevation	1.4 ft. NAVD88 (MHHW)
Width of gaps between breakwaters at design crest height	30 ft.

2. Approximately 12.2 acres of unvegetated waterbottoms shall be filled for the construction of a breakwater/high profile reef structure approximately 1.9 miles in length as indicated

on the attached diagram (Figure 1). This breakwater shall conform to the design criteria listed in the chart below:

Breakwater Design Criteria	Pearl River to Heron Bay Breakwater (western reach):
Total project length	Approx. 1.9 miles
Total project acreage	12.2 acres
Crest width	15.0 ft.
Base width	60 ft. (maximum)
Assumed bottom elevation	-3.5 NAVD 88 (MHHW)
Total structure height	5.0 to 8.5 ft.
Riprap volume	58,000 cubic yards
Thickness of material (riprap)	5.0 to 8.5 ft.
Estimated initial settlement	0.5 – 1.0 ft.
Design side slopes (Seaward Face)	5h:1v
Design side slopes (Landward Face)	3h:1v
Breakwater distance from shoreline	40 to 150 ft.
Reach of each breakwater	180 ft.
Design Crest Elevation	1.4 ft. NAVD 88 (MHHW)
Width of gaps between breakwaters at design crest height	30 ft.

3. Approximately 46 acres of unvegetated waterbottoms shall be planted with cultch material in the form of crushed or processed stone with a median diameter between 1.0 and 2.0 inches in order to enhance benthic habitat. The 46 acres shall be located within the 194-acre site within Heron Bay as indicated on the attached diagram (Figure 1). Only clean material free of waste, metal and organic trash, and unsightly debris shall be used;

4. Approximately 46 acres of marsh habitat shall be created within the 76-acre site within Heron Bay as indicated on the attached diagram (Figure 1). Authorized activities associated with this marsh creation include:

    a. Two linear containment dikes to create a cell:
        i. One along the edge of the existing marsh;
        ii. One along the waterward limits of the marsh creation area;
        iii. Construction will be completed by either excavating sediment from within the cell creation area or by using suitable dredged material if available;
        iv. Four (4) weirs shall be installed in the dikes to allow water to decant during the filling of the containment cell and to manage consolidation of fill material;
        v. After consolidation, the weirs will be removed and the dikes will be breached or degraded to provide for appropriate intertidal circulation;

vi. Any use of dredged material shall be approved in writing by DMR prior to placement and shall be tested in accordance with current standards for beneficial use of dredged material as determined by the Mississippi Department of Environmental Quality's Office of Pollution Control;

b. Placement of up to 540,000 cubic yards of appropriate material within the created cell:
   i. Material shall be placed by barge or pipeline to create a variety of elevations within the target intertidal marsh elevation range of +1 MLLW, plus or minus 0.5';
   ii. Consolidated material will be allowed to vegetate naturally with native marsh grasses, but if natural recruitment does not result in the desired vegetative cover, planting with appropriate native marsh grasses approved by DMR shall be allowed;
   iii. Vegetation proposed for planting shall be approved in writing by DMR prior to placement;
   iv. The marsh creation area shall be monitored for the life of the project for the presence of invasive species. These species shall be removed upon discovery;
   v. Any use of dredged material shall be approved in writing by DMR prior to placement and shall be tested in accordance with current standards for beneficial use of dredged material as determined by the Mississippi Department of Environmental Quality's Office of Pollution Control;

5. Prior to the commencement of construction, permittee must submit to the DMR a copy of the Tidelands Lease as required by the Secretary of State and as filed in the subject County Land Records, or a statement from the Secretary of State that the permitted activity does not require a Tidelands Lease;

6. A variance to Chapter 8, Section 2, Part III.O.1. of the Mississippi Coastal Program is hereby granted;

7. A change to the Coastal Wetlands Use Plan from a General Use District and a Preservation Use District to an S6 Special Use – Preservation District is hereby granted. The change covers the footprint of the project as indicated on the attached diagram (Figure 2);

8. No construction debris or unauthorized fill material shall be allowed to enter coastal wetlands or waters;

9. Best Management Practices shall be used at all times during construction;

10. Vegetated wetlands shall not be impacted; and,

11. No creosote material shall be used in construction.

The Permittee shall maintain all water quality standards, regulations, and restrictions as set forth by the DEQ.

Any deviations beyond the restrictive conditions as set forth in your permit shall be considered a violation and may result in the revocation of the permit. Violations of these conditions may be subject to fines, project modifications and/or site restoration. Both the permittee and the contractor may be held liable for conducting unauthorized work. A modification to these conditions may be requested by submitting a written request along with a revised project diagram to DMR. *Proposed modifications to dimensions, project footprint, and/or procedures must be approved in writing prior to commencement of work.*

Issuance of this certification by DMR and acceptance by the applicant does not release the applicant from other legal requirements including but not limited to other applicable federal, state or local laws, ordinances, zoning codes or other regulations.

This certification conveys no title to land and water, does not constitute authority for reclamation of coastal wetlands and does not authorize invasion of private property or rights in property.

Please notify this Department upon completion of the permitted project so that compliance checks may be conducted by DMR staff.

This certification shall become effective upon acceptance by the applicant and receipt of the executed copy by the Director.

Please execute this certification by signing both documents and returning the copy to the Department of Marine Resources.

Work authorized by this certification must be completed on or before November 25, 2020.

Enclosed is a "Notice of Compliance" which must be conspicuously displayed at the site during construction of the permitted work.

The Department of Marine Resources has also coordinated a review of your project through the Coastal Program review procedures and determined that the project referenced above is consistent with the Mississippi Coastal Program, provided that you comply with the noted conditions and reviewing coastal program agencies do not disagree with said plans. By copy of this certification, we are notifying the U.S. Army Corps of Engineers of this determination.

THE PERMITTEE BY ACCEPTANCE OF THIS PERMIT AGREES TO ABIDE BY THE STIPULATIONS AND CONDITIONS CONTAINED HEREIN AND AS DESCRIBED BY THE PLANS AND SPECIFICATIONS SUBMITTED AS PART OF THE COMPLETED APPLICATION.

STATE OF MISSISSIPPI
DEPARTMENT OF MARINE RESOURCES

BY Jamie M. Miller
Jamie M. Miller
Executive Director
Mississippi Department of Marine Resources

Accepted this the 21 day of December, 20 15.

BY: Mike Hansen

MISSISSIPPI

Department of Marine Resources

NOTICE OF COMPLIANCE
DMR- 140197 PERMIT
THIS NOTICE ACKNOWLEDGES THAT:

DATE: November 25, 2015

Mississippi Department of Environmental Quality
P.O. Box 2261
Jackson, MS 39225

HAS, THROUGH APPLICATION TO THIS DEPARTMENT, DULY COMPLIED WITH THE MISSISSIPPI COASTAL WETLANDS PROTECTION LAW TO:

1. Approximately 28.1 acres of unvegetated waterbottoms shall be filled for the construction of a breakwater/high profile reef structure approximately 4 miles in length as indicated on the attached diagram (Figure 1). This breakwater shall conform to the design criteria listed in the chart below:

Breakwater Design Criteria	St. Joseph's Point Breakwater (eastern reach)
Total project length	Approx. 4 miles
Total project acreage	28.1 acres
Crest width	15.0 ft.
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Estimated initial settlement	0.5 – 1.0 ft.
Design side slopes (Seaward Face)	5h:1v
Design side slopes (Landward Face)	3h:1v
Breakwater distance from shoreline	20 to 400 ft.
Reach of each breakwater	180 ft.
Design Crest Elevation	1.4 ft. NAVD88 (MHHW)
Width of gaps between breakwaters at design crest height	30 ft.

2. Approximately 12.2 acres of unvegetated waterbottoms shall be filled for the construction of a breakwater/high profile reef structure approximately 1.9 miles in length as indicated on the attached diagram (Figure 1). This breakwater shall conform to the design criteria listed in the chart below:

Breakwater Design Criteria	Pearl River to Heron Bay Breakwater (western reach):
Total project length	Approx. 1.9 miles
Total project acreage	12.2 acres
Crest width	15.0 ft.
Base width	60 ft. (maximum)
Assumed bottom elevation	-3.5 NAVD 88 (MHHW)
Total structure height	5.0 to 8.5 ft.
Riprap volume	58,000 cubic yards
Thickness of material (riprap)	5.0 to 8.5 ft.
Estimated initial settlement	0.5 – 1.0 ft.
Design side slopes (Seaward Face)	5h:1v
Design side slopes (Landward Face)	3h:1v
Breakwater distance from shoreline	40 to 150 ft.
Reach of each breakwater	180 ft.
Design Crest Elevation	1.4 ft. NAVD 88 (MHHW)
Width of gaps between breakwaters at design crest height	30 ft.

POST THIS NOTICE CONSPICUOUSLY AT SITE OF WORK

MISSISSIPPI

Department of Marine Resources

3. Approximately 46 acres of unvegetated waterbottoms shall be planted with cultch material in the form of crushed or processed stone with a median diameter between 1.0 and 2.0 inches in order to enhance benthic habitat. The 46 acres shall be located within the 194-acre site within Heron Bay as indicated on the attached diagram (Figure 1). Only clean material free of waste, metal and organic trash, and unsightly debris shall be used;
4. Approximately 46 acres of marsh habitat shall be created within the 76-acre site within Heron Bay as indicated on the attached diagram (Figure 1). Authorized activities associated with this marsh creation include:
    a. Two linear containment dikes to create a cell:
        i. One along the edge of the existing marsh;
        ii. One along the waterward limits of the marsh creation area;
        iii. Construction will be completed by either excavating sediment from within the cell creation area or by using suitable dredged material if available;
        iv. Four (4) weirs shall be installed in the dikes to allow water to decant during the filling of the containment cell and to manage consolidation of fill material;
        v. After consolidation, the weirs will be removed and the dikes will be breached or degraded to provide for appropriate intertidal circulation;
        vi. Any use of dredged material shall be approved in writing by DMR prior to placement and shall be tested in accordance with current standards for beneficial use of dredged material as determined by the Mississippi Department of Environmental Quality's Office of Pollution Control;
    b. Placement of up to 540,000 cubic yards of appropriate material within the created cell:
        i. Material shall be placed by barge or pipeline to create a variety of elevations within the target intertidal marsh elevation range of +1 MLLW, plus or minus 0.5';
        ii. Consolidated material will be allowed to vegetate naturally with native marsh grasses, but if natural recruitment does not result in the desired vegetative cover, planting with appropriate native marsh grasses approved by DMR shall be allowed;
        iii. Vegetation proposed for planting shall be approved in writing by DMR prior to placement;
        iv. The marsh creation area shall be monitored for the life of the project for the presence of invasive species. These species shall be removed upon discovery;
        v. Any use of dredged material shall be approved in writing by DMR prior to placement and shall be tested in accordance with current standards for beneficial use of dredged material as determined by the Mississippi Department of Environmental Quality's Office of Pollution Control;
5. Prior to the commencement of construction, permittee must submit to the DMR a copy of the Tidelands Lease as required by the Secretary of State and as filed in the subject County Land Records, or a statement from the Secretary of State that the permitted activity does not require a Tidelands Lease;
6. A variance to Chapter 8, Section 2, Part III.O.1. of the Mississippi Coastal Program is hereby granted;
7. A change to the Coastal Wetlands Use Plan from a General Use District and a Preservation Use District to an S6 Special Use – Preservation District is hereby granted. The change covers the footprint of the project as indicated on the attached diagram (Figure 2);
8. No construction debris or unauthorized fill material shall be allowed to enter coastal wetlands or waters;
9. Best Management Practices shall be used at all times during construction;
10. Vegetated wetlands shall not be impacted; and,
11. No creosote material shall be used in construction.

On the Mississippi Sound south of the Hancock County marshes from the mouth of the Pearl River to approximately 4 miles northeast of Heron Bay and including Heron Bay, south of Ansley, Hancock County, Mississippi.

No construction debris or unauthorized fill material shall be allowed to enter coastal wetlands or waters.

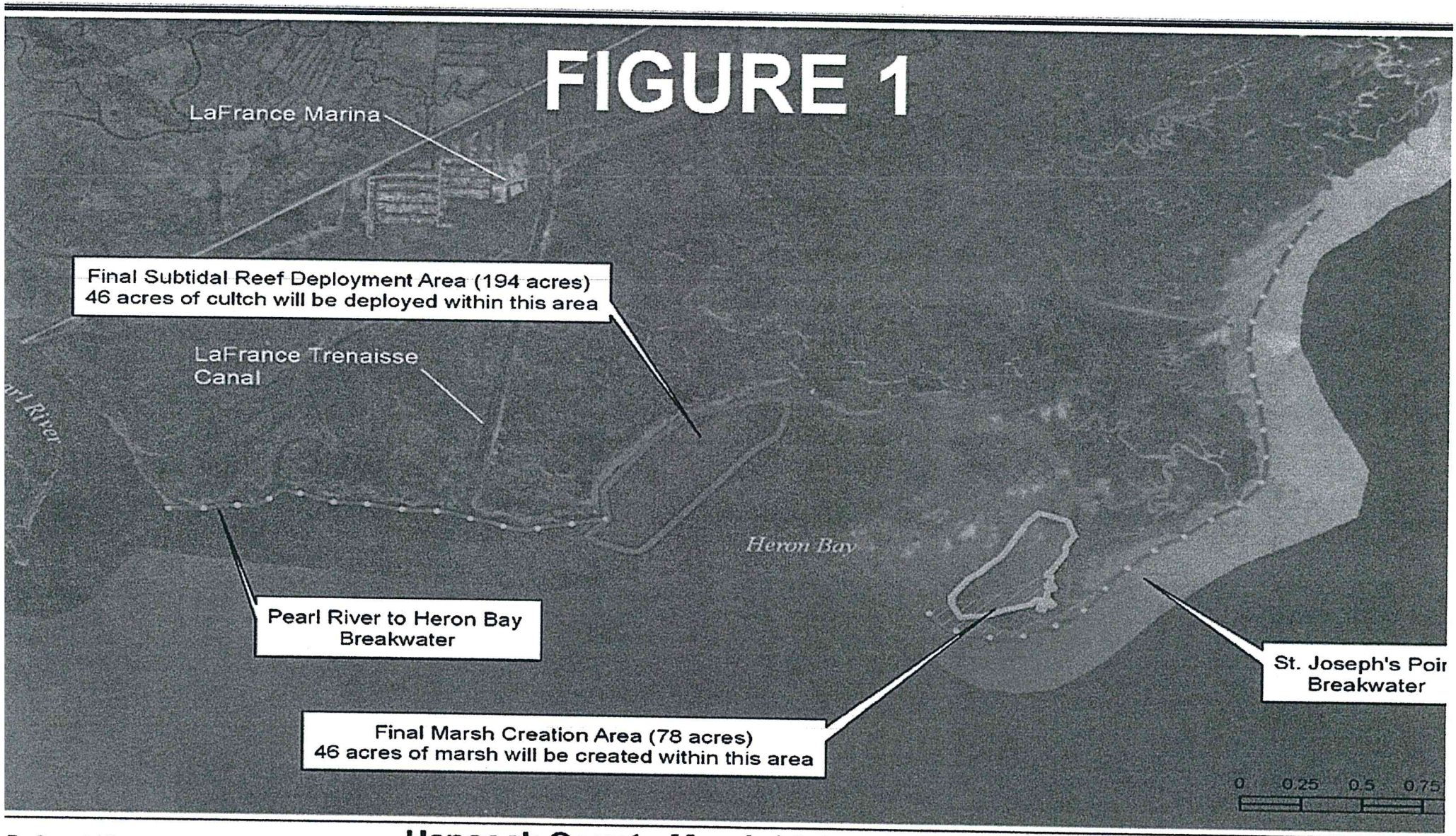
FURTHERMORE, THIS PROJECT AS PROPOSED HAS BEEN FOUND TO BE CONSISTENT WITH ALL GUIDELINES FOR CONDUCT OF REGULATED ACTIVITIES IN COASTAL WETLANDS AS SET FORTH IN THE MISSISSIPPI COASTAL PROGRAM.

Jamie M. Miller

Executive Director

POST THIS NOTICE CONSPICUOUSLY AT SITE OF WORK

FIGURE 1



The Geospatial Group, a member
7, August 2015.

e CCE
spatial Clearinghouse, and Esri.

AD 1983 UTM Zone 16N
Mercator

no warranties, expressed or
racy, completeness,
or suitability for any particular
ntained on this map.

Hancock County Marsh Living Shoreline

- Breakwater
- Final Marsh Creation Area
- Final Subtidal Reef Deployment Area
- Phase III FERP/PEIS Potential Marsh Creation Area
- Phase III FERP/PEIS Potential Subtidal Reef Deployment Area

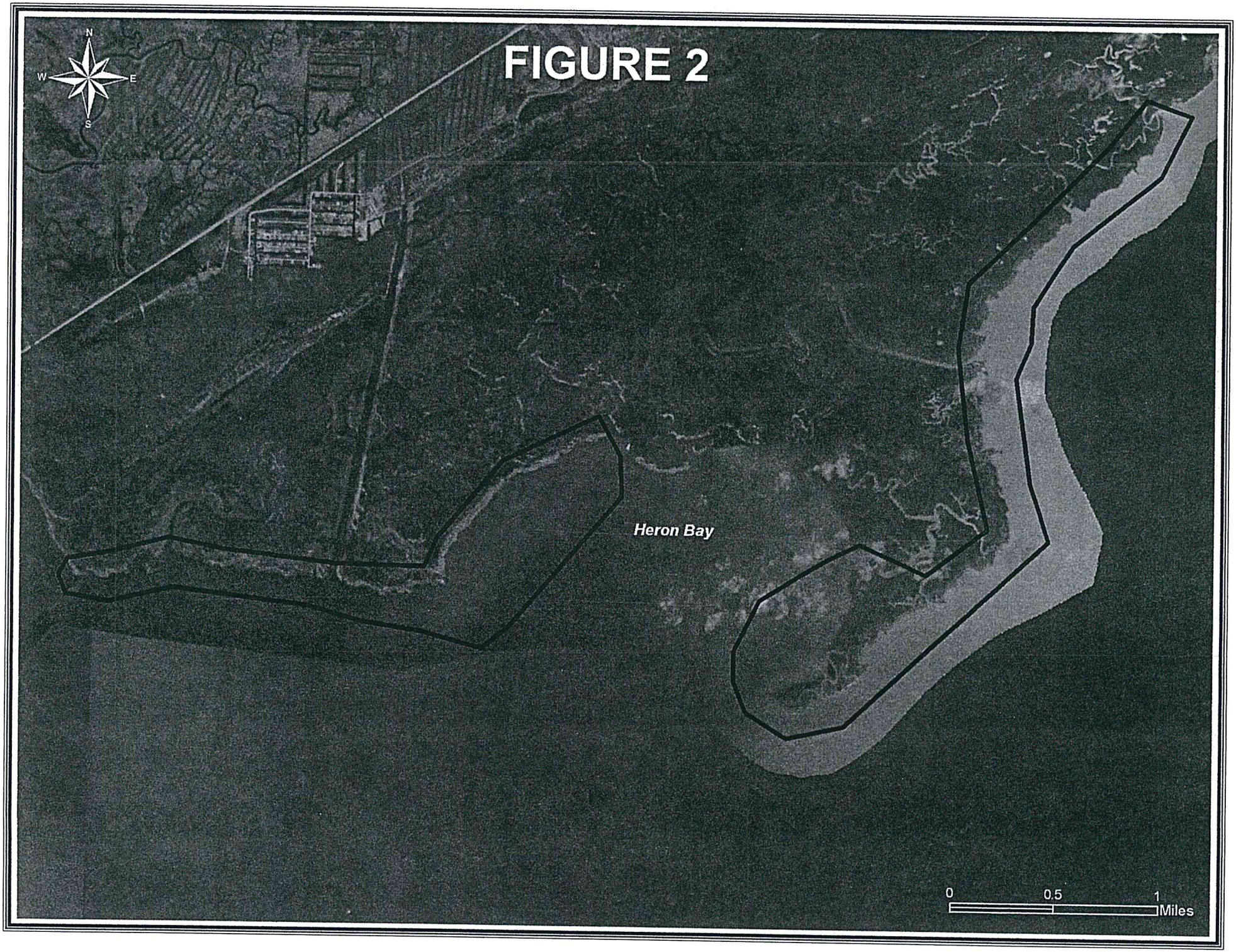


FIGURE 2
N
W
E
S
Heron Bay
0
0.5
1
Miles

STATE OF MISSISSIPPI
Phil Bryant
Governor

MISSISSIPPI DEPARTMENT OF MARINE RESOURCES
Jamie M. Miller, Executive Director

February 5, 2016

Mississippi Department of Environmental Quality
Attn: Mr. Richard Harrell
P.O. Box 2261
Jackson, MS 39225

RE: Permit DMR-140197

Dear Mr. Harrell:

Due to an error in condition number 7 in the Permit issued to you on November 25, 2015, please find attached a corrected Permit.

Please execute this Permit by signing both documents and returning the copy to the Department of Marine Resources.

If you have any questions regarding the Permit or this correspondence, please contact Willa Brantley with the Bureau of Wetlands Permitting at 228-523-4108 or willa.brantley@dmr.ms.gov.

Sincerely,

Jamie M. Miller
Executive Director
Mississippi Department of Marine Resources

JMM/wjb

Enclosures

cc: Ms. Alane Young, Covington Civil and Environmental, LLC
Ms. Maryellen Farmer, USACE
Ms. Florance Bass, OPC
Mr. Raymond Carter, SOS

Permit No.: DMR-140197
Type: Permit
Date: November 25, 2015

WHEREAS, application by: The Mississippi Department of Environmental Quality for a Permit under the provisions of Chapter 27, Mississippi Code of 1972, as amended, to perform certain works affecting the coastal wetlands of the State of Mississippi in the Mississippi Sound south of the Hancock County marshes from the mouth of the Pearl River to approximately 4 miles northeast of Heron Bay and including Heron Bay, south of Ansley, Hancock County, Mississippi, was approved by said State of Mississippi Commission on Marine Resources on November 17, 2015.

NOW THEREFORE, this Permit authorizes the above named applicant hereinafter called Permittee, to perform such works in adherence to the following conditions contained herein:

1. Approximately 28.1 acres of unvegetated waterbottoms shall be filled for the construction of a breakwater/high profile reef structure approximately 4 miles in length as indicated on the attached diagram (Figure 1). This breakwater shall conform to the design criteria listed in the chart below:

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Design side slopes (Landward Face)	3h:1v
Breakwater distance from shoreline	20 to 400 ft.
Reach of each breakwater	180 ft.
Design Crest Elevation	1.4 ft. NAVD88 (MHHW)
Width of gaps between breakwaters at design crest height	30 ft.

2. Approximately 12.2 acres of unvegetated waterbottoms shall be filled for the construction of a breakwater/high profile reef structure approximately 1.9 miles in length as indicated

on the attached diagram (Figure 1). This breakwater shall conform to the design criteria listed in the chart below:

Breakwater Design Criteria	Pearl River to Heron Bay Breakwater (western reach):
Total project length	Approx. 1.9 miles
Total project acreage	12.2 acres
Crest width	15.0 ft.
Base width	60 ft. (maximum)
Assumed bottom elevation	-3.5 NAVD 88 (MHHW)
Total structure height	5.0 to 8.5 ft.
Riprap volume	58,000 cubic yards
Thickness of material (riprap)	5.0 to 8.5 ft.
Estimated initial settlement	0.5 – 1.0 ft.
Design side slopes (Seaward Face)	5h:1v
Design side slopes (Landward Face)	3h:1v
Breakwater distance from shoreline	40 to 150 ft.
Reach of each breakwater	180 ft.
Design Crest Elevation	1.4 ft. NAVD 88 (MHHW)
Width of gaps between breakwaters at design crest height	30 ft.

3. Approximately 46 acres of unvegetated waterbottoms shall be planted with cultch material in the form of crushed or processed stone with a median diameter between 1.0 and 2.0 inches in order to enhance benthic habitat. The 46 acres shall be located within the 194-acre site within Heron Bay as indicated on the attached diagram (Figure 1). Only clean material free of waste, metal and organic trash, and unsightly debris shall be used;

4. Approximately 46 acres of marsh habitat shall be created within the 76-acre site within Heron Bay as indicated on the attached diagram (Figure 1). Authorized activities associated with this marsh creation include:

    a. Two linear containment dikes to create a cell:
        i. One along the edge of the existing marsh;
        ii. One along the waterward limits of the marsh creation area;
        iii. Construction will be completed by either excavating sediment from within the cell creation area or by using suitable dredged material if available;
        iv. Four (4) weirs shall be installed in the dikes to allow water to decant during the filling of the containment cell and to manage consolidation of fill material;
        v. After consolidation, the weirs will be removed and the dikes will be breached or degraded to provide for appropriate intertidal circulation;

vi. Any use of dredged material shall be approved in writing by DMR prior to placement and shall be tested in accordance with current standards for beneficial use of dredged material as determined by the Mississippi Department of Environmental Quality's Office of Pollution Control;

b. Placement of up to 540,000 cubic yards of appropriate material within the created cell:
   i. Material shall be placed by barge or pipeline to create a variety of elevations within the target intertidal marsh elevation range of +1 MLLW, plus or minus 0.5';
   ii. Consolidated material will be allowed to vegetate naturally with native marsh grasses, but if natural recruitment does not result in the desired vegetative cover, planting with appropriate native marsh grasses approved by DMR shall be allowed;
   iii. Vegetation proposed for planting shall be approved in writing by DMR prior to placement;
   iv. The marsh creation area shall be monitored for the life of the project for the presence of invasive species. These species shall be removed upon discovery;
   v. Any use of dredged material shall be approved in writing by DMR prior to placement and shall be tested in accordance with current standards for beneficial use of dredged material as determined by the Mississippi Department of Environmental Quality's Office of Pollution Control;

5. Prior to the commencement of construction, permittee must submit to the DMR a copy of the Tidelands Lease as required by the Secretary of State and as filed in the subject County Land Records, or a statement from the Secretary of State that the permitted activity does not require a Tidelands Lease;

6. A variance to Chapter 8, Section 2, Part III.O.1. of the Mississippi Coastal Program is hereby granted;

7. A change to the Coastal Wetlands Use Plan from a General Use District and a Preservation Use District to an S6 Special Use – Restoration District is hereby granted. The change covers the footprint of the project as indicated on the attached diagram (Figure 2);

8. No construction debris or unauthorized fill material shall be allowed to enter coastal wetlands or waters;

9. Best Management Practices shall be used at all times during construction;

10. Vegetated wetlands shall not be impacted; and,

11. No creosote material shall be used in construction.

The Permittee shall maintain all water quality standards, regulations, and restrictions as set forth by the DEQ.

Any deviations beyond the restrictive conditions as set forth in your permit shall be considered a violation and may result in the revocation of the permit. Violations of these conditions may be subject to fines, project modifications and/or site restoration. Both the permittee and the contractor may be held liable for conducting unauthorized work. A modification to these conditions may be requested by submitting a written request along with a revised project diagram to DMR. *Proposed modifications to dimensions, project footprint, and/or procedures must be approved in writing prior to commencement of work.*

Issuance of this certification by DMR and acceptance by the applicant does not release the applicant from other legal requirements including but not limited to other applicable federal, state or local laws, ordinances, zoning codes or other regulations.

This certification conveys no title to land and water, does not constitute authority for reclamation of coastal wetlands and does not authorize invasion of private property or rights in property.

Please notify this Department upon completion of the permitted project so that compliance checks may be conducted by DMR staff.

This certification shall become effective upon acceptance by the applicant and receipt of the executed copy by the Director.

Please execute this certification by signing both documents and returning the copy to the Department of Marine Resources.

Work authorized by this certification must be completed on or before November 25, 2020.

Enclosed is a "Notice of Compliance" which must be conspicuously displayed at the site during construction of the permitted work.

The Department of Marine Resources has also coordinated a review of your project through the Coastal Program review procedures and determined that the project referenced above is consistent with the Mississippi Coastal Program, provided that you comply with the noted conditions and reviewing coastal program agencies do not disagree with said plans. By copy of this certification, we are notifying the U.S. Army Corps of Engineers of this determination.

THE PERMITTEE BY ACCEPTANCE OF THIS PERMIT AGREES TO ABIDE BY THE STIPULATIONS AND CONDITIONS CONTAINED HEREIN AND AS DESCRIBED BY THE PLANS AND SPECIFICATIONS SUBMITTED AS PART OF THE COMPLETED APPLICATION.

STATE OF MISSISSIPPI
DEPARTMENT OF MARINE RESOURCES

BY: Jamie M. Miller
Jamie M. Miller
Executive Director
Mississippi Department of Marine Resources

Accepted this the 5th day of February, 2016.

BY: Marc Wyatt

MISSISSIPPI

Department of Marine Resources

NOTICE OF COMPLIANCE
DMR- 140197 PERMIT
THIS NOTICE ACKNOWLEDGES THAT:

DATE: November 25, 2015

Mississippi Department of Environmental Quality
P.O. Box 2261
Jackson, MS 39225

HAS, THROUGH APPLICATION TO THIS DEPARTMENT, DULY COMPLIED WITH THE MISSISSIPPI COASTAL WETLANDS PROTECTION LAW TO:

1. Approximately 28.1 acres of unvegetated waterbottoms shall be filled for the construction of a breakwater/high profile reef structure approximately 4 miles in length as indicated on the attached diagram (Figure 1). This breakwater shall conform to the design criteria listed in the chart below:

Breakwater Design Criteria	St. Joseph's Point Breakwater (eastern reach)
Total project length	Approx. 4 miles
Total project acreage	28.1 acres
Crest width	15.0 ft.
Base width	60 ft. (maximum)
Assumed bottom elevation	-3.5 NAVD 88 (MHHW)
Total structure height	5.0 to 8.5 ft.
Riprap volume	132,000 cubic yards
Thickness of material (riprap)	5.0 to 8.5 ft.
Estimated initial settlement	0.5 – 1.0 ft.
Design side slopes (Seaward Face)	5h:1v
Design side slopes (Landward Face)	3h:1v
Breakwater distance from shoreline	20 to 400 ft.
Reach of each breakwater	180 ft.
Design Crest Elevation	1.4 ft. NAVD88 (MHHW)
Width of gaps between breakwaters at design crest height	30 ft.

2. Approximately 12.2 acres of unvegetated waterbottoms shall be filled for the construction of a breakwater/high profile reef structure approximately 1.9 miles in length as indicated on the attached diagram (Figure 1). This breakwater shall conform to the design criteria listed in the chart below:

Breakwater Design Criteria	Pearl River to Heron Bay Breakwater (western reach):
Total project length	Approx. 1.9 miles
Total project acreage	12.2 acres
Crest width	15.0 ft.
Base width	60 ft. (maximum)
Assumed bottom elevation	-3.5 NAVD 88 (MHHW)
Total structure height	5.0 to 8.5 ft.
Riprap volume	58,000 cubic yards
Thickness of material (riprap)	5.0 to 8.5 ft.
Estimated initial settlement	0.5 – 1.0 ft.
Design side slopes (Seaward Face)	5h:1v
Design side slopes (Landward Face)	3h:1v
Breakwater distance from shoreline	40 to 150 ft.
Reach of each breakwater	180 ft.
Design Crest Elevation	1.4 ft. NAVD 88 (MHHW)
Width of gaps between breakwaters at design crest height	30 ft.

POST THIS NOTICE CONSPICUOUSLY AT SITE OF WORK

MISSISSIPPI

Department of Marine Resources

3. Approximately 46 acres of unvegetated waterbottoms shall be planted with cultch material in the form of crushed or processed stone with a median diameter between 1.0 and 2.0 inches in order to enhance benthic habitat. The 46 acres shall be located within the 194-acre site within Heron Bay as indicated on the attached diagram (Figure 1). Only clean material free of waste, metal and organic trash, and unsightly debris shall be used;
4. Approximately 46 acres of marsh habitat shall be created within the 76-acre site within Heron Bay as indicated on the attached diagram (Figure 1). Authorized activities associated with this marsh creation include:
    a. Two linear containment dikes to create a cell:
        i. One along the edge of the existing marsh;
        ii. One along the waterward limits of the marsh creation area;
        iii. Construction will be completed by either excavating sediment from within the cell creation area or by using suitable dredged material if available;
        iv. Four (4) weirs shall be installed in the dikes to allow water to decant during the filling of the containment cell and to manage consolidation of fill material;
        v. After consolidation, the weirs will be removed and the dikes will be breached or degraded to provide for appropriate intertidal circulation;
        vi. Any use of dredged material shall be approved in writing by DMR prior to placement and shall be tested in accordance with current standards for beneficial use of dredged material as determined by the Mississippi Department of Environmental Quality's Office of Pollution Control;
    b. Placement of up to 540,000 cubic yards of appropriate material within the created cell:
        i. Material shall be placed by barge or pipeline to create a variety of elevations within the target intertidal marsh elevation range of +1 MLLW, plus or minus 0.5';
        ii. Consolidated material will be allowed to vegetate naturally with native marsh grasses, but if natural recruitment does not result in the desired vegetative cover, planting with appropriate native marsh grasses approved by DMR shall be allowed;
        iii. Vegetation proposed for planting shall be approved in writing by DMR prior to placement;
        iv. The marsh creation area shall be monitored for the life of the project for the presence of invasive species. These species shall be removed upon discovery;
        v. Any use of dredged material shall be approved in writing by DMR prior to placement and shall be tested in accordance with current standards for beneficial use of dredged material as determined by the Mississippi Department of Environmental Quality's Office of Pollution Control;
5. Prior to the commencement of construction, permittee must submit to the DMR a copy of the Tidelands Lease as required by the Secretary of State and as filed in the subject County Land Records, or a statement from the Secretary of State that the permitted activity does not require a Tidelands Lease;
6. A variance to Chapter 8, Section 2, Part III.O.1. of the Mississippi Coastal Program is hereby granted;
7. A change to the Coastal Wetlands Use Plan from a General Use District and a Preservation Use District to an S6 Special Use – Restoration District is hereby granted. The change covers the footprint of the project as indicated on the attached diagram (Figure 2);
8. No construction debris or unauthorized fill material shall be allowed to enter coastal wetlands or waters;
9. Best Management Practices shall be used at all times during construction;
10. Vegetated wetlands shall not be impacted; and,
11. No creosote material shall be used in construction.

On the Mississippi Sound south of the Hancock County marshes from the mouth of the Pearl River to approximately 4 miles northeast of Heron Bay and including Heron Bay, south of Ansley, Hancock County, Mississippi.

No construction debris or unauthorized fill material shall be allowed to enter coastal wetlands or waters.

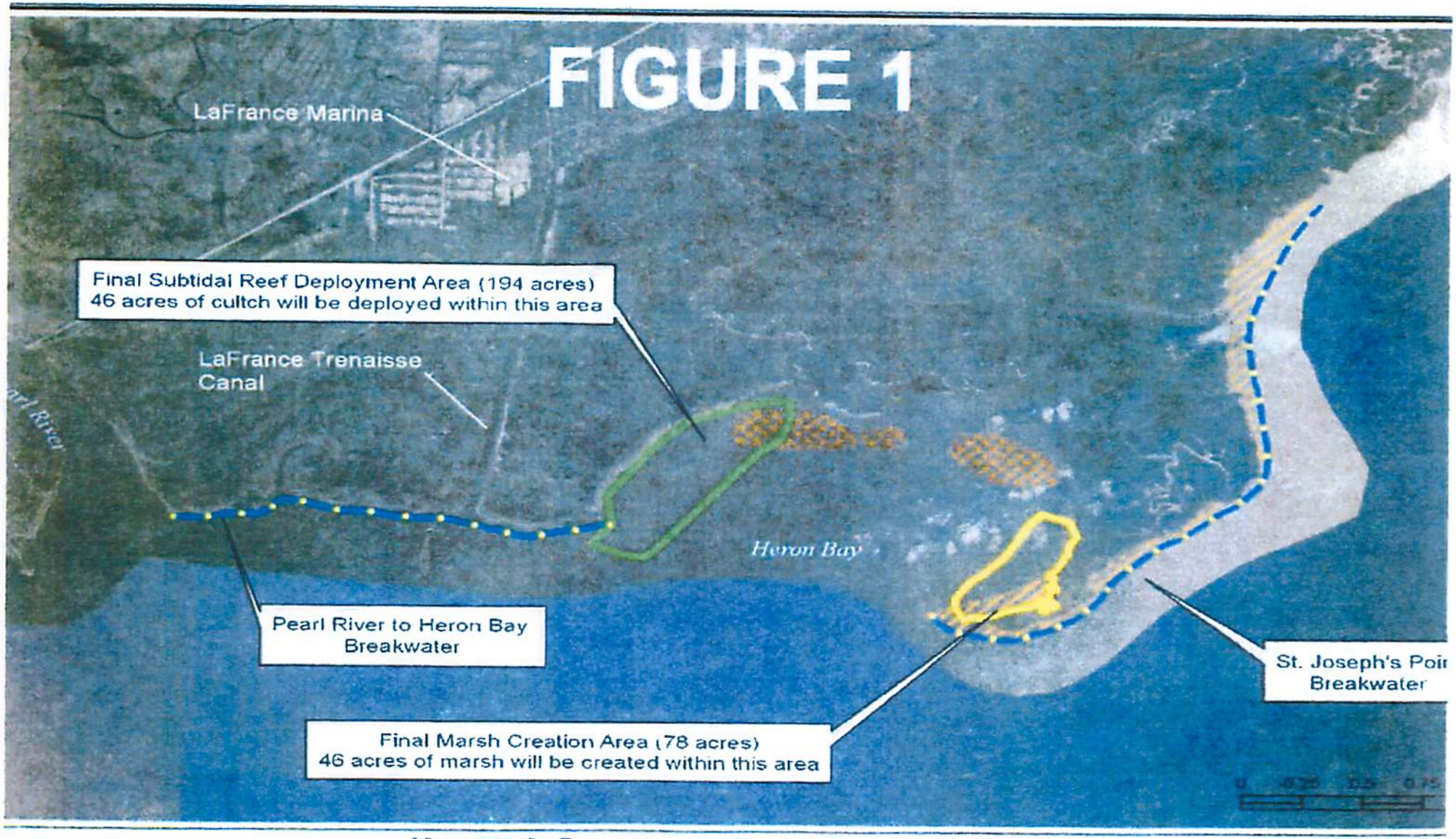
FURTHERMORE, THIS PROJECT AS PROPOSED HAS BEEN FOUND TO BE CONSISTENT WITH ALL GUIDELINES FOR CONDUCT OF REGULATED ACTIVITIES IN COASTAL WETLANDS AS SET FORTH IN THE MISSISSIPPI COASTAL PROGRAM.

Jamie M. Miller

Executive Director

POST THIS NOTICE CONSPICUOUSLY AT SITE OF WORK

FIGURE 1



y The Geospatial Group, a member
17 August 2015

he GCE
ospatial Clearinghouse, and Esri

IAD 1983 UTM Zone 16N
e Mercator

s no warranties, expressed or
uracy, completeness,
or suitability for any particular
contained on this map

Hancock County Marsh Living Shoreline

- Breakwater
- Final Marsh Creation Area
- Final Subtidal Reef Deployment Area
- Phase III FERP/PEIS Potential Marsh Creation Area
- Phase III FERP/PEIS Potential Subtidal Reef Deployment Area

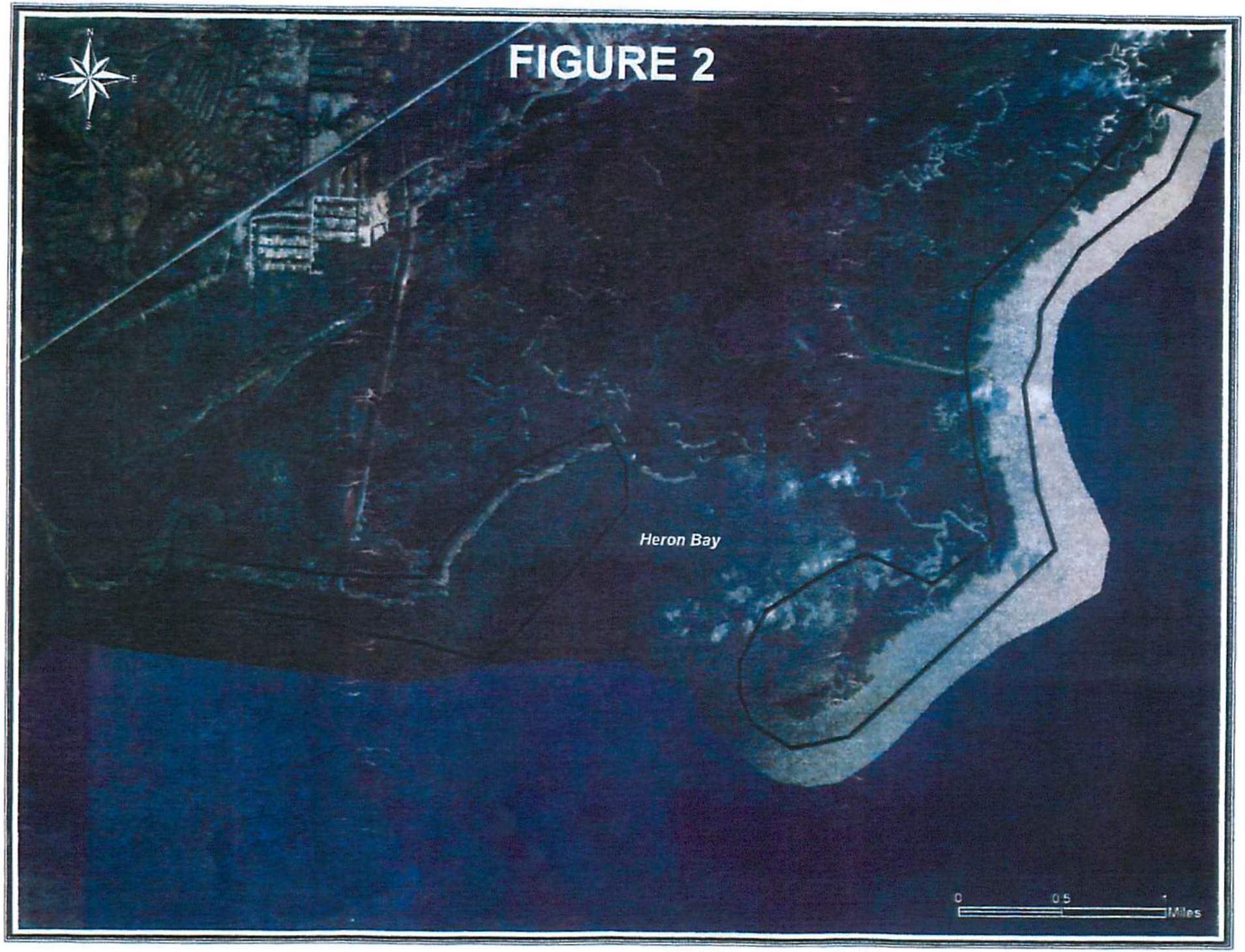


FIGURE 2
Heron Bay
0
0.5
1
Miles

APPENDIX B

U.S. Army Corps of Engineers File No. SAM-2013-00088-MJF

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, AL 36628-0001

REPLY TO
ATTENTION OF

April 19, 2016

South Mississippi Branch
Regulatory Division

SUBJECT: Department of the Army Permit Application Number SAM-2013-00088-MJF, Mississippi Department of Environmental Quality, Hancock County Living Shoreline Project, Mississippi Sound, Hancock County, Mississippi

Mississippi Department of
Environmental Quality
Attention: Mr. Richard Harrell
PO Box 2261
Jackson, Mississippi 39225

Dear Mr. Harrell:

Enclosed are two copies of a Department of the Army **draft** permit for work specified in accordance with the enclosed plans, drawings, and specifications. If the permit is acceptable as drafted, you are requested to sign both copies in the space indicated and return both signed copies to me for final action. The original will be signed by me and returned to you with a placard to be posted at all times that construction is performed at the site. **This permit is not valid until the District Commander signs it**; therefore, work must not commence on the project until a fully executed copy is returned to you.

Please mail both signed copies of the draft permit to the letterhead address to the attention of the South Mississippi Branch, Regulatory Division. **This permit is not valid until it is properly signed by both the applicant and me**; therefore, work must not commence on the project until a fully executed copy has been returned to you.

Your attention is directed to all conditions under which this permit will be issued. Failure to comply with any condition of the approved permit may result in its suspension, cancellation, or revocation. If you object to certain terms and conditions contained within the permit, you may request that the permit be modified. Enclosed you will find a Notification of Administrative Appeal Options and Process fact sheet and Request for Appeal (RFA) form. If you choose to object to certain terms and conditions of the permit, you must follow the directions provided in Section 1, Part A and submit the completed RFA form to the letterhead address.

In order for an RFA to be accepted by the U.S. Army Corps of Engineers (USACE), the USACE must determine that it is complete, that it meets the criteria under 33 CFR

Part 331.5, and that it has been received by the District office within 60 days of the date of the RFA. Should you decide to submit an Request for Appeal (RFA) form, it must be received at the letterhead address by within 60 days of the date of this letter.

It is not necessary to submit an RFA form to the District office, if you do not object to the determination/decision in this letter. In this case, both copies must be signed by the applicant in the space provided on the signature page of the permit. In the case of corporations, acceptance must be by an officer of that corporation authorized to sign on behalf of the corporation. The party responsible for assuring the work is done in accordance with the permit terms and conditions must sign the permit. Please type or print the name and title of the person signing below the signature and the date signed.

Please contact Maryellen Farmer at (228) 523-4116, if you have any questions. For additional information about our Regulatory Program, please visit our web site at: www.sam.usace.army.mil/Missions/Regulatory and please take a moment to complete our customer satisfaction survey while you're there. Your responses are appreciated and will allow us to improve our services.

Sincerely,

Allison Monroe

for Munther N. Sahawneh
Chief, South Mississippi Branch
Regulatory Division

Enclosures

US Army Corps of Engineers®

THIS NOTICE OF AUTHORIZATION MUST BE CONSPICUOUSLY DISPLAYED AT THE SITE OF WORK.

A permit to perform work authorized by statutes and regulations of the Department of the Army

at MISSISSIPPI SOUND, BETWEEN BAYOU CADDY AND MOUTH OF THE EAST PEARL RIVER, SECTION 11, TOWNSHIP 10 SOUTH, RANGE 15 WEST, HANCOCK COUNTY, MISSISSIPPI

has been issued to MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY on 19 APR 2016

Address of Permittee PO BOX 2261, JACKSON,MISSISSIPPI 39226

Permit Number

SAM2013-00088-MJF

Allison Monroe

District Commander

MUNTHER N. SAHAWNEH, CH, RD-M

ENG FORM 4336, Jul 81 (33 CFR 320-330) EDITION OF JUL 70 MAY BE USED

(Proponent: CECW-0)

DEPARTMENT OF THE ARMY PERMIT

Permittee: **MISSISSIPPI DEPARMENT OF ENVIRONMENTAL QUALITY**

Permit No.: **SAM-2013-00088-MJF**

Issuing Office: **MOBILE 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 U.S. Army Corps of Engineers (Corps) 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: The permittee is authorized to place approved fill material for the creation of 46 acres of salt marsh; place approved fill material for the creation of 46 acres of subtidal reef; and construct 5.9 miles of breakwater structures.

Breakwaters would be constructed at two locations: The first is an approximately 4 mile long structure along St. Joseph's Point and the second is approximately 1.9 miles from the Pearl River to Heron Bay. The breakwater crest elevation would be at Mean Higher High Water (MHHW) to facilitate increased marsh shoreline protection. The breakwater base width will be 60 feet wide. The breakwaters will be installed in segments with each segment being approximately 180 feet with 30-foot gaps between segments. The breakwaters will consist of riprap underlain by geotextile fabric. The structure will have a 15-foot crest width and 60-foot width at the base, and would be approximately 5.0-8.5 -feet in total height, with a total footprint of approximately 40.3 acres. The gap areas will also be underlain by geotextile fabric with a minimum of 1.5 feet of riprap covering the fabric. The target depth for deployment of the breakwaters will be approximately -3.5 feet North American Vertical Datum of 1988 (NAVD 88). The volume of material for the St. Joseph's segment will be approximately 132,000 cubic yards of rock material. The volume of material for the Pearl River-Heron Bay segment will be approximately 58,000 cubic yards of rock material. The project will be marked as required by U.S. Coast Guard.

Creation of 46 acres of salt marsh. The marsh creation area is an approximately 78 acre area in the southeastern portion of Heron Bay. Approximately 46 acres of marsh will be created in one of several locations within this area. A dike (containment structure) will be constructed by excavating existing material from unvegetated water bottoms within the marsh creation site and possibly with suitable permitted dredged materials from other sources, filling the area within the dike with appropriate dredged material to final marsh grade. The applicant intends to revegetate the area by planting using native species. Sediment will be pumped through a floating pipeline from a hydraulic dredge located where suitable fill material is available. Pumps and sediment controls will remain in place throughout the dredging and filling process and after initial settling. Dredged material will be obtained from a tested and permitted dredge project or some other suitable, permitted source. Once the entire marsh area(s) is constructed and planted, the area will be monitored.

Placement of 46 acres for Subtidal Reef. The subtidal reef deployment area is an approximately 194 acre area in the western portion of Heron Bay. Approximately 46 acres of subtidal reef habitat will be created in one to several locations with this area. Cultch deployment will occur generally in water depths of -3 to -5 feet NAVD 88. The subtidal reef(s) will be sited based on data from an oyster presence survey and will consist of approximately 6- to 9-inch thick layer of limestone or other suitable material. Deployment will be by a barge-mounted crane with clam shell bucket. As a construction alternative, water jetting of cultch material may be used in case of water depth constraints.

Project Component	Impact Type	Duration of Impact	Habitat Type Impacted	Revised Acreage of Impact (per Design Change)
St. Joseph's Point Area Breakwater Construction Activity Area	Filling fine-grained sediment with riprap over geotextile/geogrid layer	Long-Term	Shallow water/fine-grained sediment bottom	29.1
Pearl River to Heron Bay Breakwater Construction Activity Area	Filling fine-grained sediment with riprap over geotextile/geogrid layer	Permanent	Shallow water/fine-grained sediment bottom	13.8
Subtidal Reefs in Heron Bay	Filling with Cultch (shells, limestone); siting refined based on siting study	Long-Term	Shallow water/hard bottom	46
Marsh Creation (Inside Heron Bay)	Filling with suitable material; site for marsh creation selected	Long-Term	Shallow water with fine-grained sediment bottom	46
Total Permanent Impacts				**134.9**
Total Impacts				**134.9**

The permitee or their representative will conduct monitoring for a period of seven (7) years following completion. The applicant will monitor the project's performance with respect to erosion control, marsh habitat creation, and the support of secondary productivity. Information collected and evaluated will include water quality parameters; structural integrity of breakwater structure; height/elevation and area of structure; consolidation rate of breakwater structure; shoreline profile; bivalve biomass and survival; non-bivalve invertebrate biomass and survival; and an assessment of marsh vegetation. The project will incorporate a mix of long-term monitoring efforts to ensure project designs are correctly implemented during construction, and to identify any potential unanticipated erosion/sediment accumulation issues associated with the project. Corrective actions will be addressed through the maintenance budget included in the overall project budget.

ATTACHED:
1. **Plan Drawings**
2. **Mississippi Department of Marine Resources (DMR) Coastal Program Certification dated November 25, 2015 and Modification dated February 5, 2016 (DMR-140197).**
3. **Mississippi Department of Environmental Quality (DEQ) Section 401 Certification dated December 1, 2015 (WQC2015010).**
4. **National Marine Fisheries Service Consultation Letters for SER-2014-12925**
5. **Department of the Interior, United Fish and Wildlife Service final concurrence letter for review under Section 106 of the National Historic Preservation Act.**
6. **Monitoring and Adaptive Management Plan**

Project Location: The project is located In the Mississippi Sound, between Bayou Caddy and the mouth of the East Pearl River, Section 11, Township 10 South, Range 15 West, Hancock County, Mississippi [Bounding Coordinates: West – (-89.530W/30.184N) South – (-89.462W/30.169N) East – (-89.415W/30.233N) North – (-89.53W/30.184W) Centroid – (-89.457W/30.19N).

Permit Conditions

General Conditions:

1. The time limit for completing the work authorized ends on **19 April 2021**. 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 1 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:

a. The permittee shall comply with all requirements of the Mississippi Department of Environmental Quality 401 Water Quality Certification (WQC2015010) dated December 1, 2015.

b. The permittee shall comply with all requirements of the Mississippi Department of Marine Resources Coastal Zone Consistency Determination (DMR-140197) dated November 25, 2015 and modification dated February 5, 2016.

c. Best management practices shall be implemented to minimize erosion, siltation damage to adjacent wetlands and waters of the United States, and submerged aquatic vegetation. Appropriate erosion and siltation control measures must be used and maintained in effective operating condition during construction. All temporary erosion control features shall remain in place until permanent stabilization measures have been completed and have become fully effective.

d. All excavation and fill activities shall be performed in a manner that minimizes disturbance and turbidity increases in "waters of the United States", wetlands, and submerged aquatic vegetation; and shall be retained in a manner to preclude its erosion into any adjacent wetlands, submerged aquatic vegetation, or waterway.

e. It is the permittee's responsibility to ensure that the contractors working on this project are aware of all general and special permit conditions associated with this permit verification.

f. The project must be constructed in accordance with the description and plans presented.

g. 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, 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.

h. The project site shall be monitored during and after construction. An initial site report documenting site conditions (to include photos) should be completed and submitted to this office 30 days prior to construction and prior to restoration activities. A second site report (to include photos) should be completed and submitted to this office 30 days after each component of work at the project site. Annual monitoring reports (to include photos) are to be completed each year and submitted to this office no later than April 30th of that following year. Monitoring reports are to include all information as outlined in the attached Monitoring and Corrective Action Plan. The monitoring reports shall be provided on a yearly basis for a period of seven years from the final construction phase.

i. If corrective actions are deemed necessary, the permittee shall submit all proposals to this office, the MDMR, and the MDEQ for review as a potential permit modification.

j. This Department of Army (DA) permit does not authorize you to take an endangered species, in particular the Piping Plover, the Gulf sturgeon, and sea turtles (leatherback, Kemp's ridley, hawksbill, green, and loggerhead). If a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action reinitiation of consultation with NMFS-PRD and/or USFWS must take place. Therefore, within 24 hours of any of the above mentioned actions taking place you shall notify this office of the event and/or finding. The enclosed (National Marine Fisheries Service) Formal Consultation Letter (April 11, 2014, F/SER31:JBH); Amendment Consultation Letter (September 26, 2014, F/SER31:JBH; and the undated NMFS Memorandum subject titled "Deepwater Horizon Early Restoration Phase III – Hancock County Marsh Living Shoreline Project: Re-Initiation of ESA Consultation" (undated 2016), contains mandatory terms and conditions to implement reasonable and prudent measures that are associated with your project. Your authorization under this DA permit is conditional upon your compliance with all of the mandatory terms and conditions associated with the enclosed Sea Turtle and Smalltooth Sawfish Construction Conditions, dated March 23, 2006; Measures for Reducing Entrapment Risk to Protected Species, revised May 22, 2012; and USFWS Standard Manatee Conditions for In-Water Work, dated 2011. Lack of compliance with these enclosed conditions would constitute non-compliance with your DA permit. The NMFS is the appropriate authority to determine compliance with the terms and conditions of these requirements (SER-2014-12925).

k. "In order for the Coast Guard to give proper notice to the maritime community; the permitted owners, contractors, or responsible party(s) shall contact Coast Guard Sector Mobile Waterways Management Branch (spw), 1500 15th Street, Mobile, AL 36615 at (251) 441-5684 OR (251) 441-5720, 60 days prior to performing the proposed action. The permitted owners, contractors, or responsible party(s) must also install and maintain, at the permitted owners, contractors, or responsible party(s) expense, any safety lights, signs and signals required by the U.S. Coast Guard, through regulations or otherwise, on the permitted owners, contractors, or responsible party(s) fixed structures. To receive a U.S. Coast Guard Private Aids to Navigation marking determination, at no later than 30 days prior to the installation of any fixed structures in navigable waters and/or prior to installation of any floating private aids to navigation, you are required to contact the Eighth Coast Guard District (dpw), 500 Poydras St. Suite 1230, New Orleans, LA 70130, (504)671-2328 or via email to: D8oanPATON@uscg.mil. For general information related to Private Aids to Navigation please visit the Eighth CG District web site at: http://www.uscg.mil/d8/waterways/PATON.Home.asp

l. The permittee shall comply with all requirements and stipulations of the United Stated Department of the Interior, Fish and Wildlife Service Review under Section 106 of the National Historic Preservation Act (NHPA)(FWS/R4/DH NRDAR) dated March 14, 2016.

Further Information:

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

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
(X) Section 10 of the Rivers and Harbors Act 1899 (33 U.S.C. 403).

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.

Marc Wyatt — 4/20/2016

(PERMITTEE) **MR. MARC WYATT**
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
POST OFFICE BOX 2261
JACKSON, MISSISSIPPPI 39225

(DATE)

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

JON J. CHYTKA
COLONEL, U.S. ARMY CORPS OF ENGINEERS
DISTRICT COMMANDER

BY: Allison Monroe — 4/21/16

MUNTHER N. SAHAWNEH
CHIEF, SOUTH MISSISSIPPI BRANCH
REGULATORY DIVISION

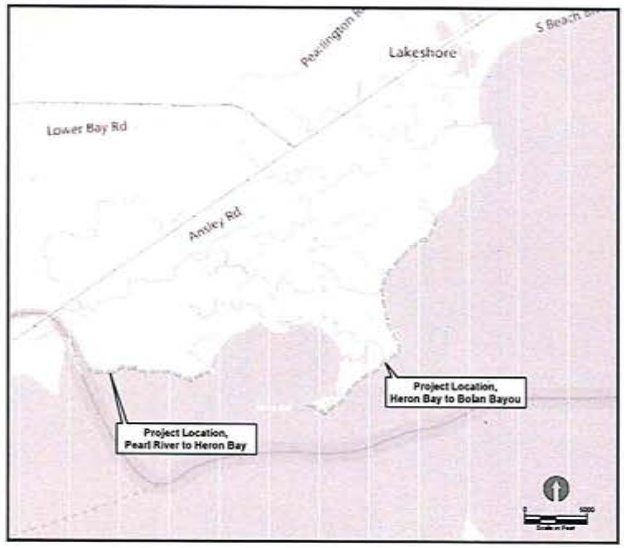
(DATE)

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)

HANCOCK COUNTY MARSH LIVING SHORELINE

HANCOCK COUNTY, MISSISSIPPI



DRAWING INDEX		
SHEET	DRAWING	TITLE
1	G1	TITLE SHEET
2	C1	PEARL RIVER TO HERON BAY PROJECT LAYOUT, STA. 0+00 TO 13+00
3	C2	PEARL RIVER TO HERON BAY PROJECT LAYOUT, STA. 13+00 TO 28+40
4	C3	PEARL RIVER TO HERON BAY PROJECT LAYOUT, STA. 28+40 TO 44+00
5	C4	PEARL RIVER TO HERON BAY PROJECT LAYOUT, STA. 44+00 TO 58+80
6	C5	PEARL RIVER TO HERON BAY PROJECT LAYOUT, STA. 58+80 TO 75+60
7	C6	PEARL RIVER TO HERON BAY PROJECT LAYOUT, STA. 75+60 TO 90+20
8	C7	PEARL RIVER TO HERON BAY PROJECT LAYOUT, STA. 90+20 TO 102+70
9	C8	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 0+00 TO 16+60
10	C9	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 16+60 TO 33+40
11	C10	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 33+40 TO 46+00
12	C11	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 46+00 TO 57+80
13	C12	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 57+80 TO 74+80
14	C13	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 74+80 TO 87+40
15	C14	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 87+40 TO 98+00
16	C15	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 98+00 TO 108+40
17	C16	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 108+40 TO 119+00
18	C17	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 119+00 TO 129+40
19	C18	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 129+40 TO 144+00
20	C19	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 144+00 TO 154+60
21	C20	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 154+60 TO 167+20
22	C21	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 167+20 TO 180+60
23	C22	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 180+60 TO 196+60
24	C23	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 196+60 TO 209+20
25	C24	LIGHTHOUSE BAYOU TO BOLAN BAYOU PROJECT LAYOUT, STA. 209+20 TO 215+60
26	C25	TYPICAL BREAKWATER SECTIONS AND DETAILS
27	C26	HERON BAY REEF PROBE LOCATIONS FOR PROPOSED SUB-TIDAL REEF
28	C27	HERON BAY MARSH PROBE LOCATIONS FOR PROPOSED MARSH FILL PLACEMENT

ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, LLC

REVISIONS				
REV	DATE	BY	APPD	DESCRIPTION

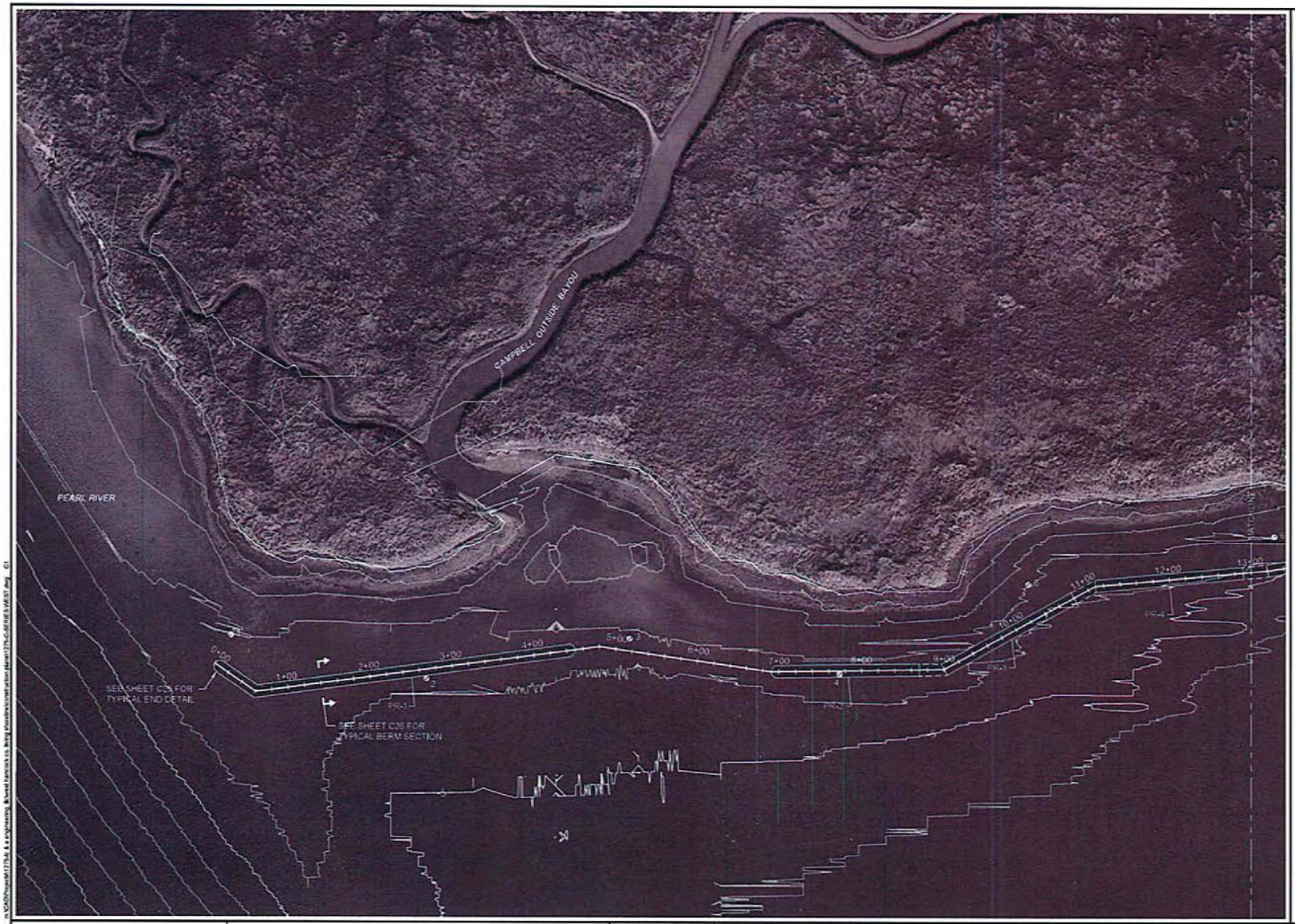
DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLMER
CHECKED BY: W. MEARS
APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

TITLE SHEET

G1

SHEET NO. 1 OF 28



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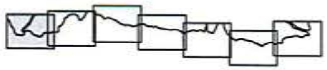

LEGEND:

- BREAKWATER CREST (SEE NOTE 6)
- BREAKWATER GAP (SEE SHEET C25)
- 14+00 PROJECT ALIGNMENT AND STATION
- GEOTECHNICAL BORING BY BURNS, COOLEY, DENNIS, INC. (MAY 2015)
- GEOTECHNICAL BORING BY SOILTECH CONSULTANTS (JUNE 2013)
- SICT SAMPLE BY ANCHOR QEA (2015)

NORTH

0 60 120
SCALE IN FEET

NOTES:

1. HORIZONTAL DATUM: MISSISSIPPI STATE PLANES EAST ZONE, NAD 83, U.S. FEET.
2. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. 0.0 FEET MEAN LOWER LOW WATER (MLLW) = -0.3 FEET NAVD88
4. AERIAL PHOTOGRAPH FROM GOOGLE EARTH PRO, 2015.
5. SURVEY BY HYDROTERRA, MISSISSIPPI LIVING SHORELINE RESTORATION PROJECT, PEARL RIVER TO HERON BAY, SURVEY PERFORMED DECEMBER 2014, JANUARY TO MARCH 2015.
6. PLANS DO NOT SHOW FULL EXTENT OF BREAKWATER; ONLY THE 15' CREST WIDTH.

ONE INCH AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, co

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SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

PEARL RIVER TO HERON BAY PROJECT LAYOUT, STA. 0+00 TO 13+00

C1

SHEET NO. 2 OF 28

Aug 19, 2015 9:33am dholmer
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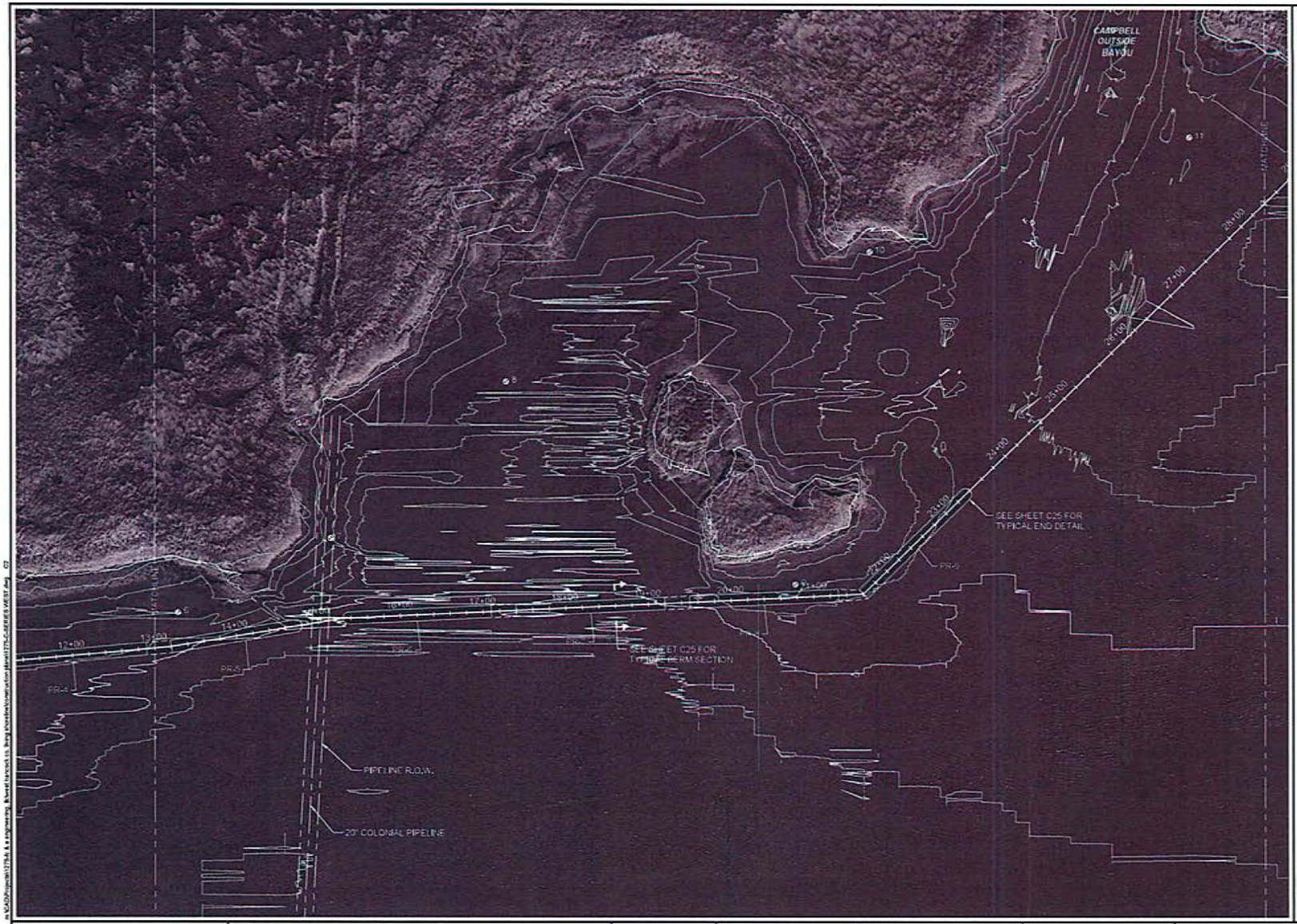

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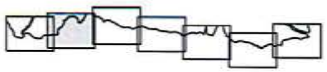

LEGEND:

- BREAKWATER CREST (SEE NOTE 6)
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- SICT SAMPLE BY ANCHOR QEA (2015)

NORTH

0 60 120
SCALE IN FEET

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6. PLANS DO NOT SHOW FULL EXTENT OF BREAKWATER; ONLY THE 15' CREST WIDTH.
7. PIPELINE RIGHT-OF-WAY INFORMATION PROVIDED BY COLONIAL PIPELINE.

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, LLC

REVISIONS				
REV	DATE	BY	APPD	DESCRIPTION

DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLMER
CHECKED BY: W. MEARS
APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

PEARL RIVER TO HERON BAY PROJECT LAYOUT, STA. 13+00 TO 28+40

C2

SHEET NO. 3 OF 28

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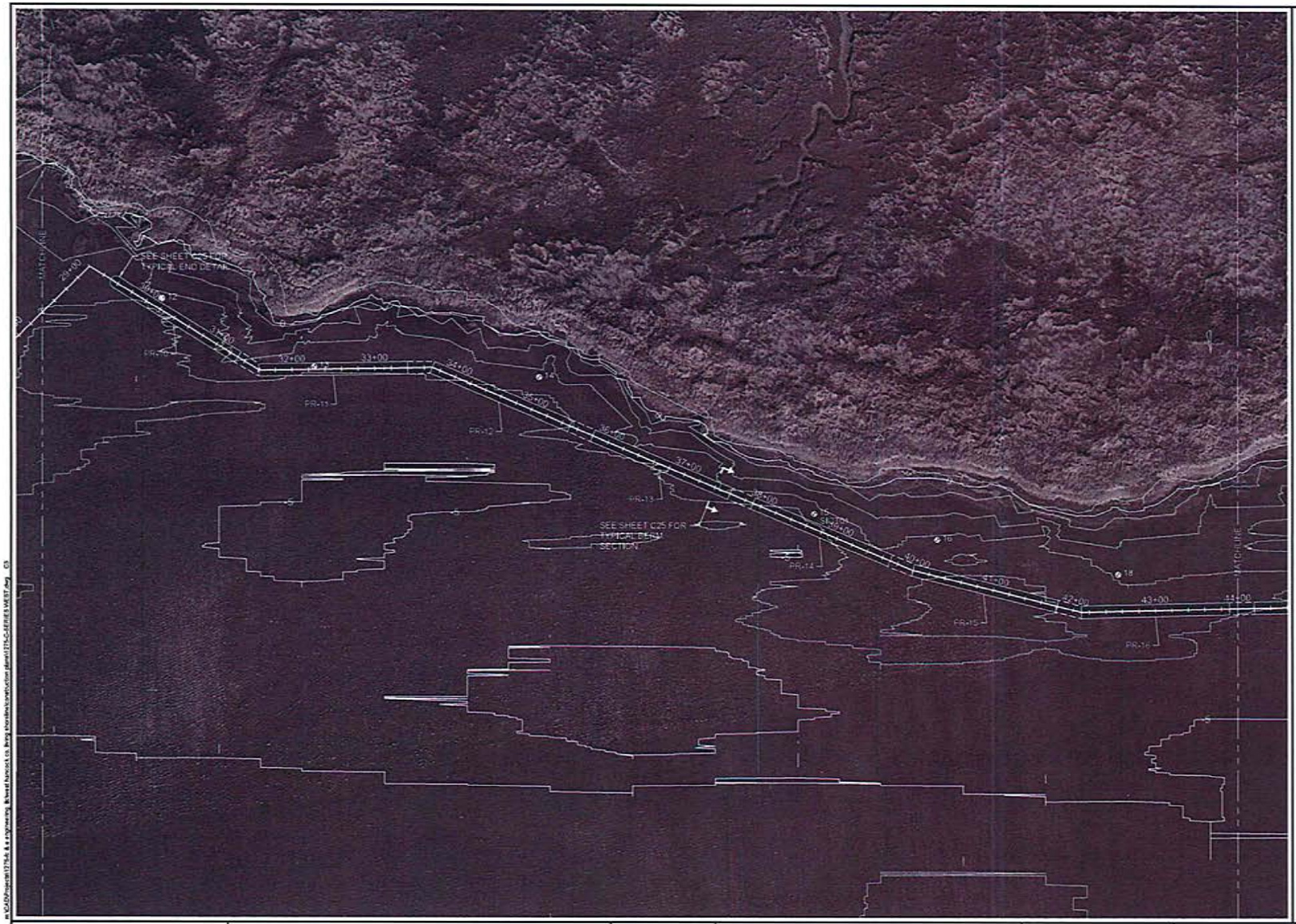

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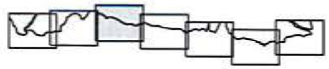

LEGEND:

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- SICT SAMPLE BY ANCHOR QEA (2015)

NORTH

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SCALE IN FEET

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6. PLANS DO NOT SHOW FULL EXTENT OF BREAKWATER; ONLY THE 15' CREST WIDTH.

ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, LLC

REVISIONS				
REV	DATE	BY	APPD	DESCRIPTION

DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLMER
CHECKED BY: W. MEARS
APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

PEARL RIVER TO HERON BAY PROJECT LAYOUT, STA. 28+40 TO 44+00

C3

SHEET NO. 4 OF 28

Aug 18, 2015 9:33am dholmer
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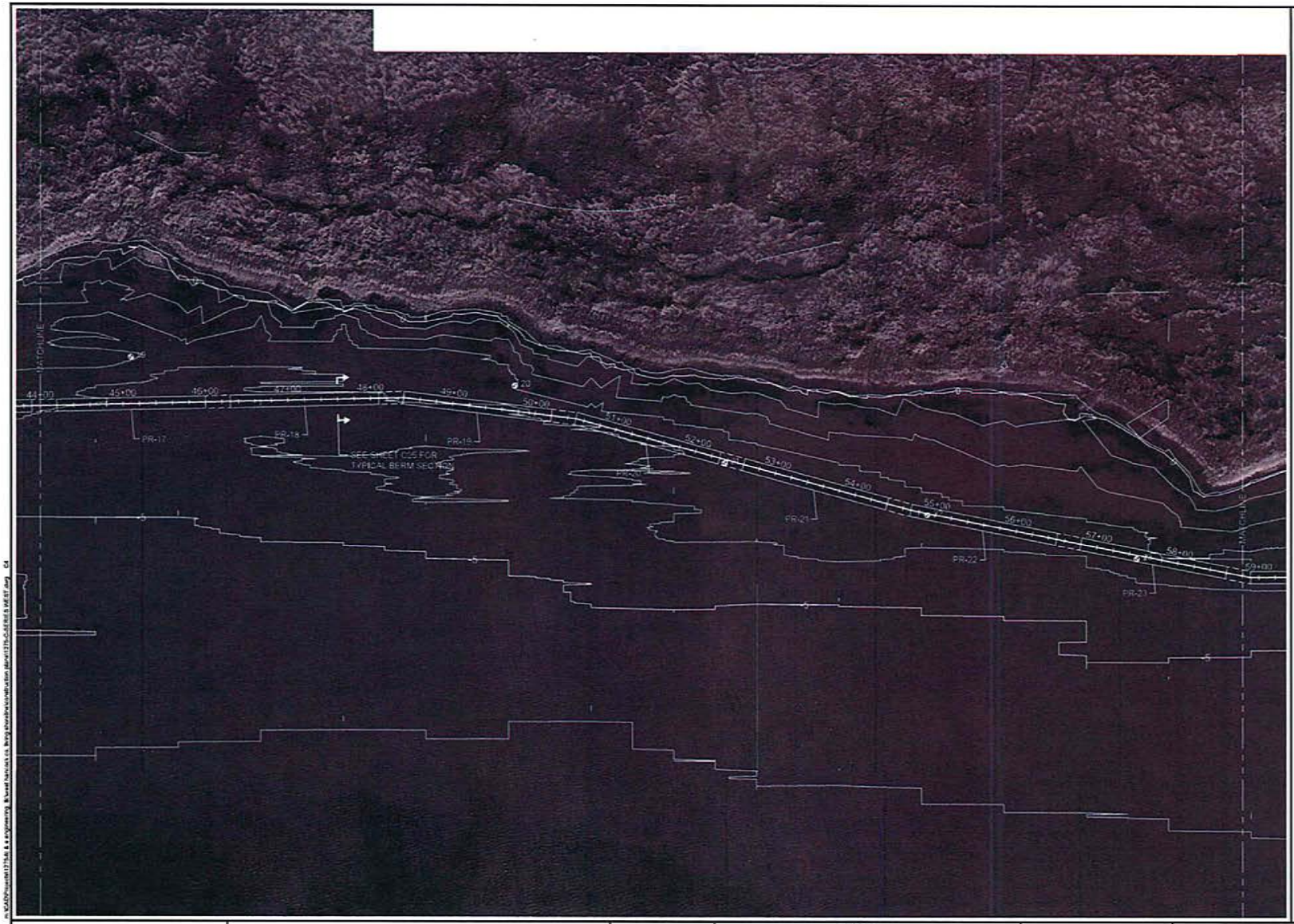

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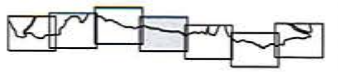

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NORTH

0 60 120
SCALE IN FEET

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ONE INCH
AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, LLC

REVISIONS				
REV	DATE	BY	APPD	DESCRIPTION

DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLMER
CHECKED BY: W. MEARS
APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

PEARL RIVER TO HERON BAY PROJECT LAYOUT, STA. 44+00 TO 58+80

C4

SHEET NO. 5 OF 28

Aug 18, 2015 9:31am dholmer
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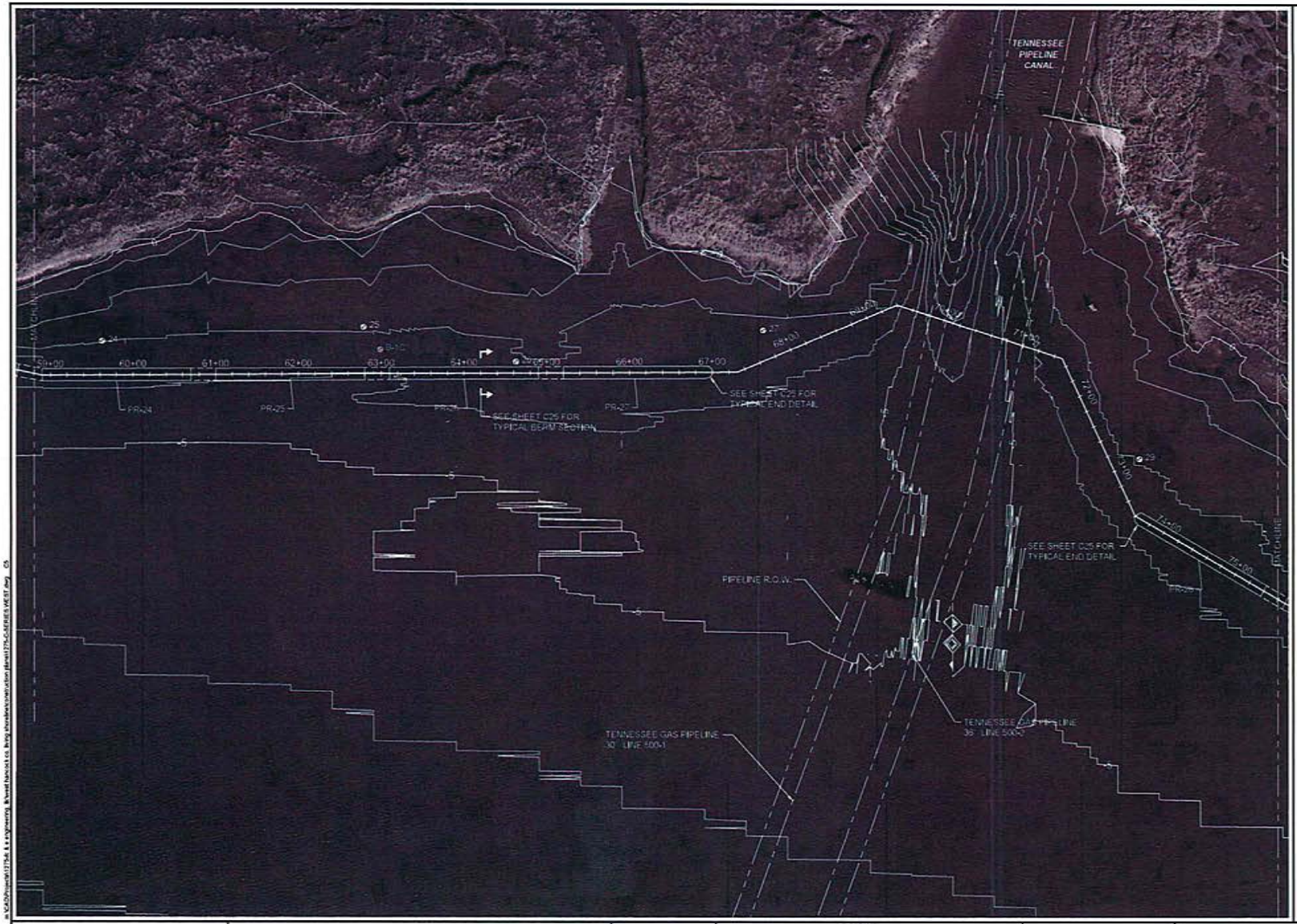

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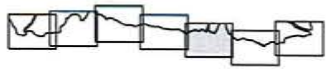

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NORTH

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SCALE IN FEET

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ONE INCH
AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, LLC

REVISIONS				
REV	DATE	BY	APPD	DESCRIPTION

DESIGNED BY: K. ROBERTSON
DRAWN BY: D. HOLMER
CHECKED BY: W. MEARS
APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

PEARL RIVER TO HERON BAY PROJECT LAYOUT, STA. 58+80 TO 75+60

C5

SHEET NO. 5 OF 28

Aug 18, 2015 9:31am dholmer
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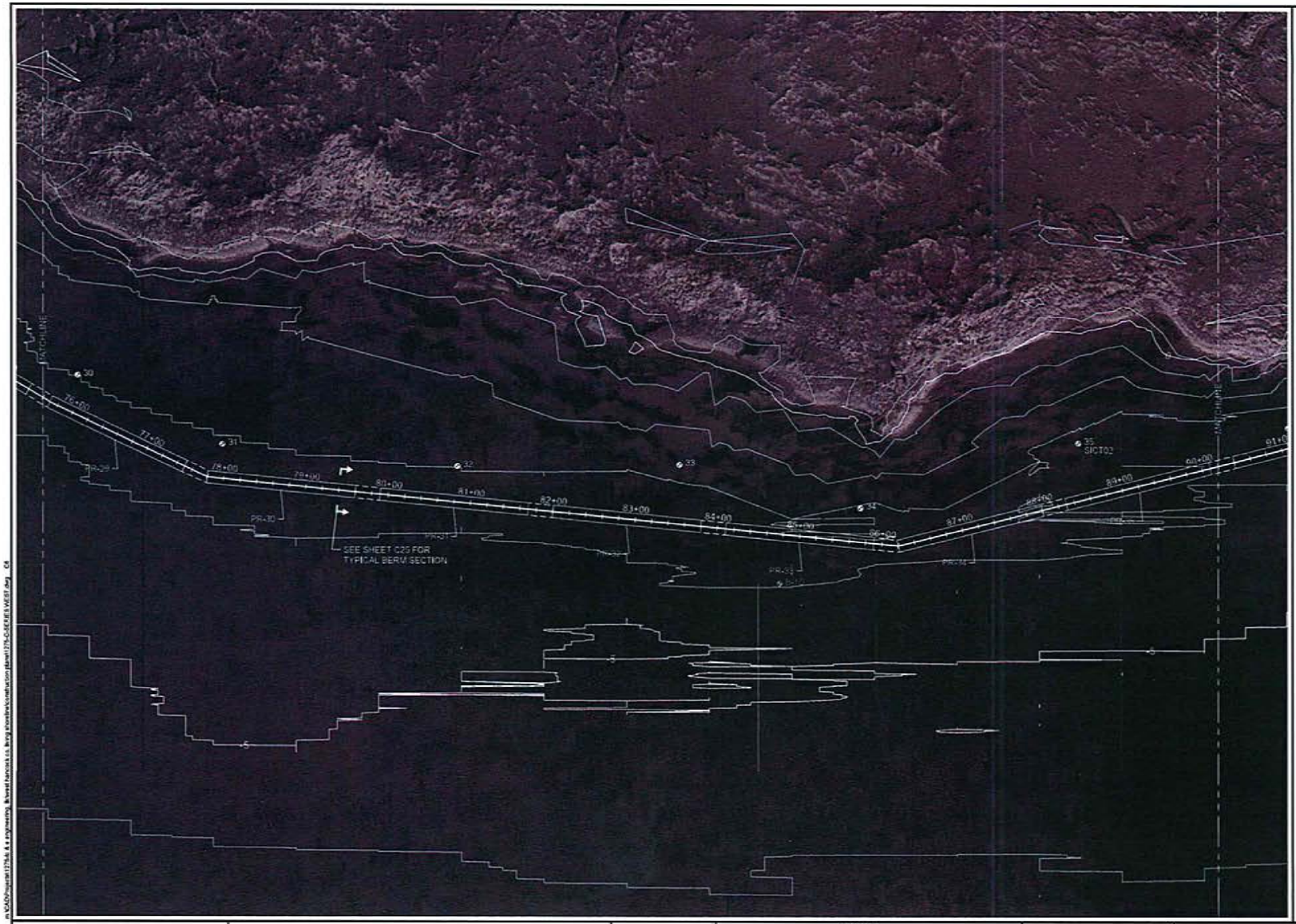

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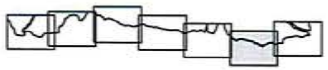

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NORTH

0 60 120
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6. PLANS DO NOT SHOW FULL EXTENT OF BREAKWATER; ONLY THE 15' CREST WIDTH.

ONE INCH
AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, LLC

REVISIONS				
REV.	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLNER
CHECKED BY: W. MEARS
APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

PEARL RIVER TO HERON BAY PROJECT LAYOUT, STA. 75+60 TO 90+20

C6

SHEET NO. 7 OF 28

Aug 19, 2015 9:33am dhalner
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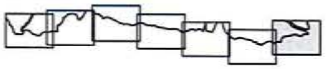

LEGEND:

- BREAKWATER CREST (SEE NOTE 6)
- BREAKWATER GAP (SEE SHEET C25)
- 14+00 PROJECT ALIGNMENT AND STATION
- GEOTECHNICAL BORING BY BURNS, COOLEY, DENNIS, INC. (MAY 2015)
- GEOTECHNICAL BORING BY SOILTECH CONSULTANTS (JUNE 2013)
- SICT SAMPLE BY ANCHOR QEA (2015)

NORTH

0 60 120
SCALE IN FEET

NOTES:

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ANCHOR QEA

FC&E Engineering, LLC

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DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLMER
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APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

PEARL RIVER TO HERON BAY PROJECT
LAYOUT, STA. 90+20 TO 102+70

C7

SHEET NO. 8 OF 28

Aug 18, 2015 9:31am dholmer
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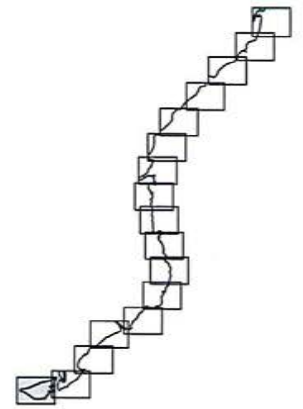

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NORTH

0 60 120
SCALE IN FEET

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ANCHOR QEA

FC&E Engineering, LLC

REVISIONS				
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DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLMER
CHECKED BY: W. MEARS
APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2016

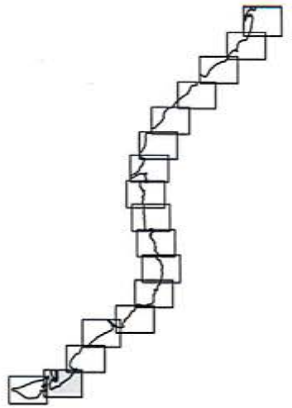
HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 0+00 TO 16+60

C8

SHEET NO. 9 OF 28

SHEET INDEX:



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NORTH

0 60 120
SCALE IN FEET

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ANCHOR QEA

FC&E Engineering, Inc

REVISIONS				
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DESIGNED BY: R. ROBERTSON
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APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 16+60 TO 33+40

C9

SHEET NO. 10 OF 28

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Aug 13, 2015 9:42am dholmer

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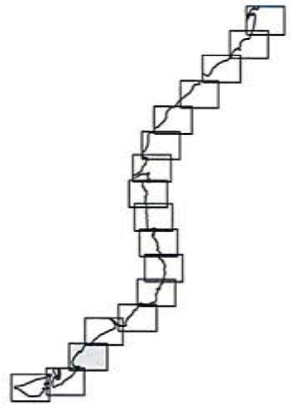

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NORTH

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SCALE IN FEET

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ANCHOR QEA

FC&E Engineering, LLC

REVISIONS				
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APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

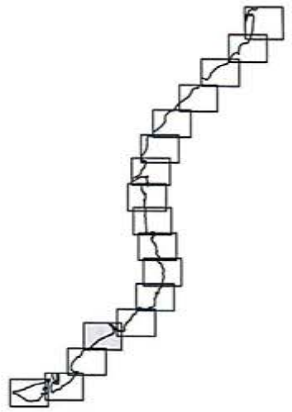
HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 33+40 TO 46+00

C10

SHEET NO. 11 OF 28

SHEET INDEX:



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- BREAKWATER GAP (SEE SHEET C25)
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NORTH

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SCALE IN FEET

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ANCHOR QEA

FC&E Engineering, LLC

REVISIONS

REV	DATE	BY	APPD	DESCRIPTION

DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLMER
CHECKED BY: W. MEARS
APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 46+00 TO 57+80

C11

SHEET NO. 12 OF 28

Aug 18, 2015 8:42am dholmer
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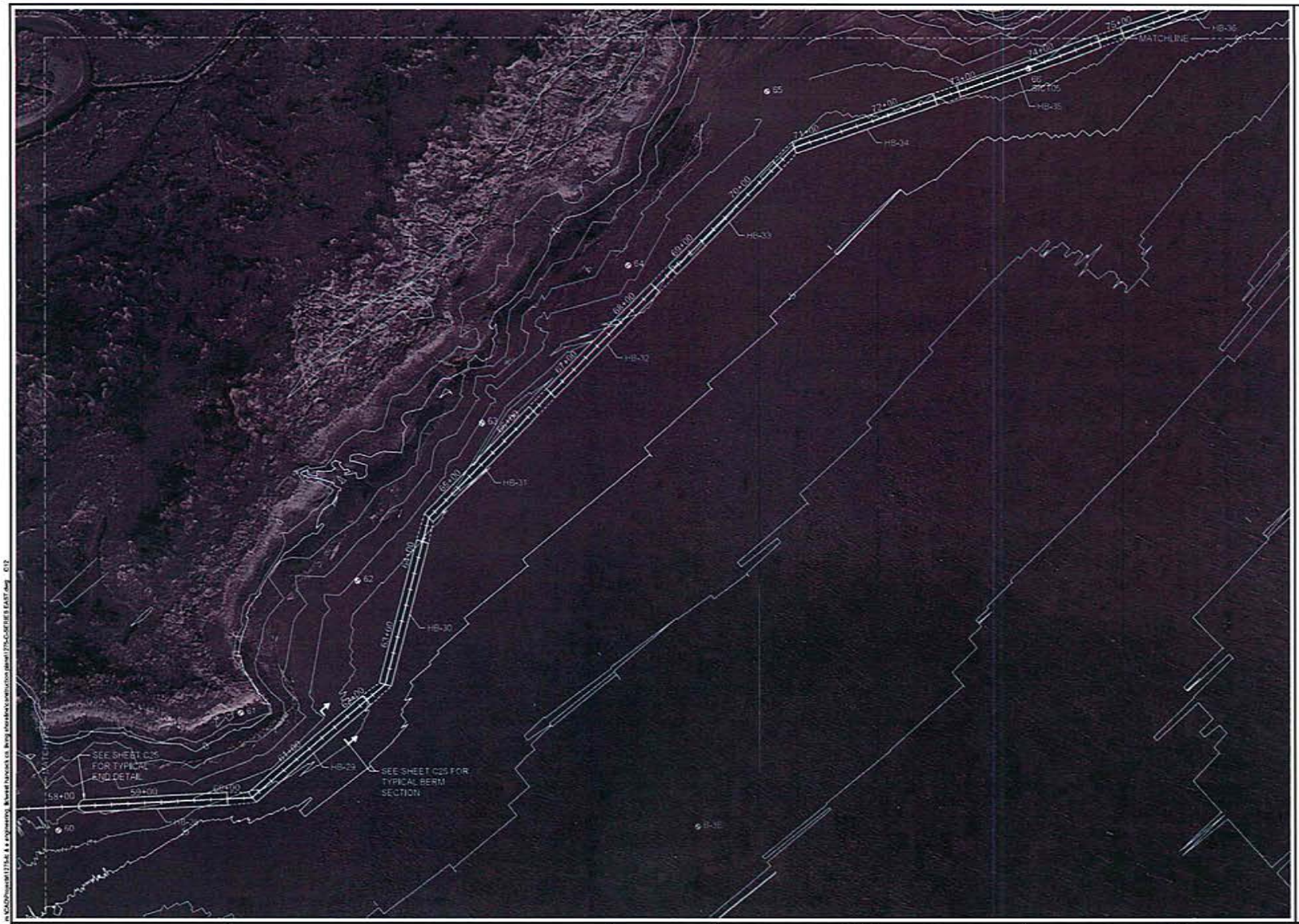

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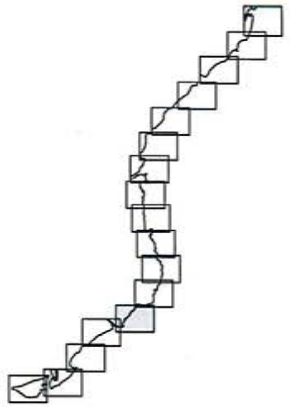

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- BREAKWATER GAP (SEE SHEET C25)
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NORTH

0 60 120
SCALE IN FEET

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ANCHOR QEA

FC&E Engineering, LLC

REVISIONS				
REV	DATE	BY	APPD	DESCRIPTION

DESIGNED BY R. ROBERTSON
DRAWN BY D. HOLMER
CHECKED BY W. MEARS
APPROVED BY W. MEARS
SCALE AS NOTED
DATE AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 57+80 TO 74+80

C12

SHEET NO. 13 OF 28

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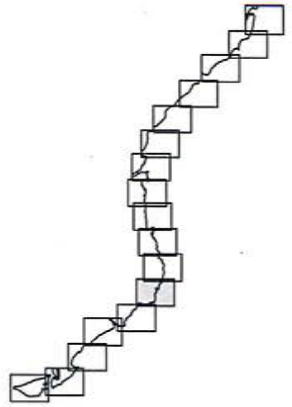

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NORTH

0 60 120
SCALE IN FEET

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ANCHOR QEA

FC&E Engineering, LLC

REVISIONS				
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DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLMER
CHECKED BY: W. MEARS
APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 74+80 TO 87+40

C13

SHEET NO. 14 OF 28

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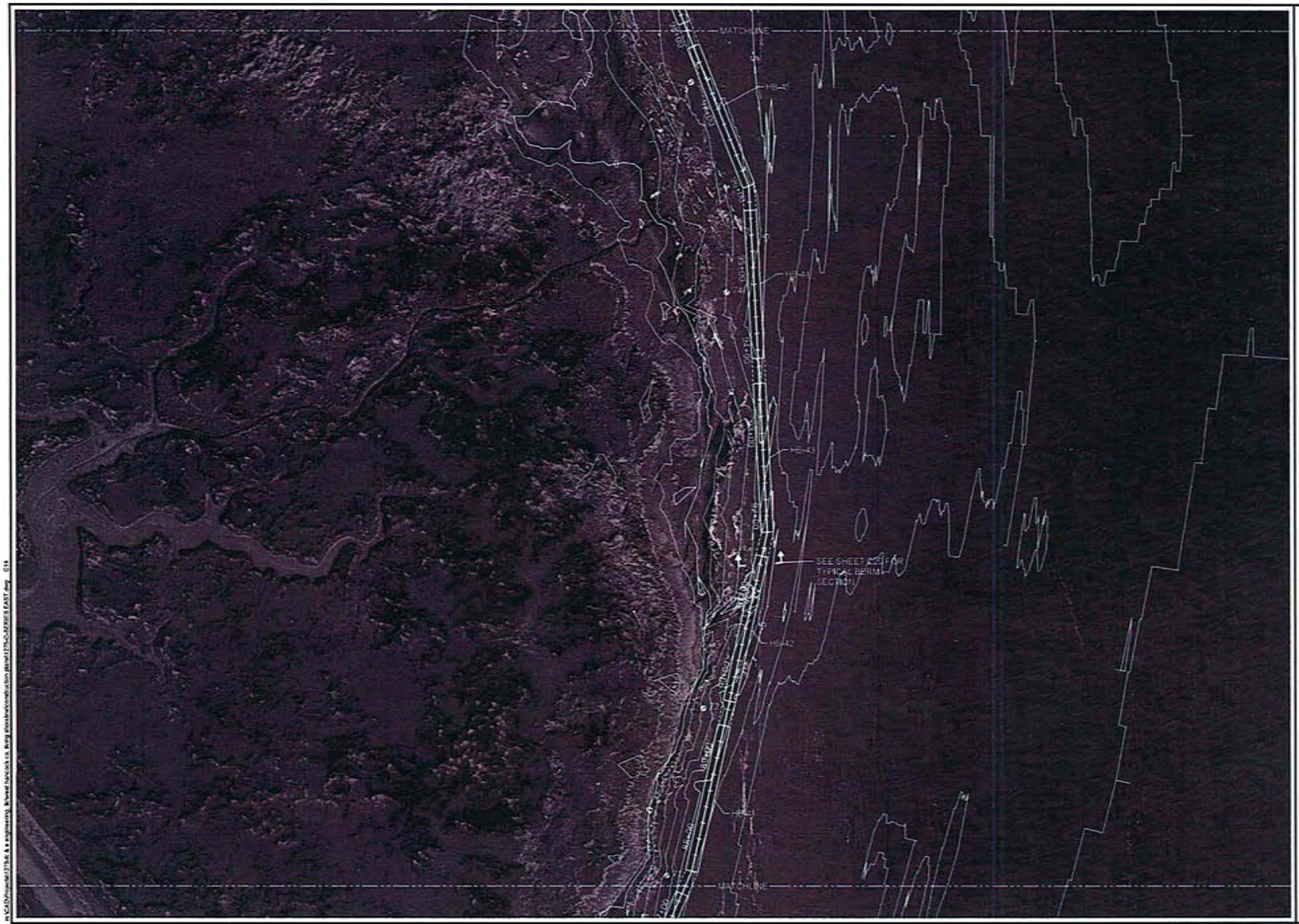

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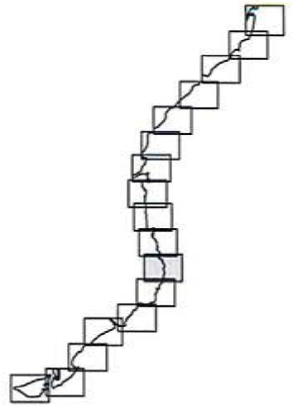

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SCALE IN FEET

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FC&E Engineering, Inc.

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HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 87+40 TO 98+00

C14

SHEET NO. 15 OF 28

Aug 18, 2015 9:42am dholmer
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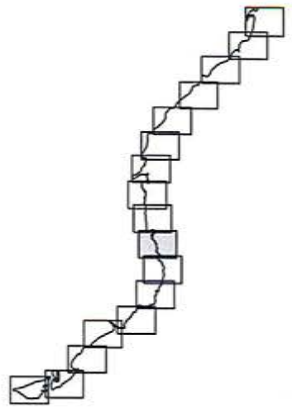

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SCALE IN FEET

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HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 98+00 TO 108+40

C15

SHEET NO. 16 OF 28

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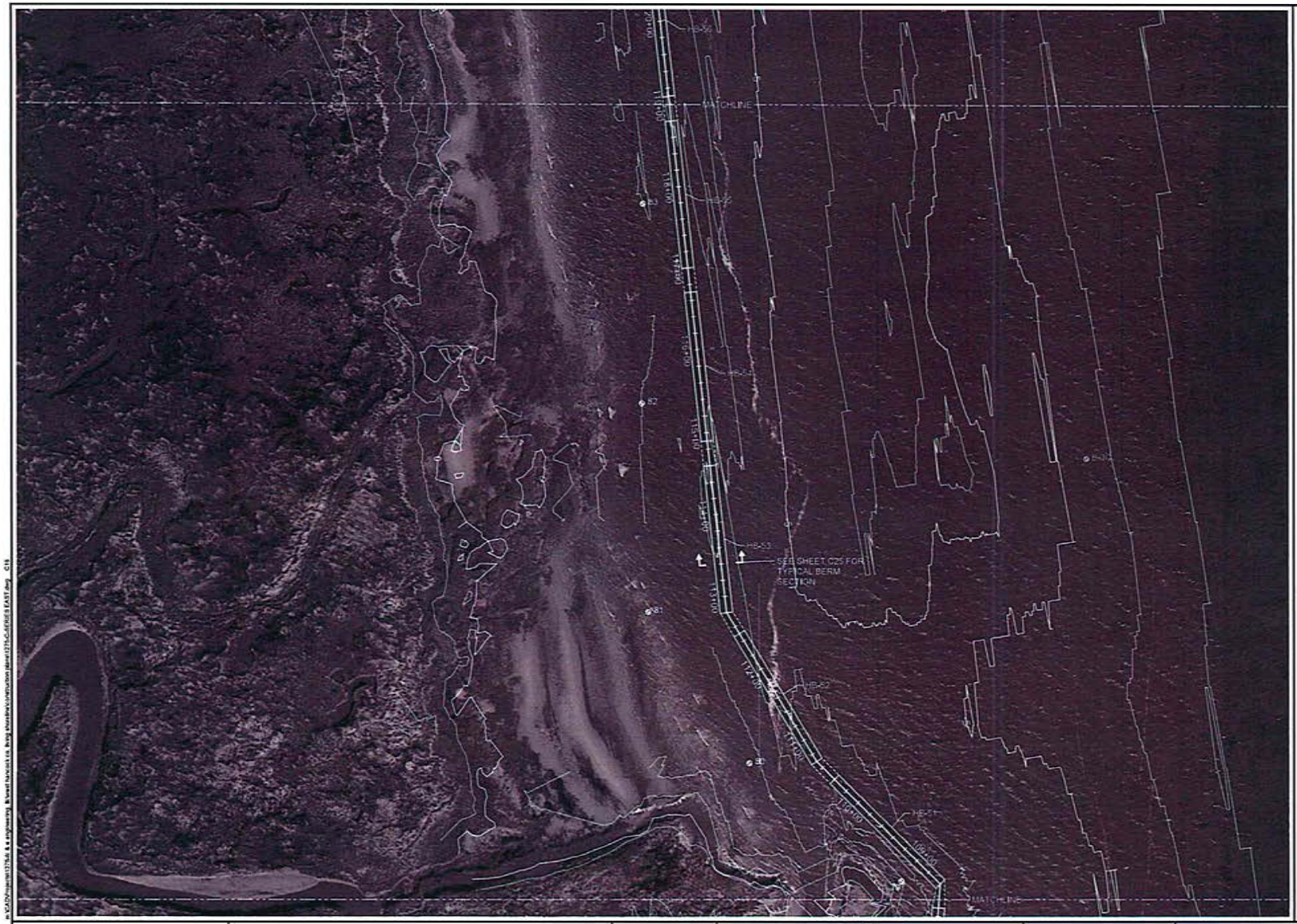

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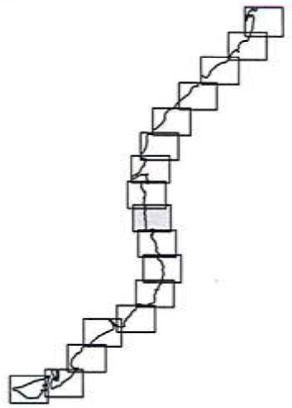

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SCALE IN FEET

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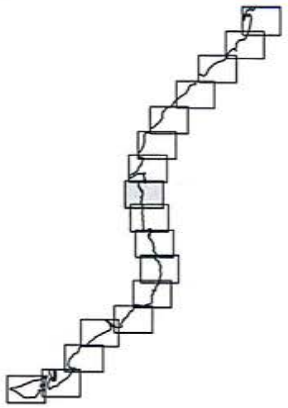
HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 108+40 TO 119+00

C16

SHEET NO. 17 OF 28

SHEET INDEX:



LEGEND:

- BREAKWATER CREST (SEE NOTE 6)
- BREAKWATER GAP (SEE SHEET C25)
- 14+00 PROJECT ALIGNMENT AND STATION
- GEOTECHNICAL BORING BY BURNS, COOLEY, DENNIS, INC. (MAY 2015)
- GEOTECHNICAL BORING BY SOILTECH CONSULTANTS (JUNE 2013)
- SICT SAMPLE BY ANCHOR QEA (2015)

NORTH

0 60 120
SCALE IN FEET

NOTES:

1. HORIZONTAL DATUM: MISSISSIPPI STATE PLANES EAST ZONE, NAD 83, U.S. FEET.
2. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. 0.0 FEET MEAN LOWER LOW WATER (MLLW) = -0.3 FEET NAVD88
4. AERIAL PHOTOGRAPH FROM GOOGLE EARTH PRO, 2015.
5. SURVEY BY HYDROTERRA, MISSISSIPPI LIVING SHORELINE RESTORATION PROJECT, LIGHTHOUSE BAYOU TO BOLAN BAYOU. SURVEY PERFORMED DECEMBER 2014, JANUARY TO MARCH 2015.
6. PLANS DO NOT SHOW FULL EXTENT OF BREAKWATER; ONLY THE 15' CREST WIDTH.

ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, LLC

REVISIONS				
REV	DATE	BY	APPD	DESCRIPTION

DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLMER
CHECKED BY: W. MEARS
APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

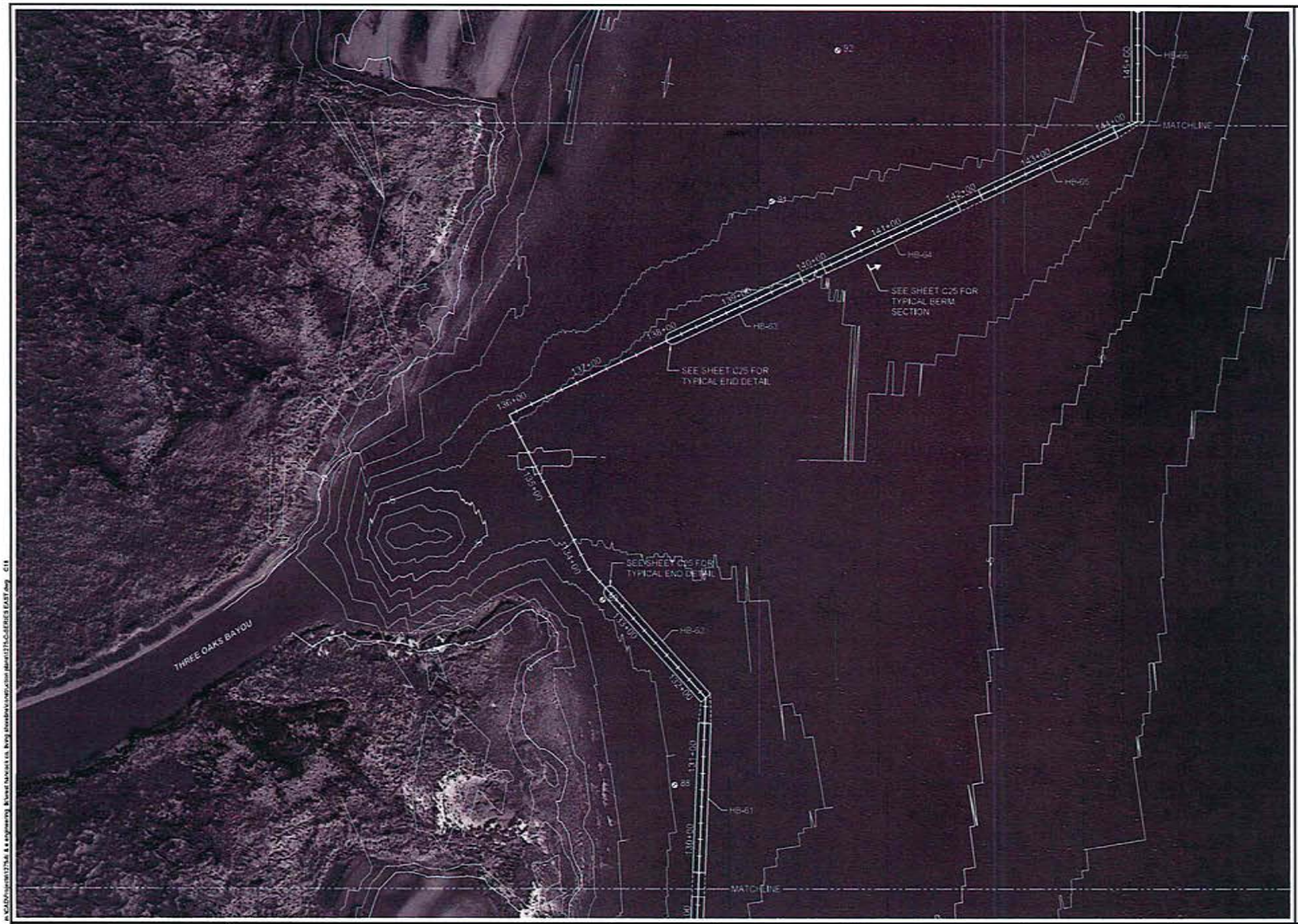
HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 119+00 TO 129+40

C17

SHEET NO. 18 OF 28

Aug 18, 2015 9:41am dholmer
n:\CAD\Projects\1275ch & s engineering &sheet layouts cs .dwg shorelineconstruction plans\1275-CS-SERIES EAST.dwg C17



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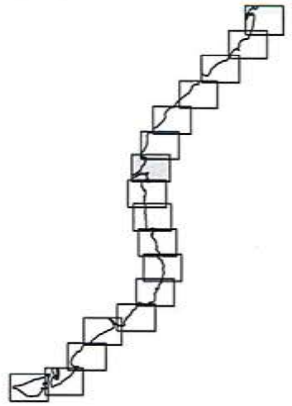

LEGEND:

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- BREAKWATER GAP (SEE SHEET C25)
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- GEOTECHNICAL BORING BY SOILTECH CONSULTANTS (JUNE 2013)
- SICT SAMPLE BY ANCHOR QEA (2015)

NORTH

0 60 120
SCALE IN FEET

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6. PLANS DO NOT SHOW FULL EXTENT OF BREAKWATER; ONLY THE 15' CREST WIDTH.

ORIGINAL AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, LLC

REVISIONS				
REV.	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLMER
CHECKED BY: W. MEARS
APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 129+40 TO 144+00

C18

SHEET NO. 19 OF 28

Aug 13, 2015 9:41am dholmer
m:\CAD\Projects\137\06_8 a engineering_fc\set files\cs cs_living shoreline\construction plans\137x-C-SERIES EAST.dwg C18

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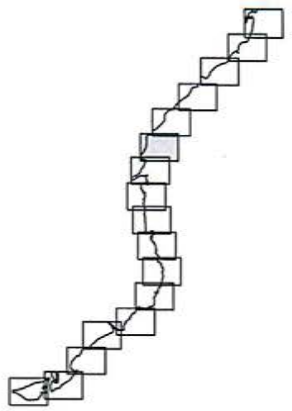

LEGEND:

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- BREAKWATER GAP (SEE SHEET C25)
- 14+00 PROJECT ALIGNMENT AND STATION
- GEOTECHNICAL BORING BY BURNS, COOLEY, DENNIS, INC. (MAY 2015)
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NORTH

0 60 120
SCALE IN FEET

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6. PLANS DO NOT SHOW FULL EXTENT OF BREAKWATER; ONLY THE 15' CREST WIDTH.

ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, LLC

REVISIONS				
REV	DATE	BY	APPD	DESCRIPTION

DESIGNED BY: R. ROBERTSON
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APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 144+00 TO 154+60

C19

SHEET NO. 20 OF 28

Aug 19, 2015 8:41am dholmer
n:\QAD\Projects\275-5_s engineering, llc\east hancock co. living shoreline\construction plans\275-C-SERIES EAST.dwg C19

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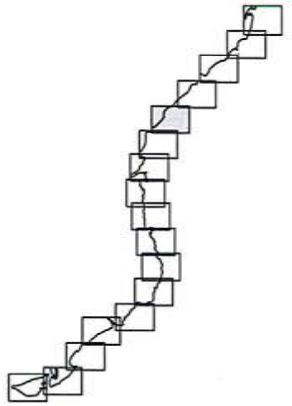

LEGEND:

- BREAKWATER CREST (SEE NOTE 6)
- BREAKWATER GAP (SEE SHEET C25)
- 14+00 PROJECT ALIGNMENT AND STATION
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NORTH

0 60 120
SCALE IN FEET

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6. PLANS DO NOT SHOW FULL EXTENT OF BREAKWATER; ONLY THE 15' CREST WIDTH.

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, LLC

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

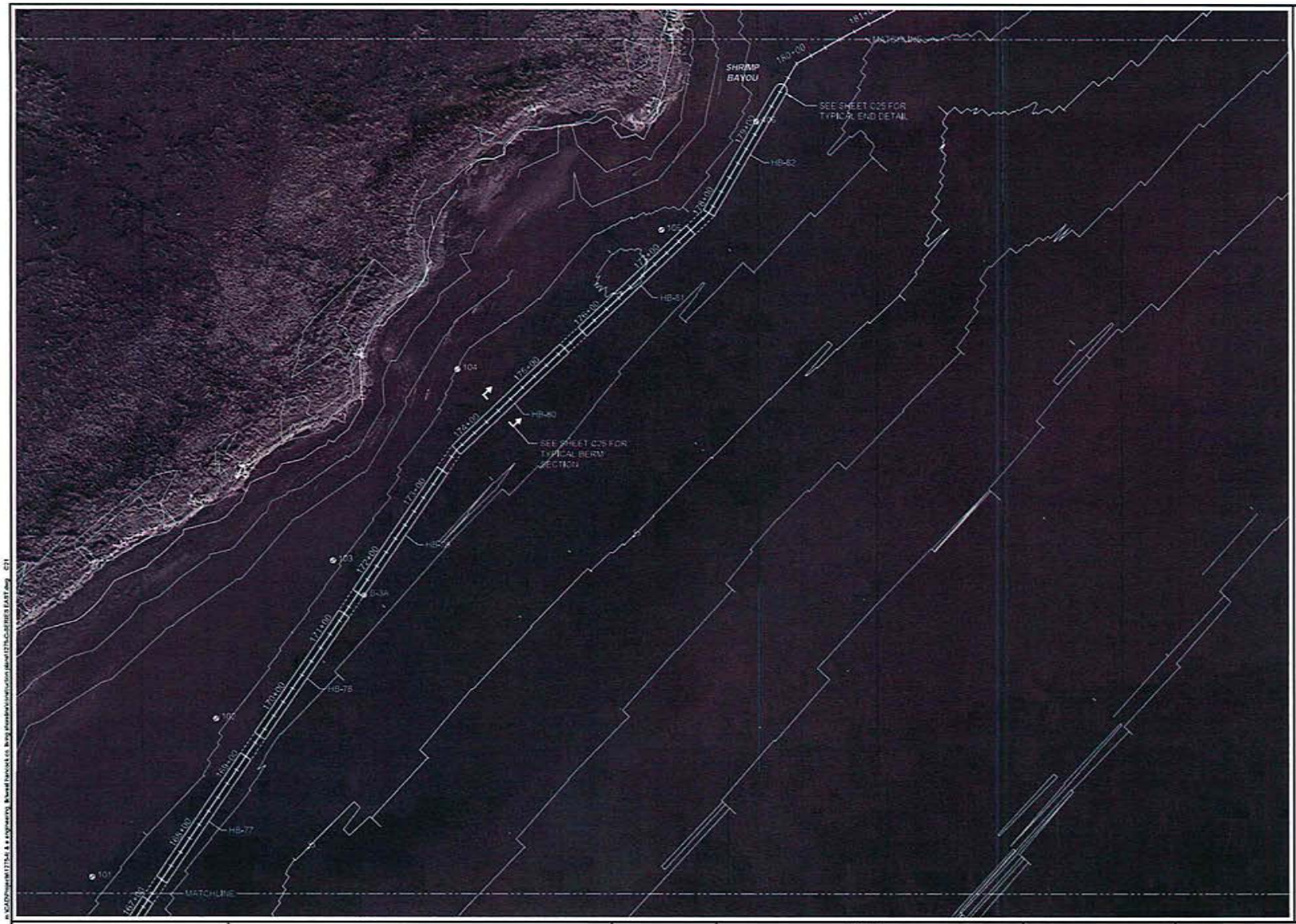
DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLMER
CHECKED BY: W. MEARS
APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 154+60 TO 167+20

C20

SHEET NO. 21 OF 28



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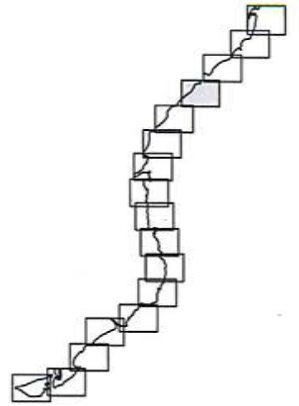

LEGEND:

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- SICT SAMPLE BY ANCHOR QEA (2015)

NORTH

0 60 120
SCALE IN FEET

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6. PLANS DO NOT SHOW FULL EXTENT OF BREAKWATER; ONLY THE 15' CREST WIDTH.

ONE INCH
AT FULL SIZE IF NOT ONE, REDUCE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, llc

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLMER
CHECKED BY: W. MEARS
APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

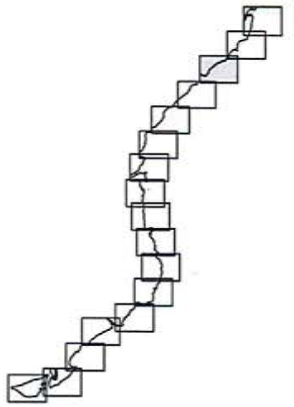
HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 167+20 TO 180+60

C21

SHEET NO. 22 OF 28

SHEET INDEX:



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NORTH

0 60 120
SCALE IN FEET

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6. PLANS DO NOT SHOW FULL EXTENT OF BREAKWATER; ONLY THE 15' CREST WIDTH.

ONE INCH
AT FULL SIZE, IF NOT ONE INCH USE AS GRAPHIC SCALE

ANCHOR QEA

FC&E Engineering, LLC

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLMER
CHECKED BY: W. WEARS
APPROVED BY: W. WEARS
SCALE: AS NOTED
DATE: AUGUST 2015

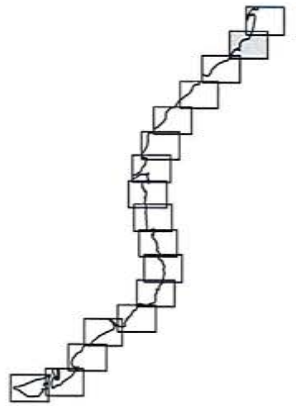
HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 180+60 TO 196+60

C22

SHEET NO. 23 OF 28

SHEET INDEX:



LEGEND:

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- SICT SAMPLE BY ANCHOR QEA (2015)

NORTH

0 60 120
SCALE IN FEET

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ONE INCH
AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, inc

REVISIONS				
REV	DATE	BY	APPD	DESCRIPTION

DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLMER
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APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 196+50 TO 209+20

C23

SHEET NO. 24 OF 28

Aug 18, 2015 8:11am dholmer
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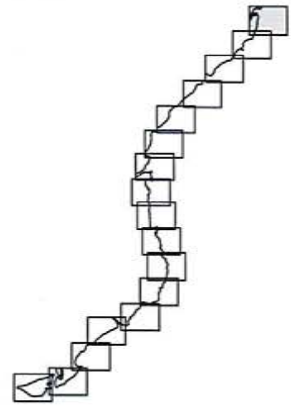

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NORTH

0 60 120
SCALE IN FEET

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ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, LLC

REVISIONS				
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DESIGNED BY: R. ROBERTSON
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SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

LIGHTHOUSE BAYOU TO BOLAN BAYOU
PROJECT LAYOUT, STA. 209+20 TO 215+60

C24

SHEET NO. 25 OF 28

Aug 18, 2015 8:41pm dholmer
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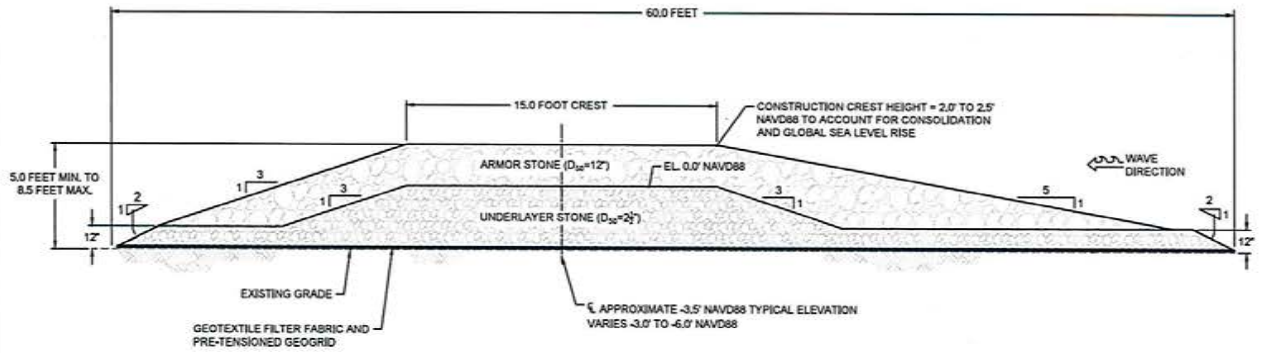
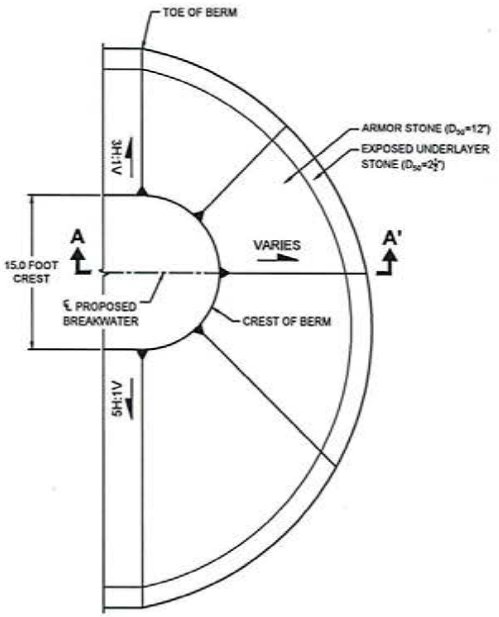
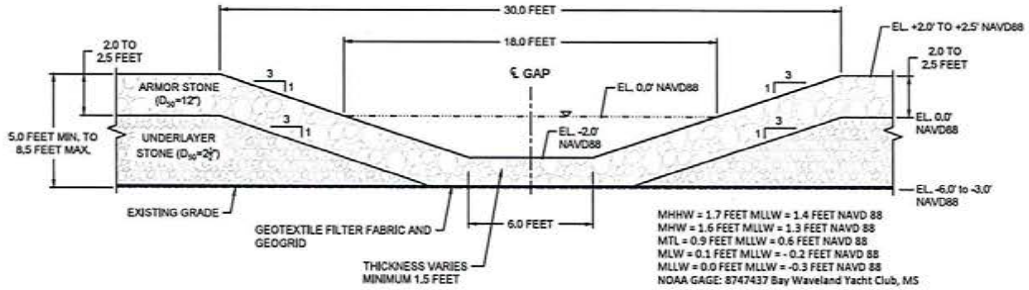


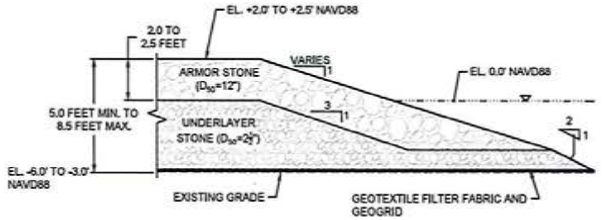
SECTION - TYPICAL BREAKWATER DETAIL
SCALE: 1" = 3'



PLAN - TYPICAL BREAKWATER ROUNDHEAD AT GAP DETAIL
SCALE: 1" = 6'



DETAIL - TYPICAL BREAKWATER GAP DETAIL
SCALE: 1" = 3'



SECTION - TYPICAL BREAKWATER ROUNDHEAD AT END DETAIL
SCALE: 1" = 3'

IF NOT ONE INCH THIS SIZE, SCALE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, inc

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

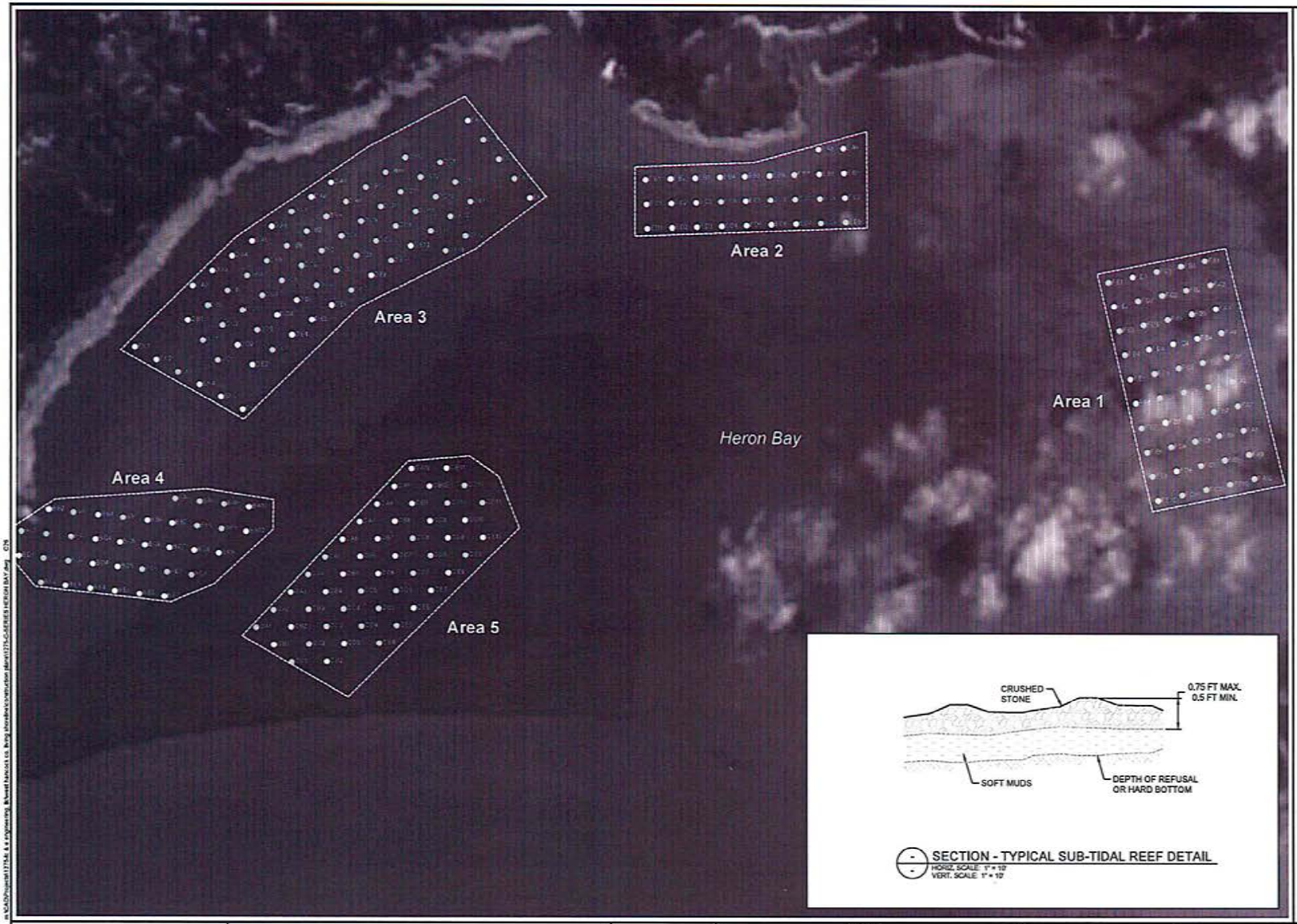
DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLMER
CHECKED BY: W. MEARS
APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

TYPICAL BREAKWATER SECTIONS AND DETAILS

C25

SHEET NO. 26 OF 28



SECTION - TYPICAL SUB-TIDAL REEF DETAIL
HORIZ. SCALE: 1" = 10'
VERT. SCALE: 1" = 10'

LEGEND:

- LESS THAN 0.3 FT OF SOFT MUD OR SILT, REFUSAL INTO HARD MUD
- MORE THAN 0.3 FT OF SOFT MUD, REFUSAL OR INCLUSIONS OF SHELL OR SHELL HASH
- MORE THAN 0.3 FT OF SOFT MUD, REFUSAL INTO HARD MUD
- SOFT MATERIALS > 2.0 FEET THICK OR NO REFUSAL NOTED

NORTH

0 400 800
SCALE IN FEET

NOTES:

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3. 0.0 FEET MEAN LOWER LOW WATER (MLLW) = -0.3 FEET NAVD88
4. AERIAL PHOTOGRAPH FROM ESRI.
5. 46 ACRE SUB-TIDAL REEF TO BE CREATED WITHIN THE 75 ACRES SHOWN (AREAS 1 - 5)
6. PROBING SURVEY PERFORMED BY DIMCO ON JULY 7, 2015.

ONE INCH
AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, inc

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

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HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

HERON BAY REEF PROBE LOCATIONS FOR PROPOSED SUB-TIDAL REEF

C26

SHEET NO. 27 OF 28

Aug 18, 2015 8:53pm dholmer
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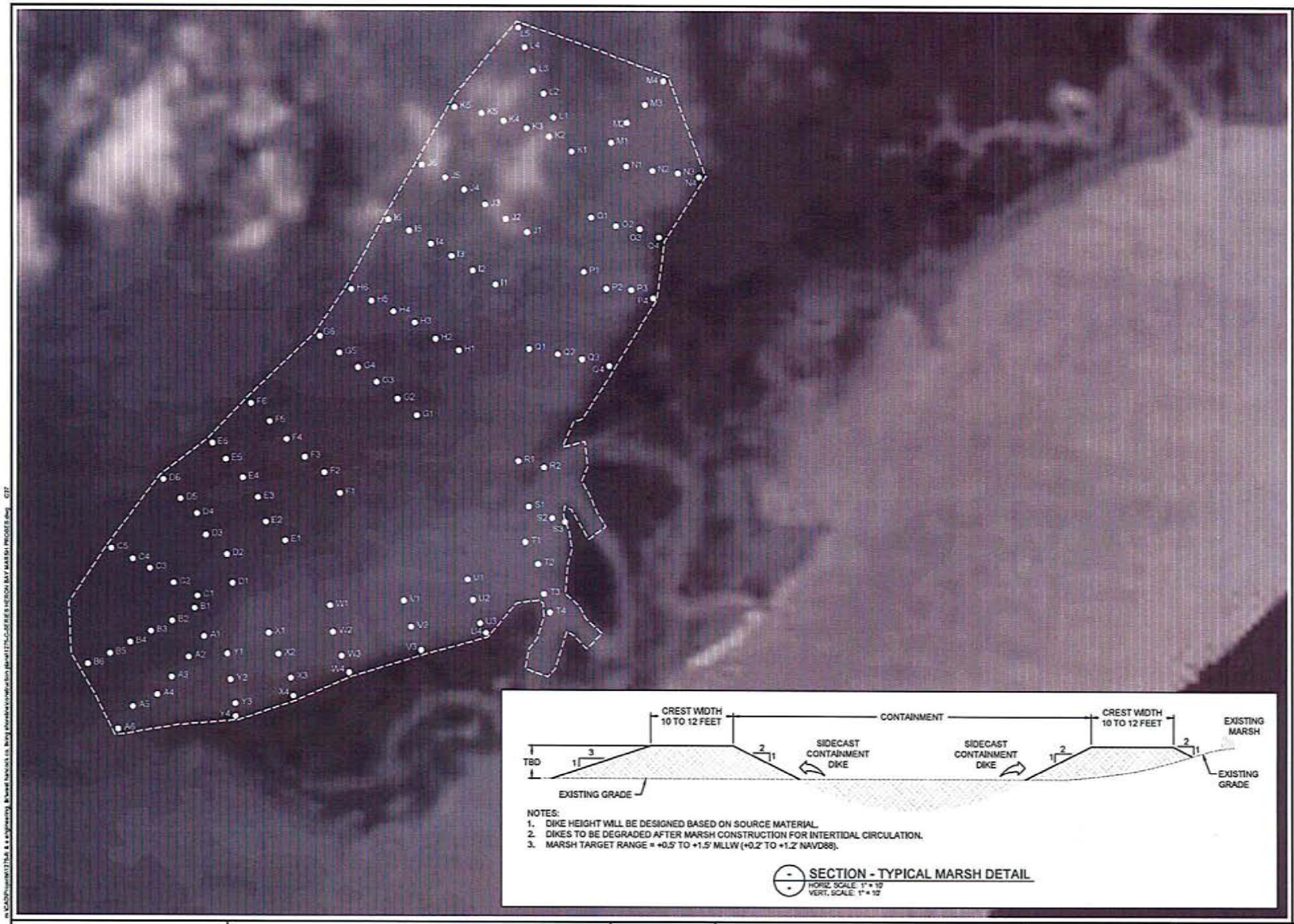


NOTES:
1. DIKE HEIGHT WILL BE DESIGNED BASED ON SOURCE MATERIAL.
2. DIKES TO BE DEGRADED AFTER MARSH CONSTRUCTION FOR INTERTIDAL CIRCULATION.
3. MARSH TARGET RANGE = +0.5' TO +1.5' MLLW (+0.2' TO +1.2' NAVD88).

SECTION - TYPICAL MARSH DETAIL

HORIZ. SCALE: 1" = 10'
VERT. SCALE: 1" = 10'

LEGEND:

TARGET AREA FOR MARSH FILL PLACEMENT

PROBE LOCATION

NORTH

0 200 400
SCALE IN FEET

NOTES:

1. HORIZONTAL DATUM: MISSISSIPPI STATE PLANES EAST ZONE, NAD 83, U.S. FEET.
2. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. 0.0 FEET MEAN LOWER LOW WATER (MLLW) = -0.3 FEET NAVD88
4. AERIAL PHOTOGRAPH FROM ESRI.
5. 46 ACRE MARSH TO BE CREATED WITHIN THE 86 ACRES SHOWN.
6. PROBING SURVEY PERFORMED BY DIMCO ON JULY 7, 2015.

IF NOT ONE INCH ON THIS SHEET ADJUST SCALE ACCORDINGLY

ANCHOR QEA

FC&E Engineering, inc

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: R. ROBERTSON
DRAWN BY: D. HOLMER
CHECKED BY: W. MEARS
APPROVED BY: W. MEARS
SCALE: AS NOTED
DATE: AUGUST 2015

HANCOCK COUNTY MARSH LIVING SHORELINE, MS
SAM-2013-00088-MJF / DMR-140197

HERON BAY MARSH PROBE LOCATIONS FOR PROPOSED MARSH FILL PLACEMENT

C27

SHEET NO. 28 OF 28

STATE OF MISSISSIPPI
Phil Bryant
Governor

MISSISSIPPI DEPARTMENT OF MARINE RESOURCES
Jamie M. Miller, Executive Director

November 25, 2015

Mississippi Department of Environmental Quality
Attn: Mr. Richard Harrell
P.O. Box 2261
Jackson, MS 39225

RE: Permit DMR-140197

Dear Mr. Harrell:

Please find enclosed the original and one copy of the Permit issued to you by the Mississippi Commission on Marine Resources on November 17, 2015.

Please execute this Permit by signing both documents and returning the copy to the Department of Marine Resources.

The Department of Marine Resources has also coordinated a review of your project through the Coastal Program review procedures and determined that the project referenced above is consistent with the Mississippi Coastal Program, provided that you comply with the noted conditions.

If you have any questions regarding the Permit or this correspondence, please contact Willa Brantley with the Bureau of Wetlands Permitting at 228-523-4108 or willa.brantley@dmr.ms.gov.

Sincerely,

Jamie M. Miller

Jamie M. Miller
Executive Director
Mississippi Department of Marine Resources

JMM/wjb

Enclosures

cc: Ms. Alane Young, Covington Civil and Environmental, LLC

Ms. Maryellen Farmer, USACE
Ms. Florance Bass, OPC
Mr. Raymond Carter, SOS

Permit No.: DMR-140197
Type: Permit
Date: November 25, 2015

WHEREAS, application by: The Mississippi Department of Environmental Quality for a Permit under the provisions of Chapter 27, Mississippi Code of 1972, as amended, to perform certain works affecting the coastal wetlands of the State of Mississippi in the Mississippi Sound south of the Hancock County marshes from the mouth of the Pearl River to approximately 4 miles northeast of Heron Bay and including Heron Bay, south of Ansley, Hancock County, Mississippi, was approved by said State of Mississippi Commission on Marine Resources on November 17, 2015.

NOW THEREFORE, this Permit authorizes the above named applicant hereinafter called Permittee, to perform such works in adherence to the following conditions contained herein:

1. Approximately 28.1 acres of unvegetated waterbottoms shall be filled for the construction of a breakwater/high profile reef structure approximately 4 miles in length as indicated on the attached diagram (Figure 1). This breakwater shall conform to the design criteria listed in the chart below:

Breakwater Design Criteria	St. Josephs Point Breakwater (eastern reach)
Total project length	Approx. 4 miles
Total project acreage	28.1 acres
Crest width	15.0 ft.
Base width	60 ft. (maximum)
Assumed bottom elevation	-3.5 NAVD 88 (MHHW)
Total structure height	5.0 to 8.5 ft.
Riprap volume	132,000 cubic yards
Thickness of material (riprap)	5.0 to 8.5 ft.
Estimated initial settlement	0.5 – 1.0 ft.
Design side slopes (Seaward Face)	5h:1v
Design side slopes (Landward Face)	3h:1v
Breakwater distance from shoreline	20 to 400 ft.
Reach of each breakwater	180 ft.
Design Crest Elevation	1.4 ft. NAVD88 (MHHW)
Width of gaps between breakwaters at design crest height	30 ft.

2. Approximately 12.2 acres of unvegetated waterbottoms shall be filled for the construction of a breakwater/high profile reef structure approximately 1.9 miles in length as indicated

on the attached diagram (Figure 1). This breakwater shall conform to the design criteria listed in the chart below:

Breakwater Design Criteria	Pearl River to Heron Bay Breakwater (western reach):
Total project length	Approx. 1.9 miles
Total project acreage	12.2 acres
Crest width	15.0 ft.
Base width	60 ft. (maximum)
Assumed bottom elevation	-3.5 NAVD 88 (MHHW)
Total structure height	5.0 to 8.5 ft.
Riprap volume	58,000 cubic yards
Thickness of material (riprap)	5.0 to 8.5 ft.
Estimated initial settlement	0.5 – 1.0 ft.
Design side slopes (Seaward Face)	5h:1v
Design side slopes (Landward Face)	3h:1v
Breakwater distance from shoreline	40 to 150 ft.
Reach of each breakwater	180 ft.
Design Crest Elevation	1.4 ft. NAVD 88 (MHHW)
Width of gaps between breakwaters at design crest height	30 ft.

3. Approximately 46 acres of unvegetated waterbottoms shall be planted with cultch material in the form of crushed or processed stone with a median diameter between 1.0 and 2.0 inches in order to enhance benthic habitat. The 46 acres shall be located within the 194-acre site within Heron Bay as indicated on the attached diagram (Figure 1). Only clean material free of waste, metal and organic trash, and unsightly debris shall be used;

4. Approximately 46 acres of marsh habitat shall be created within the 76-acre site within Heron Bay as indicated on the attached diagram (Figure 1). Authorized activities associated with this marsh creation include:

   a. Two linear containment dikes to create a cell:
      i. One along the edge of the existing marsh;
      ii. One along the waterward limits of the marsh creation area;
      iii. Construction will be completed by either excavating sediment from within the cell creation area or by using suitable dredged material if available;
      iv. Four (4) weirs shall be installed in the dikes to allow water to decant during the filling of the containment cell and to manage consolidation of fill material;
      v. After consolidation, the weirs will be removed and the dikes will be breached or degraded to provide for appropriate intertidal circulation;

vi. Any use of dredged material shall be approved in writing by DMR prior to placement and shall be tested in accordance with current standards for beneficial use of dredged material as determined by the Mississippi Department of Environmental Quality's Office of Pollution Control;

b. Placement of up to 540,000 cubic yards of appropriate material within the created cell:

i. Material shall be placed by barge or pipeline to create a variety of elevations within the target intertidal marsh elevation range of +1 MLLW, plus or minus 0.5';

ii. Consolidated material will be allowed to vegetate naturally with native marsh grasses, but if natural recruitment does not result in the desired vegetative cover, planting with appropriate native marsh grasses approved by DMR shall be allowed;

iii. Vegetation proposed for planting shall be approved in writing by DMR prior to placement;

iv. The marsh creation area shall be monitored for the life of the project for the presence of invasive species. These species shall be removed upon discovery;

v. Any use of dredged material shall be approved in writing by DMR prior to placement and shall be tested in accordance with current standards for beneficial use of dredged material as determined by the Mississippi Department of Environmental Quality's Office of Pollution Control;

5. Prior to the commencement of construction, permittee must submit to the DMR a copy of the Tidelands Lease as required by the Secretary of State and as filed in the subject County Land Records, or a statement from the Secretary of State that the permitted activity does not require a Tidelands Lease;

6. A variance to Chapter 8, Section 2, Part III.O.1. of the Mississippi Coastal Program is hereby granted;

7. A change to the Coastal Wetlands Use Plan from a General Use District and a Preservation Use District to an S6 Special Use – Preservation District is hereby granted. The change covers the footprint of the project as indicated on the attached diagram (Figure 2);

8. No construction debris or unauthorized fill material shall be allowed to enter coastal wetlands or waters;

9. Best Management Practices shall be used at all times during construction;

10. Vegetated wetlands shall not be impacted; and,

11. No creosote material shall be used in construction.

The Permittee shall maintain all water quality standards, regulations, and restrictions as set forth by the DEQ.

Any deviations beyond the restrictive conditions as set forth in your permit shall be considered a violation and may result in the revocation of the permit. Violations of these conditions may be subject to fines, project modifications and/or site restoration. Both the permittee and the contractor may be held liable for conducting unauthorized work. A modification to these conditions may be requested by submitting a written request along with a revised project diagram to DMR. ***Proposed modifications to dimensions, project footprint, and/or procedures must be approved in writing prior to commencement of work.***

Issuance of this certification by DMR and acceptance by the applicant does not release the applicant from other legal requirements including but not limited to other applicable federal, state or local laws, ordinances, zoning codes or other regulations.

This certification conveys no title to land and water, does not constitute authority for reclamation of coastal wetlands and does not authorize invasion of private property or rights in property.

Please notify this Department upon completion of the permitted project so that compliance checks may be conducted by DMR staff.

This certification shall become effective upon acceptance by the applicant and receipt of the executed copy by the Director.

Please execute this certification by signing both documents and returning the copy to the Department of Marine Resources.

Work authorized by this certification must be completed on or before November 25, 2020.

Enclosed is a "Notice of Compliance" which must be conspicuously displayed at the site during construction of the permitted work.

The Department of Marine Resources has also coordinated a review of your project through the Coastal Program review procedures and determined that the project referenced above is consistent with the Mississippi Coastal Program, provided that you comply with the noted conditions and reviewing coastal program agencies do not disagree with said plans. By copy of this certification, we are notifying the U.S. Army Corps of Engineers of this determination.

THE PERMITTEE BY ACCEPTANCE OF THIS PERMIT AGREES TO ABIDE BY THE STIPULATIONS AND CONDITIONS CONTAINED HEREIN AND AS DESCRIBED BY THE PLANS AND SPECIFICATIONS SUBMITTED AS PART OF THE COMPLETED APPLICATION.

STATE OF MISSISSIPPI
DEPARTMENT OF MARINE RESOURCES

BY: Jamie M. Miller

Jamie M. Miller
Executive Director
Mississippi Department of Marine Resources

Accepted this the ____ day of _____, 20 ___.

BY:_____

MISSISSIPPI

Department of Marine Resources

NOTICE OF COMPLIANCE
DMR- 140197 PERMIT
THIS NOTICE ACKNOWLEDGES THAT:

DATE: November 25, 2015

Mississippi Department of Environmental Quality
P.O. Box 2261
Jackson, MS 39225

HAS, THROUGH APPLICATION TO THIS DEPARTMENT, DULY COMPLIED WITH THE MISSISSIPPI COASTAL WETLANDS PROTECTION LAW TO:

1. Approximately 28.1 acres of unvegetated waterbottoms shall be filled for the construction of a breakwater/high profile reef structure approximately 4 miles in length as indicated on the attached diagram (Figure 1). This breakwater shall conform to the design criteria listed in the chart below:

Breakwater Design Criteria	St. Louis Bay to Bayou Breakwater (Option 1 and 2)
Total project length	Approx. 4 miles
Total project acreage	26.1 acres
Crest width	15.0 ft.
Base width	60 ft. (maximum)
Assumed bottom elevation	-3.5 NAVD 88 (MHHW)
Total structure height	5.0 to 8.5 ft.
Riprap volume	132,000 cubic yards
Thickness of material (riprap)	5.0 to 8.5 ft.
Estimated initial settlement	0.5 – 1.0 ft.
Design side slopes (Seaward Face)	5h:1v
Design side slopes (Landward Face)	3h:1v
Breakwater distance from shoreline	20 to 400 ft.
Reach of each breakwater	180 ft.
Design Crest Elevation	1.4 ft. NAVD88 (MHHW)
Width of gaps between breakwaters at design crest height	30 ft.

2. Approximately 12.2 acres of unvegetated waterbottoms shall be filled for the construction of a breakwater/high profile reef structure approximately 1.9 miles in length as indicated on the attached diagram (Figure 1). This breakwater shall conform to the design criteria listed in the chart below:

Breakwater Design Criteria	Point Clyo to Heron Bay Breakwater (Option 1 and 2)
Total project length	Approx. 1.9 miles
Total project acreage	12.2 acres
Crest width	15.0 ft.
Base width	60 ft. (maximum)
Assumed bottom elevation	-3.5 NAVD 88 (MHHW)
Total structure height	5.0 to 8.5 ft.
Riprap volume	58,000 cubic yards
Thickness of material (riprap)	5.0 to 8.5 ft.
Estimated initial settlement	0.5 – 1.0 ft.
Design side slopes (Seaward Face)	5h:1v
Design side slopes (Landward Face)	3h:1v
Breakwater distance from shoreline	40 to 150 ft.
Reach of each breakwater	180 ft.
Design Crest Elevation	1.4 ft. NAVD 88 (MHHW)
Width of gaps between breakwaters at design crest height	30 ft.

POST THIS NOTICE CONSPICUOUSLY AT SITE OF WORK

MISSISSIPPI

Department of Marine Resources

3. Approximately 46 acres of unvegetated waterbottoms shall be planted with cultch material in the form of crushed or processed stone with a median diameter between 1.0 and 2.0 inches in order to enhance benthic habitat. The 46 acres shall be located within the 194-acre site within Heron Bay as indicated on the attached diagram (Figure 1). Only clean material free of waste, metal and organic trash, and unsightly debris shall be used;
4. Approximately 46 acres of marsh habitat shall be created within the 76-acre site within Heron Bay as indicated on the attached diagram (Figure 1). Authorized activities associated with this marsh creation include:
    a. Two linear containment dikes to create a cell:
        i. One along the edge of the existing marsh;
        ii. One along the waterward limits of the marsh creation area;
        iii. Construction will be completed by either excavating sediment from within the cell creation area or by using suitable dredged material if available;
        iv. Four (4) weirs shall be installed in the dikes to allow water to decant during the filling of the containment cell and to manage consolidation of fill material;
        v. After consolidation, the weirs will be removed and the dikes will be breached or degraded to provide for appropriate intertidal circulation;
        vi. Any use of dredged material shall be approved in writing by DMR prior to placement and shall be tested in accordance with current standards for beneficial use of dredged material as determined by the Mississippi Department of Environmental Quality's Office of Pollution Control;
    b. Placement of up to 540,000 cubic yards of appropriate material within the created cell:
        i. Material shall be placed by barge or pipeline to create a variety of elevations within the target intertidal marsh elevation range of +1 MLLW, plus or minus 0.5';
        ii. Consolidated material will be allowed to vegetate naturally with native marsh grasses, but if natural recruitment does not result in the desired vegetative cover, planting with appropriate native marsh grasses approved by DMR shall be allowed;
        iii. Vegetation proposed for planting shall be approved in writing by DMR prior to placement;
        iv. The marsh creation area shall be monitored for the life of the project for the presence of invasive species. These species shall be removed upon discovery;
        v. Any use of dredged material shall be approved in writing by DMR prior to placement and shall be tested in accordance with current standards for beneficial use of dredged material as determined by the Mississippi Department of Environmental Quality's Office of Pollution Control;
5. Prior to the commencement of construction, permittee must submit to the DMR a copy of the Tidelands Lease as required by the Secretary of State and as filed in the subject County Land Records, or a statement from the Secretary of State that the permitted activity does not require a Tidelands Lease;
6. A variance to Chapter 8, Section 2, Part III.O.1. of the Mississippi Coastal Program is hereby granted;
7. A change to the Coastal Wetlands Use Plan from a General Use District and a Preservation Use District to an S6 Special Use – Preservation District is hereby granted. The change covers the footprint of the project as indicated on the attached diagram (Figure 2);
8. No construction debris or unauthorized fill material shall be allowed to enter coastal wetlands or waters;
9. Best Management Practices shall be used at all times during construction;
10. Vegetated wetlands shall not be impacted; and,
11. No creosote material shall be used in construction.

On the Mississippi Sound south of the Hancock County marshes from the mouth of the Pearl River to approximately 4 miles northeast of Heron Bay and including Heron Bay, south of Ansley, Hancock County, Mississippi.

No construction debris or unauthorized fill material shall be allowed to enter coastal wetlands or waters.

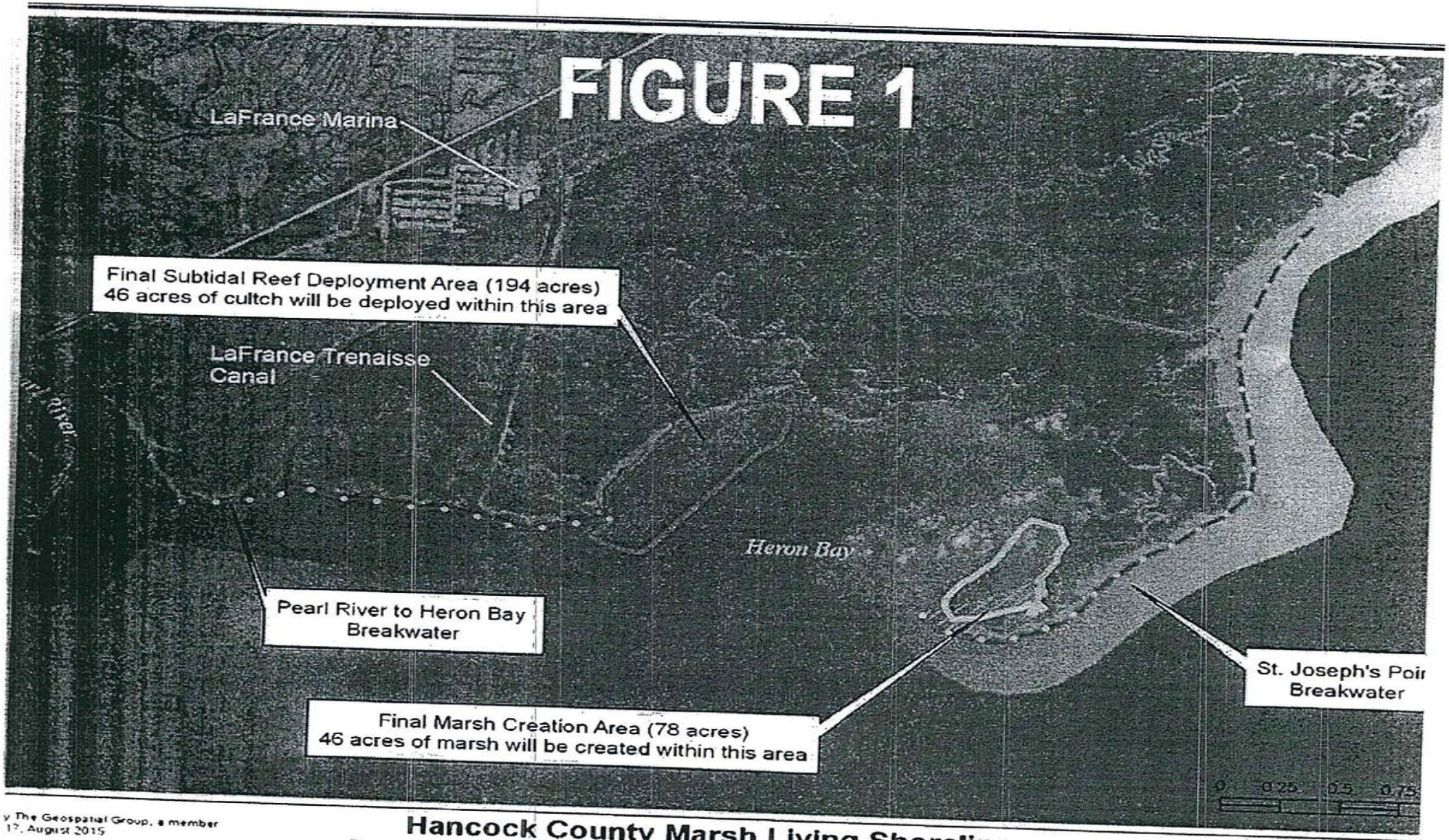
FURTHERMORE, THIS PROJECT AS PROPOSED HAS BEEN FOUND TO BE CONSISTENT WITH ALL GUIDELINES FOR CONDUCT OF REGULATED ACTIVITIES IN COASTAL WETLANDS AS SET FORTH IN THE MISSISSIPPI COASTAL PROGRAM.

Jamie M. Miller

Executive Director

POST THIS NOTICE CONSPICUOUSLY AT SITE OF WORK

FIGURE 1



y The Geospatial Group, a member
17, August 2015

he CCE
ospatial Cleanghouse, and Esn

IAD 1983 UTM Zone 16N
e Mercator

s no warranties, expressed or
uracy, completeness,
, or suitability for any particular
ontained on this map

Hancock County Marsh Living Shoreline

- Breakwater
- Final Marsh Creation Area
- Final Subtidal Reef Deployment Area
- Phase III FERP/PEIS Potential Marsh Creation Area
- Phase III FERP/PEIS Potential Subtidal Reef Deployment Area

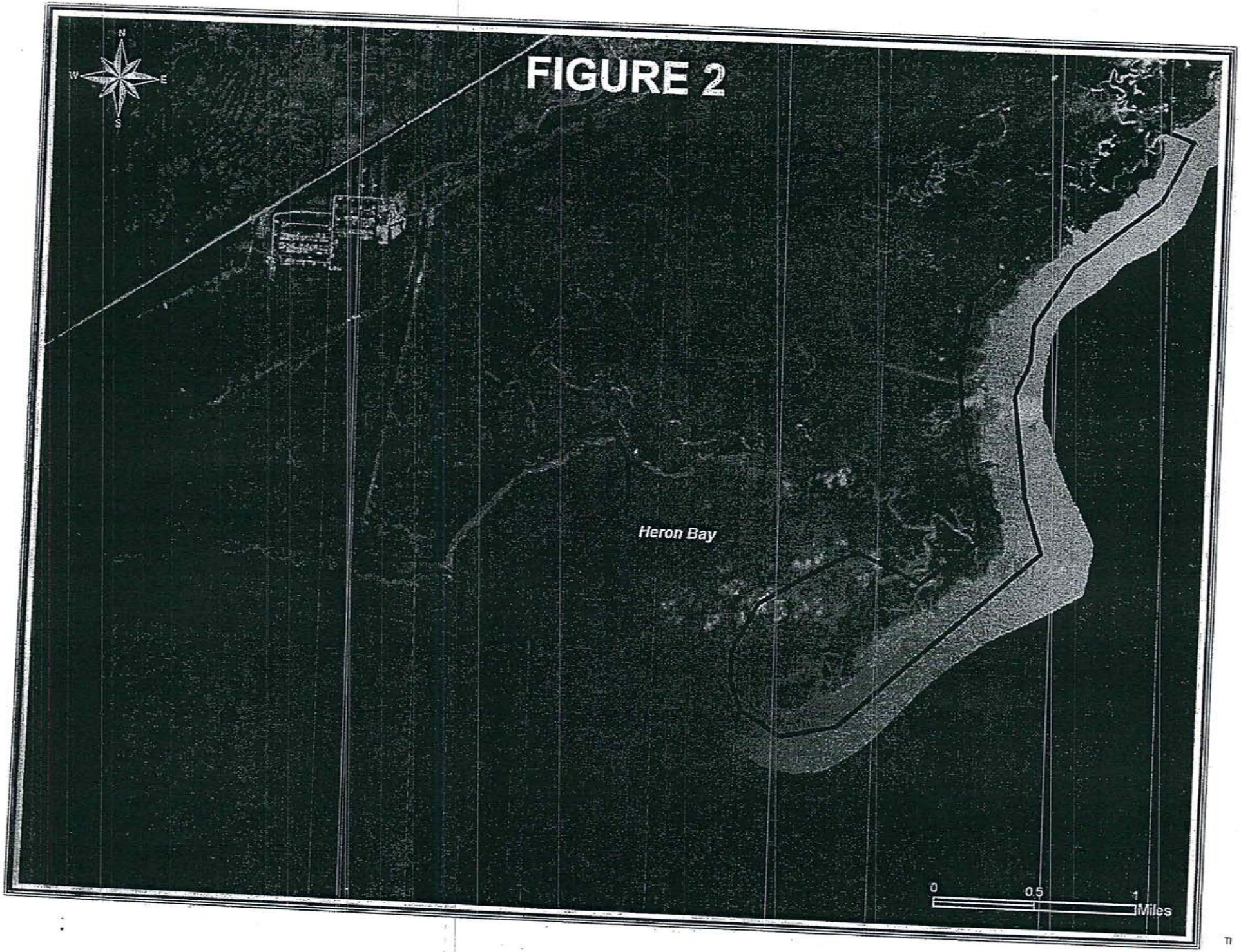


FIGURE 2
N
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E
S
Heron Bay
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0.5
1
Miles

STATE OF MISSISSIPPI
Phil Bryant
Governor

MISSISSIPPI DEPARTMENT OF MARINE RESOURCES
Jamie M. Miller, Executive Director

February 5, 2016

Mississippi Department of Environmental Quality
Attn: Mr. Richard Harrell
P.O. Box 2261
Jackson, MS 39225

RE: Permit DMR-140197

Dear Mr. Harrell:

Due to an error in condition number 7 in the Permit issued to you on November 25, 2015, please find attached a corrected Permit.

Please execute this Permit by signing both documents and returning the copy to the Department of Marine Resources.

If you have any questions regarding the Permit or this correspondence, please contact Willa Brantley with the Bureau of Wetlands Permitting at 228-523-4108 or willa.brantley@dmr.ms.gov.

Sincerely,

Jamie M. Miller

Jamie M. Miller
Executive Director
Mississippi Department of Marine Resources

JMM/wjb

Enclosures

cc: Ms. Alane Young, Covington Civil and Environmental, LLC
Ms. Maryellen Farmer, USACE
Ms. Florance Bass, OPC
Mr. Raymond Carter, SOS

November 25, 2015

Permit No.: DMR-140197
Type: Permit
Date: November 25, 2015

WHEREAS, application by: The Mississippi Department of Environmental Quality for a Permit under the provisions of Chapter 27, Mississippi Code of 1972, as amended, to perform certain works affecting the coastal wetlands of the State of Mississippi in the Mississippi Sound south of the Hancock County marshes from the mouth of the Pearl River to approximately 4 miles northeast of Heron Bay and including Heron Bay, south of Ansley, Hancock County, Mississippi, was approved by said State of Mississippi Commission on Marine Resources on November 17, 2015.

NOW THEREFORE, this Permit authorizes the above named applicant hereinafter called Permittee, to perform such works in adherence to the following conditions contained herein:

1. Approximately 28.1 acres of unvegetated waterbottoms shall be filled for the construction of a breakwater/high profile reef structure approximately 4 miles in length as indicated on the attached diagram (Figure 1). This breakwater shall conform to the design criteria listed in the chart below:

Breakwater Design Criteria	St. Joseph's Point Breakwater (eastern reach)
Total project length	Approx. 4 miles
Total project acreage	28.1 acres
Crest width	15.0 ft.
Base width	60 ft. (maximum)
Assumed bottom elevation	-3.5 NAVD 88 (MHHW)
Total structure height	5.0 to 8.5 ft.
Riprap volume	132,000 cubic yards
Thickness of material (riprap)	5.0 to 8.5 ft.
Estimated initial settlement	0.5 – 1.0 ft.
Design side slopes (Seaward Face)	5h:1v
Design side slopes (Landward Face)	3h:1v
Breakwater distance from shoreline	20 to 400 ft.
Reach of each breakwater	180 ft.
Design Crest Elevation	1.4 ft. NAVD88 (MHHW)
Width of gaps between breakwaters at design crest height	30 ft.

2. Approximately 12.2 acres of unvegetated waterbottoms shall be filled for the construction of a breakwater/high profile reef structure approximately 1.9 miles in length as indicated

on the attached diagram (Figure 1). This breakwater shall conform to the design criteria listed in the chart below:

Breakwater Design Criteria	Pearl River to Heron Bay Breakwater (western reach):
Total project length	Approx. 1.9 miles
Total project acreage	12.2 acres
Crest width	15.0 ft.
Base width	60 ft. (maximum)
Assumed bottom elevation	-3.5 NAVD 88 (MHHW)
Total structure height	5.0 to 8.5 ft.
Riprap volume	58,000 cubic yards
Thickness of material (riprap)	5.0 to 8.5 ft.
Estimated initial settlement	0.5 – 1.0 ft.
Design side slopes (Seaward Face)	5h:1v
Design side slopes (Landward Face)	3h:1v
Breakwater distance from shoreline	40 to 150 ft.
Reach of each breakwater	180 ft.
Design Crest Elevation	1.4 ft. NAVD 88 (MHHW)
Width of gaps between breakwaters at design crest height	30 ft.

3. Approximately 46 acres of unvegetated waterbottoms shall be planted with cultch material in the form of crushed or processed stone with a median diameter between 1.0 and 2.0 inches in order to enhance benthic habitat. The 46 acres shall be located within the 194-acre site within Heron Bay as indicated on the attached diagram (Figure 1). Only clean material free of waste, metal and organic trash, and unsightly debris shall be used;

4. Approximately 46 acres of marsh habitat shall be created within the 76-acre site within Heron Bay as indicated on the attached diagram (Figure 1). Authorized activities associated with this marsh creation include:

    a. Two linear containment dikes to create a cell:
        i. One along the edge of the existing marsh;
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        iii. Construction will be completed by either excavating sediment from within the cell creation area or by using suitable dredged material if available;
        iv. Four (4) weirs shall be installed in the dikes to allow water to decant during the filling of the containment cell and to manage consolidation of fill material;
        v. After consolidation, the weirs will be removed and the dikes will be breached or degraded to provide for appropriate intertidal circulation;

vi. Any use of dredged material shall be approved in writing by DMR prior to placement and shall be tested in accordance with current standards for beneficial use of dredged material as determined by the Mississippi Department of Environmental Quality's Office of Pollution Control;

b. Placement of up to 540,000 cubic yards of appropriate material within the created cell:
   i. Material shall be placed by barge or pipeline to create a variety of elevations within the target intertidal marsh elevation range of +1 MLLW, plus or minus 0.5';
   ii. Consolidated material will be allowed to vegetate naturally with native marsh grasses, but if natural recruitment does not result in the desired vegetative cover, planting with appropriate native marsh grasses approved by DMR shall be allowed;
   iii. Vegetation proposed for planting shall be approved in writing by DMR prior to placement;
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   v. Any use of dredged material shall be approved in writing by DMR prior to placement and shall be tested in accordance with current standards for beneficial use of dredged material as determined by the Mississippi Department of Environmental Quality's Office of Pollution Control;

5. Prior to the commencement of construction, permittee must submit to the DMR a copy of the Tidelands Lease as required by the Secretary of State and as filed in the subject County Land Records, or a statement from the Secretary of State that the permitted activity does not require a Tidelands Lease;

6. A variance to Chapter 8, Section 2, Part III.O.1. of the Mississippi Coastal Program is hereby granted;

7. A change to the Coastal Wetlands Use Plan from a General Use District and a Preservation Use District to an S6 Special Use – Restoration District is hereby granted. The change covers the footprint of the project as indicated on the attached diagram (Figure 2);

8. No construction debris or unauthorized fill material shall be allowed to enter coastal wetlands or waters;

9. Best Management Practices shall be used at all times during construction;

10. Vegetated wetlands shall not be impacted; and,

11. No creosote material shall be used in construction.

The Permittee shall maintain all water quality standards, regulations, and restrictions as set forth by the DEQ.

Any deviations beyond the restrictive conditions as set forth in your permit shall be considered a violation and may result in the revocation of the permit. Violations of these conditions may be subject to fines, project modifications and/or site restoration. Both the permittee and the contractor may be held liable for conducting unauthorized work. A modification to these conditions may be requested by submitting a written request along with a revised project diagram to DMR. ***Proposed modifications to dimensions, project footprint, and/or procedures must be approved in writing prior to commencement of work.***

Issuance of this certification by DMR and acceptance by the applicant does not release the applicant from other legal requirements including but not limited to other applicable federal, state or local laws, ordinances, zoning codes or other regulations.

This certification conveys no title to land and water, does not constitute authority for reclamation of coastal wetlands and does not authorize invasion of private property or rights in property.

Please notify this Department upon completion of the permitted project so that compliance checks may be conducted by DMR staff.

This certification shall become effective upon acceptance by the applicant and receipt of the executed copy by the Director.

Please execute this certification by signing both documents and returning the copy to the Department of Marine Resources.

Work authorized by this certification must be completed on or before November 25, 2020.

Enclosed is a "Notice of Compliance" which must be conspicuously displayed at the site during construction of the permitted work.

The Department of Marine Resources has also coordinated a review of your project through the Coastal Program review procedures and determined that the project referenced above is consistent with the Mississippi Coastal Program, provided that you comply with the noted conditions and reviewing coastal program agencies do not disagree with said plans. By copy of this certification, we are notifying the U.S. Army Corps of Engineers of this determination.

THE PERMITTEE BY ACCEPTANCE OF THIS PERMIT AGREES TO ABIDE BY THE STIPULATIONS AND CONDITIONS CONTAINED HEREIN AND AS DESCRIBED BY THE PLANS AND SPECIFICATIONS SUBMITTED AS PART OF THE COMPLETED APPLICATION.

STATE OF MISSISSIPPI
DEPARTMENT OF MARINE RESOURCES

BY: Jamie M. Miller

Jamie M. Miller
Executive Director
Mississippi Department of Marine Resources

Accepted this the ____ day of _____, 20 ____.

BY: _____

MISSISSIPPI

Department of Marine Resources

NOTICE OF COMPLIANCE
DMR- 140197 PERMIT
THIS NOTICE ACKNOWLEDGES THAT:

DATE: November 25, 2015

Mississippi Department of Environmental Quality
P.O. Box 2261
Jackson, MS 39225

HAS, THROUGH APPLICATION TO THIS DEPARTMENT, DULY COMPLIED WITH THE MISSISSIPPI COASTAL WETLANDS PROTECTION LAW TO:

1. Approximately 28.1 acres of unvegetated waterbottoms shall be filled for the construction of a breakwater/high profile reef structure approximately 4 miles in length as indicated on the attached diagram (Figure 1). This breakwater shall conform to the design criteria listed in the chart below:

Breakwater Design Criteria	St. Joseph's Point Breakwater (eastern reach)
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Breakwater distance from shoreline	20 to 400 ft.
Reach of each breakwater	180 ft.
Design Crest Elevation	1.4 ft. NAVD88 (MHHW)
Width of gaps between breakwaters at design crest elevation	30 ft.

2. Approximately 12.2 acres of unvegetated waterbottoms shall be filled for the construction of a breakwater/high profile reef structure approximately 1.9 miles in length as indicated on the attached diagram (Figure 1). This breakwater shall conform to the design criteria listed in the chart below:

Breakwater Design Criteria	Pearl River to Harbor Bay Breakwater (western reach)
Total project length	Approx. 1.9 miles
Total project acreage	12.2 acres
Crest width	15.0 ft.
Base width	60 ft. (maximum)
Assumed bottom elevation	-3.5 NAVD 88 (MHHW)
Total structure height	5.0 to 8.5 ft.
Riprap volume	58,000 cubic yards
Thickness of material (riprap)	5.0 to 8.5 ft.
Estimated initial settlement	0.5 – 1.0 ft.
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Reach of each breakwater	180 ft.
Design Crest Elevation	1.4 ft. NAVD 88 (MHHW)
Width of gaps between breakwaters at design crest elevation	30 ft.

POST THIS NOTICE CONSPICUOUSLY AT SITE OF WORK

MISSISSIPPI

Department of Marine Resources

3. Approximately 46 acres of unvegetated waterbottoms shall be planted with cultch material in the form of crushed or processed stone with a median diameter between 1.0 and 2.0 inches in order to enhance benthic habitat. The 46 acres shall be located within the 194-acre site within Heron Bay as indicated on the attached diagram (Figure 1). Only clean material free of waste, metal and organic trash, and unsightly debris shall be used;
4. Approximately 46 acres of marsh habitat shall be created within the 76-acre site within Heron Bay as indicated on the attached diagram (Figure 1). Authorized activities associated with this marsh creation include:
    a. Two linear containment dikes to create a cell:
        i. One along the edge of the existing marsh;
        ii. One along the waterward limits of the marsh creation area;
        iii. Construction will be completed by either excavating sediment from within the cell creation area or by using suitable dredged material if available;
        iv. Four (4) weirs shall be installed in the dikes to allow water to decant during the filling of the containment cell and to manage consolidation of fill material;
        v. After consolidation, the weirs will be removed and the dikes will be breached or degraded to provide for appropriate intertidal circulation;
        vi. Any use of dredged material shall be approved in writing by DMR prior to placement and shall be tested in accordance with current standards for beneficial use of dredged material as determined by the Mississippi Department of Environmental Quality's Office of Pollution Control;
    b. Placement of up to 540,000 cubic yards of appropriate material within the created cell:
        i. Material shall be placed by barge or pipeline to create a variety of elevations within the target intertidal marsh elevation range of +1 MLLW, plus or minus 0.5';
        ii. Consolidated material will be allowed to vegetate naturally with native marsh grasses, but if natural recruitment does not result in the desired vegetative cover, planting with appropriate native marsh grasses approved by DMR shall be allowed;
        iii. Vegetation proposed for planting shall be approved in writing by DMR prior to placement;
        iv. The marsh creation area shall be monitored for the life of the project for the presence of invasive species. These species shall be removed upon discovery;
        v. Any use of dredged material shall be approved in writing by DMR prior to placement and shall be tested in accordance with current standards for beneficial use of dredged material as determined by the Mississippi Department of Environmental Quality's Office of Pollution Control;
5. Prior to the commencement of construction, permittee must submit to the DMR a copy of the Tidelands Lease as required by the Secretary of State and as filed in the subject County Land Records, or a statement from the Secretary of State that the permitted activity does not require a Tidelands Lease;
6. A variance to Chapter 8, Section 2, Part III.O.1. of the Mississippi Coastal Program is hereby granted;
7. A change to the Coastal Wetlands Use Plan from a General Use District and a Preservation Use District to an S6 Special Use – Restoration District is hereby granted. The change covers the footprint of the project as indicated on the attached diagram (Figure 2);
8. No construction debris or unauthorized fill material shall be allowed to enter coastal wetlands or waters;
9. Best Management Practices shall be used at all times during construction;
10. Vegetated wetlands shall not be impacted; and,
11. No creosote material shall be used in construction.

On the Mississippi Sound south of the Hancock County marshes from the mouth of the Pearl River to approximately 4 miles northeast of Heron Bay and including Heron Bay, south of Ansley, Hancock County, Mississippi.

No construction debris or unauthorized fill material shall be allowed to enter coastal wetlands or waters.

FURTHERMORE, THIS PROJECT AS PROPOSED HAS BEEN FOUND TO BE CONSISTENT WITH ALL GUIDELINES FOR CONDUCT OF REGULATED ACTIVITIES IN COASTAL WETLANDS AS SET FORTH IN THE MISSISSIPPI COASTAL PROGRAM.

Jamie M. Miller

Executive Director

POST THIS NOTICE CONSPICUOUSLY AT SITE OF WORK

STATE OF MISSISSIPPI
PHIL BRYANT
GOVERNOR
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
GARY C. RIKARD, EXECUTIVE DIRECTOR
December 1, 2015

Mr. Richard Harrell
Mississippi Department of Environmental Quality
Post Office Box 2288
Jackson, MS 39073

Dear Mr. Harrell:

Re: MDEQ, NRDA, Hancock County Marsh Living Shoreline
Hancock County
COE No. SAM201300088MJF
WQC No. WQC2015010

Pursuant to Section 401 of the Federal Water Pollution Control Act (33 U. S. C. 1251, 1341), the Office of Pollution Control (OPC) issues this Certification, after public notice and opportunity for public hearing, to Mississippi Department of Environmental Quality, an applicant for a Federal License or permit to conduct the following activity:

MDEQ, NRDA, Hancock County Marsh Living Shoreline: Placement of fill material for the creation of 46 acres of salt marsh; place fill material for the creation of 46 acres of oyster cultch; and construct 5.9 miles of breakwater structures.

Breakwaters would be constructed in two locations. Approximately 4.0 miles of breakwater would be constructed along St. Joseph's Point and approximately 1.9 miles from the Pearl River to Heron Bay. **The breakwater design includes:**

OFFICE OF POLLUTION CONTROL
POST OFFICE BOX 2261 • JACKSON, MISSISSIPPI 39225-2261 • TEL.: (601) 961-5171 • FAX: (601) 354-6612 • www.deq.state.ms.us
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Breakwater Design Criteria	St. Joseph's Point Breakwater (eastern reach)	Pearl River to Heron Bay Breakwater (western reach)
Total project length	Approximately 4 miles	Approximately 1.9 miles
Total project acreage	28.1 acres	12.2 acres
Crest width	15.0 ft	15.0 ft
Base width	60 foot (maximum)	60 foot (maximum)
Assumed bottom elevation	-3.5 NAVD 88	-3.5 NAVD 88
Total structure height	5.0 to 8.5 ft	5.0 to 8.5 ft
Riprap volume	132,000 cubic yards	58,000 cubic yards
Thickness of material (riprap)	5.0 to 8.5 ft	5.0 to 8.5 ft
Estimated initial settlement	0.5-0.9 ft	0.5-0.9 ft
Design side slopes (Seaward Face)	5v:1h	5v:1h
Design side slopes (Landward Face)	3v:1h	3v:1h
Breakwater distance from shoreline	20 to 400 ft	40 to 150 ft
Reach of each breakwater	180 ft	180 ft
Design Crest Elevation	1.4 ft NAVD88 (MHHW)	1.4 ft NAVD88 (MHHW)
Width of gaps between breakwaters at design crest height	30 ft	30 ft

All proposed temporary flotation channels proposed for the construction of the breakwater are eliminated from the project resulting in a 123.9 acre reduction in impacts from the proposed channel footprint and sidecast of spoil.

The 46 acre salt marsh creation includes:

The final marsh creation area is an approximately 78 acre area in the southeastern portion of Heron Bay. Approximately 46 acres of marsh would be created in one of several locations within this area. A dike would be constructed by excavating existing material from un-vegetated water bottoms within the marsh creation site and possibly with suitable permitted dredged materials from other sources, filling the area within the dike with appropriate dredged material to final marsh grade, and allowing the area to vegetate by natural colonization of estuarine marsh species. Dredged material would be obtained through the Mississippi Beneficial Sediment Use Program as available or excavated from a suitable borrow source. Once the entire marsh area(s) is constructed, the area would be monitored for natural re-vegetation. The applicant anticipates natural vegetative colonization would occur within one to three years.

The 46 acre sub-tidal reef includes:

The final sub-tidal reef deployment area is an approximately 194-acre area in the western portion of Heron Bay. Approximately 46 acres of sub-tidal reef habitat would be created in one to several locations within this area. Cultch material would be deployed in water depths of -3 to -5 feet NAVD 88. The sub-tidal reef(s) would be sited based on data from an oyster presence survey and would consist of approximately 6- to 9-inch thick layer of limestone or other suitable material.

Post-construction monitoring will be conducted for a period of seven (7) years following completion. Monitoring would occur for erosion control, marsh habitat creation, and the support of secondary productivity. Evaluation includes water quality parameters; structural integrity of breakwater structure; height/elevation and area of structure; consolidation rate of breakwater structure; shoreline profile; bivalve density, size, biomass and survival; non-bivalve invertebrate density and biomass; and percent cover of marsh vegetation. The project will incorporate a mix of long-term monitoring efforts to ensure project designs are correctly implemented during construction, and to identify any potential unanticipated erosion/sediment accumulation issues associated with the project. Corrective action will be addressed through the maintenance budget included in the overall project budget. [SAM-2013-00088-MJF, WQC2015010].

The Office of Pollution Control certifies that the above-described activity will be in compliance with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act and Section 49-17-29 of the Mississippi Code of 1972, if the applicant complies with the following conditions:

1. All material placed for beneficial use shall be properly tested and analyzed as required by the Mississippi Beneficial Use Program.

2. The final post-construction monitoring plan shall be provided prior to the start of construction activities.

3. All timber pilings or bulkhead materials shall be steel, concrete, plastic, or timber treated with chromated copper arsenate (CCA).

4. Turbidity outside the limits of a 750-foot mixing zone shall not exceed the ambient turbidity by more than 50 Nephelometric Turbidity Units.

5. No sewage, oil, refuse, or other pollutants shall be discharged into the watercourse.

The Office of Pollution Control also certifies that there are no limitations under Section 302 nor standards under Sections 306 and 307 of the Federal Water Pollution Control Act which are applicable to the applicant's above-described activity.

This certification is valid for the project as proposed. Any deviations without proper modifications and/or approvals may result in a violation of the 401 Water Quality Certification. If we can be of further assistance, please contact us.

Sincerely,

Harry M. Wilson III, P.E., DEE
Chief, Environmental Permits Division

HMW: FB

cc: Maryellen Farmer, U.S. Army Corps of Engineers, Mobile District
Willa Brantley, Department of Marine Resources
Calista Mills, Environmental Protection Agency
Alane Young, Covington Civil and Environmental, LLC

STATE OF MISSISSIPPI
PHIL BRYANT
GOVERNOR
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
GARY C. RIKARD, EXECUTIVE DIRECTOR
December 1, 2015

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Sincerely,

Harry M. Wilson III, P.E., DEE
Chief, Environmental Permits Division

HMW: FB

cc: Maryellen Farmer, U.S. Army Corps of Engineers, Mobile District
Willa Brantley, Department of Marine Resources
Calista Mills, Environmental Protection Agency
Alane Young, Covington Civil and Environmental, LLC

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

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Ms. Leslie Craig
Supervisor, NOAA Restoration Center-Southeast Region
NOAA Fisheries-Office of Habitat Conservation
263 13th Avenue South
St. Petersburg, Florida 33701

Ref.: Deepwater Horizon-Early Restoration Plan Phase III Living Shoreline Projects

	Applicant	NMFS Number	Location
1	MS Department of Environmental Quality	SER-2014-12925	Hancock County, Mississippi
2	NOAA Restoration Center – SE Office	SER-2014-12926	Baldwin County, Alabama
3	FL Department of Environmental Protection	SER-2014-13016	Escambia County, Florida
4	FL Department of Environmental Protection	SER-2014-13083	Franklin County, Florida

Dear Ms. Craig:

This document responds to 4 letters, received between January 13 and February 4, 2014, from the National Oceanic and Atmospheric Administration (NOAA) Restoration Center, requesting National Marine Fisheries Service (NMFS) concurrence under Section 7 of the Endangered Species Act (ESA) with the project-effects determinations associated with living shoreline construction projects in the Gulf of Mexico. On February 5, 2014, we decided to batch these projects into a single consultation based on the similarity of the proposed activities. You determined that the proposed activities may affect, but are not likely to adversely affect 5 sea turtle species (green, hawksbill, Kemp's ridley, leatherback, and loggerhead), Gulf sturgeon, smalltooth sawfish, and designated Gulf sturgeon critical habitat in Units 8, 9, and 13. NMFS requested additional information via email on February 19, 2014. We received the response on March 13, 2014. We asked for clarification of that information via email on March 14, 2014. We received clarification on March 19, 2014, and we initiated consultation that day. NMFS's findings on the projects' potential effects are based on the project descriptions in this response; thus, any changes to the proposed actions may negate the findings of this consultation and may require reinitiation of consultation with NMFS.

All of the applicants will use floating turbidity curtains around all in-water construction areas and will follow NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, dated March 23, 2006; *Measures for Reducing Entrapment Risk to Protected Species*, revised May 22, 2012; and U.S. Fish and Wildlife Service's (USFWS) *Standard Manatee Conditions for In-Water Work*, dated 2011. Each project is described in detail below and locations are shown in the figures attached at the end of this consultation (all project location datum are North American Datum 1983).

1. The Hancock County Marsh Living Shoreline projects (3) are located in Hancock County, Mississippi. Action Area Bounding Coordinates (N-S-E-W): 30.184°N, 89.53°W; 30.169°N,

89.462°W; 30.233°N, 89.415°W; 30.184°N, 89.530339°W. The proposed projects consist of 3 components: (1) use of breakwater materials to reduce shoreline erosion, (2) creation of 46 acres of salt marsh, and (3) enhancement of 46 acres of oyster reef habitat that have historically supported oyster habitat (Figure 1). The breakwater at St. Joseph's Point (eastern reach) will be approximately 4 miles long, have a crest width of 15 feet (ft), a total height of 4 ft, and include openings throughout to allow for tidal flow. The breakwater will have a footprint of approximately 14.4 acres and will be placed on substrate of fine-grained sediment. It will be composed of a riprap core covered by a 9-inch-thick layer of bagged oyster shell. The Pearl River to Heron Bay breakwater (western reach) will be constructed identical to the St. Joseph's Point breakwater, but will be 1.9 miles long. The Pearl River to Heron Bay breakwater will have a footprint of approximately 5.5 acres. Temporary flotation access channels will be used to facilitate access for work barges into the work area. One channel will be excavated parallel to the breakwaters and additional channels excavated perpendicular to provide access from the Mississippi Sound (Figure 1). The excavated, dredged material will be cast on the seaward side of the channels so they naturally fill back in after construction. The channels will be dredged to 8 ft below mean lower low water (MLLW) to accommodate barge draft. The channels will be excavated using standard, construction best management practices (BMPs) to minimize environmental impacts. Permanent navigation signs will be installed in accordance with safety requirements.

A total of 46 acres of marsh will be created behind the constructed breakwater at St. Joseph's Point. It will be backfilled with dredged material obtained from the Mississippi Beneficial Sediment Use Program and allowed to re-vegetate by natural colonization of estuarine marsh species. Sediment will be pumped through a floating pipeline from a hydraulic dredge until final marsh target elevations are achieved. Pumps and sediment controls will remain in place throughout the dredging and filling process until initial settling has occurred. Once the entire marsh area is constructed, the area would be monitored for natural re-vegetation.

Oyster cultch will be deployed over 46 acres in Heron Bay in areas that currently support or previously supported oyster production. Oyster cultch deployment will occur in water depths of -3 to -5 ft MLLW and the limits of the cultch deployment areas will be marked with buoys or poles. A barge-mounted crane with a clamshell bucket will deploy the cultch in a 6- to 9-inch-thick layer of oyster shell or limestone. A material barge loaded with cultch will be moored to the crane barge. As a construction alternative, water jetting of loose shell off of the material barge may be used in case of water-depth constraints. Construction is scheduled to take place from May-October to avoid potential impacts to migrating Gulf sturgeon.

2. The Swift Tract Living Shoreline project is located at 30.335832°N, 87.812745°W, along the eastern portion of Bon Secour Bay, approximately 6 miles northwest of Gulf Shores in Baldwin County, Alabama (Figure 2). The Swift Tract breakwater will be 8,500 ft long, have a crest width of 10 ft, and a total height of 3 ft. Calculated volumes of material are 15,800 tons of riprap and 2,200 cubic yards (yd^3) of oyster shell. Approximately 2.9 acres of fine-grained sediment or soft bottom will be covered with riprap and topped with bagged, oyster shell. One or more work barges, with a long-reach backhoe, will be positioned along the seaward side of the breakwater construction area. A material barge will be positioned seaward of the work barge. Additionally, 6 warning signs placed on 12-inch-diameter, treated posts will be installed adjacent to the

breakwaters. In an effort to reduce noise and turbidity effects, these posts will be pushed into the sediment rather than using a pile driver or jetting the piles into place. Construction is anticipated to be completed within 6 months.

3. The Pensacola Bay Living Shoreline projects are located in Escambia County, Florida at 30.410278°N, 87.202778°W, Project Green Shores Site II (PGSII); and 30.399722°N, 87.232222°W, Sanders Beach (Figure 3). Construction activities at PGSII will include expansion of an existing breakwater with a crest width of 100 ft and a total height of 3.5 ft. The volume of material needed will be approximately 11,000 tons of riprap and fossilized oyster shell covering a footprint of 1.9 acres of fine-grained sediment. Breakwaters constructed at Sanders Beach will be 2,400 ft long, have a crest width of 30 ft, and a total height of 3.5 ft. The volume of material needed will be approximately 14,000 tons of riprap and fossilized oyster shell, covering a footprint of 3.15 acres of fine-grained sediment. A gap of 100 ft will be left between each breakwater to allow for tidal flow.

Work barges with a long-reach backhoe will be positioned along the seaward side of the breakwaters and the material barge will be positioned seaward of the work barge. Additionally, 14 warning signs, placed on 12-inch-diameter posts, will be installed adjacent to the breakwaters. In an effort to reduce noise and turbidity effects, these posts will be pushed into the sediment rather than using a pile driver or jetting the piles into place.

After the breakwaters have been constructed, selected landward areas will be filled with dredged material obtained from one or more existing dredge disposal sites or navigational channels adjacent to the project sites (Figures 5 and 6). Approximately 16 acres will be required to provide the estimated 102,000 cubic yd^3 using the following criteria: (1) borrow source will be free of contaminants as described in the *Inland Testing Manual (Evaluation of Dredged Material Proposed For Discharge in Waters of the United States,* (U.S. Army Corps of Engineers, 1998); and (2) borrow areas in depths of 6 ft or less will be limited to excavated depths of 4 ft below the sediment line and borrow areas in 6 ft or more of depth will be limited to excavated depths of 6 ft below the sediment line.

The marsh creation areas will be filled beginning at the most landward extent and filled until final marsh elevations are achieved. Marsh elevations will be designed to meet the requirements of native marsh plant species and to withstand normal wave heights for the project area. Based on similar projects, it is estimated that approximately 6,000 yd^3 of fill will be needed for PGSII and approximately 96,000 yd^3 of fill will be needed for Sanders Beach. To avoid potential impacts to protected species, the proposed project will use a hydraulic cutterhead pipeline dredge rather than a hopper dredge. Floating turbidity screens will be used to control turbidity levels and meet State of Florida requirements (Chapter 62-302.530 F.A.C.). Sediment controls will remain in place throughout the dredging and filling process. Construction is anticipated to take between 6-10 months for all elements, occurring between August-October 2015.

4. The Cat Point Living Shoreline project is located at 29.73093°N, 84.88433°W, along an area just off the Apalachicola National Estuarine Research Reserve Office Complex and Nature Center in Eastpoint, Florida (Figure 4). Proposed activities include expanding an existing breakwater structure by up to 0.3 miles and creating 1 acre of salt marsh habitat. The extensions

to the existing breakwater will be added on the north end (689 ft) and south end (750 ft). The structure is approximately 30 ft from the shoreline, has a crest width of 5 ft, and a total height of 2.5 ft. The extensions will be similar in measurement. Gaps ranging in size from 3-25 ft wide will be built into the breakwater to allow for tidal flow. Expansion of the breakwater will be undertaken during the winter season (November through early March), when low tides in the project area expose the tidal flats. Then materials can be placed from shore with a backhoe or crane (the area is too shallow to use a barge). Materials and equipment will be staged on state-owned lands adjacent to the road right-of-way, and will be accessed by an existing road (Millender Street). Native marsh plant species will be planted behind the breakwater structures, along the shoreline, to create approximately 1 acre of new marsh. Marsh creation will involve planting species on 2- to 3-ft centers. This activity would commence once the constructed breakwater extensions are complete and stabilized so the restored areas will be protected to the fullest extent possible.

We believe that sea turtles (the endangered Kemp's ridley; the threatened loggerhead,[1] and the threatened/endangered green[2]) and the threatened Gulf sturgeon may be present in the action areas and may be affected by the projects. We believe leatherback and hawksbill sea turtles will not be present, thus, they will not be affected, because their very-specific foraging and life history requirements are not met in or near the action areas: leatherbacks are deepwater, pelagic species and hawksbills are associated with coral reefs. Smalltooth sawfish also are not likely to be encountered at any of the project sites and therefore will not be affected. Their current distribution has contracted to peninsular Florida and, within that area, they can only be found with regularity off the extreme southern portion of Florida. Of the proposed projects, 3 fall within ESA-designated Gulf sturgeon critical habitat (Units 8, 9, and 13); Swift Tract is not located in designated critical habitat.

NMFS has identified the following potential effects to sea turtles and Gulf sturgeon and has concluded that the species are not likely to be adversely affected by the proposed actions for several reasons. Effects include the risks of being struck by transiting vessels, cutterhead and mechanical dredge-related activities, and deployment of material from the barges. Due to the species' mobility, natural avoidance behaviors, and the slow transit speed of the towed barges (5 knots or less), the risk of injury will be discountable. Compliance with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, dated March 23, 2006 (enclosed), will further reduce the risk as it requires work to stop if a listed species is observed within 50 ft of operating or moving machinery. NMFS believes that the temporary pipeline put in place to pump sediment from the dredged material disposal site to the marsh creation area will not adversely affect or impede the passage or transit of any of these species, as they can simply avoid it, or swim over, under, or around it; thus, any effects of pipeline presence are insignificant.

Sea turtles and Gulf sturgeon may be temporarily unable to use the sites for foraging or shelter habitat due to avoidance of construction activities, related noise, and physical exclusion from areas blocked by turbidity curtains. These effects will be temporary and insignificant, given the projects' small footprints, short construction durations, and turbidity controls that will only

[1] Northwest Atlantic Ocean distinct population segment (DPS)

[2] Green turtles are listed as threatened except for the Florida and Pacific coast of Mexico breeding populations, which are listed as endangered.

enclose a small portion of the project sites and will be removed after construction. In addition, the Hancock County, Swift Tract, and Pensacola Bay project activities will occur between May and October when Gulf sturgeon are found primarily in freshwater rivers. Activities at Cat Point will occur during the winter months when the tide is at its lowest so cranes can work from shore. Due to the shallow water depths, that particular project area provides poor foraging and refuge habitat for sturgeon. Gulf sturgeon are suction feeders, using their relatively narrow mouths to funnel water and prey items. Because of their feeding morphology, they are usually found at slightly deeper depths (greater than 6 ft) where there is lower wave energy. There is ample available foraging and refuge habitat for Gulf sturgeon outside of, but adjacent to, the Cat Point site just offshore where the depths provide more suitable habitat to Gulf sturgeon.

The essential features for the conservation of Gulf sturgeon present in Units 8, 9, and 13 are: (1) abundant prey items; (2) water quality and sediment quality necessary for normal behavior, growth, and viability of all life stages; and (3) safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats. Of these essential features, NMFS believes prey abundance, water quality, and sediment quality may be affected.

The prey abundance essential feature may be affected by burial or excavation of Gulf sturgeon foraging sites during marsh creation, flotation channel dredging, and oyster reef creation. The temporary loss of prey species within the project area will not appreciably decrease the prey available to Gulf sturgeon as there are abundant, similar, nearby foraging habitats. Any decrease in numbers of these prey species would be minimal in relation to their numbers across the entire critical habitat units or nearby areas. Prey species can quickly recolonize the project areas after construction; thus, effects to the prey abundance essential feature of critical habitat will be insignificant. Furthermore, effects to the ecological functions and values of the critical habitat units for Gulf sturgeon will be insignificant.

The marsh creation projects will likely have a beneficial impact on Gulf sturgeon by increasing prey abundance in adjacent areas. Partyka and Peterson (2008) found even the smallest patches of marsh habitat supported a larger diversity of fauna than nearby areas.[3] Therefore, it is likely that Gulf sturgeon prey species (e.g., amphipods, lancelets, polychaetes, gastropods, ghost shrimp, isopods, mollusks, and crustaceans) will benefit from the restoration of a marsh area with native vegetation. While some of this enhanced prey abundance will remain in the marsh and not be available to Gulf sturgeon for foraging, we believe that directly (through spillover) or indirectly (through trophic movement) prey abundance will be increased in areas accessible to foraging Gulf sturgeon. This spillover effect is supported by Whaley and Minello's (2002) findings of the strong trophic link between infauna and nekton near the marsh edge and the high fishery productivity derived from Gulf coast marshes.[4]

Water quality will be temporarily affected by disturbance to the bottom sediments during dredging activities. The effects are expected to be insignificant, given that increases in turbidity

[3] Partyka, M.L. and M.S. Peterson. 2008. Habitat quality and salt-marsh assemblages along an anthropogenic estuarine shoreline. Journal of Coastal Research 24(6):1570-1581.

[4] Minello, T.J., K.W. Able, M.P. Weinstein, and C.G. Hays. 2003. Salt marshes as nurseries for nekton: testing hypotheses on density, growth, and survival through meta-analysis. Marine Ecology Progress Series 246:39-59.

will be temporary and minimized by the use of turbidity curtains. In addition, sediments will settle out of the water column quickly, and/or tidal currents will disperse the disturbed sediments to baseline conditions. We do not expect any adverse changes to the sediment quality from the proposed dredging, as the composition of the dredged materials to be replaced (put back into the flotation channels, post project construction) in critical habitat are from the same approximate area in critical habitat, and therefore are expected to be similar or identical to those that are currently present.

Finally, we concur with your project-effect determinations that the projects for which you requested ESA consultations are not likely to adversely affect Kemp's ridley, loggerhead, or green sea turtles, Gulf sturgeon, or Gulf sturgeon critical habitat in Units 8, 9, and 13.

This concludes the NOAA Restoration Center's consultation responsibilities under the ESA for species under NMFS's purview. Consultation must be reinitiated if a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat is designated that may be affected by the identified action.

We've enclosed additional relevant information for your review. We look forward to further cooperation with you on other projects to ensure the conservation of our threatened and endangered marine species and designated critical habitat. If you have any questions about this consultation, please contact Joyce Barkley-Hahn, Consultation Biologist, at (727) 551-5741, or by email at joyce.barkley-hahn@noaa.gov.

Sincerely,

Miles M Croom

for Roy E. Crabtree, Ph.D.
Regional Administrator

Enc.: 1. *Sea Turtle and Smalltooth Sawfish Construction Conditions* (Revised March 23, 2006)
2. *Measures for Reducing Entrapment Risk to Protected Species* (Revised May 22, 2012)
3. *Standard Manatee Conditions for In-Water Work* (Dated 2011).

File: 1514-22C.

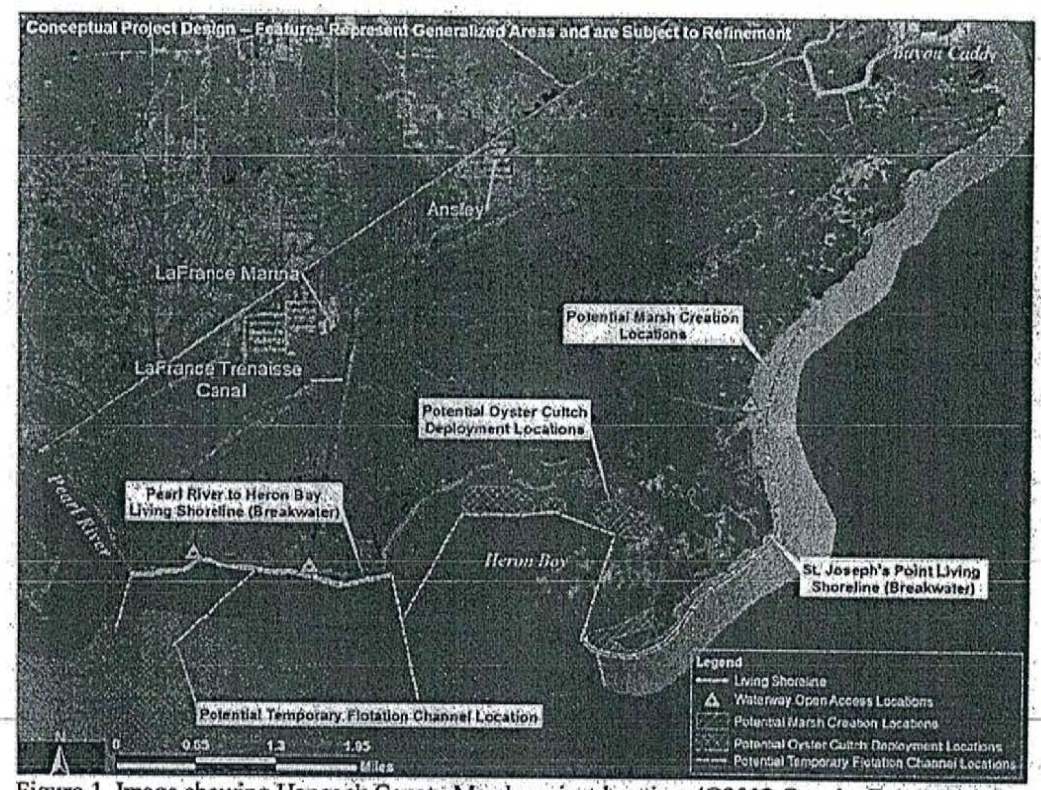

Figure 1. Image showing Hancock County Marsh project locations (©2012 Google, TerraMetrics)

Figure 2. Image showing Swift Tract project location (©2012 Google, TerraMetrics)

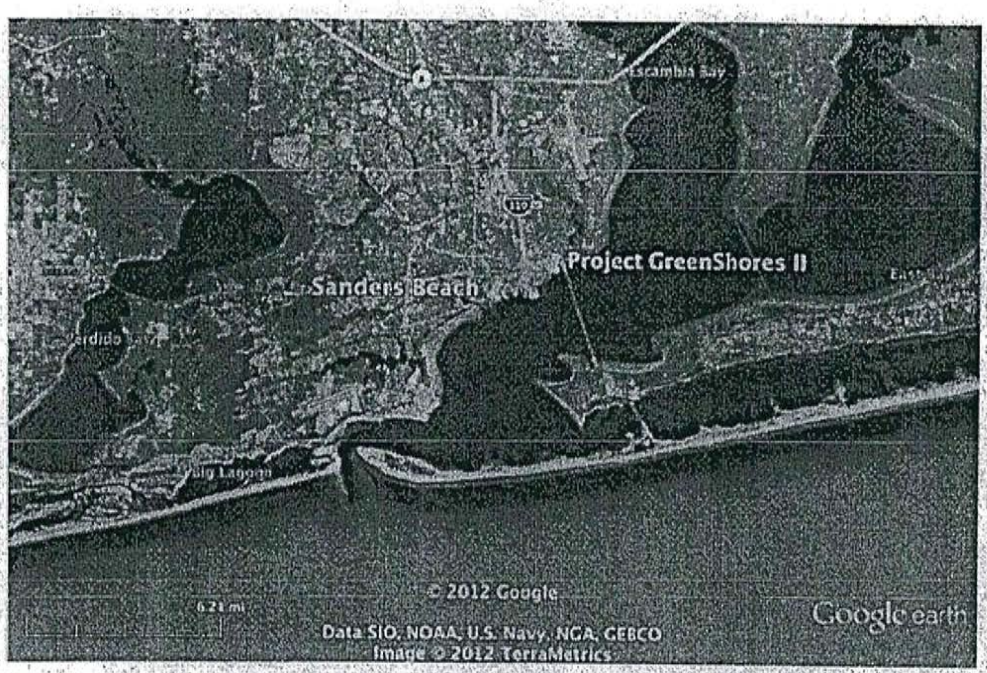

Figure 3. Image showing Pensacola Bay project locations (©2012 Google, TerraMetrics, data SIO, NOAA, U.S. Navy, NGA, GEBCO)

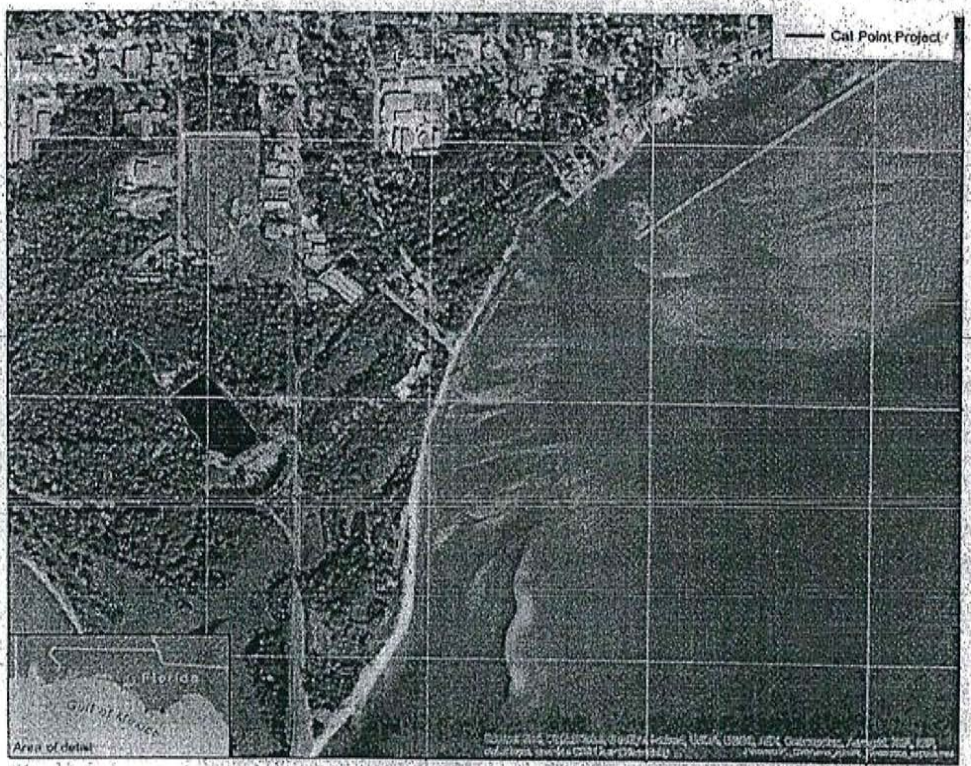

Figure 4. Image showing Cat Point project locations (©ESRI, DigitalGlobe, GeoEye, I-cubed, USDA, USGS, AEX, Getmapping, IGN, IGP, Swisstopo, GIS User Community)

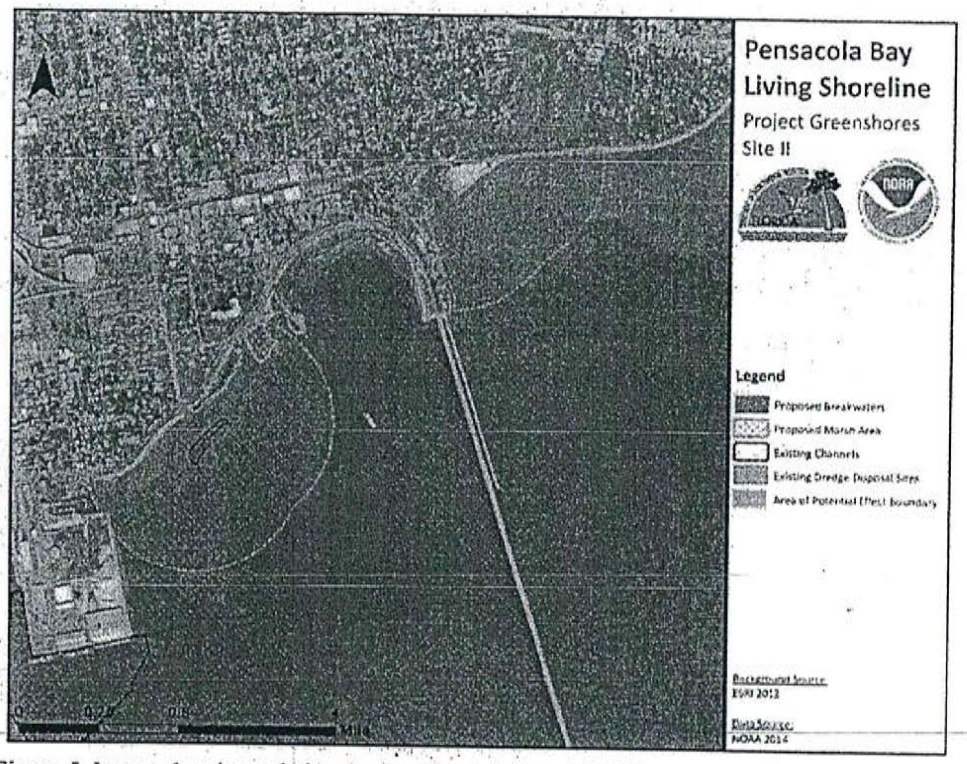

Figure 5. Image showing existing dredge disposal sites at PGSII

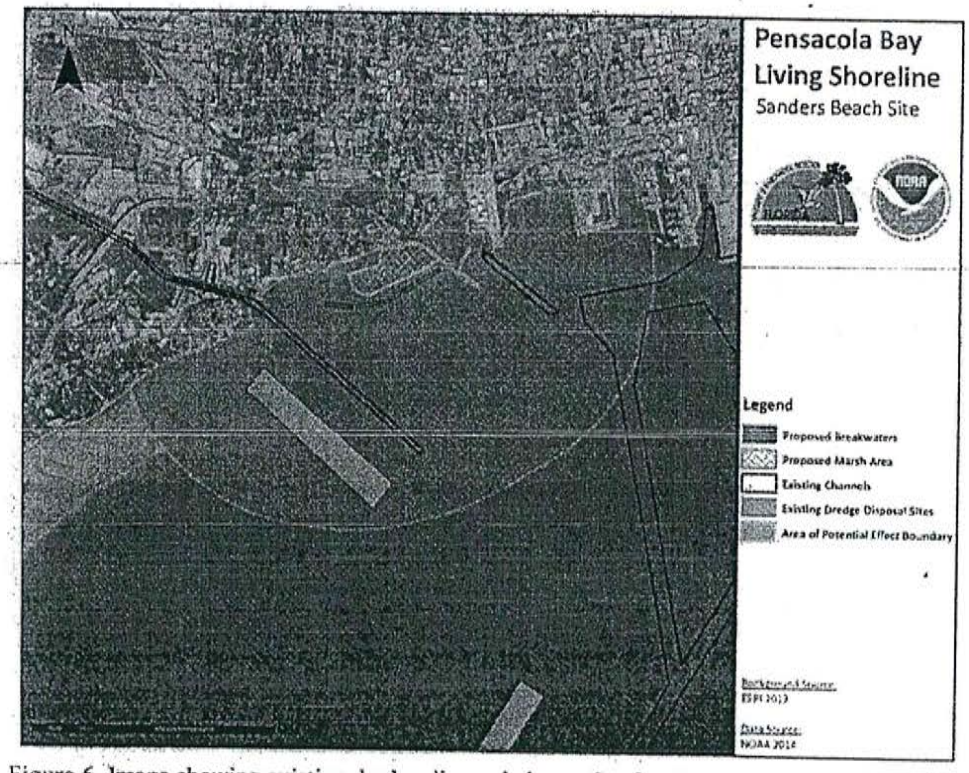

Figure 6. Image showing existing dredge disposal sites at Sanders Beach

SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS

The permittee shall comply with the following protected species construction conditions:

a. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.

b. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.

c. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.

d. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.

e. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.

f. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.

g. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

Revised: March 23, 2006

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
(727) 824-5312; FAX (727) 824-5309
http://sero.nmfs.noaa.gov

Measures for Reducing Entrapment Risk to Protected Species

Bottlenose dolphins, sea turtles, and Gulf sturgeon (protected species) are known to inhabit coastal waters of the northern Gulf of Mexico. Bottlenose dolphins are protected under the Marine Mammal Protection Act (MMPA) and sea turtles and Gulf sturgeon are protected under the Endangered Species Act (ESA). Because of the potential for these protected species to become entrapped within coastal waters of construction sites along the northern Gulf coast, projects that enclose shallow open water areas for wetland creation or nourishment will use the following measures to minimize the potential for entrapment:

1. **Pre-construction planning.** During project design, the Federal Action Agency or project proponents must incorporate at least one escape route into the proposed retention structure(s) to allow any protected species to exit the area(s) to be enclosed. Escape routes must lead directly to open water outside the construction site and must have a minimum width of 100 feet. Escape routes should also have a depth as deep as the deepest natural entrance into the enclosure site and must remain open until a thorough survey of the area, conducted immediately prior to complete enclosure, determines no Protected Species are present within the confines of the structure (see item 5 below for details).

2. **Pre-construction compliance meeting.** Prior to construction, the Federal Action Agency, project proponents, the contracting officer representative, and construction personnel should conduct a site visit and meeting to develop a project-specific approach to implementing these preventative measures.

3. **Responsible parties.** The Federal Action Agency will instruct all personnel associated with the project of the potential presence of protected species in the area and the need to prevent entrapment of these animals. All construction personnel will be advised that there are civil and criminal penalties for harming, harassing, or killing protected species. Construction personnel will be held responsible for any protected species harassed or killed as a result of construction activities. All costs associated with monitoring and final clearance surveys are the responsibility of project proponents and must be incorporated in the construction plan.

4. **Monitoring during retention structure construction.** It is the responsibility of construction personnel to monitor the area for protected species during dike or levee construction. If protected species are regularly sighted over a 2 or 3 day period within the enclosure area during retention structure assembly, construction personnel must notify the Federal Action Agency. It is the responsibility of the Federal Action Agency

to then coordinate with the National Marine Fisheries Service (NMFS) Marine Mammal Health and Stranding Response team (1-877-WHALE HELP [1-877-942-5343]) or the appropriate State Coordinator for the Sea Turtle Stranding and Salvage Network (see http://www.sefsc.noaa.gov/species/turtles/stranding_coordinators.htm) to determine what further actions may be required. Construction personnel may not attempt to scare, herd, disturb, or harass the protected species to encourage them to leave the area.

5. **Pre-closure final clearance.** Prior to completing any retention structure by closing the escape route, the Federal Action Agency will insure that the area to be enclosed is observed for protected species. Surveys must be conducted by experienced marine observers during daylight hours beginning the day prior to closure and continuing during closure. This is best accomplished by small vessel or aerial surveys with 2-3 experienced marine observers per vehicle (vessel/helicopter) scanning for protected species. Large areas (e.g. >300 acres) will likely require the use of more than one vessel or aerial survey to insure full coverage of the area. These surveys will occur in a Beaufort sea state (BSS) of 3 feet or less, as protected species are difficult to sight in choppy water. Escape routes may not be closed until the final clearance determines the absence of protected species within the enclosure sight.

6. **Post closure sightings.** If protected species become entrapped in an enclosed area, the Federal Action Agency and NMFS must be immediately notified. If observers note entrapped animals are visually disturbed, stressed, or their health is compromised then the Action Agency may require any pumping activity to cease and the breaching of retention structures so that the animals can either leave on their own or be moved under the direction of NMFS.

   a. In coordination with the local stranding networks and other experts, NMFS will conduct an initial assessment to determine the number of animals, their size, age (in the case of dolphins), body condition, behavior, habitat, environmental parameters, prey availability and overall risk.
   b. If the animal(s) is/are not in imminent danger they will need to be monitored by the Stranding Network for any significant changes in the above variables.
   c. Construction personnel may not attempt to scare, herd, disturb, or harass the protected species to encourage them to leave the area. Coordination by the Federal Action Agency with the NMFS SER Stranding Coordinator may result in authorization for these actions.
   d. NMFS may intervene (catch and release and/or rehabilitate) if the protected species are in a situation that is life threatening and evidence suggests the animal is unlikely to survive in its immediate surroundings.
   e. Surveys will be conducted throughout the area at least twice or more in calm surface conditions (BSS 3 feet or less), with experienced marine observers, to determine whether protected species are no longer present in the area.

While NMFS recommends these best management practices to prevent the future takes of marine mammals by entrapment, use of these measures cannot guarantee a take will not occur. Following these measures does not constitute compliance with the MMPA's Incidental Take requirements and take is not authorized.

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK
2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.

b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.

d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.

e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or in Vero Beach (1-772-562-3909) for south Florida, and emailed to FWC at ImperiledSpecies@myFWC.com.

f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8½" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at http://www.myfwc.com/WILDLIFEHABITATS/manatee_sign_vendors.htm. Questions concerning these signs can be forwarded to the email address listed above.

CAUTION: MANATEE HABITAT

All project vessels

IDLE SPEED / NO WAKE

When a manatee is within 50 feet of work
all in-water activities must

SHUT DOWN

Report any collision with or injury to a manatee:

Wildlife Alert:

1-888-404-FWCC(3922)

cell *FWC or #FWC

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

SEP 26 2014 F/SER31:JBH

MEMORANDUM FOR: F/HC3 – Leslie Craig

FROM: for F/SE – Roy E. Crabtree, Ph.D. Miles M. Croom

SUBJECT: Amendment to Deepwater Horizon-Early Restoration Plan Phase III, Endangered Species Act Section 7 Consultations for 4 Living Shoreline Projects and Mississippi's Popp's Ferry Causeway Park

	Applicant	NMFS Number	Location
1	Mississippi Department of Environmental Quality	SER-2014-12925	Hancock County, Mississippi
2	NOAA Restoration Center – Southeast Regional Office	SER-2014-12926	Baldwin County, Alabama
3	Florida Department of Environmental Protection	SER-2014-13016	Escambia County, Florida
4	Florida Department of Environmental Protection	SER-2014-13083	Franklin County, Florida
5	Mississippi Department of Environmental Quality	SER-2014-13026	Harrison County, Mississippi

This memorandum responds to the National Oceanic and Atmospheric Administration (NOAA) Restoration Center's (RC) April 21, 2014, request for amendments to the National Marine Fisheries Service (NMFS) Section 7 concurrence letters of April 11, 2014, and May 6, 2014, regarding the above-referenced projects. The project-effects determinations were based on information provided by the NOAA RC and NMFS's review of published literature. We concurred with your determinations that the proposed activities may affect, but are not likely to adversely affect, 3 sea turtle species (green, Kemp's ridley, and loggerhead) and Gulf sturgeon. Additionally, for the 4 living shoreline projects (SER-2014-12925, -12926, -13016, and -13083), we concurred with your determination that the proposed activities will not adversely affect designated Gulf sturgeon critical habitat in Units 8, 9, and 13.

You initially indicated Projects 1, 2, and 3 would be constructed within the May-October timeframe to avoid potential impacts to migrating Gulf sturgeon. However, the applicants currently face considerable uncertainty regarding project implementation timing and are unable to commit to conducting in-water activities during the period from May to October. We relied in part on the commitment to conduct in-water activities from May to October to support our conclusion that temporary exclusion from the sites will have an insignificant effect on Gulf sturgeon because Gulf sturgeon are generally found in freshwater rivers during this period. However, the primary basis for our conclusion of the effects analyses were the projects' small footprints, the short construction durations, and the fact that turbidity controls, if used, will only enclose a small portion of the project sites and will be removed after construction (as explained below, turbidity curtains will not be used for Projects 1, 2, and 5). Thus, we have determined

that the change in Projects 1, 2, and 3 do not alter our effects analysis, and any effects caused by the temporary exclusion from foraging or shelter habitat will be insignificant.

In our letters, we erroneously included the use of floating turbidity curtains in the descriptions of the proposed activities for Projects 1, 2, and 5. NOAA RC has provided information indicating that floating turbidity curtains will not be used for these 3 projects. It is our understanding that for the Swift Tract project in Alabama (SER-2014-12926), curtains are not required by the Alabama Department of Environmental Management if the water clarity is monitored and turbidity remains under 50 nephelometric turbidity units (NTU). For the Hancock County project in Mississippi (SER-2014-12925), Florence Watson of the Mississippi Department of Environmental Quality replied in an email to the applicant that, "Turbidity screens are required for activities that will be ongoing for a significant period of time. [The Hancock County project] is temporary in nature, has minimal construction activities in water, and the construction timeframe is very short. Also, the water quality standard establishes that turbidity shall not exceed 50 NTUs of the ambient turbidity outside a 750-foot mixing zone. This activity will likely occur well within this mixing zone and is not expected to disturb the water bottoms to an extent to exceed this standard." It is our understanding that this same reasoning applies to the Harrison County, Mississippi project (SER-2014-13026) as the projects are of similar scale. For these 3 projects, turbidity is expected to remain below 50 NTUs. In addition, the species have the ability to move away from the project sites and will likely avoid construction activities. Therefore, we conclude that any effects caused by this minor modification to the proposed actions will be insignificant.

Consultation must be reinitiated if a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat is designated that may be affected by the identified action. If you have any questions about this consultation, please contact Joyce Barkley-Hahn, Consultation Biologist, at (727) 551-5741, or by email at joyce.barkley-hahn@noaa.gov.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

MEMORANDUM FOR: David M. Bernhart, Assistant Regional Administrator for Protected Resources
Protected Resources Division (PRD)

FROM: Jamie Schubert, Marine Habitat Resource Specialist
Restoration Center

SUBJECT: *Deepwater Horizon* Early Restoration Phase III - Hancock County Marsh Living Shoreline Project: Re-Initiation of ESA Consultation

I. Introduction

The Hancock County Marsh Living Shoreline project is part of a suite of projects approved for implementation in the Final Phase III Early Restoration Plan for the *Deepwater Horizon* Oil Spill (Final Phase III ERP/PEIS). The NOAA Restoration Center and Mississippi Department of Environmental Quality (MDEQ) are the action agencies for implementation of this project.

In 2014, the NOAA Restoration Center initiated an ESA consultation with the NMFS Protected Resource Division, Southeast Regional Office (PRD SERO) for this project, along with three other living shoreline projects, as then proposed for inclusion in the Phase III Early Restoration Plan. On April 11, 2014, PRD SERO issued a letter of concurrence, concluding that implementation of the Hancock County project is Not Likely to Adversely Affect four species of sea turtles and the Gulf sturgeon. Because the April 11, 2014 concurrence letter had erroneously included the use of floating turbidity curtains in Mississippi, PRD SERO issued a revised letter of concurrence on September 26, 2104, concluding again that the Hancock County project May Affect but are Not Likely to Adversely Affect four species of sea turtles and the Gulf sturgeon.

Additional surveys, engineering, and design activities since the 2014 letter of concurrence have resulted in some modifications to the Hancock County project. The NOAA Restoration Center and the MDEQ have reviewed the prior letters of concurrence (attached). The project has not changed in scope and the site conditions remain the same as those described and considered in the previous consultation for this action, but the changes in the project's footprint in our view warranted re-initiating the ESA consultation with PRD SERO. The NOAA Restoration Center is unaware of any new information that would change the previous determinations, however. The NOAA Restoration Center and the MDEQ will still implement the project as described in the 2014 letters of concurrence

from NOAA PRD, including adherence to the precautionary measures, best management practices and requirements as described in those letters. Therefore, the NOAA Restoration Center has determined that the Hancock County project, if implemented as modified during its further engineering and design, May Affect but is still Not Likely to Adversely Affect sea turtles and the Gulf sturgeon.

Table 1 – Species evaluated in the initial and re-initiated consultation

SPECIES	STATUS	DETERMINATION
Gulf sturgeon	Threatened	May affect, but not likely to adversely affect
Leatherback sea turtle	Endangered	May affect, but not likely to adversely affect
Kemp's ridley sea turtle	Endangered	May affect, but not likely to adversely affect
Green sea turtle	Threatened/Endangered	May affect, but not likely to adversely affect
Loggerhead sea turtle	Threatened	May affect, but not likely to adversely affect

II. Description of Project Modifications:

The Final Phase III ERP/PEIS and the Biological Assessment submitted to initiate the original consultation stated that the Hancock County project in Mississippi included construction of three components: 46 acres of marsh, 46 acres of submerged reef, and 5.9 miles of intertidal breakwaters. During the engineering and design phase for the project, additional background studies were conducted to determine the most effective project design to reduce shoreline erosion, restore salt marsh habitat, and restore benthic habitats at the site.

Based on the information provided by these studies, the NOAA Restoration Center and MDEQ determined the breakwater height and base width would have to increase to provide the desired level of shoreline protection. Also, sediment cores taken in Heron Bay revealed a more desirable bottom substrate for the subtidal reef construction in the northwestern portion of Heron Bay than in the northeastern portion. On that basis, the submerged reef footprint was shifted to the northwestern portion of the bay. The construction methodology for the breakwater and sub-tidal reef components were further refined and the temporary flotation channel/sidecasting of sediments became unnecessary and was eliminated from the project, which reduces the potential construction impacts to species and critical habitats. The marsh creation footprint has also been refined and will now be located entirely within Heron Bay and the tidal creeks between Heron Bay and the Mississippi Sound. The 2014 ESA consultation anticipated the marsh footprint would be both in Heron Bay and also on the landward side of the breakwater. The following summarizes the project's specific design changes:

- The breakwater height will be increased from Mean Low Water to Mean High High Water to facilitate increased shoreline protection;

- Commensurate with breakwater height increase, the breakwater base width will be increased from 30 feet to 60 feet resulting in a net increase in the breakwater footprint of 23 acres;
- Approximately 123.1 acres of the flotation channels/sidecast sediments will be eliminated from the project;
- The Potential Subtidal Reef Deployment Area shown in the Final Phase III ERP/PEIS has been refined based on field studies. The Refined Subtidal Reef Deployment Area is a 200 acre area in the western portion of Heron Bay. Approximately 46 acres of cultch will be deployed in one to several locations within this area (Figure 1).
- The Potential Marsh Creation Area shown in the Final Phase III ERP/PEIS has been refined based on field studies. The Refined Marsh Creation Area is a 76 acre area in the southeastern portion of Heron Bay. Approximately 46 acres of marsh will be created in one to several locations within this area (Figure 1).

Figure 1 depicts the resulting modifications to the project's footprint and Table 2 quantifies the specific increases and decreases in the overall footprint. These changes do not impact the project's overall objectives, which are to 1) construct reef structures to protect shoreline from erosion and support secondary productivity; 2) restore marsh habitat, and 3) restore subtidal reefs to support secondary productivity.

Figure 1. Modified Hancock County Marsh Living Shoreline Project Footprint compared to previously evaluated component areas

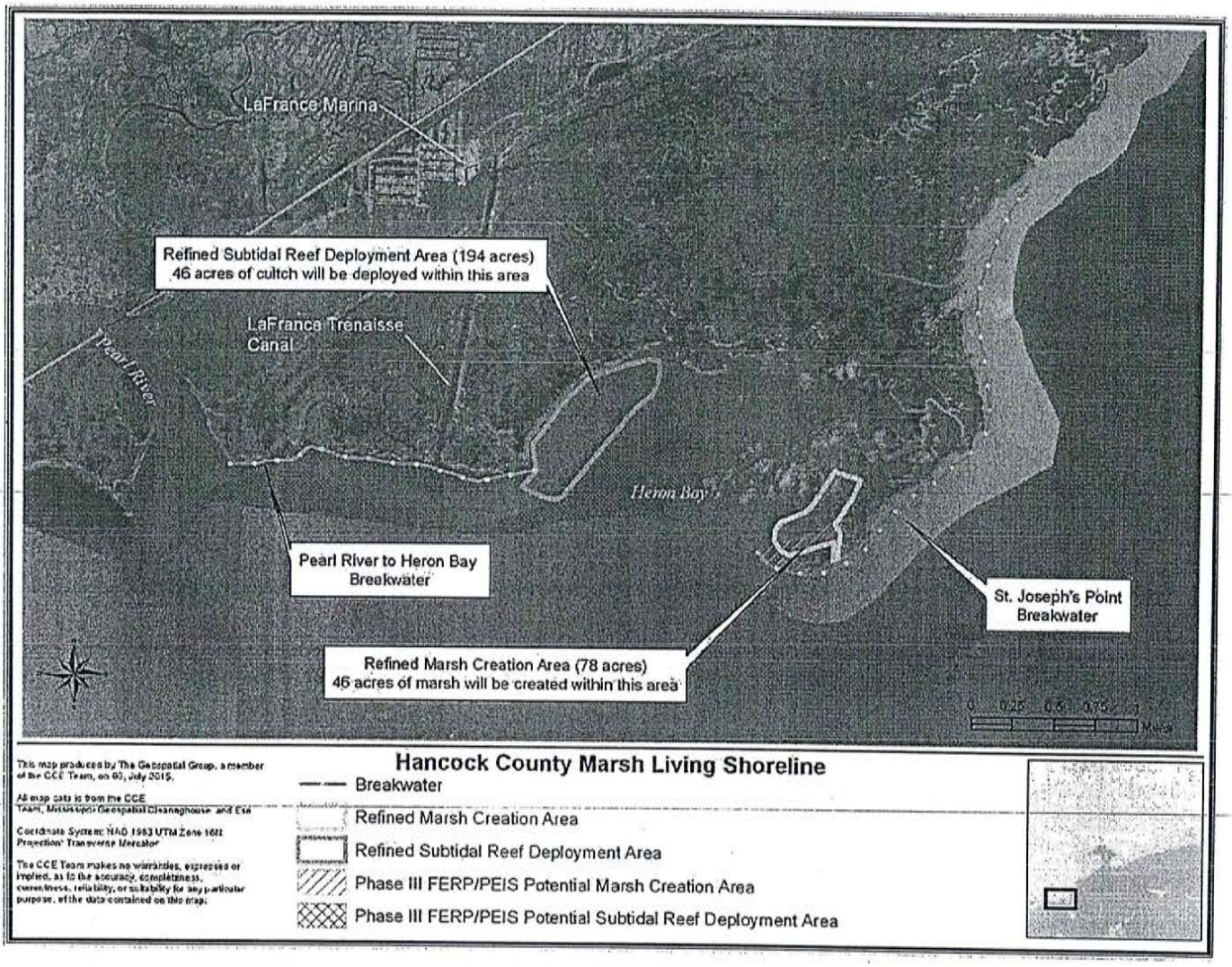

Table 2. Summary of Originally Identified Impacts and Modified Impacts.

Project Component	Impact Type	Revised Impact Type (per Design Change)	Duration of Impact	Habitat Type Impacted	Acreage of Impact (per Phase 3 PEIS)	Revised Acreage of Impact (per Design Change)	Increase/(Decrease) in Acreage of Impact (per Design Change)
St. Joseph's Point Area Breakwater Construction Activity Area	Filling fine-grained sediment with riprap, covered with bagged shell veneer	Filling fine-grained sediment with riprap over geotextile/geogrid layer	Long-Term	Shallow water/fine-grained sediment bottom	14.4	29.1	14.7
Pearl River to Heron Bay Breakwater Construction Activity Area	Filling fine-grained sediment with riprap, covered with bagged shell veneer	Filling fine-grained sediment with riprap over geotextile/geogrid layer	Permanent	Shallow water/fine-grained sediment bottom	5.5	13.8	8.3
Temporary Flotation Channels (breakwaters and subtidal reefs)	Excavation of sea bottom	None	Short-Term	Water depths of 2 to 8 feet with fine-grained sediment bottom	101	0	(101.0)
Temporary Flotation Channel Sidecast material	Placement of excavated sea bottom of seaward side of flotation channels or for use in marsh creation	None	Short-Term	Water depths of 2 to 8 feet with fine-grained sediment bottom	22.9	0	(22.9)
Subtidal Reefs in Heron Bay	Filling with Cultch (shells, limestone)	Filling with Cultch (shells, limestone); siting refined based on siting study	Long-Term	Shallow water/hard bottom	46	46	0.0
Marsh Creation (Inside Heron Bay)	Filling with suitable material	Filling with suitable material; site for marsh creation selected	Long-Term	Shallow water with fine-grained sediment bottom	46	46	0.0
				Total Temporary Impacts	**123.9**	**0**	**(123.9)**
				Total Permanent Impacts	**111.9**	**134.9**	**23.0**
				Total Impacts	**242.2**	**134.9**	**(100.9)**

III. Construction Methodology:

The project's current construction methods and activities are described below in order to determine whether any construction activities are likely to impact species or critical habitats. Actual construction methods and activities have been updated since the initial consultation based on the final design.

A. Breakwaters

The specific breakwater construction elevation (Mean Higher High Water) was selected to maximize shoreline protection (Table 3). Construction will include placement of linear structures that would utilize natural stone and/or shell-based materials. The alignment and limits of the breakwaters would be surveyed; the alignment of the breakwaters would be marked by rock "pods" that would be a minimum of one foot above the Mean Higher High Water (MHHW) surface. The rock pods would be coordinated with the US Coast Guard but have been used in other Gulf regions for habitat projects as a visual marker for recreational mariners. The height of the breakwaters along the alignment would be constructed based on bottom elevations and the initial crest elevation (2.0 ft. NAVD 88; 2.4 ft. Mean Lower Low Water). The initial constructed elevation includes an allowance for short term consolidation and sea level rise. Barriers, navigation warning signs (as required by the U.S. Coast Guard), and other safety devices would be required and utilized during construction.

Table 3. Updated Breakwater specifications for the Hancock County Marsh LSL.

Breakwater Design Criteria	St. Joseph's Point Breakwater (eastern reach)	Pearl River to Heron Bay Breakwater (western reach):
Total project length	Approx. 4 miles	Approx. 1.9 miles
Total project acreage	29.1 acres	13.8 acres
Crest width	15.0 ft.	15.0 ft.
Base width	60 ft. (maximum)	60 ft. (maximum)
Assumed bottom elevation	-3.5 NAVD 88	-3.5 NAVD 88
Total structure height	5.0 to 6.0 ft.	5.0 to 6.0 ft.
Riprap volume	132,000 cubic yards	58,000 cubic yards
Thickness of material (riprap)	5.0 to 6.0 ft.	5.0 to 6.0 ft.
Estimated initial settlement	0.5ft.	0.5ft.
Design side slopes (Seaward Face)	5v:1h	5v:1h
Design side slopes (Landward Face)	3v:1h	3v:1h
Breakwater distance from shoreline	20 to 400 ft.	–40 to 150ft.
Reach of each breakwater	180ft.	180ft.
Design Crest Height	1.4 ft. NAVD88 (MHHW)	1.4 ft. NAVD 88 (MHHW)
Width of gaps at design crest height	25 ft.	25 ft.

The dimensions for the breakwaters would be approximately 60 ft. wide (maximum) at the base and approximately 15 ft. wide at the crest (Table 3).

The breakwaters would be constructed using graded stone. The breakwater material would be transported to the work area on barges and installed by a crane located on a separate barge. Placement of the breakwater material would be monitored to ensure the breakwater dimensions, slopes, and crest elevations are achieved. The deployment of the breakwater material may extend over a period of ten to twelve months. Major construction activities would adhere to the Sea turtle and Smalltooth Sawfish Construction Conditions (NMFS, 2006) and will minimize the potential for impacting Gulf Sturgeon. Total installed volumes would be as follows:

- ***St. Joseph's Point Breakwater (eastern reach):*** The target depth for deployment is approximately -3.5 ft. NAVD 88, but could be between -3.0 and -5.0 ft. NAVD 88. The volume of placed material would be approximately 132,000 cubic yards of riprap. The breakwater would cover a footprint of approximately 29.1acres of fine-grained sediment.
- ***Pearl River to Heron Bay Breakwater (western reach):*** The target depth for deployment is approximately -3.5 NAVD 88, but could be between -2.0 ft. and -5.0 ft. NAVD 88. The volume of placed material would be approximately 58,000 cubic yards of riprap. The breakwater would cover a footprint of approximately 13.8 acres of fine-grained sediment.

Temporary flotation channels for construction are no longer necessary and have been eliminated from the project. After completion of construction, the breakwater structure would be surveyed. It is not anticipated that permanent navigation signs would be required by the U.S. Coast Guard; visual features, above mean high tide, will be integrated into the rock structure. The location would be installed in accordance with safety requirements.

B. Creation of Marsh in the Vicinity of St. Joseph's Point

After the breakwater along St. Joseph's Point has been installed, area(s) landward of the breakwater and in Heron Bay would be filled with dredged material obtained from the MDMR Beneficial Use of Sediment Program if material is available, or a suitable, permitted borrow source or approved permitted dredging project. The marsh will mimic the adjacent marsh intertidal range. It is anticipated that an earthen dike would be constructed at the seaward extent of the marsh. Upon location of suitable material, the dike would be constructed by excavating existing material from the landward side of the proposed dike location, but not borrowing from the existing marsh. Once an area of the marsh is diked, the area landward of the dike would be filled with dredged material until final marsh grades are achieved. Dike and marsh fill sediments would be placed mechanically or pumped through a floating pipeline from a hydraulic dredge located

where suitable fill material or approved permitted dredge material is available. Pumps and sediment controls would remain in place throughout the dredging and filling process and after initial settling has occurred. Once the entire marsh area(s) is constructed, the area would be monitored for natural re-vegetation.

C. Placement of Subtidal Reef Cultch in Heron Bay

Crushed stone would be deployed in Heron Bay in water depths of -3 to -5 ft. NAVD 88 in areas that currently support or previously supported reef activities. Maps of historic reef areas within Heron Bay were investigated for thickness of soft muds, shell or shell hash and suitable bearing soils. Based on this investigation, an area has been identified that would support the subtidal reef (see Figure 1). A survey has been completed that identified suitable areas. The subtidal reefs materials would be deployed as a high-profile 6- to 9-inch-thick layer of crushed stone. Prior to deployment, the limits of the subtidal reef area(s) would be marked with buoys or poles. Crushed stone would be deployed by a barge-mounted crane with a clam shell bucket or other suitable method. A material barge would be moored to the crane barge. As a construction alternative, water jetting the material off of a barge may be used in case of water-depth constraints. Upon completion, the deployment area would be surveyed. Temporary flotation channels for this project component have been eliminated.

D. Best Management Practices

Throughout the design phase, every practical attempt has been and will continue to be made to avoid and minimize potentially adverse impacts to species and all protection measures identified in the original Biological Assessment and approved in the prior concurrence letters will be adhered to.

IV. Endangered Species Act Re-Initiation Criteria

A. Re-initiation criteria (50 CFR Ch. IV (10–1–08 Edition), Section 402, § 402.16)

1. *The amount or extent of take specified in the incidental take statement is exceeded.*

   For the Hancock County Marsh Living Shoreline Project, this criterion is not applicable since there is no authorized take resulting from the consultations.

2. *New information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered.*

   The proposed changes to the project design could change the *manner* in which the project may affect listed species, but the extent of effects will be similar or less than those analyzed under the previous designs. Therefore reinitiation of informal consultation is warranted, but the project remains not likely to adversely affect listed species. The width of the breakwater footprint has increased, but the flotation channels and spoil piles associated with the breakwater construction have been eliminated. The breakwater will still be placed at a similar water depth contour over soft grained sediment, which is the same as the conditions identified

in the original consultation. Further, although the breakwater footprint is increasing (+/- 23 acres), the overall footprint of breakwater related impacts is significantly reduced due to the elimination of flotation channels. The breakwater and flotation channels would have impacted approximately 93 acres, but with the elimination of the flotation channels this footprint is reduced to approximately 36 acres. The modified placement of the subtidal reef will not result in effects that were not previously considered since the northwestern portion of Heron Bay provides similar habitat to listed species as the northeastern portion of Heron Bay. The entire northern portion of Heron Bay is comprised of soft sediments underlain by varying thicknesses of broken shell material; however, the northwestern portion of the bay has a thinner layer of soft sediment making it more suitable for submerged reef placement. The marsh restoration will be accomplished using the same techniques as previously anticipated and will be within and adjacent to areas already evaluated in the initial concurrence.

3. *The identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion.*

   The modifications will not cause an effect to a listed species or critical habitat that was not considered in the original Biological Assessment. As discussed above, although the breakwater footprint has been increased, the subtidal reef footprint has been shifted to the west, the marsh restoration footprint has been limited to Heron Bay only, and the flotation channels have been eliminated which significantly reduces the overall project footprint. Other than elimination of the flotation channels, the same construction methodologies and materials will be used to complete the project, so the project modifications will not cause any effects that were not previously identified.

4. *New species is listed or critical habitat designated that may be affected by the identified action.*

   There have been no new species listed or critical habitat designated since the original consultation and concurrence.

B. Specific-Concurrence Considerations:

In addition to the re-initiation criteria evaluated above, the modified project was evaluated as compared to the criteria PRD applied during the consultation process. The initial April 11, 2014 concurrence letter stated "[t]he prey abundance essential feature may be affected by burial or excavation of Gulf sturgeon foraging sites during marsh creation, flotation channel dredging, and oyster reef creation. The temporary loss of prey species within the project area will not appreciably decrease the prey available to Gulf sturgeon as there are abundant, similar, nearby foraging habitats. Any decrease in numbers of these prey species would be minimal in relation to their numbers across the

entire critical habitat units or nearby areas. Prey species can quickly recolonize the project areas after construction; thus, effects to the prey abundance essential feature of critical habitat will be insignificant. Furthermore, effects to the ecological functions and values of the critical habitat units for Gulf sturgeon will be insignificant." Further, on September 26, 2014, PRD prepared a revised concurrence letter which states "the primary basis for our conclusion of the effects analyses were the projects' small footprints, the short construction durations, and the fact that turbidity controls, if used, will only enclose a small portion of the project sites and will be removed after construction (as explained below, turbidity curtains will not be used for Projects 1, 2, and 5[1])."

1. Prey Availability
   The conditions related to prey availability have not changed related to the Hancock County project modifications discussed above as abundant, similar, and nearby foraging habits are still available. Additionally, the conclusion that the ability of prey species to quickly recolonize impacted areas would not change as a result of the project modifications discussed above.

2. Small Construction Footprint:
   As described above, the construction footprint of the marsh and subtidal reef have stayed the same, but have been shifted out of the areas previously proposed, and the anticipated impacts from the breakwater and flotation channels have been reduced. Based upon the dimensions of the project submitted with the original biological assessment prepared by the MS Department of Environmental Quality, the breakwater and flotation channel impacts were approximately 128 feet wide (30 feet for breakwater and 98 feet for top of channel) by 6 miles long (31,680 linear feet). The total aerial footprint of both the breakwater and parallel flotation channel was 93 acres. By eliminating the flotation channels, as currently proposed, and increasing the breakwater width to 60 feet, the total aerial footprint impact is reduced to 36 acres. Overall, the construction footprint is less than in the initial consultation for the breakwater component and there has been no change to the marsh or submerged reef footprint.

3. Short Construction Durations:
   The construction duration has not changed since the initial consultation.

VI. Conclusion

The NOAA Restoration Center seeks PRD SERO's concurrence with the NOAA Restoration Center's findings that the modified project and construction techniques may affect, but are not likely to adversely affect the four species of sea turtles and the Gulf sturgeon or Gulf sturgeon critical habitat. The basic elements of the proposed project that lead to the Restoration Center's determination that the project was not likely to adversely

[1] In the concurrence letter, Project 5 was the Hancock County Marsh Living Shoreline Project. Therefore, an evaluation of impacts based on temporary use of flotation channels is not provided.

affect listed species in the earlier PRD concurrence letters have not changed related to the Hancock County Marsh Living Shoreline project.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

In Reply Refer To:
FWS/R4/DH NRDAR

March 14, 2016

Gary Rikard
Mississippi Department of Environmental Quality
Post Office Box 2261
Jackson, Mississippi 39225-2261

Re: Mississippi Hancock County Marsh Living Shoreline Project, *Deepwater Horizon* Oil Spill Natural Resources Damage Assessment and Restoration (NRDAR)

Dear Mr. Rikard:

The Department of the Interior (DOI), on behalf of the National Oceanic and Oceanographic Administration, the U.S. Department of Agriculture, and the U.S. Environmental Protection Agency, has completed a review of the Mississippi Hancock County Marsh Living Shoreline Project under section 106 of the National Historic Preservation Act (NHPA). As part of this review, DOI consulted with the Mississippi State Historic Preservation Office, the Choctaw Nation of Oklahoma, the Alabama-Coushatta Tribe of Texas, the Kiowa Tribe of Oklahoma, the Coushatta Tribe of Louisiana, the Muscogee (Creek) Nation, the Caddo Nation, and the Thlopthlocco Tribal Town. DOI has concluded that this project will have "no adverse effect" on historic properties contingent on the following stipulations:

- Those areas containing known archaeological sites as identified in the cultural resource surveys that were conducted for this project, and a sufficient buffer around those sites adequate to protect those resources, will be designated as "no go zones" during project implementation. Construction crews will be provided with maps that identify the "no go zones' but do not specifically identify the location of the cultural resource.
- Training will be provided to the construction crews in the identification of potential cultural resources.
- The construction crews will be provided with procedures on the measures to take if such resources are discovered.
- In the event that archaeological locus JLC022B-0, identified during the pedestrian survey conducted as part of this project, cannot be avoided, additional archaeological assessment of the locus will take place to identify the site's significance prior to any work being conducted which may impact the site.

If any cultural or historic resources are discovered during the implementation of this project,

work must cease in the vicinity of the discovery and staff must contact James Chapman, DOI *Deepwater Horizon* Oil Spill NRDAR Section 106 Coordinator, at (404) 679-7060 or james_chapman@fws.gov. The discovery of cultural or historic resources may necessitate additional review of this project under NHPA Section 106.

If you have any questions, please contact James Chapman using the contact information listed above.

Sincerely yours,

Debora L. McClain
Deputy DOI DH NRDAR Case Manager

MONITORING AND CORRECTIVE ACTION

The National Oceanic and Atmospheric Administration (NOAA) is working closely with the Hancock County Shoreline Restoration Design Team to evaluate the goals and objectives critical to the Natural Resource Damage Assessment (NRDA) process as well as the success of restoration for the three components of the project.

The Monitoring Plan will be developed to assess the project's performance towards meeting the following goals: (1) Construct reef structures to protect shoreline from erosion and support secondary production; (2) Restore marsh habitat; and (3) Restore submerged reefs to support secondary production. The following monitoring objectives have been developed to evaluate the three components, and specific performance standards are being developed to answer the questions related to each objective. These objectives will be evaluated over a 7-year post-construction monitoring period.

- Objective #1: Build living shorelines that are sustained for the expected lifespan of the project
  - Did the project achieve its design criteria?
  - Is the projected structure of the reefs being maintained?
  - Parameters: Reef Elevation and Reef Area
- Objective #2: Support habitat utilization of reefs by bivalves and other invertebrate infauna and epifauna
  - Are bivalves settling and growing on the reef structures?
  - Are other invertebrate infauna and epifauna colonizing the reef structures?
  - What is the biomass of invertebrate infauna and epifauna associated with the reef structures?
  - Parameters: Bivalve Density and Invertebrate Infauna and Epifauna Biomass
- Objective #3: Reduce shoreline erosion
  - Is wave energy being dissipated?
  - Is shoreline erosion being reduced?
  - Parameters: Shoreline Profile / Slope and Marsh Edge Position
- Objective #4: Create or enhance a marsh that is sustained for the expected lifespan of the project
  - Did the project achieve its design criteria?
  - Is the projected structure of the marsh being maintained?
  - Parameters: Marsh Elevation and Marsh Spatial Extent
- Objective #5: Promote establishment of native marsh vegetation
  - Is native marsh vegetation becoming established?
  - Parameters: Vegetative Species Composition and Percent Cover

- Objective #6: Create or enhance submerged reefs that are sustained for the expected lifespan of the project
  - Did the project achieve its design criteria?
  - Is the projected structure of the submerged reef being maintained?
  - Parameters: Reef Elevation and Reef Area
- Objective #7: Support habitat utilization of submerged reefs by bivalves and other invertebrate infauna and epifauna
  - Are bivalves settling and growing on the reef structures?
  - Are other invertebrate infauna and epifauna colonizing the reef structures?
  - What is the biomass of invertebrate infauna and epifauna associated with the submerged reef?
  - Parameters: Bivalve Density and Invertebrate Infauna and Epifauna Biomass

Corrective Action

Corrective actions may be undertaken, as funding allows, encouraging success of the Hancock County Marsh Living Shoreline Project. A variety of factors may influence management activities and corrective actions at the Hancock County LSL site; however, performance monitoring will be used to assess and identify appropriate corrective actions and to develop associated corrective action plans. Any corrective actions that substantially differ from the original construction methods may have to be coordinated with the regulatory agencies. The Monitoring Plan will identify the corrective action with the project objective, the performance standards developed to assess the objectives, and possible corrective actions to address unattained interim and final performance standards. See Table 1 for objectives with potential corrective actions.

Table 1
Corrective Actions[20]

Objective	Potential Corrective Action
Objective 1: Build living shorelines that are sustained for the expected lifespan of the project based on reef height, reef area, and consolidation rate of the reefs	• Add structural material and/or oyster shell to existing reef structure
Objective 2: Support habitat utilization of reefs by bivalves and other invertebrate infauna and epifauna based on measuring bivalve and non-bivalve species composition, density, size, and tissue biomass	• Add structural material and/or oyster shell to existing reef structure or • Construct new/additional reef structures.
Objective 3: Reduce shoreline erosion based on evaluation of shoreline elevation/profile, marsh edge position, and wave height reduction	• Add structural material and/or oyster shell to existing reef structure, or • Modify existing reef/breakwater design
Objective 4: Create or enhance a marsh that is sustained for the expected lifespan of the project	• Add, re-grade, or remove sediment
Objective 5: Promote establishment of native marsh vegetation	• Plant, re-plant, or remove non-native vegetation to meet restoration objectives
Objective 6: Create or enhance submerged reefs that are sustained for the expected lifespan of the project	• Add structural material and/or oyster shell to existing reef structure • Construct new reef structures
Objective 7: Support habitat utilization of submerged reefs by bivalves and other invertebrate infauna and epifauna	• Add structural material and/or oyster shell to existing reef structure • Construct new reef structures in a more suitable location(s)

[20] In general, Corrective Actions would occur within the permitted Hancock County Marsh Living Shoreline footprint. Corrective actions outside of the permitted area, if applicable, would be coordinated with the MDMR/USACE.

APPENDIX C

Mississippi Department of Environmental Quality File No. WQC-2015010

STATE OF MISSISSIPPI

PHIL BRYANT

GOVERNOR

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

GARY C. RIKARD, EXECUTIVE DIRECTOR

December 1, 2015

Mr. Richard Harrell
Mississippi Department of Environmental Quality
Post Office Box 2288
Jackson, MS 39073

Dear Mr. Harrell:

Re: MDEQ, NRDA, Hancock County Marsh Living Shoreline
Hancock County
COE No. SAM201300088MJF
WQC No. WQC2015010

Pursuant to Section 401 of the Federal Water Pollution Control Act (33 U. S. C. 1251, 1341), the Office of Pollution Control (OPC) issues this Certification, after public notice and opportunity for public hearing, to Mississippi Department of Environmental Quality, an applicant for a Federal License or permit to conduct the following activity:

MDEQ, NRDA, Hancock County Marsh Living Shoreline: Placement of fill material for the creation of 46 acres of salt marsh; place fill material for the creation of 46 acres of oyster cultch; and construct 5.9 miles of breakwater structures.

Breakwaters would be constructed in two locations. Approximately 4.0 miles of breakwater would be constructed along St. Joseph's Point and approximately 1.9 miles from the Pearl River to Heron Bay. **The breakwater design includes:**

OFFICE OF POLLUTION CONTROL
POST OFFICE BOX 2261 • JACKSON, MISSISSIPPI 39225-2261• TEL: (601) 961-5171 • FAX: (601) 354-6612 • www.deq.state.ms.us
AN EQUAL OPPORTUNITY EMPLOYER

Breakwater Design Criteria	St. Joseph's Point Breakwater (eastern reach)	Pearl River to Heron Bay Breakwater (western reach)
Total project length	Approximately 4 miles	Approximately 1.9 miles
Total project acreage	28.1 acres	12.2 acres
Crest width	15.0 ft	15.0 ft
Base width	60 foot (maximum)	60 foot (maximum)
Assumed bottom elevation	-3.5 NAVD 88	-3.5 NAVD 88
Total structure height	5.0 to 8.5 ft	5.0 to 8.5 ft
Riprap volume	132,000 cubic yards	58,000 cubic yards
Thickness of material (riprap)	5.0 to 8.5 ft	5.0 to 8.5 ft
Estimated initial settlement	0.5-0.9 ft	0.5-0.9 ft
Design side slopes (Seaward Face)	5v:1h	5v:1h
Design side slopes (Landward Face)	3v:1h	3v:1h
Breakwater distance from shoreline	20 to 400 ft	40 to 150 ft
Reach of each breakwater	180 ft	180 ft
Design Crest Elevation	1.4 ft NAVD88 (MHHW)	1.4 ft NAVD88 (MHHW)
Width of gaps between breakwaters at design crest height	30 ft	30 ft

All proposed temporary flotation channels proposed for the construction of the breakwater are eliminated from the project resulting in a 123.9 acre reduction in impacts from the proposed channel footprint and sidecast of spoil.

The 46 acre salt marsh creation includes:

The final marsh creation area is an approximately 78 acre area in the southeastern portion of Heron Bay. Approximately 46 acres of marsh would be created in one of several locations within this area. A dike would be constructed by excavating existing material from un-vegetated water bottoms within the marsh creation site and possibly with suitable permitted dredged materials from other sources, filling the area within the dike with appropriate dredged material to final marsh grade, and allowing the area to vegetate by natural colonization of estuarine marsh species. Dredged material would be obtained through the Mississippi Beneficial Sediment Use Program as available or excavated from a suitable borrow source. Once the entire marsh area(s) is constructed, the area would be monitored for natural re-vegetation. The applicant anticipates natural vegetative colonization would occur within one to three years.

The 46 acre sub-tidal reef includes:

The final sub-tidal reef deployment area is an approximately 194-acre area in the western portion of Heron Bay. Approximately 46 acres of sub-tidal reef habitat would be created in one to several locations within this area. Cultch material would be deployed in water depths of -3 to -5 feet NAVD 88. The sub-tidal reef(s) would be sited based on data from an oyster presence survey and would consist of approximately 6- to 9-inch thick layer of limestone or other suitable material.

Post-construction monitoring will be conducted for a period of seven (7) years following completion. Monitoring would occur for erosion control, marsh habitat creation, and the support of secondary productivity. Evaluation includes water quality parameters; structural integrity of breakwater structure; height/elevation and area of structure; consolidation rate of breakwater structure; shoreline profile; bivalve density, size, biomass and survival; non-bivalve invertebrate density and biomass; and percent cover of marsh vegetation. The project will incorporate a mix of long-term monitoring efforts to ensure project designs are correctly implemented during construction, and to identify any potential unanticipated erosion/sediment accumulation issues associated with the project. Corrective action will be addressed through the maintenance budget included in the overall project budget. [SAM-2013-00088-MJF, WQC2015010].

The Office of Pollution Control certifies that the above-described activity will be in compliance with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act and Section 49-17-29 of the Mississippi Code of 1972, if the applicant complies with the following conditions:

1. All material placed for beneficial use shall be properly tested and analyzed as required by the Mississippi Beneficial Use Program.

2. The final post-construction monitoring plan shall be provided prior to the start of construction activities.

3. All timber pilings or bulkhead materials shall be steel, concrete, plastic, or timber treated with chromated copper arsenate (CCA).

4. Turbidity outside the limits of a 750-foot mixing zone shall not exceed the ambient turbidity by more than 50 Nephelometric Turbidity Units.

5. No sewage, oil, refuse, or other pollutants shall be discharged into the watercourse.

The Office of Pollution Control also certifies that there are no limitations under Section 302 nor standards under Sections 306 and 307 of the Federal Water Pollution Control Act which are applicable to the applicant's above-described activity.

This certification is valid for the project as proposed. Any deviations without proper modifications and/or approvals may result in a violation of the 401 Water Quality Certification. If we can be of further assistance, please contact us.

Sincerely,

Harry M. Wilson III, P.E., DEE
Chief, Environmental Permits Division

HMW: FB

cc: Maryellen Farmer, U.S. Army Corps of Engineers, Mobile District
Willa Brantley, Department of Marine Resources
Calista Mills, Environmental Protection Agency
Alane Young, Covington Civil and Environmental, LLC

APPENDIX D

Endangered Species Act (ESA), the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act Consultations with Department of the Interior (DOI), United States Fish and Wildlife Services (USFWS)

In Reply Refer To:

2014-I-221

October 7, 2015

Memorandum

To: Deputy Case Manager, *Deepwater Horizon* Department of the Interior Natural Resource Damage Assessment and Restoration (NRDAR)

From: Field Supervisor, Mississippi Field Office Stephen Ricks

Subject: Informal Consultation for the Proposed Hancock County Marsh Living Shoreline Project (including September 29, 2015 modifications), Hancock County, Mississippi

This memorandum acknowledges our receipt of your memorandum on September 29, 2015, 2015. This response is in accordance with Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (ESA). We have reviewed your proposed project and concur with your September 29, 2015 determinations for endangered and threatened species, their critical habitat, and at-risk species (should they become listed). We based our concurrence on the justification below. Where more than one justification was applicable, multiple boxes are checked and additional comments are added.

☐ Species-specific surveys were conducted and there are no endangered, threatened, or at-risk species or designated critical habitat on site. Comments: _____

☒ Endangered, threatened, and at-risk species are not known from and are not expected to occur within the vicinity of the proposed project. Comments: Red Knot, Piping Plover, Inflated heelsplitter, pearl darter, Louisiana quillwort, ringed map turtle, Louisiana black bear, and gopher tortoise

☒ Appropriate avoidance and minimization measures have been included within the project description to ensure that any effects to listed species (or at-risk species should they become listed) are insignificant or discountable. Comments: West Indian Manatee

☐ Critical habitat is not present on site and does not occur within the vicinity of the proposed project. Comments: _____

☐ Appropriate avoidance and minimization measures have been included within the project description to ensure PCEs and/or critical habitat will not be adversely modified or destroyed. Comments: _____

☐ The proposed project is completely beneficial to the listed or at-risk species and/or critical habitat considered. Comments: _____

Unless the project description changes, or new information reveals that the effects of the proposed action may affect listed species in a manner or to an extent not considered, or a new species or critical habitat is designated that may be affected by the proposed action, no further action pursuant to the ESA is necessary.

If you have questions, please contact David Felder at 601-321-1131 or email, david_felder@fws.gov.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

In Reply Refer To:
FWS/R4/DH NRDAR

SEP 29 2015

Memorandum

To: Field Supervisor, Jackson Ecological Services Office, Mississippi

From: Deputy *Deepwater Horizon*, Department of the Interior Natural Resource Damage Assessment and Restoration (NRDAR), Case Manager Deborah L McCl

Subject: Request for concurrence regarding project modifications to the Hancock County Marsh Living Shoreline Project, Mississippi

The Hancock County Marsh Living Shoreline project is part of a suite of projects approved for implementation in the Final Phase III Early Restoration Plan for the *Deepwater Horizon* Oil Spill (Final Phase III ERP/PEIS). The NOAA Restoration Center and Mississippi Department of Environmental Quality (MDEQ) are the agencies implementing this project.

In January 2014, the Department of the Interior (DOI) *Deepwater Horizon* Case Management Office initiated an ESA consultation with the U.S. Fish and Wildlife Service (USFWS) Jackson Ecological Services Field Office for this project, as then proposed for inclusion in the Phase III Early Restoration Plan. On January 24, 2014 USFWS issued a letter concurring with our determination that the Hancock County Marsh Living Shoreline project is not likely to adversely affect West Indian manatee (See attached consultation).

Additional surveys, engineering, and design activities since informal consultation was concluded resulted in some modifications to the Hancock County Marsh Living Shoreline project. These changes are summarized below. A more detailed description of the changes is provided in the attached supplemental document.

- The breakwater height will be increased from Mean Low Water to Mean High High Water to facilitate increased shoreline protection;

- Commensurate with breakwater height increase, the breakwater base width will be increased from 30 feet to 60 feet resulting in a net increase in the breakwater footprint of 23 acres;

- Approximately 123.1 acres of the flotation channels/sidecast sediments will be eliminated from the project;

- The Potential Subtidal Reef Deployment Area shown in the Final Phase III ERP/PEIS has been refined based on field studies. The Refined Subtidal Reef Deployment Area is a 200 acre area in the western portion of Heron Bay. Approximately 46 acres of cultch will be deployed in one to several locations within this area (Figure 1).

- The Potential Marsh Creation Area shown in the Final Phase III ERP/PEIS has been refined based on field studies. The Refined Marsh Creation Area is a 76 acre area in the southeastern portion of Heron Bay. Approximately 46 acres of marsh will be created in one to several locations within this area (Figure 1).

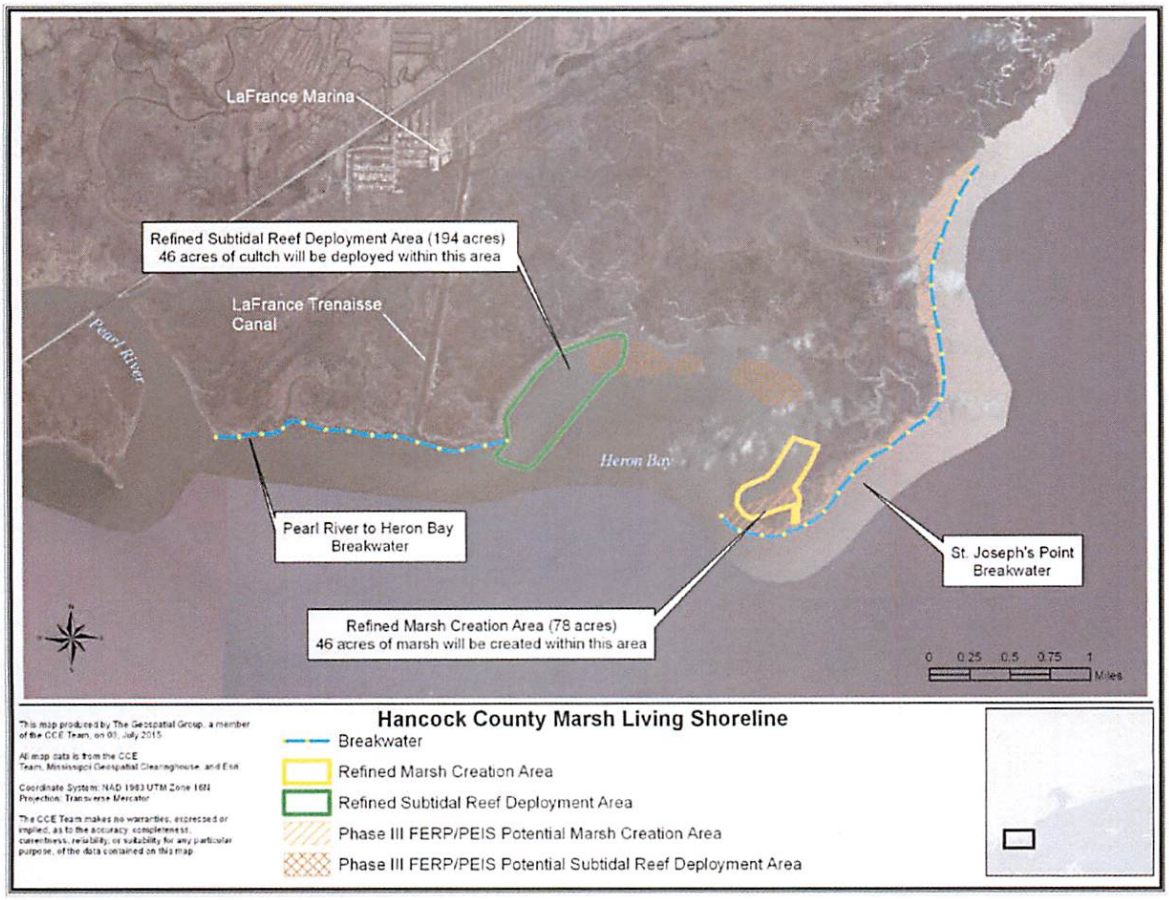

Figure 1. Modified Hancock County Marsh Living Shoreline Project Footprint compared to previously evaluated component areas.

DOI has reviewed the prior letter of concurrence and the modifications to the project. The project has not changed in scope and the site conditions remain the same as those described and considered in the previous consultation for this action. The project footprint, and the height and base width of the breakwaters in Heron Bay have changed. The NOAA Restoration Center and the MDEQ will implement the project with the proposed changes above and otherwise as described in the 2014 letter of concurrence from the Jackson, MS Field Office, including adherence to the precautionary measures, best management practices, and requirements as described in those letters including adherence to the Standard Manatee Conditions for In-Water Work (USFWS 2011).

We do not anticipate that the proposed changes will affect any species or critical habitat in a manner or extent not considered in the original analysis. Therefore, DOI has determined that the Hancock County Marsh Living Shoreline project, as modified, may affect but is still not likely to adversely affect the West Indian manatee. All other no effect determinations remain the same.

In our June 4, 2014 letter, we further determined that we do not anticipate any take, incidental or otherwise, under the Marine Mammal Protection Act (MMPA) for West Indian manatee due to implementation of the proposed project (See attached). Because the conservation measures will still be implemented as described under the ESA consultation, we do not anticipate that the proposed project changes will result in any take for West Indian manatee under the MMPA.

We request your concurrence with our determination. If you have questions or concerns regarding this request, please contact Ashley Mills, Fish and Wildlife Biologist, at 812-756-2712 or ashley_mills@fws.gov.

Attachments (5)

From: Holly Herod [mailto:holly_herod@fws.gov]
Sent: Tuesday, May 20, 2014 12:49 PM
To: Stephen Parker
Cc: colette_charbonneau@fws.gov
Subject: FW: Standard Manatee Conditions for In-Water Work-Hancock County Marsh Living Shorelines

"DWH ATTORNEY WORK PRODUCT / ATTORNEY-CLIENT COMMUNICATIONS"

Concurrence Received, see below.

Holly Herod

Department of the Interior
DWH Case Management Office, ESA Coordinator

1875 Century Boulevard
Atlanta, Georgia 30345
Ph: 404-679-7089
Cell: 678-772-4805
Fax: 404-679-7081

DRAFT/DELIBERATIVE; ATTORNEY WORK PRODUCT; ATTORNEY CLIENT COMMUNICATION; PRIVILEGED AND/OR CONFIDENTIAL/ CONFIDENTIAL RECORD-SUBJECT TO DWH US/STATE CONFIDENTIALITY AGREEMENT AND TRUSTEE COUNCIL MOU/CONFIDENTIAL, SETTLEMENT COMMUNICATION

From: David Felder [mailto:david_felder@fws.gov]
Sent: Tuesday, May 20, 2014 1:48 PM
To: Holly Herod
Cc: paul_necaise@fws.gov
Subject: RE: Standard Manatee Conditions for In-Water Work-Hancock County Marsh Living Shorelines

Holly,

Thanks for the additional coordination. The MS Field Office concurs that the proposed minor modification to the manatee conservation measures for the Hancock County Marsh Living Shorelines Project would not change our original "effects determination" for this project. We concur that the proposed Hancock County Marsh Living Shorelines Project may affect, but is not likely to adversely affect the manatee.

Thanks
David

David Felder
Fish and Wildlife Biologist
US Fish and Wildlife Service
6578 Dogwood View Parkway, Suite A
Jackson, MS 39213
david_felder@fws.gov
(601) 321-1131 office
(601) 965-4340 fax

From: Holly Herod [mailto:holly_herod@fws.gov]
Sent: Tuesday, May 20, 2014 9:08 AM
To: David Felder
Cc: colette_charbonneau@fws.gov
Subject: FW: Standard Manatee Conditions for In-Water Work-Hancock County Marsh Living Shorelines

Hi David, please see the note below.

Basically the Trustees for State of Mississippi (represented in the email below by their consultant) are looking to modify one of their manatee conservation measures (for Hancock Co living shoreline) to be consistent with the conservation measures in the Popp's Ferry Consultation. Specifically, Hancock Co Living Shoreline would not be required to post signage, but would do so if necessary. They would also try to do the work when manatees are least likely to be present based on water temperature; however, I am not sure how feasible the temperature restriction would be due to the high likelihood of Gulf sturgeon (evaluated in consultation with NMFS) presence. Manatees are not highly likely in the Hancock Co living shoreline area due to water depths and lack of sea grasses, but could be present or transiting the area.

I believe this is a reasonable request and that the effects analysis of the consultation would not change. With the proposed change, I believe we would still achieve a may affect, not likely to adversely affect determination.

Can you concur with this proposed change and use our email exchange as for the official record? If not, please call me at your convenience to discuss your concerns.

Sincerely,

Holly Herod

Department of the Interior
DWH Case Management Office, ESA Coordinator

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Atlanta, Georgia 30345
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From: Stephen Parker [mailto:sparker@cce.ms]
Sent: Tuesday, May 20, 2014 9:54 AM
To: Holly Herod (holly_herod@fws.gov); Jamie Schubert
Cc: Ennis, Bradley; Chris Thomas; tony@ccellc.us; Richard_Harrell@deq.state.ms.us
Subject: Standard Manatee Conditions for In-Water Work-Hancock County Marsh Living Shorelines

"DWH ATTORNEY WORK PRODUCT / ATTORNEY-CLIENT COMMUNICATIONS"

Holly,
We would like to request that our Hancock County Marsh Living Shorelines Project Consultation be amended to read like our Popp's Ferry Causeway Park Consultation with regard to Standard Manatee Conditions for In-water work (see below). Do you see any issues with this. If possible we would like to make the modifications without re-initiating consultations. Thanks for the conversation yesterday and clarifying the potential process.
Steve

Stephen Parker, Principal
Adaptive Management Services, LLC
228-224-9057

Hancock County Marsh Living Shore
Awareness of manatee presence. If manatee(s) are found to be present in the immediate project area during restoration activities, construction will be halted until species moves away from project area. The project will follow USFWS guidelines according to Standard Manatee Conditions for In-water Work, (USFWS,2011).

Popp's Ferry Causeway Park
If possible, complete the in-water work when manatees are not expected to be present, i.e., when water temperatures are below 68F. If timing restrictions are not feasible, then conditions A-D of the Standard Manatee Conditions for In-water Work, 2011, shall be followed when operating vessels or doing in-water work construction.

We would like to change the condition to read:
For in-water work in other states (Alabama, Mississippi, Louisiana, and Texas) where manatees could be present, follow conditions a, b, c, and d of the *Standard Manatee Conditions for In-water Work*. Report any collisions to the U.S. Fish and Wildlife Service or State trust resource agency. Temporary signs, if necessary, can be modified from the Florida Fish and Wildlife Conservation Commission's template to reflect local conditions.

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From: Stephen Parker <sparker@cce.ms>
Subject: Standard Manatee Conditions for In-Water Work-Hancock County Marsh Living Shorelines
Date: May 20, 2014 8:53:45 AM CDT
To: "Holly Herod (holly_herod@fws.gov)" <holly_herod@fws.gov>, Jamie Schubert <Jamie.Schubert@noaa.gov>
Cc: "Ennis, Bradley" <bennis@balch.com>, Chris Thomas <cthomas@cce.ms>, "tony@ccellc.us" <tony@ccellc.us>, "Richard_Harrell@deq.state.ms.us" <Richard_Harrell@deq.state.ms.us>

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Popp's Ferry Causeway Park
If possible, complete the in-water work when manatees are not expected to be present, i.e., when water temperatures are below 68F. If timing restrictions are not feasible, then conditions A-D of the Standard Manatee Conditions for In-water Work, 2011, shall be followed when operating vessels or doing in-water work construction.

We would like to change the condition to read:
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United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

In Reply Refer To:
FWS/R4/DH NRDAR

JAN 13 2014

Memorandum

To: Field Supervisor Mississippi Field Office

From: Deputy Deepwater Horizon Department of the Interior Natural Resource Damage Assessment and Restoration (NRDAR) Case Manager

Subject: Informal Consultation Request for the proposed Hancock County Marsh Living Shoreline Restoration, Mississippi

As you are no doubt aware, on or about April 20, 2010, the mobile offshore drilling unit *Deepwater Horizon* experienced an explosion, leading to a fire and its subsequent sinking in the Gulf of Mexico (the Gulf). These events resulted in the discharge of an estimated 5 million barrels (210 million gallons) of oil into the Gulf over a period of approximately 3 months. In addition, various response actions were undertaken in an attempt to minimize impacts from spilled oil. These events are hereafter collectively referred to as the Oil Spill.

The Department of the Interior (DOI), acting through the U.S. Fish and Wildlife Service (the Service) and other Bureaus, is a designated natural resource trustee agency authorized by the Oil Pollution Act of 1990 (OPA) and other applicable federal laws to assess and assert a natural resource damages claim for this Oil Spill. DOI is only one of several Trustees, including the state of Mississippi Trustee, Mississippi Department of Environmental Quality, so authorized. Consistent with their federal and state authorities, the Trustees are investigating the resource injuries and losses that occurred as a result of the Oil Spill and have initiated restoration planning to identify the actions that will be needed or appropriate to restore injured resources and to make the public whole for the injuries and losses that occurred. This process is known as a Natural Resource Damage Assessment (NRDA).

On April 20, 2011, DOI, the National Oceanic and Atmospheric Administration and the Trustees for the five Gulf states affected by the Oil Spill entered into an agreement with BP, a responsible party for the Oil Spill, under which BP agreed to provide $1 billion for early restoration projects in the Gulf to address injuries to natural resources caused by the Oil Spill. The early restoration project has been proposed in a draft early restoration plan that was released for public comment and review on December 6, 2013. If the Trustees select the project after consideration of public comment and a stipulated agreement is reached with BP, the early restoration project will be implemented by the Mississippi Department of Environmental Quality. DOI, acting through the Service, will be a co-Trustee for the project, if it is selected and implemented.

The above facts lead us to the conclusion that consultation (and conference) under Section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*), is required for this project and we wish to engage in such consultation. Accordingly, we have reviewed the proposed Hancock County Marsh Living Shoreline Restoration, Mississippi for potential impacts to listed, proposed, and candidate species and proposed and designated critical habitats in accordance with section 7 of the ESA. We have determined that the proposed project may affect, but is not likely to adversely affect West Indian manatee (*Trichechus manatus*). We have also reviewed the proposed project for impacts to bald eagles and migratory birds in accordance with the Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 U.S.C. 668-668c) and the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703–712), respectively. Consultation will also be initiated with National Marine Fisheries Service for species where ESA regulatory authority is shared and in regards to Marine Mammal Protection Act (MMPA) of 1972, as amended (16 U.S.C. 1461 *et seq.*).

We request your review of and concurrence/conference with the attached intra-Service Section 7 Biological Evaluation form describing the proposed project, potential effects, conservation measures and justifications for our determinations. If you have questions or concerns regarding this request for consultation, please contact Holly Herod, Fish and Wildlife Biologist, at 404-679-7089 or holly_herod@fws.gov.

Attachment

SOUTHEAST REGION
INTRA-SERVICE SECTION 7
BIOLOGICAL EVALUATION FORM

Originating Person: Holly Herod; prepared by Stephen Parker (representing MS DEQ)
Telephone Number: Holly Herod: 404-679-7089; Stephen Parker 228-224-9057
E-Mail: holly_herod@fws.gov; sparker@adaptivemngmt.com
Date: December 31, 2013

PROJECT NAME (Grant Title/Number): Hancock County Marsh Living Shoreline (Early Restoration Project)

I. Service Program:

_X_ **NRDAR**
___ **Ecological Services**
___ **Federal Aid**
- ___ **Clean Vessel Act**
- ___ **Coastal Wetlands**
- ___ **Endangered Species Section 6**
- ___ **Partners for Fish and Wildlife**
- ___ **Sport Fish Restoration**
- ___ **Wildlife Restoration**

___ **Fisheries**
___ **Refuges/Wildlife**

II. State/Agency: Mississippi Department of Environmental Quality

III. Station Name: DOI Deepwater Horizon Case Management Team, USFWS Southeast Regional Office, Atlanta, Georgia 30345

IV. Location (attach map): *See Figure 1*

A. **Ecoregion Number and Name:** 4/Southeast

B. **County and State:** Hancock County, Mississippi

C. **Section, township, and range (or latitude and longitude):** Centroid = -89.457, 30.19

D. **Distance (miles) and direction to nearest town:** Approximately 3.5 miles NNW to Ansley, MS from project centroid.

V. Description of Proposed Action and Habitats in the Action Area (attach additional pages as needed):

Introduction and Background

The restoration activities proposed for this project would be located in western Hancock County, Mississippi, between Bayou Caddy and the mouth of the East Pearl River (Figure 1). This marsh complex is part of the extensive Pearl River estuary where the land is largely in public ownership

and managed by the Mississippi Department of Marine Resources (MDMR) as part of the Coastal Preserves of the State of Mississippi. The 13,570-acre preserve consists of marsh, including tidal channels, lagoons, and bays, representing one of the largest marsh habitats in Mississippi. Historically, there were extensive, prolific reefs of the American oyster (*Crassostrea virginica*) in the shore zone and nearshore areas of lower Hancock County that provided natural protection to the shore from erosion. High erosion rates particularly at St. Joseph's Point make this shoreline a priority for protection and marsh creation. Both the *Mississippi Coastal Improvement Plan* and the *Project Management Plan for Beneficial Use Projects along Coastal Mississippi* cite this area as a priority project site.

The Hancock County Marsh Living Shoreline project will include shoreline/marsh protection, marsh creation, restoration and increased benthic secondary productivity. Specifically, the proposed project consists of three restoration components:

- Use of living shoreline techniques that utilize natural and artificial breakwater material to stabilize eroding shorelines by dampening wave energy while encouraging reestablishment of habitat that was once present in the region.
- Creation of 46 acres of salt marsh habitat in areas that have experienced high rates of shoreline and marsh habitat erosion.
- Placement of 46 acres of oyster cultch in areas that have historically supported oyster habitat.

Living Shorelines (Breakwaters)

For this project, the living shoreline is defined as a breakwater made of limestone with oyster shell veneer that provides erosion control benefits and enhances natural shoreline habitat. The breakwaters would be constructed at two locations: along St. Joseph's Point (eastern reach) and Pearl River to Heron Bay (western reach).

- **St. Joseph's Point Breakwater (eastern reach):** This breakwater would be approximately 4 miles long, extending from Heron Bay to approximately 4 miles to the northeast, with a crest width of 15 feet and total height of approximately 4 feet (to +0.87 ft., North American Vertical Datum [NAVD]). The breakwater would have a footprint of approximately 14.4 acres and would be placed on a substrate of fine-grained sediment. It would be composed of a core of limestone riprap covered by a 9-inch thick layer of bagged oyster shell.

- **Pearl River to Heron Bay Breakwater (western reach):** This breakwater would be approximately 1.9 miles long with a crest width of 15 feet and a total height of approximately 4.0 feet (to +0.87 ft., NAVD). Its design and sediment substrate are to be similar to the St. Joseph's Point breakwater, described above. The Pearl River to Heron Bay breakwater project area footprint will be approximately 5.5 acres consisting of fine-grained sediment.

Creation of Marsh in the Vicinity of St. Joseph's Point

A total of 46 acres of marsh would be created in one to several locations. Salt marshes are defined as transitional marsh areas between land and water that occur in coastal areas at salinities at or approaching that of ocean water. Typical vegetation in salt marsh habitat includes species such as *Spartina alterniflora*, *Juncus romerianus*, and *Distichlis spicata.* The area behind the constructed breakwater at St. Joseph's Point would be backfilled with dredged material and allowed to re-vegetate by natural colonization of estuarine marsh species. Dredged fill material would be obtained through the Mississippi Beneficial Sediment Use Program as available or excavated from a suitable, nearshore/offshore borrow source. Dredged material would be hydraulically placed to obtain the target elevation.

Placement of Oyster Reef Cultch in Heron Bay

Oyster cultch would be deployed over 46 acres in Heron Bay in areas that currently support or previously supported oyster production. Oyster reefs are defined as large colonial aggregations of living oysters and other bivalves that can have subtidal as well as intertidal portions, and provide habitat for a community of other species (e.g., tunicates, fish, crabs, worms, mussels, bryozoans, and barnacles). Oyster cultch deployment would occur generally in water depths of -3 to -5 feet Mean Lower Low Water (MLLW). The reef(s) would be sited based on data gathered from an oyster presence survey, and would consist of a 6 to 9-inch thick layer of oyster shell. marsh platform.

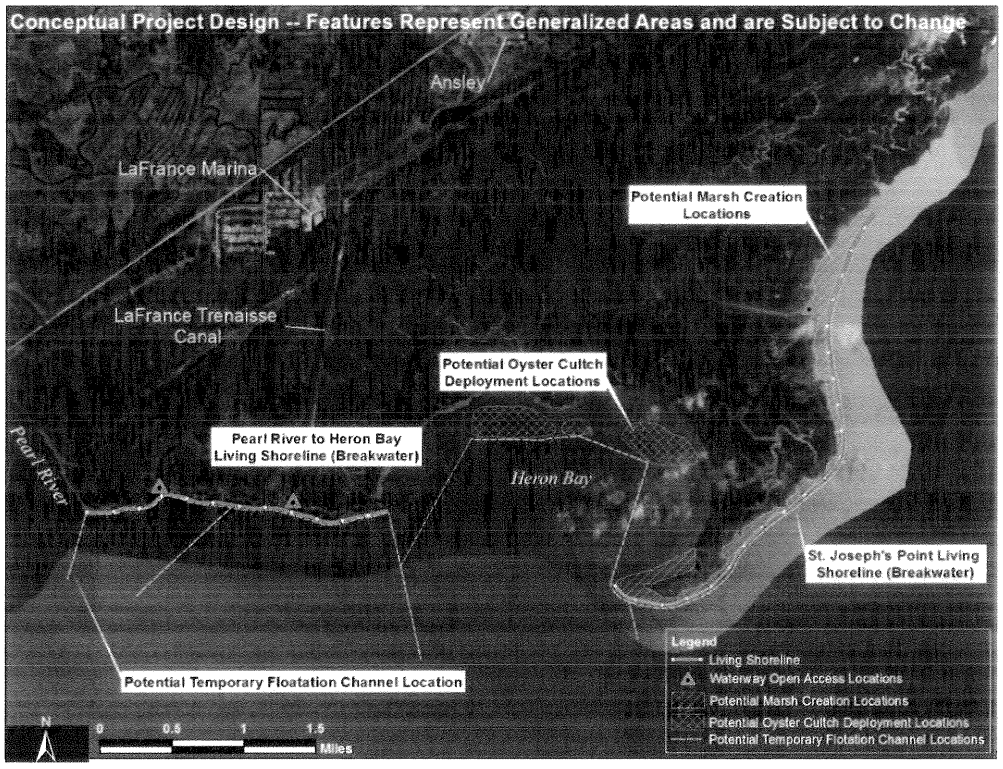

Figure 1: Conceptual Hancock County Marsh Living Shoreline Project Components

Project Location

The proposed project is located in Hancock County, Mississippi (Bounding Coordinates: West -89.530339 W, 30.184 N; South: -89.462 W, 30.169 N; East: -89.415 W, 30.233 N; North: -89.53 W, 30.184 W. Centroid = -89.457 W, 30.19 N). The Hancock County marsh is a 13,570-acre preserve managed by the MDMR and is the second largest continuous marsh area in the state. The preserve includes adjoining marshlands bordering the Mississippi Sound from the Pearl River to St. Joseph's Point. The project area includes the shoreline of the Hancock County marsh from the mouth of the Pearl River on the west to approximately 1.86 miles past the heel of St. Joseph's Point, including Heron Bay. On the seaward side, the project area extends approximately to the -8 ft. contour from the proposed breakwater to incorporate temporary flotation channels that will be utilized by work barges during construction.

Construction and Installation

Living Shorelines (Breakwaters)

The specific breakwater elevation and design was selected to maximize shoreline protection and meet individual state regulatory requirements. Construction would include placement of linear structures that would utilize artificial and/or shell based materials at approximately the -3.5 ft msl contour.

The alignment and limits of the breakwaters would be surveyed with the outer limits of the breakwaters being marked with poles driven into the bottom and extended approximately 3 feet above the water surface. The height of the breakwaters along the alignment would be constructed based on bottom elevations and the reef's crest elevation (0.87 foot NAVD88 – Mean Tide Level). Barriers, navigation warning signs (lighted and unlighted), and other safety devices would be installed along the work area to protect boaters.

The breakwaters would be approximately 30 feet wide at the base, 15 feet wide at the crest, to approximately 4 feet thick. The riprap core of the breakwaters would either be constructed using loose boulders or 'marine mattresses', consisting of 2 to 6 inch diameter rocks assembled on land. The core material would be transported to the work area on barges and installed by a crane located on a separate barge. Placement of the riprap core would be monitored to ensure the breakwater dimensions, slopes, and crest elevations are achieved. After installation of the riprap core, it would be covered with bags of shell. The deployment of the breakwaters may extend over a period of ten to twelve months. Total installed volumes would be as follows:

- *St. Joseph's Point Breakwater (Eastern Reach):* The target depth for deployment is approximately -3.5 MLLW. The volume of placed material would be approximately 51,600 cubic yards of riprap and 16,400 cubic yards of shell. The breakwater would cover a footprint of approximately 14.4 acres of fine-grained sediment.

- *Pearl River to Heron Bay Breakwater (Western Reach):* The target depth for deployment is between approximately -3.5 MLLW. The volume of placed material would be

approximately 16,900 cubic yards of riprap and 6,300 cubic yards of shell. The breakwater would cover a footprint of approximately 5.5 acres of fine-grained sediment.

The project is designed to use temporary flotation channels (Figure 1) to facilitate access for work barges into the work area. A channel will be excavated parallel to the alignments of the two breakwaters (Figure 1). Additional channels will be excavated perpendicular to these channels to provide access from the Mississippi Sound to allow work barges entry and exit for the project area. The excavated dredged material would be cast on the seaward side of the channels so that they would naturally fill back in after construction. The depth of the channels would be 8 feet below MLLW to accommodate barge draft. The bottom width of the channels would be approximately 80 feet with 3H:1V side slopes. The entry locations for the channels would be determined by analyzing the shortest distance from the breakwaters to the appropriate depth on -8 ft. and excavated using best management practices to minimize environmental impacts. The preliminary flotation channel footprint for the purposes of project planning was calculated based on an estimate of a heavy loaded barge. Proposed flotation channel dimensions are summarized in Table 1.

Table 1 – Preliminary Temporary Flotation Channel Footprint

Component	Dimension
Channel Length	55,008 ft.
Barge Draft	8 ft.
Channel Width	80 ft.
Area Temporarily Impacted	101 acres

After completion of construction, the breakwater structure would be surveyed and permanent navigation signs would be installed in accordance with safety requirements.

Creation of Marsh in the Vicinity of St. Joseph's Point

After the breakwater along St. Joseph's Point has been installed, selected areas landward of the breakwater would be filled with dredged material obtained from the MDMR Beneficial Use of Sediment Program if material is available, or a suitable nearshore/offshore borrow source. A dike would be constructed at the seaward extent of the marsh. The dike would be constructed by excavating existing material from the landward side of the dike. Once an area of the marsh is diked, the area landward of the dike would be filled with dredged material until final marsh grades are achieved. Sediment would be pumped through a floating pipeline from a hydraulic dredge located where suitable fill material is available. Pumps and sediment controls would remain in place throughout the dredging and filling process, and after initial settling has occurred. Once the entire marsh area(s) is constructed, the area would be monitored for natural re-vegetation.

Placement of Oyster Cultch Reefs in Heron Bay

Oyster cultch would be deployed in Heron Bay in water depths of -3 to -5 feet MLLW in areas that currently support or previously supported oyster production. An oyster presence survey has been completed that identified suitable areas. The cultch would be deployed as a 6 to 9-inch thick layer of oyster shell. Prior to deployment, the limits of the oyster cultch deployment area(s) would be marked with buoys or poles. Oyster shells would be deployed by a barge-mounted crane with a clam shell bucket. A material barge loaded with oyster shells would be moored to the crane barge. As a construction alternative, water jetting of loose shell off of a material barge may be used in case of water depth constraints. Upon completion, the deployment area would be surveyed.

Best Management Practices

Construction timing would be limited to the May to October timeframe to avoid disturbance to Gulf Sturgeon migration patterns in the area. Work barges would be moored for overnight and weekends/holidays in areas where previous impacts have occurred (flotation channels, deployment areas). Spoil from flotation channels will be placed on the seaward side of the channel to facilitate current-driven backfilling of channels.

Operations and Maintenance

Anticipated pre- and post-construction monitoring activities

Monitoring activities would be performed prior to construction as well as for up to seven years after construction. Monitoring activities would include:

- Topographic/bathymetric surveys
- Vegetation surveys (species composition and percent cover)
- Oyster and invertebrate monitoring (density and biomass)

The project will incorporate a mix of monitoring efforts to ensure project designs are correctly implemented during construction and in a subsequent period, where corrective action could be taken.

Post-construction performance monitoring will be conducted to observe the performance of the physical breakwater structures (breakwater height, structural integrity, settling rate, etc.), and marsh (elevation, settling rate, etc.) to allow for corrective action, if needed in the opinion of the MDEQ..

Post-construction performance monitoring would also evaluate the project's performance over time with respect to the restoration goals and objectives. Specifically, this monitoring would evaluate the production and support of organisms on the breakwater (e.g., secondary production) and the performance of the created marsh. Monitoring parameters would include the following: water quality (e.g., salinity, dissolved oxygen); vegetative monitoring; and invertebrate infauna and epifauna composition and biomass.

Anticipated short-term maintenance activities

The breakwater is anticipated to experience the greatest consolidation of the subgrade in the first years following construction. Within four years following construction, a maintenance activity on the breakwater structure may be necessary to add more riprap or shell material. Need for additional placement of rock and/or shell on the breakwater would be assessed during the regular monitoring. Maintenance construction methods would be similar to the construction methods of the original breakwater structure as described in Section 1.3.

Anticipated long-term maintenance activities

No other operations or maintenance activities are anticipated.

VI. Federally Listed Species and Critical Habitat in Project County (Hancock, MS species list and habitat descriptions dated Feb 2013 obtained from Mississippi Ecological Services Field Office website):

SPECIES/CRITICAL HABITAT	STATUS[1]	HABITAT PREFERENCE	HABITAT OR PCE'S PRESENT
Green turtle (*Chelonia mydas*) **Also Consulting with NOAA NMFS**	T	Shallow coastal waters with SAV and algae, nests on open beaches	Terrestrial – No Aquatic - Yes
Gulf sturgeon (*Acipenser oxyrhynchus desotoi*) **Consulting with NOAA NMFS**	T	Migrates from large coastal rivers to coastal bays, estuaries, and barrier islands	Yes
Critical Habitat Gulf sturgeon **Consulting with NOAA NMFS**	CH	PCEs as summarized: include abundant food items within riverine habitats for larval and juvenile life stages; and estuarine and marine habitats and substrates for subadult and adult life stages; riverine spawning sites with substrates suitable for egg deposition and development; riverine aggregation areas; a flow regime necessary for normal behavior, growth, and survival of all life stages in the riverine environment; water quality chemical characteristics necessary for normal behavior,	Yes

SPECIES/CRITICAL HABITAT	STATUS[1]	HABITAT PREFERENCE	HABITAT OR PCE'S PRESENT
		growth, and viability of all life stages; sediment quality necessary for normal behavior, growth, and viability of all life stages; and safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats.	
Hawsbill turtle (*Eretmochelys imbricata*) **Also Consulting with NOAA NMFS**	E	Coral reefs, open ocean, bays, estuaries, nests on open beaches; not on Hancock Co. species list, included for consideration with other sea turtles.	Terrestrial – No Aquatic - Yes
Kemp's ridley turtle (*Lepidochelys kempii*) **Also Consulting with NOAA NMFS**	E	Nearshore and inshore coastal waters; neritic zones with muddy or sandy substrate, nests on open beaches	Terrestrial – No Aquatic - Yes
Leatherback turtle (*Dermochelys coriacea*) **Also Consulting with NOAA NMFS**	E	Open ocean, coastal waters, nests on open beaches	Terrestrial – No Aquatic - Yes
Loggerhead turtle (*Caretta caretta*) **Also Consulting with NOAA NMFS**	T	Open ocean; also inshore areas, bays, salt marshes, ship channels, and mouths of large rivers, nests on open beaches	Terrestrial – No Aquatic - Yes
West Indian manatee (*Trichechus manatus*)	E	Fresh, brackish, and salt water in large coastal rivers, bays and estuaries	Yes
Piping Plover (*Charadrius melodus*)	T	Beaches and mudflats in southeastern coastal areas	nearby
Critical Habitat Piping plover	CH	PCEs: Sand or mud flats (or both) with no or sparse emergent vegetation.; Adjacent unvegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important, especially for roosting piping plovers; Important components of the beach/dune ecosystem include surf-cast algae, sparsely	nearby

SPECIES/CRITICAL HABITAT	STATUS[1]	HABITAT PREFERENCE	HABITAT OR PCE'S PRESENT
		vegetated back beach and salterns, spits, and washover areas; Washover areas are broad, unvegetated zones, with little or no topographic relief, that are formed and maintained by the action of hurricanes, storm surge, or other extreme wave action.	
Red knot (*Calidris canutus rufa*)	P	Sandy beaches, tidal mudflats, salt marshes, and peat banks. May forage along beaches, oyster reefs, and exposed bay bottoms while roosting on high sand, flats, reefs, and other sites protected from high tides.	Nearby
Inflated heelsplitter (*Potamilus inflatus*)	T	Riverine, Lower Pearl River, Noxubee, and Tombigbee watersheds in areas with moderate to swift currents, riffle/shoals areas with stable bottoms of sandy gravel or firm mud, gravel, and cobble.	No
Pearl darter (*Percina aurora*)	C	Stable gravel riffles or sandstone exposures with large sized gravel or rock; freshwater riverine in the Pearl and Pascagoula river systems.	No
Louisiana quillwort (*Isoetes louisianensis*)	E	Mineral soil, usually light gray in color, in bottomlands that are periodically washed free of leaves and debris, lives in water or in very wet habitats	No
Louisiana black bear (*Ursus americanus luteolus*)	T	Bottomland Hardwood and flooplain Forest; habitats must contain hard mast, soft mast, escape cover, denning sites, forested dispersal corridors, and limited human access	No
Ringed map turtle (*Graptemys oculifera*)	T	Riverine, river stretches with moderate currents, abundant	No

SPECIES/CRITICAL HABITAT	STATUS[1]	HABITAT PREFERENCE	HABITAT OR PCE'S PRESENT
		basking sites, and sand bars for nesting	
Gopher tortoise (*Gopherus polyphemus)*	T	Open canopy longleaf pine/scrub oak habitats with well-drained sandy soils	No

[1]STATUS: E=endangered, T=threatened, PE=proposed endangered, PT=proposed threatened, CH=critical habitat, PCH=proposed critical habitat, C=candidate species

VII. Determination of Effects:

A. Explanation of effects of the action on species and critical habitats in item VI. (attach additional pages as needed):

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT
Gulf sturgeon	Impacts to Gulf sturgeon and Gulf sturgeon critical habitat in the estuarine and marine environments will be analyzed by National Marine Fisheries Service (NMFS) in coordination with the USFWS. Information presented in this consultation is meant to facilitate NMFS review. Numerous studies in the northern Gulf have documented habitat use and seasonality of Gulf sturgeon movement from spawning areas in riverine habitat to foraging grounds in the nearshore environment (Fox et al., 2002; Heise et al., 2004, 2005; Rogillio et al., 2007; Ross et al., 2009; Havrylkoff et al., 2012). Telemetry data from Gulf sturgeon that are natal to the Pearl River drainage system show clear seasonal migration patterns. Movement chronologies show summer habitat use upriver to take place between April and November and winter habitat use at Cat, Ship, Horn, and Petit Bois islands in the Mississippi Sound to occur between November and early March (Rigillio et al., 2007). Data from two separate telemetry studies in the Pearl River area (Rigillio et al., 2007; Ross et al., 2009) document Gulf sturgeon migrating to and from the Rigolets Pass to the west of the Pearl River mouth in high concentrations before heading toward spawning and foraging grounds upriver and nearshore at the barrier islands, respectively (Figure 3). Ross et al. (2009) noted that in March and April, the majority of tagged fish began to move from offshore waters to the Rigolets Pass near the mouth of the Pearl River, their movement continuing upstream into the river system through June. Telemetry data from 2010 and 2011

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT
	extracted from the GulfTOPP (Tagging of Pelagic Predators Gulf of Mexico) website show Gulf sturgeon movement in waters off of the Hancock County Pearl River marsh in March and November at depths greater than six feet. Given the dates associated with the tags, the fish were likely migrating to the Rigolets Pass in March before heading upriver and to the Mississippi barrier islands in November for foraging on sandy substrates. Though sturgeon are present seasonally, we expect no effects to sturgeon from the proposed project in the riverine ecosystems as no work will occur in these habitats. Furthermore, to avoid migration disturbance, the project aims to construct restoration features from May-October while the species occupies riverine habitat, prior to the onset of migration. Moreover, if any Gulf sturgeon species are observed in the project area, a stop work order will be implemented until the species leaves the area.
Critical Habitat Gulf sturgeon	Impacts to Gulf sturgeon and Gulf sturgeon critical habitat in the estuarine and marine environments will be analyzed by National Marine Fisheries Service (NMFS) in coordination with the USFWS. Information presented in this consultation is meant to facilitate NMFS review. Gulf sturgeon critical habitat exists in the project area and is represented on the habitat resources map (Figure 1). However, no effects to PCEs from the proposed project are expected in the riverine ecosystems as no work will occur in these habitats. PCEs include abundance of prey items, water quality, sediment quality, and safe and unobstructed migratory pathways. All restoration activities will take place in shallow estuarine waters near the shoreline allowing sufficient area for passage of individuals if present during implementation. Additionally, the benthic habitat in the project area is not preferred foraging habitat for Gulf sturgeon. Well oxygenated, clear water with sandy substrates are primarily used for feeding by the species (Fox et al., 2002; Ross et al., 2009). Benthic habitat in the project footprint is largely composed of soft, silty substrates with turbid waters. Potential water quality impacts as a result of dredging and disposal have also been considered. Dredging and disposal is expected to produce turbidity levels in excess of natural conditions, however sediment disturbance during these operations are expected to be temporary and minimal. If floatation channels are created for work barges, dredging will likely impact benthic invertebrates. These impacts are primarily short-term in nature, consisting of a temporary loss of populations in the footprint of the channel. The shallow areas and substrate type that the channels may be constructed in are not considered suitable foraging habitat for sturgeon, therefore we do not expect any effect to abundance of prey items for the Gulf sturgeon.

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT
Green turtle; Hawksbill turtle; Kemp's ridley turtle; Leatherback turtle; Loggerhead turtle	NMFS will consult on potential impacts to sea turtles in the estuarine and marine environments. The five sea turtles species on the list are rarely observed in Mississippi waters (MDWFP 2001). Most of these species nest in locations far from Mississippi although it is possible that both Kemp's ridley and loggerhead sea turtles could use the offshore barrier islands for nesting (NOAA Fisheries 2012; NOAA Fisheries 2013a; NOAA Fisheries 2013b; NOAA Fisheries 2013c). Both the Kemp's ridley and loggerhead have been caught close to the shoreline by land-based fishermen indicating use of the Mississippi nearshore areas for foraging and/or movement (MDWFP 2001). The shoreline habitat in the action area is unsuitable for sea turtle nesting (i.e., no sandy beach above high tide) and we do not expect nesting in the action area. Therefore, we anticipate no effects to sea turtles in terrestrial habitats from the proposed project.
West Indian manatee	The West Indian manatee occasionally occurs in Mississippi coastal habitats and these visits are becoming more common (Fertl et al. 2005). The manatee migrates from wintering habitats in Florida and possibly Mexico to Mississippi and Alabama waters from spring through fall, when project implementation is expected. Although the West Indian manatee could be present in the project area in warmer months, their presence is uncertain as the migration of this species is still not well understood. One study did indicate that when manatees were observed outside of Florida they were most likely found near estuaries and the mouths of rivers (Fertl et al. 2005). Manatees forage on a variety of plants, including submerged aquatic vegetation (SAV), floating plants, and emergent plants (MDWFP 2001). The estuarine shallow water habitat of the project area supports sparse growth of *Ruppia maritima* around the marsh edge, but given the high erosion rates of the headland area and wave fetch dynamics, it is unlikely that any large patches exist. Since the manatee may feed up to five hours per day, it is unlikely that any would stay in the area for a prolonged period of time. If manatees were present, in-water work could startle an individual or project debris or vessels could strike a manatee. Striking a manatee generally results in harm or mortality. We expect conservation measures listed below to minimize risk of startle and strike to an insignificant and discountable level.
Piping Plover and Red Knot	Piping Plover populations winter on the Gulf and Atlantic coasts. In Mississippi piping plover are commonly observed on barrier islands and beaches, both manmade and natural (MDWFP 2001) and are generally present between August and May. Red knots may stop over on the Gulf coast during their winter and spring migrations, but are generally not resident. They are also commonly found on the barrier islands (www.ebird.org as of August 23, 2013). Therefore, project

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT
	implementation may overlap with departure and arrival of wintering birds. The habitats in the action area surrounding the Pearl River to Heron Bay, Heron Bay proper, and St. Joseph's shoreline are estuarine marshes which piping plover and red knot do not use for resting or feeding. In addition, the closest observations of piping plover and red knot to these areas are over 2 kilometers away (see www.ebird.org as of August 27, 2013). Because there is no suitable habitat present within the action area and individuals are not known to use the action area, no effects to this species are anticipated.
Critical Habitat Piping plover	Figure 2 depicts Piping Plover critical habitat in the vicinity of the project area (http://www.fws.gov/plover/#maps) showing the habitat is over 2 kilometers from the edge of the construction footprint and not within the action area. Project implementation will change the way the shoreline accretes and erodes in the action area but will not affect PCEs in critical habitat due to the distance between the critical habitat and action area. Therefore no destruction or adverse modification of critical habitat will occur.
Inflated heelsplitter; Pearl darter; Louisiana quillwort; ringed map turtle	No suitable habitat for these species is present in or near the action area and these species are not known from the action area. Therefore no effects to these species are anticipated.
Louisiana black bear	No suitable habitat is present in or near the action area and this species is not known to occur within the action area. Therefore, no effects to this species are anticipated.
Gopher tortoise	No suitable habitat is present in or near the action area and this species is not known to occur within the action area. Therefore, no effects to this species are anticipated.

B. Explanation of actions to be implemented to reduce adverse effects:

SPECIES/ CRITICAL HABITAT	ACTIONS TO MINIMIZE IMPACTS
Green turtle; Hawksbill turtle; Kemp's ridley turtle; Leatherback turtle; Loggerhead turtle	Awareness of potential turtle presence. If any sea turtles are found to be present in the immediate project area during restoration activities, construction will be halted until species moves away from project area.
West Indian manatee	Awareness of manatee presence. If manatee(s) are found to be present in the immediate project area during restoration activities, construction will be halted until species moves away from project area. Will follow USFWS guidelines according to *STANDARD MANATEE CONDITIONS FOR IN-WATER WORK, 2011* (Attachment 1).

SPECIES/ CRITICAL HABITAT	ACTIONS TO MINIMIZE IMPACTS
Gulf sturgeon (*Acipenser oxyrhynchus desotoi*)	Project restoration features will be built close the shoreline in shallow water (1-4 feet) and will not impede any migratory paths. Project components will be constructed in the months of May-October to avoid inter-riverine migration movements. Project construction activities will be subject to a stop work order if the species is observed in the project footprint. Work will continue once the species leaves the area.

VIII. Effect Determination and Response Requested:

SPECIES/ CRITICAL HABITAT	DETERMINATION[1]			RESPONSE[1] REQUESTED
	NE	NLAA	AA	
Green turtle – terrestrial habitats only	X			Concurrence for terrestrial; consulting with NOAA NMFS for aquatic
Gulf sturgeon	—	—	—	Consulting with NOAA NMFS
Critical Habitat Gulf sturgeon	—	—	—	Consulting with NOAA NMFS
Hawsbill turtle	X			Concurrence for terrestrial; consulting with NOAA NMFS for aquatic
Kemp's ridley	X			Concurrence for terrestrial; consulting with NOAA NMFS for aquatic
Leatherback turtle	X			Concurrence for terrestrial; consulting with NOAA NMFS for aquatic
Loggerhead turtle	X			Concurrence for terrestrial; consulting with NOAA NMFS

SPECIES/ CRITICAL HABITAT	DETERMINATION[1]			RESPONSE[1] REQUESTED
	NE	NLAA	AA	
				for aquatic
West Indian manatee		X		concurrence
Piping Plover	X			concurrence
Critical Habitat Piping plover	X			concurrence
Red knot	X			Conference
Inflated heelsplitter (*Potamilus inflatus*)	X			concurrence
Pearl darter (*Percina aurora*)	X			Conference
Louisiana quillwort	X			concurrence
Louisiana black bear	X			concurrence
Ringed map turtle	X			concurrence
Gopher tortoise	X			concurrence

[1]DETERMINATION/ RESPONSE REQUESTED:

IX. Bald Eagles

Are bald eagles present in the action area? ___No X_

If "Yes", can you implement the conservation measures below? _ ___Yes ____ No

1. If bald eagle breeding or nesting behaviors are observed or a nest is discovered or known, all activities (walking, camping, cleanup, use of a UTV, ATV, or boat) should avoid the nest by a minimum of 660 feet. If the nest is protected by a vegetated buffer where there is *no* line of sight to the nest, then the minimum avoidance distance is 330 feet. This avoidance distance shall be maintained from the onset of breeding/courtship behaviors until any eggs have hatched and eaglets have fledged (approximately 6 months).
2. If a similar activity (like driving on a roadway) is closer than 660 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
3. If a vegetated buffer is present and there is no line of sight to the nest and a similar activity is closer than 330 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
4. In some instances activities conducted within 660 feet of a nest may result in disturbance, particularly for the eagles occupying the Mississippi barrier islands. If an activity appears to cause initial disturbance, the activity shall stop and all individuals and equipment will be moved away until the eagles are no longer displaying disturbance behaviors.

If not, contact the Service's Migratory Bird Permit Office to determine how to avoid impacts or if a permit may be needed.

X. Migratory Birds

A. Identify the species anticipated in the project area and behaviors (breeding, roosting, foraging) anticipated during project implementation.

SPECIES	BEHAVIOR	SPECIES/HABITAT IMPACTS
Wading birds (herons, egrets, ibises)	Foraging, feeding, resting, roosting, nesting	Wading birds primarily forage and feed at the water's edge. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily nest and roost in trees or shrubs (e.g. pines, *Baccharis*), which occur outside the project area.
Shorebirds (plovers, oystercatchers, stilts, sandpipers)	Foraging, feeding, resting, roosting, nesting	Shorebirds forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. The project will be constructed in areas where shorelines are substantially eroded. In the project area, there is limited natural beach and mudflat where shorebirds would nest.
Seabirds (terns, gulls, skimmers, double-crested cormorant, American white pelican, brown pelican)	Foraging, feeding, resting, roosting, nesting	Seabirds forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. Nesting habitat does not exist in the project area; therefore it is not anticipated to impact nesting.
Waterfowl (ducks, loons, and grebes)	Foraging, feeding, resting, roosting, nesting	Waterfowl forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily roost and nest in low vegetation, which is not directly inside the project area; therefore it is not anticipated to impact nesting.
Raptors (osprey, hawks, eagles, owls)	Foraging, feeding, resting, roosting, nesting	Raptors forage, feed, and rest in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. Most raptors are aerial foragers and soar long distances in search of food. Locations where these birds roost and nest are not within the project area.
Rails and coots	Foraging, feeding, resting, roosting, nesting	Rails and coots forage, feed, rest, or roost in the project area. As such, they may be impacted locally and temporarily by the project. However they are most likely to favor marshy areas. It is expected that they would be able to move to another nearby location to

SPECIES	BEHAVIOR	SPECIES/HABITAT IMPACTS
		continue foraging, feeding and resting if disturbed by the project. These birds primarily roost and nest in marshes, which are not directly within the project area; therefore it is not anticipated to impact nesting.

B. If species or habitat impacts could occur, identify avoidance and minimization measures to prevent incidental take. Incidental take of Migratory Birds cannot be authorized.

SPECIES/SPECIES GROUP	CONSERVATION MEASURES TO MINIMIZE IMPACTS
Wading birds (herons, egrets, ibises)	Care will be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. All disturbance will be localized and temporary. The general behavior of these birds is to mediate their own exposure to human activity when given the opportunity. Roosting should not be impacted because the project will occur during daylight hours only. These birds primarily roost in trees or shrubs, but project components will not impact these habitats. Nesting will not be impacted because the project will occur only in-water and there are no rookeries or habitat to establish rookeries in the area.
Shorebirds (plovers, oystercatchers, stilts, sandpipers)	Care will be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. All disturbance will be localized and temporary. The general behavior of these birds is to mediate their own exposure to human activity when given the opportunity. Roosting should not be impacted because the project will occur during daylight hours only. Nesting will not be impacted because the project will occur only in-water. If construction will occur during the nesting season within 300 feet of potential nesting habitat, pre-construction surveys could be conducted to ensure either no nesting birds are present in habitat adjacent to construction areas or to develop meaningful avoidance measures.
Seabirds (terns, gulls, skimmers, double-crested cormorant, American white pelican, brown pelican)	Care will be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. All disturbance will be localized and temporary. The general behavior of these birds is to mediate their own exposure to human activity when given the opportunity. Roosting should not be impacted because the project will occur during daylight hours only. Nesting will not be impacted because the project will occur only in-water. If construction will occur during the nesting season within 300 feet of potential nesting habitat, pre-construction surveys could be conducted to ensure either no nesting birds are present in habitat adjacent to construction areas or to develop meaningful avoidance measures.
Raptors (osprey, hawks, eagles, owls)	No work will occur within 660 feet of any bald eagle nests. Care will be taken to avoid working near other raptor nests, and to minimize noise and vibration in their vicinities. Roosting should not be impacted because the project will occur during daylight hours only, and because the areas where these birds nest are not within the project area. A staff biologist will advise

	the contractor of the nesting status of all identified raptor nests near the project area and approve of work in the vicinity. Nesting will not be impacted because the project will occur only in-water. If construction will occur during the nesting season within 300 feet (660 ft for eagles) of potential nesting habitat, pre-construction surveys could be conducted to ensure either no nesting birds are present in habitat adjacent to construction areas or to develop meaningful avoidance measures.
Waterfowl (ducks, loons, and grebes)	Care will be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. All disturbance will be localized and temporary. The general behavior of these birds is to mediate their own exposure to human activity when given the opportunity. Roosting should not be impacted because the project will occur during daylight hours only. Nesting will not be impacted because the project will occur only in-water. If construction will occur during the nesting season within 300 feet of potential nesting habitat, pre-construction surveys could be conducted to ensure either no nesting birds are present in habitat adjacent to construction areas or to develop meaningful avoidance measures.
Rails and coots	Care will be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. All disturbance will be localized and temporary. The general behavior of these birds is to mediate their own exposure to human activity when given the opportunity. Roosting should not be impacted because the project will occur during daylight hours only. Nesting will not be impacted because the project will occur only in-water. If construction will occur during the nesting season within 300 feet of potential nesting habitat, pre-construction surveys could be conducted to ensure either no nesting birds are present in habitat adjacent to construction areas or to develop meaningful avoidance measures.

XI. Signatures from the station preparing the Intra-Service Biological Evaluation:

/s/ Holly N. Blalock-Herod 12/31/2013
Signature (originating station - preparer) **date**
DOI Case Management Team, ESA Coordinator

Deborah L McCal 1/9/14
Signature (originating station) **date**
Deputy Case Manager

This analysis resulted in a determination that no "take" of a federally listed species would occur. If any of the following occur, then there must be reinitiation on this action:

(1) any incidental take occurs

(2) new information reveals effects of the Service's action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion;

Hancock County Marsh Living Shoreline

(3) **the Service's action is later 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 any incidental take occurs, the operations causing such take must cease until reinitiation.

If reinitiation is required, contact the Mississippi Ecological Services Field Office **about the action.**
Mississippi Ecological Services Field Office, 6578 Dogwood View Parkway, Suite A, Jackson, Mississippi 39213, (p) 601-965-4900, (f) 601-965-4340

XII. Reviewing Ecological Services Office Evaluation:

A. Concurrence X **Nonconcurrence** _____

B. Formal consultation required _____

C. Conference required _____

D. Informal conference required _____

E. Remarks (attach additional pages as needed):

DF 1/24/2014
Signature **date**

Biologist MS Field Office
Title **office**

David Felder
601 321 1131

ATTACHMENT 1: STANDARD MANATEE CONDITIONS FOR IN-WATER WORK, 2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.

b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.

d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation.Animals must not be herded away or harassed into leaving.

e. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the Florida Fish and Wildlife Conservation Commission may be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8½ " by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at http://www.myfwc.com/WILDLIFEHABITATS/ manatee_sign_vendors.htm.

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APPENDIX E

ESA Consultation with National Oceanic and Atmospheric Administration (NOAA), Protected Resources Division (PRD), Southeast Regional Office, NOAA Fisheries Service

From: **Stephen Parker** sparker@cce.ms
Subject: RE: NMFS ESA Section 7 Consultation Re. Hancock County Marsh Living Shoreline project
Date: February 26, 2016 at 2:02 PM
To: Michael Tucker - NOAA Federal michael.tucker@noaa.gov, Elizabeth Yarbrough - NOAA Affiliate elizabeth.yarbrough@noaa.gov
Cc: Jamie Schubert - NOAA Federal jamie.schubert@noaa.gov, Dan Van-Nostrand - NOAA Federal dan.van-nostrand@noaa.gov, maryellen.j.farmer@usace.army.mil, Rachel Sweeney - NOAA Federal Rachel.Sweeney@noaa.gov, David Bernhart - NOAA Federal david.bernhart@noaa.gov, Karla Reece - NOAA Federal karla.reece@noaa.gov, Shelley Sotir - NOAA Federal shelley.sotir@noaa.gov, Chris Thomas cthomas@cce.ms, Heather Blough - NOAA Federal heather.blough@noaa.gov

"DWH ATTORNEY WORK PRODUCT / ATTORNEY-CLIENT COMMUNICATIONS"

Thank you Michael for the clarification.
Steve

Stephen Parker, Senior Scientist
Covington Civil and Environmental, LLC
228-224-9057

From: Michael Tucker - NOAA Federal [mailto:michael.tucker@noaa.gov]
Sent: Friday, February 26, 2016 1:46 PM
To: Elizabeth Yarbrough - NOAA Affiliate <elizabeth.yarbrough@noaa.gov>
Cc: Jamie Schubert - NOAA Federal <jamie.schubert@noaa.gov>; Stephen Parker <sparker@cce.ms>; Dan Van-Nostrand - NOAA Federal <dan.van-nostrand@noaa.gov>; maryellen.j.farmer@usace.army.mil; Rachel Sweeney - NOAA Federal <Rachel.Sweeney@noaa.gov>; David Bernhart - NOAA Federal <david.bernhart@noaa.gov>; Karla Reece - NOAA Federal <karla.reece@noaa.gov>; Shelley Sotir - NOAA Federal <shelley.sotir@noaa.gov>; Heather Blough - NOAA Federal <heather.blough@noaa.gov>
Subject: Re: NMFS ESA Section 7 Consultation Re. Hancock County Marsh Living Shoreline project

"DWH ATTORNEY WORK PRODUCT / ATTORNEY-CLIENT COMMUNICATIONS"

Hi Folks,
I just wanted to inform everyone that a minor typo was discovered in this memorandum. In the "Consultation History" section we provided the wrong tracking number for the initial consultation for this project. The incorrect number (SER-2014-15033) should be replaced with the correct number (SER-2014-12925). As this is a relatively minor error, we will not be issuing a new, revised memorandum. Please make a note of the correction in your own records. We apologize for the mix-up. Thanks for your understanding.

Mike

On Thu, Feb 25, 2016 at 3:12 PM, Elizabeth Yarbrough - NOAA Affiliate <elizabeth.yarbrough@noaa.gov> wrote:

> Please see concurrence letter attached.

Hard copy will be sent upon request.

Thank you.

--

Elizabeth Yarbrough
Contractor, Jamison Professional Services
National Marine Fisheries Service
NOAA Southeast Regional Office
727-824-5312

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Elizabeth Yarbrough
Contractor, Jamison Professional Services
National Marine Fisheries Service
NOAA Southeast Regional Office
727-824-5312

--

Michael Tucker

NOAA Fisheries Southeast Region
U.S. Department of Commerce
727-209-5981
http://sero.nmfs.noaa.gov/

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

FEB 2 5 2016

F/SER31:MET
SER-2015-17048

MEMORANDUM FOR: F/HC3 – Jamie Schubert

FROM: F/SE – Roy E. Crabtree, Ph.D. for

SUBJECT: Deepwater Horizon-Early Restoration Plan
Phase III, Endangered Species Act Section 7 Consultations
for Hancock County Marsh Living Shoreline Project: Re-Initiation
of ESA Consultation

This memorandum responds to your memo dated August 14, 2015, requesting National Marine Fisheries Service (NMFS) concurrence under Section 7 of the Endangered Species Act (ESA) with your project-effects determinations associated with a habitat restoration project in Hancock County, Mississippi. The Hancock County Marsh Living Shoreline project is part of a suite of projects approved for implementation in the Final Phase III Early Restoration Plan (ERP) for the Deepwater Horizon Oil Spill (Final Phase III ERP/ Programmatic Environmental Impact Statement [PEIS]). The NOAA Restoration Center and Mississippi Department of Environmental Quality (MDEQ) are action agencies for implementation of this project. The U.S. Army Corps of Engineers (Corps) has also initiated consultation on this project related to Department of the Army permit application number SAM-2013-00088-MJF. This memorandum provides NMFS' concurrence with both the NOAA Restoration Center and the Corps determinations that their respective actions are not likely to adversely affect listed species or designated critical habitat under NMFS' jurisdiction.

Consultation History

In 2014, the NOAA Restoration Center initiated an ESA consultation with us for this project, along with 3 other living shoreline projects, as then proposed for inclusion in the Phase III Early Restoration Plan. On April 11, 2014, we issued a letter of concurrence (SER-2014-15033) which concluded that implementation of the Hancock County project would not be likely to adversely affect 3 species of sea turtles (green, Kemp's ridley, and loggerhead), Gulf sturgeon, and designated Gulf sturgeon critical habitat. It was also determined that the proposed project would not affect hawksbill or leatherback sea turtles or smalltooth sawfish as these species are not expected to occur in the action area. Because the April 11, 2014 concurrence letter had erroneously included the use of floating turbidity curtains for this project, we issued a revised letter of concurrence (SER-2014-15033) on September 26, 2104, which concluded again that the Hancock County project may affect, but is not likely to adversely affect, 3 species of sea turtles and the Gulf sturgeon.

Additional surveys, engineering, and design activities since the 2014 letter of concurrence have resulted in minor modifications to the Hancock County project (described in detail below). The NOAA Restoration Center has determined that these proposed modifications warrant re-initiating

ESA consultation on the project and it intends to adhere to all of the precautionary measures, best management practices, and other requirements included in previous letters of concurrence from the Southeast Regional Offices' Protected Resources Division. The NOAA Restoration Center has determined that the Hancock County project, if implemented as modified during detailed engineering and design, may affect, but is still not likely to adversely affect, 4 species of sea turtles (green, Kemp's ridley, leatherback, and loggerhead), Gulf sturgeon, or Gulf sturgeon critical habitat.

Project Description

The Final Phase III ERP/PEIS and the Biological Assessment submitted to initiate the original consultation stated that the Hancock County project in Mississippi included construction of 3 components: 46 acres (ac) of marsh, 46 ac of submerged reef, and 5.9 miles of intertidal breakwaters. Based on the information acquired during final engineering and design for the project, the NOAA Restoration Center and MDEQ determined the breakwater height and base width would have to increase to provide the desired level of shoreline protection. Also, sediment cores taken in Heron Bay revealed the most desirable bottom substrate for the subtidal reef construction in the northwestern portion of Heron Bay. On that basis, the submerged reef footprint was shifted from the northeastern portion of the bay to the northwestern portion of the bay. The construction methodology for the breakwater and sub-tidal reef components were further refined and the temporary flotation channel/sidecasting of sediments became unnecessary and was eliminated from the project, which resulted in a significant reduction in the potential construction impacts to species and critical habitats. The marsh creation footprint has also been refined and will now be located entirely within Heron Bay and the tidal creeks between Heron Bay and the Mississippi Sound. The 2014 ESA consultation anticipated the marsh footprint would be both in Heron Bay and also on the landward side of the breakwater. The following summarizes the specific design changes:

- The breakwater height has been increased from mean low water to mean higher high water to facilitate increased shoreline protection.
- Commensurate with breakwater height increase, the breakwater base width has been increased from 30 feet (ft) to 60 ft, resulting in a net increase in the breakwater footprint of 23 ac.
- Approximately 123.1 ac of the flotation channels/sidecast sediments have been eliminated from the project.
- The Potential Subtidal Reef Deployment Area shown in the Final Phase III ERP/PEIS has been refined based on field studies. The Refined Subtidal Reef Deployment Area is a 200-ac area in the western portion of Heron Bay. Approximately 46 ac of cultch will be deployed in one to several locations within this area (Figure 1).
- The Potential Marsh Creation Area shown in the Final Phase III ERP/PEIS has been refined based on field studies. The Refined Marsh Creation Area is a 76-ac area in the southeastern portion of Heron Bay. Approximately 46 ac of marsh will be created in one to several locations within this area (Figure 1).

Figure 1 depicts the resulting modifications to the project's footprint, and Table 1 quantifies the specific increases and decreases in the overall footprint. These changes do not impact the project's overall objectives, which are to (1) construct reef structures to protect shoreline from erosion and support secondary productivity, (2) restore marsh habitat, and (3) restore subtidal reefs to support secondary productivity.

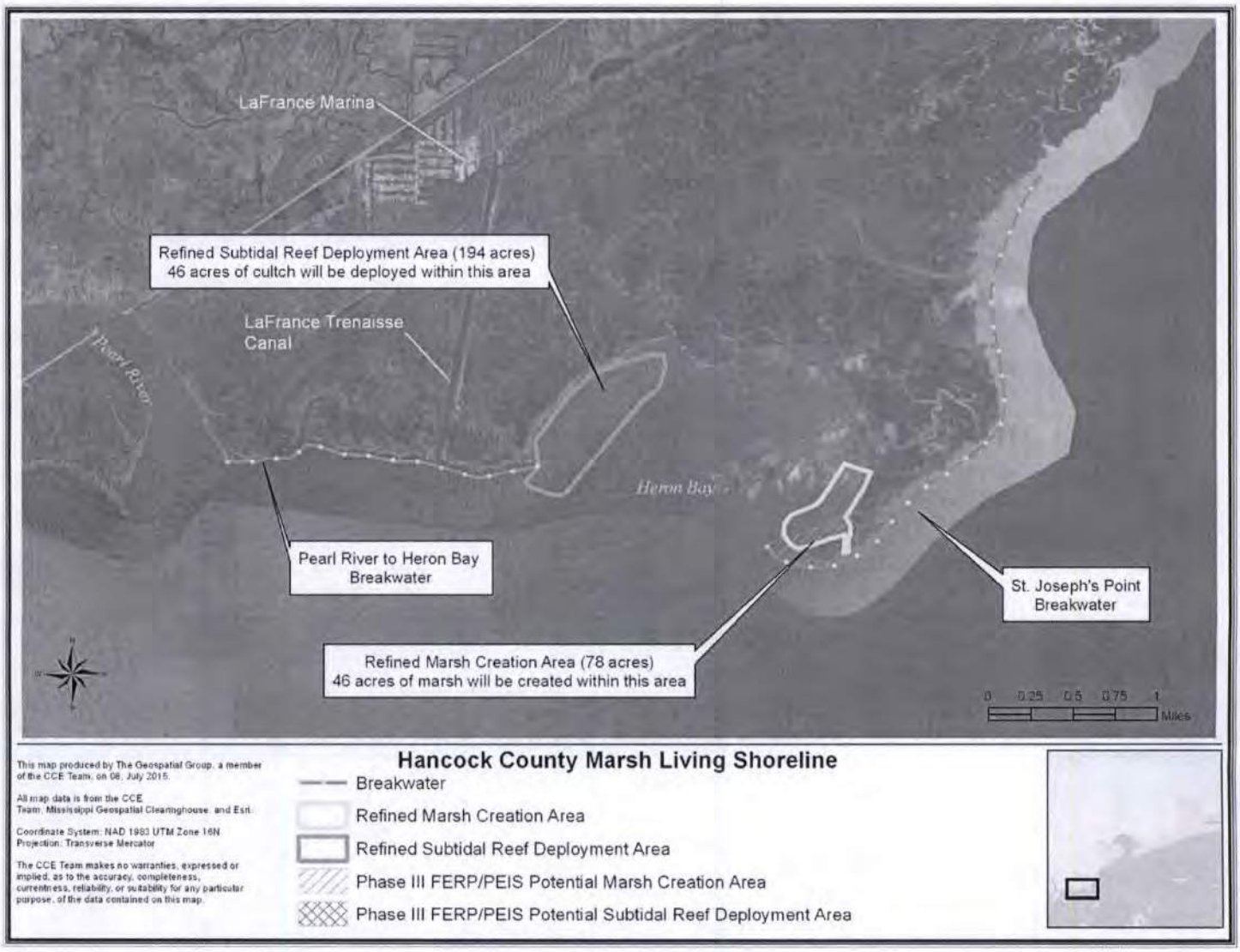

Figure 1. Modified Hancock County Marsh Living Shoreline Project footprint compared to previously evaluated component areas

Table 1. Summary of Originally Identified Impacts and Modified Impacts

Project Component	Impact Type	Revised Impact Type (per Design Change)	Duration of Impact	Habitat Type Impacted	Acreage of Impact (per Phase 3 PEIS)	Revised Acreage of Impact (per Design Change)	Increase/(Decrease) in Acreage of Impact (per Design Change)
St. Joseph's Point Area Breakwater Construction Activity Area	Filling fine-grained sediment with riprap, covered with bagged shell veneer	Filling fine-grained sediment with riprap over geotextile/geogrid layer	Long-Term	Shallow water/fine-grained sediment bottom	14.4	29.1	14.7
Pearl River to Heron Bay Breakwater Construction Activity Area	Filling fine-grained sediment with riprap, covered with bagged shell veneer	Filling fine-grained sediment with riprap over geotextile/geogrid layer	Permanent	Shallow water/fine-grained sediment bottom	5.5	13.8	8.3
Temporary Flotation Channels (breakwaters and subtidal reefs)	Excavation of sea bottom	None	Short-Term	Water depths of 2-8 ft with fine-grained sediment bottom	101	0	(101.0)
Temporary Flotation Channel Sidecast material	Placement of excavated sea bottom of seaward side of flotation channels or for use in marsh creation	None	Short-Term	Water depths of 2-8 ft with fine-grained sediment bottom	22.9	0	(22.9)
Subtidal Reefs in Heron Bay	Filling with cultch (shells, limestone)	Filling with cultch (shells, limestone); siting refined based on siting study	Long-Term	Shallow water/hard bottom	46	46	0.0

Project Component	Impact Type	Revised Impact Type (per Design Change)	Duration of Impact	Habitat Type Impacted	Acreage of Impact (per Phase 3 PEIS)	Revised Acreage of Impact (per Design Change)	Increase/(Decrease) in Acreage of Impact (per Design Change)
Marsh Creation (Inside Heron Bay)	Filling with suitable material	Filling with suitable material; site for marsh creation selected	Long-Term	Shallow water with fine-grained sediment bottom	46	46	0.0
Total Temporary Impacts					**123.9**	**0**	**(123.9)**
Total Permanent Impacts					**111.9**	**134.9**	**23.0**
Total Impacts					**242.2**	**134.9**	**(100.9)**

Construction Methodology

The project's final design construction methods and activities are described below.

A. Breakwaters

The specific breakwater construction elevation (mean higher high water [MHHW]) was selected to maximize shoreline protection (Table 2). Construction will include placement of linear structures that would utilize natural stone and/or shell-based materials. The alignment and limits of the breakwaters would be surveyed; the alignment of the breakwaters would be marked by rock "pods" that would be a minimum of 1 ft above the MHHW surface. The rock pods would be coordinated with the U.S. Coast Guard, although they have been used in other Gulf regions for habitat projects as a visual marker for recreational mariners. The height of the breakwaters along the alignment would be constructed based on bottom elevations and the initial crest elevation (2.0 ft NAVD 88; 2.4 ft mean lower low water). The initial constructed elevation includes an allowance for short term consolidation and sea level rise. Barriers, navigation warning signs (as required by the U.S. Coast Guard), and other safety devices would be required and utilized during construction.

Table 2. Updated Breakwater Specifications for the Hancock County Marsh Living Shoreline

Breakwater Design Criteria	St. Joseph's Point Breakwater (eastern reach)	Pearl River to Heron Bay Breakwater (western reach)
Total project length	Approximately 4 miles	Approximately 1.9 miles
Total project acreage	29.1 ac	13.8 ac
Crest width	15.0 ft	15.0 ft
Base width	60 ft (maximum)	60 ft (maximum)
Assumed bottom elevation	-3.5 NAVD 88	-3.5 NAVD 88
Total structure height	5.0-6.0 ft	5.0-6.0 ft
Riprap volume	132,000 cubic yards (yd^3)	58,000 yd^3
Thickness of material (riprap)	5.0-6.0 ft	5.0-6.0 ft

Breakwater Design Criteria	St. Joseph's Point Breakwater (eastern reach)	Pearl River to Heron Bay Breakwater (western reach)
Estimated initial settlement	0.5 ft	0.5 ft
Design side slopes (seaward face)	5v:1h	5v:1h
Design side slopes (landward face)	3v:1h	3v:1h
Breakwater distance from shoreline	20-400 ft	40-150 ft
Reach of each breakwater	180 ft	180 ft
Design crest height	1.4 ft NAVD 88 (MHHW)	1.4 ft. NAVD 88 (MHHW)
Width of gaps at design crest height	25 ft	25 ft

The dimensions for the breakwaters would be approximately 60 ft wide (maximum) at the base and approximately 15 ft wide at the crest (Table 2). The breakwaters would be constructed using graded stone. The breakwater material would be transported to the work area on barges and installed by a crane located on a separate barge. Placement of the breakwater material would be monitored to ensure the breakwater dimensions, slopes, and crest elevations are achieved. The deployment of the breakwater material may extend over a period of 10-12 months. Major construction activities would adhere to the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NMFS 2006). Total installed volumes would be as follows:

- ***St. Joseph's Point Breakwater (eastern reach):*** The target depth for deployment is approximately -3.5 ft NAVD 88, but could be between -3.0 and -5.0 ft NAVD 88. The volume of placed material would be approximately 132,000 yd^3 of riprap. The breakwater would cover a footprint of approximately 29.1 ac of fine-grained sediment.

- ***Pearl River to Heron Bay Breakwater (western reach):*** The target depth for deployment is approximately -3.5 NAVD 88, but could be between -2.0 ft and -5.0 ft NAVD 88. The volume of placed material would be approximately 58,000 yd^3 of riprap. The breakwater would cover a footprint of approximately 13.8 ac of fine-grained sediment.

Temporary flotation channels for construction are no longer necessary and have been eliminated from the project. After completion of construction, the breakwater structure would be surveyed. It is not anticipated that permanent navigation signs would be required by the U.S. Coast Guard; visual features above mean high tide will be integrated into the rock structure.

B. Creation of Marsh in the Vicinity of St. Joseph's Point

After the breakwater along St. Joseph's Point has been installed, areas in Heron Bay would be filled with dredged material obtained from the Mississippi Department of Marine Resources Beneficial Use of Sediment Program if material is available, or a suitable, permitted borrow source or approved permitted dredging project. The marsh will mimic the adjacent marsh intertidal range. It is anticipated that an earthen dike would be constructed at the seaward extent of the marsh. The dike would be constructed by excavating existing material from the landward side of the proposed dike location, but not borrowing from the existing marsh. Once an area of the marsh is diked, the area landward of the dike would be filled with dredged material until final marsh grades are achieved. Dike and marsh fill sediments would be placed mechanically or pumped through a floating pipeline from a hydraulic dredge located where approved permitted

dredge material is available. Once the entire marsh area(s) is constructed, the area would be monitored for natural re-vegetation.

C. Placement of Subtidal Reef Cultch in Heron Bay

Crushed stone would be deployed in Heron Bay in water depths of -3 to -5 ft (NAVD 88) in areas that currently support or previously supported reef activities. A survey has been completed that identified suitable areas (Figure 1). The subtidal reefs materials would be deployed as a high-profile 6- to 9-inch-thick layer of crushed stone. Prior to deployment, the limits of the subtidal reef area(s) would be marked with buoys or poles. Crushed stone would be deployed by a barge-mounted crane with a clamshell bucket or other suitable method. A material barge would be moored to the crane barge. As a construction alternative, water jetting the material off of a barge may be used in case of water-depth constraints. Upon completion, the deployment area would be surveyed. Temporary flotation channels for this project component are no longer necessary and have been eliminated.

D. Best Management Practices

Throughout the design phase, every practical attempt has been and will continue to be made to avoid and minimize potentially adverse impacts to species. Additionally, all protection measures identified in the original Biological Assessment and approved in the prior concurrence letters will be followed.

Analysis of Effects

Sea turtles (the endangered Kemp's ridley; the threatened loggerhead,[1] and the threatened/endangered green[2]) and the threatened Gulf sturgeon may be present in the action area and may be affected by the project. Leatherback sea turtles are not expected to be affected by the project as they are deepwater, pelagic species and are not expected to occur in the action area. The proposed project falls within ESA-designated Gulf sturgeon critical habitat (Unit 8).

NMFS has identified the following potential effects to sea turtles and Gulf sturgeon and has concluded that the species are not likely to be adversely affected by the proposed action for several reasons. Possible effects include the risks of being struck by transiting vessels, cutterhead and mechanical dredge-related activities, and deployment of material from the barges. The project proponent has agreed to adhere to NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions* (STSSCC).[3] These criteria require that all vessels associated with the construction project operate at "no wake/idle" speeds at all times while in the construction area or other shallow water areas, and that operation of any mechanical construction equipment shall cease immediately if a sea turtle is seen within a 50-ft radius of the equipment. Due to the species' mobility and natural avoidance behaviors, and the project proponent's compliance with the STSSCC, the risk of injury directly related to construction activities is discountable. NMFS believes that the temporary pipeline that may be used to pump sediment to the marsh creation

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[1] Northwest Atlantic Ocean distinct population segment

[2] Green turtles are listed as threatened except for the Florida and Pacific coast of Mexico breeding populations, which are listed as endangered.

[3] NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, available on NMFS webpage at: http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/sea_turtle_and_smalltooth_sawfish_construction_conditions_3-23-06.pdf

area will not adversely affect or impede the passage or transit of any listed species, as they can simply avoid it, or swim over, under, or around it. Thus, any effects of pipeline presence will be insignificant. Breakwaters also have the potential to affect listed species by restricting their movement and blocking access to foraging habitats along shorelines. However, the project design criteria call for segmented breakwaters (180 ft per segment) with large gaps (25 ft gaps) between each segment to allow free movement of listed species, flow, and nutrients between shoreline areas and open water. Thus, any effects of proposed breakwaters will be insignificant.

Sea turtles and Gulf sturgeon may be temporarily unable to use the sites for foraging or shelter habitat due to avoidance of construction activities and related noise. These effects will be temporary and insignificant, given the projects small footprints and the fact that there is ample suitable habitat directly adjacent to the proposed construction areas.

The essential features for the conservation of Gulf sturgeon present in Unit 8 are: (1) abundant prey items; (2) water quality and sediment quality necessary for normal behavior, growth, and viability of all life stages; and (3) safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats.

The prey abundance essential feature may be affected by burial of Gulf sturgeon foraging sites during breakwater construction, marsh creation, and oyster reef creation. The loss of prey species within the project area will not appreciably decrease the prey available to Gulf sturgeon as there are abundant, similar, nearby foraging habitats. Any decrease in numbers of these prey species would be minimal in relation to their numbers throughout the surrounding areas and prey species can quickly recolonize the project areas after construction; thus, effects to the prey abundance essential feature of critical habitat will be insignificant.

The marsh creation will likely also have a long-term beneficial impact on Gulf sturgeon by increasing prey abundance in adjacent areas. Partyka and Peterson (2008) found even the smallest patches of marsh habitat supported a larger diversity of fauna than nearby areas.[3] Therefore, it is likely that Gulf sturgeon prey species (e.g., amphipods, lancelets, polychaetes, gastropods, ghost shrimp, isopods, mollusks, and crustaceans) will benefit from the restoration of a marsh area with native vegetation. While some of this enhanced prey abundance will remain in the marsh and not be available to Gulf sturgeon for foraging, we believe that directly (through spillover) or indirectly (through trophic movement) prey abundance will be increased in areas accessible to foraging Gulf sturgeon. This spillover effect is supported by Whaley and Minello's (2002) findings of the strong trophic link between infauna and nekton near the marsh edge and the high fishery productivity derived from Gulf Coast marshes.[4]

Water quality may be temporarily affected by disturbance to the bottom sediments during construction activities. The effects are expected to be insignificant, given that any increases in turbidity will be temporary and minimized by the use of best management practices. In addition,

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[3] Partyka, M.L. and M.S. Peterson. 2008. Habitat quality and salt-marsh assemblages along an anthropogenic estuarine shoreline. Journal of Coastal Research 24(6):1570-1581.

[4] Minello, T.J., K.W. Able, M.P. Weinstein, and C.G. Hays. 2003. Salt marshes as nurseries for nekton: testing hypotheses on density, growth, and survival through meta-analysis. Marine Ecology Progress Series 246:39-59.

sediments will settle out of the water column quickly, and/or tidal currents will disperse the disturbed sediments to baseline conditions.

Sediment quality may be affected by the creation of marsh, oyster reef, and living shoreline structures, which are expected to cover any sediments in the footprint of the features, and these sediments would no longer be accessible to Gulf sturgeon. The covering of these small areas of sediment within the project area will not appreciably decrease sediment quality for Gulf sturgeon critical habitat as there are abundant, similar, nearby sediments throughout this unit of critical habitat. Thus, any effects of the proposed action on sediment quality will be insignificant.

Construction of breakwaters could affect the safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats. However, the project design criteria call for segmented breakwaters (180 ft per segment) with large gaps (25 ft gaps) between each segment which will provide unobstructed passage for Gulf sturgeon. Thus, any effects of proposed breakwaters on this essential feature of critical habitat will be insignificant.

Based on the preceding analysis, we concur with your project-effect determination that the project for which you requested ESA consultation is not likely to adversely affect Kemp's ridley, loggerhead, or green sea turtles, Gulf sturgeon, or Gulf sturgeon critical habitat.

This concludes the NOAA Restoration Center's consultation responsibilities under the ESA for species under NMFS's purview. Consultation must be reinitiated if a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat is designated that may be affected by the identified action.

We look forward to further cooperation with you on other projects to ensure the conservation of our threatened and endangered marine species and designated critical habitat. If you have any questions about this consultation, please contact Mike Tucker, Consultation Biologist, at (727) 209-5981, or by email at michael.tucker@noaa.gov.

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CC: Maryellen J. Farmer
South Mississippi Branch
Regulatory Division
Mobile District, Corps of Engineers
P.O. BOX 2288
Mobile, AL 36628-0001

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

MEMORANDUM FOR: David M. Bernhart, Assistant Regional Administrator for Protected Resources
Protected Resources Division (PRD)

FROM: Jamie Schubert, Marine Habitat Resource Specialist
Restoration Center

DATE: August 14, 2015

SUBJECT: *Deepwater Horizon* Early Restoration Phase III - Hancock County Marsh Living Shoreline Project: Re-Initiation of ESA Consultation

I. Introduction

The Hancock County Marsh Living Shoreline project is part of a suite of projects approved for implementation in the Final Phase III Early Restoration Plan for the *Deepwater Horizon* Oil Spill (Final Phase III ERP/PEIS). The NOAA Restoration Center and Mississippi Department of Environmental Quality (MDEQ) are the action agencies for implementation of this project.

In 2014, the NOAA Restoration Center initiated an ESA consultation with the NMFS Protected Resource Division, Southeast Regional Office (PRD SERO) for this project, along with three other living shoreline projects, as then proposed for inclusion in the Phase III Early Restoration Plan. On April 11, 2014, PRD SERO issued a letter of concurrence, concluding that implementation of the Hancock County project is Not Likely to Adversely Affect four species of sea turtles and the Gulf sturgeon. Because the April 11, 2014 concurrence letter had erroneously included the use of floating turbidity curtains in Mississippi, PRD SERO issued a revised letter of concurrence on September 26, 2104, concluding again that the Hancock County project May Affect but are Not Likely to Adversely Affect four species of sea turtles and the Gulf sturgeon.

Additional surveys, engineering, and design activities since the 2014 letter of concurrence have resulted in some modifications to the Hancock County project. The NOAA Restoration Center and the MDEQ have reviewed the prior letters of concurrence (attached). The project has not changed in scope and the site conditions remain the same as those described and considered in the previous consultation for this action, but the changes in the project's footprint in our view warranted re-initiating the ESA consultation with PRD SERO. The NOAA Restoration Center is unaware of any new information that

would change the previous determinations, however. The NOAA Restoration Center and the MDEQ will still implement the project as described in the 2014 letters of concurrence from NOAA PRD, including adherence to the precautionary measures, best management practices and requirements as described in those letters. Therefore, the NOAA Restoration Center has determined that the Hancock County project, if implemented as modified during its further engineering and design, May Affect but is still Not Likely to Adversely Affect sea turtles and the Gulf sturgeon.

Table 1 – Species evaluated in the initial and re-initiated consultation

SPECIES	STATUS	DETERMINATION
Gulf sturgeon	Threatened	May affect, but not likely to adversely affect
Leatherback sea turtle	Endangered	May affect, but not likely to adversely affect
Kemp's ridley sea turtle	Endangered	May affect, but not likely to adversely affect
Green sea turtle	Threatened/Endangered	May affect, but not likely to adversely affect
Loggerhead sea turtle	Threatened	May affect, but not likely to adversely affect

II. Description of Project Modifications:

The Final Phase III ERP/PEIS and the Biological Assessment submitted to initiate the original consultation stated that the Hancock County project in Mississippi included construction of three components: 46 acres of marsh, 46 acres of submerged reef, and 5.9 miles of intertidal breakwaters. During the engineering and design phase for the project, additional background studies were conducted to determine the most effective project design to reduce shoreline erosion, restore salt marsh habitat, and restore benthic habitats at the site.

Based on the information provided by these studies, the NOAA Restoration Center and MDEQ determined the breakwater height and base width would have to increase to provide the desired level of shoreline protection. Also, sediment cores taken in Heron Bay revealed a more desirable bottom substrate for the subtidal reef construction in the northwestern portion of Heron Bay than in the northeastern portion. On that basis, the submerged reef footprint was shifted to the northwestern portion of the bay. The construction methodology for the breakwater and sub-tidal reef components were further refined and the temporary flotation channel/sidecasting of sediments became unnecessary and was eliminated from the project, which reduces the potential construction impacts to species and critical habitats. The marsh creation footprint has also been refined and will now be located entirely within Heron Bay and the tidal creeks between Heron Bay and the Mississippi Sound. The 2014 ESA consultation anticipated the marsh footprint would be both in Heron Bay and also on the landward side of the breakwater. The following summarizes the project's specific design changes:

- The breakwater height will be increased from Mean Low Water to Mean High High Water to facilitate increased shoreline protection;
- Commensurate with breakwater height increase, the breakwater base width will be increased from 30 feet to 60 feet resulting in a net increase in the breakwater footprint of 23 acres;
- Approximately 123.1 acres of the flotation channels/sidecast sediments will be eliminated from the project;
- The Potential Subtidal Reef Deployment Area shown in the Final Phase III ERP/PEIS has been refined based on field studies. The Refined Subtidal Reef Deployment Area is a 200 acre area in the western portion of Heron Bay. Approximately 46 acres of cultch will be deployed in one to several locations within this area (Figure 1).
- The Potential Marsh Creation Area shown in the Final Phase III ERP/PEIS has been refined based on field studies. The Refined Marsh Creation Area is a 76 acre area in the southeastern portion of Heron Bay. Approximately 46 acres of marsh will be created in one to several locations within this area (Figure 1).

Figure 1 depicts the resulting modifications to the project's footprint and Table 2 quantifies the specific increases and decreases in the overall footprint. These changes do not impact the project's overall objectives, which are to 1) construct reef structures to protect shoreline from erosion and support secondary productivity; 2) restore marsh habitat, and 3) restore subtidal reefs to support secondary productivity.

Figure 1. Modified Hancock County Marsh Living Shoreline Project Footprint compared to previously evaluated component areas

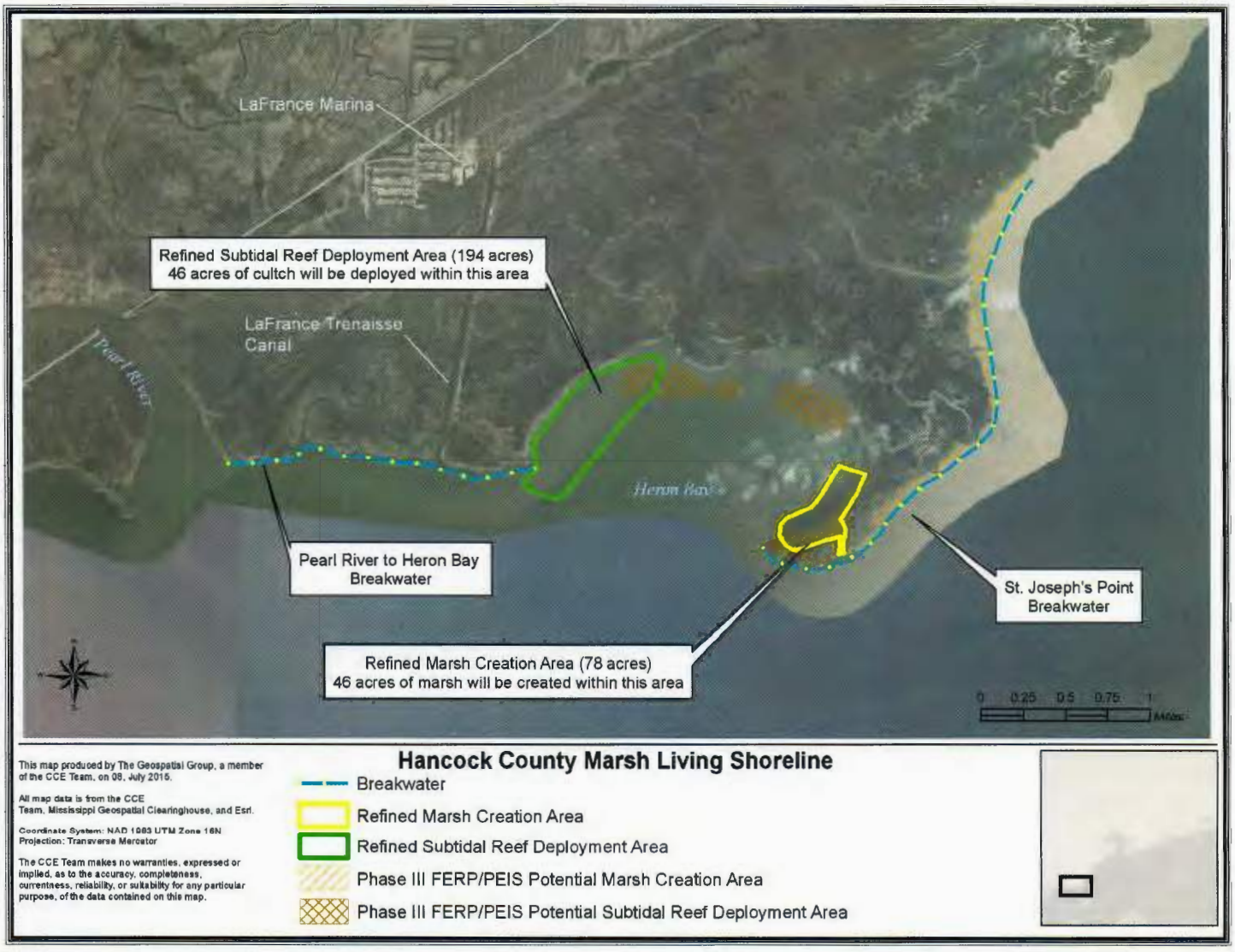

Table 2. Summary of Originally Identified Impacts and Modified Impacts.

Project Component	Impact Type	Revised Impact Type (per Design Change)	Duration of Impact	Habitat Type Impacted	Acreage of Impact (per Phase 3 PEIS)	Revised Acreage of Impact (per Design Change)	Increase/(Decrease) in Acreage of Impact (per Design Change)
St. Joseph's Point Area Breakwater Construction Activity Area	Filling fine-grained sediment with riprap, covered with bagged shell veneer	Filling fine-grained sediment with riprap over geotextile/geogrid layer	Long-Term	Shallow water/fine-grained sediment bottom	14.4	29.1	14.7
Pearl River to Heron Bay Breakwater Construction Activity Area	Filling fine-grained sediment with riprap, covered with bagged shell veneer	Filling fine-grained sediment with riprap over geotextile/geogrid layer	Permanent	Shallow water/fine-grained sediment bottom	5.5	13.8	8.3
Temporary Flotation Channels (breakwaters and subtidal reefs)	Excavation of sea bottom	None	Short-Term	Water depths of 2 to 8 feet with fine-grained sediment bottom	101	0	(101.0)
Temporary Flotation Channel Sidecast material	Placement of excavated sea bottom of seaward side of flotation channels or for use in marsh creation	None	Short-Term	Water depths of 2 to 8 feet with fine-grained sediment bottom	22.9	0	(22.9)
Subtidal Reefs in Heron Bay	Filling with Cultch (shells, limestone)	Filling with Cultch (shells, limestone); siting refined based on siting study	Long-Term	Shallow water/hard bottom	46	46	0.0
Marsh Creation (Inside Heron Bay)	Filling with suitable material	Filling with suitable material; site for marsh creation selected	Long-Term	Shallow water with fine-grained sediment bottom	46	46	0.0
				Total Temporary Impacts	**123.9**	**0**	**(123.9)**
				Total Permanent Impacts	**111.9**	**134.9**	**23.0**
				Total Impacts	**242.2**	**134.9**	**(100.9)**

III. Construction Methodology:

The project's current construction methods and activities are described below in order to determine whether any construction activities are likely to impact species or critical habitats. Actual construction methods and activities have been updated since the initial consultation based on the final design.

A. Breakwaters

The specific breakwater construction elevation (Mean Higher High Water) was selected to maximize shoreline protection (Table 3). Construction will include placement of linear structures that would utilize natural stone and/or shell-based materials. The alignment and limits of the breakwaters would be surveyed; the alignment of the breakwaters would be marked by rock "pods" that would be a minimum of one foot above the Mean Higher High Water (MHHW) surface. The rock pods would be coordinated with the US Coast Guard but have been used in other Gulf regions for habitat projects as a visual marker for recreational mariners. The height of the breakwaters along the alignment would be constructed based on bottom elevations and the initial crest elevation (2.0 ft. NAVD 88; 2.4 ft. Mean Lower Low Water). The initial constructed elevation includes an allowance for short term consolidation and sea level rise. Barriers, navigation warning signs (as required by the U.S. Coast Guard), and other safety devices would be required and utilized during construction.

Table 3. Updated Breakwater specifications for the Hancock County Marsh LSL.

Breakwater Design Criteria	St. Joseph's Point Breakwater (eastern reach)	Pearl River to Heron Bay Breakwater (western reach):
Total project length	Approx. 4 miles	Approx. 1.9 miles
Total project acreage	29.1 acres	13.8 acres
Crest width	15.0 ft.	15.0 ft.
Base width	60 ft. (maximum)	60 ft. (maximum)
Assumed bottom elevation	-3.5 NAVD 88	-3.5 NAVD 88
Total structure height	5.0 to 6.0 ft.	5.0 to 6.0 ft.
Riprap volume	132,000 cubic yards	58,000 cubic yards
Thickness of material (riprap)	5.0 to 6.0 ft.	5.0 to 6.0 ft.
Estimated initial settlement	0.5ft.	0.5ft.
Design side slopes (Seaward Face)	5v:1h	5v:1h
Design side slopes (Landward Face)	3v:1h	3v:1h
Breakwater distance from shoreline	20 to 400 ft.	–40 to 150ft.
Reach of each breakwater	180ft.	180ft.
Design Crest Height	1.4 ft. NAVD88 (MHHW)	1.4 ft. NAVD 88 (MHHW)
Width of gaps at design crest height	25 ft.	25 ft.

The dimensions for the breakwaters would be approximately 60 ft. wide (maximum) at the base and approximately 15 ft. wide at the crest (Table 3).

The breakwaters would be constructed using graded stone. The breakwater material would be transported to the work area on barges and installed by a crane located on a separate barge. Placement of the breakwater material would be monitored to ensure the breakwater dimensions, slopes, and crest elevations are achieved. The deployment of the breakwater material may extend over a period of ten to twelve months. Major construction activities would adhere to the Sea turtle and Smalltooth Sawfish Construction Conditions (NMFS, 2006) and will minimize the potential for impacting Gulf Sturgeon. Total installed volumes would be as follows:

- ***St. Joseph's Point Breakwater (eastern reach):*** The target depth for deployment is approximately -3.5 ft. NAVD 88, but could be between -3.0 and -5.0 ft. NAVD 88. The volume of placed material would be approximately 132,000 cubic yards of riprap. The breakwater would cover a footprint of approximately 29.1acres of fine-grained sediment.
- ***Pearl River to Heron Bay Breakwater (western reach):*** The target depth for deployment is approximately -3.5 NAVD 88, but could be between -2.0 ft. and -5.0 ft. NAVD 88. The volume of placed material would be approximately 58,000 cubic yards of riprap. The breakwater would cover a footprint of approximately 13.8 acres of fine-grained sediment.

Temporary flotation channels for construction are no longer necessary and have been eliminated from the project. After completion of construction, the breakwater structure would be surveyed. It is not anticipated that permanent navigation signs would be required by the U.S. Coast Guard; visual features, above mean high tide, will be integrated into the rock structure. The location would be installed in accordance with safety requirements.

B. Creation of Marsh in the Vicinity of St. Joseph's Point

After the breakwater along St. Joseph's Point has been installed, area(s) landward of the breakwater and in Heron Bay would be filled with dredged material obtained from the MDMR Beneficial Use of Sediment Program if material is available, or a suitable, permitted borrow source or approved permitted dredging project. The marsh will mimic the adjacent marsh intertidal range. It is anticipated that an earthen dike would be constructed at the seaward extent of the marsh. Upon location of suitable material, the dike would be constructed by excavating existing material from the landward side of the proposed dike location, but not borrowing from the existing marsh. Once an area of the marsh is diked, the area landward of the dike would be filled with dredged material until final marsh grades are achieved. Dike and marsh fill sediments would be placed mechanically or pumped through a floating pipeline from a hydraulic dredge located

where suitable fill material or approved permitted dredge material is available. Pumps and sediment controls would remain in place throughout the dredging and filling process and after initial settling has occurred. Once the entire marsh area(s) is constructed, the area would be monitored for natural re-vegetation.

C. Placement of Subtidal Reef Cultch in Heron Bay

Crushed stone would be deployed in Heron Bay in water depths of -3 to -5 ft. NAVD 88 in areas that currently support or previously supported reef activities. Maps of historic reef areas within Heron Bay were investigated for thickness of soft muds, shell or shell hash and suitable bearing soils. Based on this investigation, an area has been identified that would support the subtidal reef (see Figure 1). A survey has been completed that identified suitable areas. The subtidal reefs materials would be deployed as a high-profile 6- to 9-inch-thick layer of crushed stone. Prior to deployment, the limits of the subtidal reef area(s) would be marked with buoys or poles. Crushed stone would be deployed by a barge-mounted crane with a clam shell bucket or other suitable method. A material barge would be moored to the crane barge. As a construction alternative, water jetting the material off of a barge may be used in case of water-depth constraints. Upon completion, the deployment area would be surveyed. Temporary flotation channels for this project component have been eliminated.

D. Best Management Practices

Throughout the design phase, every practical attempt has been and will continue to be made to avoid and minimize potentially adverse impacts to species and all protection measures identified in the original Biological Assessment and approved in the prior concurrence letters will be adhered to.

IV. Endangered Species Act Re-Initiation Criteria

A. Re-initiation criteria (50 CFR Ch. IV (10–1–08 Edition), Section 402, § 402.16)

1. *The amount or extent of take specified in the incidental take statement is exceeded.*

   For the Hancock County Marsh Living Shoreline Project, this criterion is not applicable since there is no authorized take resulting from the consultations.

2. *New information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered.*

   The proposed changes to the project design could change the *manner* in which the project may affect listed species, but the extent of effects will be similar or less than those analyzed under the previous designs. Therefore reinitiation of informal consultation is warranted, but the project remains not likely to adversely affect listed species. The width of the breakwater footprint has increased, but the flotation channels and spoil piles associated with the breakwater construction have been eliminated. The breakwater will still be placed at a similar water depth contour over soft grained sediment, which is the same as the conditions identified

in the original consultation. Further, although the breakwater footprint is increasing (+/- 23 acres), the overall footprint of breakwater related impacts is significantly reduced due to the elimination of flotation channels. The breakwater and flotation channels would have impacted approximately 93 acres, but with the elimination of the flotation channels this footprint is reduced to approximately 36 acres. The modified placement of the subtidal reef will not result in effects that were not previously considered since the northwestern portion of Heron Bay provides similar habitat to listed species as the northeastern portion of Heron Bay. The entire northern portion of Heron Bay is comprised of soft sediments underlain by varying thicknesses of broken shell material; however, the northwestern portion of the bay has a thinner layer of soft sediment making it more suitable for submerged reef placement. The marsh restoration will be accomplished using the same techniques as previously anticipated and will be within and adjacent to areas already evaluated in the initial concurrence.

3. *The identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion.*

   The modifications will not cause an effect to a listed species or critical habitat that was not considered in the original Biological Assessment. As discussed above, although the breakwater footprint has been increased, the subtidal reef footprint has been shifted to the west, the marsh restoration footprint has been limited to Heron Bay only, and the flotation channels have been eliminated which significantly reduces the overall project footprint. Other than elimination of the flotation channels, the same construction methodologies and materials will be used to complete the project, so the project modifications will not cause any effects that were not previously identified.

4. *New species is listed or critical habitat designated that may be affected by the identified action.*

   There have been no new species listed or critical habitat designated since the original consultation and concurrence.

B. Specific-Concurrence Considerations:

In addition to the re-initiation criteria evaluated above, the modified project was evaluated as compared to the criteria PRD applied during the consultation process. The initial April 11, 2014 concurrence letter stated "[t]he prey abundance essential feature may be affected by burial or excavation of Gulf sturgeon foraging sites during marsh creation, flotation channel dredging, and oyster reef creation. The temporary loss of prey species within the project area will not appreciably decrease the prey available to Gulf sturgeon as there are abundant, similar, nearby foraging habitats. Any decrease in numbers of these prey species would be minimal in relation to their numbers across the

entire critical habitat units or nearby areas. Prey species can quickly recolonize the project areas after construction; thus, effects to the prey abundance essential feature of critical habitat will be insignificant. Furthermore, effects to the ecological functions and values of the critical habitat units for Gulf sturgeon will be insignificant." Further, on September 26, 2014, PRD prepared a revised concurrence letter which states "the primary basis for our conclusion of the effects analyses were the projects' small footprints, the short construction durations, and the fact that turbidity controls, if used, will only enclose a small portion of the project sites and will be removed after construction (as explained below, turbidity curtains will not be used for Projects 1, 2, and 5[1])."

1. Prey Availability
   The conditions related to prey availability have not changed related to the Hancock County project modifications discussed above as abundant, similar, and nearby foraging habits are still available. Additionally, the conclusion that the ability of prey species to quickly recolonize impacted areas would not change as a result of the project modifications discussed above.

2. Small Construction Footprint:
   As described above, the construction footprint of the marsh and subtidal reef have stayed the same, but have been shifted out of the areas previously proposed, and the anticipated impacts from the breakwater and flotation channels have been reduced. Based upon the dimensions of the project submitted with the original biological assessment prepared by the MS Department of Environmental Quality, the breakwater and flotation channel impacts were approximately 128 feet wide (30 feet for breakwater and 98 feet for top of channel) by 6 miles long (31,680 linear feet). The total aerial footprint of both the breakwater and parallel flotation channel was 93 acres. By eliminating the flotation channels, as currently proposed, and increasing the breakwater width to 60 feet, the total aerial footprint impact is reduced to 36 acres. Overall, the construction footprint is less than in the initial consultation for the breakwater component and there has been no change to the marsh or submerged reef footprint.

3. Short Construction Durations:
   The construction duration has not changed since the initial consultation.

VI. Conclusion

The NOAA Restoration Center seeks PRD SERO's concurrence with the NOAA Restoration Center's findings that the modified project and construction techniques may affect, but are not likely to adversely affect the four species of sea turtles and the Gulf sturgeon or Gulf sturgeon critical habitat. The basic elements of the proposed project that lead to the Restoration Center's determination that the project was not likely to adversely

[1] In the concurrence letter, Project 5 was the Hancock County Marsh Living Shoreline Project. Therefore, an evaluation of impacts based on temporary use of flotation channels is not provided.

affect listed species in the earlier PRD concurrence letters have not changed related to the Hancock County Marsh Living Shoreline project.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

SEP 26 2014 F/SER31:JBH

MEMORANDUM FOR: F/HC3 – Leslie Craig

FROM: for F/SE – Roy E. Crabtree, Ph.D. Miles M. Croom

SUBJECT: Amendment to Deepwater Horizon-Early Restoration Plan Phase III, Endangered Species Act Section 7 Consultations for 4 Living Shoreline Projects and Mississippi's Popp's Ferry Causeway Park

	Applicant	NMFS Number	Location
1	Mississippi Department of Environmental Quality	SER-2014-12925	Hancock County, Mississippi
2	NOAA Restoration Center – Southeast Regional Office	SER-2014-12926	Baldwin County, Alabama
3	Florida Department of Environmental Protection	SER-2014-13016	Escambia County, Florida
4	Florida Department of Environmental Protection	SER-2014-13083	Franklin County, Florida
5	Mississippi Department of Environmental Quality	SER-2014-13026	Harrison County, Mississippi

This memorandum responds to the National Oceanic and Atmospheric Administration (NOAA) Restoration Center's (RC) April 21, 2014, request for amendments to the National Marine Fisheries Service (NMFS) Section 7 concurrence letters of April 11, 2014, and May 6, 2014, regarding the above-referenced projects. The project-effects determinations were based on information provided by the NOAA RC and NMFS's review of published literature. We concurred with your determinations that the proposed activities may affect, but are not likely to adversely affect, 3 sea turtle species (green, Kemp's ridley, and loggerhead) and Gulf sturgeon. Additionally, for the 4 living shoreline projects (SER-2014-12925, -12926, -13016, and -13083), we concurred with your determination that the proposed activities will not adversely affect designated Gulf sturgeon critical habitat in Units 8, 9, and 13.

You initially indicated Projects 1, 2, and 3 would be constructed within the May-October timeframe to avoid potential impacts to migrating Gulf sturgeon. However, the applicants currently face considerable uncertainty regarding project implementation timing and are unable to commit to conducting in-water activities during the period from May to October. We relied in part on the commitment to conduct in-water activities from May to October to support our conclusion that temporary exclusion from the sites will have an insignificant effect on Gulf sturgeon because Gulf sturgeon are generally found in freshwater rivers during this period. However, the primary basis for our conclusion of the effects analyses were the projects' small footprints, the short construction durations, and the fact that turbidity controls, if used, will only enclose a small portion of the project sites and will be removed after construction (as explained below, turbidity curtains will not be used for Projects 1, 2, and 5). Thus, we have determined

that the change in Projects 1, 2, and 3 do not alter our effects analysis, and any effects caused by the temporary exclusion from foraging or shelter habitat will be insignificant.

In our letters, we erroneously included the use of floating turbidity curtains in the descriptions of the proposed activities for Projects 1, 2, and 5. NOAA RC has provided information indicating that floating turbidity curtains will not be used for these 3 projects. It is our understanding that for the Swift Tract project in Alabama (SER-2014-12926), curtains are not required by the Alabama Department of Environmental Management if the water clarity is monitored and turbidity remains under 50 nephelometric turbidity units (NTU). For the Hancock County project in Mississippi (SER-2014-12925), Florence Watson of the Mississippi Department of Environmental Quality replied in an email to the applicant that, "Turbidity screens are required for activities that will be ongoing for a significant period of time. [The Hancock County project] is temporary in nature, has minimal construction activities in water, and the construction timeframe is very short. Also, the water quality standard establishes that turbidity shall not exceed 50 NTUs of the ambient turbidity outside a 750-foot mixing zone. This activity will likely occur well within this mixing zone and is not expected to disturb the water bottoms to an extent to exceed this standard." It is our understanding that this same reasoning applies to the Harrison County, Mississippi project (SER-2014-13026) as the projects are of similar scale. For these 3 projects, turbidity is expected to remain below 50 NTUs. In addition, the species have the ability to move away from the project sites and will likely avoid construction activities. Therefore, we conclude that any effects caused by this minor modification to the proposed actions will be insignificant.

Consultation must be reinitiated if a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat is designated that may be affected by the identified action. If you have any questions about this consultation, please contact Joyce Barkley-Hahn, Consultation Biologist, at (727) 551-5741, or by email at joyce.barkley-hahn@noaa.gov.

UNITED STATES DEPARTMENT OF COMMERCE
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APR 11 2014

F/SER31:JBH

Ms. Leslie Craig
Supervisor, NOAA Restoration Center-Southeast Region
NOAA Fisheries-Office of Habitat Conservation
263 13th Avenue South
St. Petersburg, Florida 33701

Ref.: Deepwater Horizon-Early Restoration Plan Phase III Living Shoreline Projects

	Applicant	NMFS Number	Location
1	MS Department of Environmental Quality	SER-2014-12925	Hancock County, Mississippi
2	NOAA Restoration Center – SE Office	SER-2014-12926	Baldwin County, Alabama
3	FL Department of Environmental Protection	SER-2014-13016	Escambia County, Florida
4	FL Department of Environmental Protection	SER-2014-13083	Franklin County, Florida

Dear Ms. Craig:

This document responds to 4 letters, received between January 13 and February 4, 2014, from the National Oceanic and Atmospheric Administration (NOAA) Restoration Center, requesting National Marine Fisheries Service (NMFS) concurrence under Section 7 of the Endangered Species Act (ESA) with the project-effects determinations associated with living shoreline construction projects in the Gulf of Mexico. On February 5, 2014, we decided to batch these projects into a single consultation based on the similarity of the proposed activities. You determined that the proposed activities may affect, but are not likely to adversely affect 5 sea turtle species (green, hawksbill, Kemp's ridley, leatherback, and loggerhead), Gulf sturgeon, smalltooth sawfish, and designated Gulf sturgeon critical habitat in Units 8, 9, and 13. NMFS requested additional information via email on February 19, 2014. We received the response on March 13, 2014. We asked for clarification of that information via email on March 14, 2014. We received clarification on March 19, 2014, and we initiated consultation that day. NMFS's findings on the projects' potential effects are based on the project descriptions in this response; thus, any changes to the proposed actions may negate the findings of this consultation and may require reinitiation of consultation with NMFS.

All of the applicants will use floating turbidity curtains around all in-water construction areas and will follow NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, dated March 23, 2006; *Measures for Reducing Entrapment Risk to Protected Species*, revised May 22, 2012; and U.S. Fish and Wildlife Service's (USFWS) *Standard Manatee Conditions for In-Water Work,* dated 2011. Each project is described in detail below and locations are shown in the figures attached at the end of this consultation (all project location datum are North American Datum 1983).

1. The Hancock County Marsh Living Shoreline projects (3) are located in Hancock County, Mississippi. Action Area Bounding Coordinates (N-S-E-W): 30.184°N, 89.53°W; 30.169°N,

89.462°W; 30.233°N, 89.415°W; 30.184°N, 89.530339°W. The proposed projects consist of 3 components: (1) use of breakwater materials to reduce shoreline erosion, (2) creation of 46 acres of salt marsh, and (3) enhancement of 46 acres of oyster reef habitat that have historically supported oyster habitat (Figure 1). The breakwater at St. Joseph's Point (eastern reach) will be approximately 4 miles long, have a crest width of 15 feet (ft), a total height of 4 ft, and include openings throughout to allow for tidal flow. The breakwater will have a footprint of approximately 14.4 acres and will be placed on substrate of fine-grained sediment. It will be composed of a riprap core covered by a 9-inch-thick layer of bagged oyster shell. The Pearl River to Heron Bay breakwater (western reach) will be constructed identical to the St. Joseph's Point breakwater, but will be 1.9 miles long. The Pearl River to Heron Bay breakwater will have a footprint of approximately 5.5 acres. Temporary flotation access channels will be used to facilitate access for work barges into the work area. One channel will be excavated parallel to the breakwaters and additional channels excavated perpendicular to provide access from the Mississippi Sound (Figure 1). The excavated, dredged material will be cast on the seaward side of the channels so they naturally fill back in after construction. The channels will be dredged to 8 ft below mean lower low water (MLLW) to accommodate barge draft. The channels will be excavated using standard, construction best management practices (BMPs) to minimize environmental impacts. Permanent navigation signs will be installed in accordance with safety requirements.

A total of 46 acres of marsh will be created behind the constructed breakwater at St. Joseph's Point. It will be backfilled with dredged material obtained from the Mississippi Beneficial Sediment Use Program and allowed to re-vegetate by natural colonization of estuarine marsh species. Sediment will be pumped through a floating pipeline from a hydraulic dredge until final marsh target elevations are achieved. Pumps and sediment controls will remain in place throughout the dredging and filling process until initial settling has occurred. Once the entire marsh area is constructed, the area would be monitored for natural re-vegetation.

Oyster cultch will be deployed over 46 acres in Heron Bay in areas that currently support or previously supported oyster production. Oyster cultch deployment will occur in water depths of -3 to -5 ft MLLW and the limits of the cultch deployment areas will be marked with buoys or poles. A barge-mounted crane with a clamshell bucket will deploy the cultch in a 6- to 9-inch-thick layer of oyster shell or limestone. A material barge loaded with cultch will be moored to the crane barge. As a construction alternative, water jetting of loose shell off of the material barge may be used in case of water-depth constraints. Construction is scheduled to take place from May-October to avoid potential impacts to migrating Gulf sturgeon.

2. The Swift Tract Living Shoreline project is located at 30.335832°N, 87.812745°W, along the eastern portion of Bon Secour Bay, approximately 6 miles northwest of Gulf Shores in Baldwin County, Alabama (Figure 2). The Swift Tract breakwater will be 8,500 ft long, have a crest width of 10 ft, and a total height of 3 ft. Calculated volumes of material are 15,800 tons of riprap and 2,200 cubic yards (yd^3) of oyster shell. Approximately 2.9 acres of fine-grained sediment or soft bottom will be covered with riprap and topped with bagged, oyster shell. One or more work barges, with a long-reach backhoe, will be positioned along the seaward side of the breakwater construction area. A material barge will be positioned seaward of the work barge. Additionally, 6 warning signs placed on 12-inch-diameter, treated posts will be installed adjacent to the

breakwaters. In an effort to reduce noise and turbidity effects, these posts will be pushed into the sediment rather than using a pile driver or jetting the piles into place. Construction is anticipated to be completed within 6 months.

3. The Pensacola Bay Living Shoreline projects are located in Escambia County, Florida at 30.410278°N, 87.202778°W, Project Green Shores Site II (PGSII); and 30.399722°N, 87.232222°W, Sanders Beach (Figure 3). Construction activities at PGSII will include expansion of an existing breakwater with a crest width of 100 ft and a total height of 3.5 ft. The volume of material needed will be approximately 11,000 tons of riprap and fossilized oyster shell covering a footprint of 1.9 acres of fine-grained sediment. Breakwaters constructed at Sanders Beach will be 2,400 ft long, have a crest width of 30 ft, and a total height of 3.5 ft. The volume of material needed will be approximately 14,000 tons of riprap and fossilized oyster shell, covering a footprint of 3.15 acres of fine-grained sediment. A gap of 100 ft will be left between each breakwater to allow for tidal flow.

Work barges with a long-reach backhoe will be positioned along the seaward side of the breakwaters and the material barge will be positioned seaward of the work barge. Additionally, 14 warning signs, placed on 12-inch-diameter posts, will be installed adjacent to the breakwaters. In an effort to reduce noise and turbidity effects, these posts will be pushed into the sediment rather than using a pile driver or jetting the piles into place.

After the breakwaters have been constructed, selected landward areas will be filled with dredged material obtained from one or more existing dredge disposal sites or navigational channels adjacent to the project sites (Figures 5 and 6). Approximately 16 acres will be required to provide the estimated 102,000 cubic yd^3 using the following criteria: (1) borrow source will be free of contaminants as described in the *Inland Testing Manual (Evaluation of Dredged Material Proposed For Discharge in Waters of the United States,* (U.S. Army Corps of Engineers, 1998); and (2) borrow areas in depths of 6 ft or less will be limited to excavated depths of 4 ft below the sediment line and borrow areas in 6 ft or more of depth will be limited to excavated depths of 6 ft below the sediment line.

The marsh creation areas will be filled beginning at the most landward extent and filled until final marsh elevations are achieved. Marsh elevations will be designed to meet the requirements of native marsh plant species and to withstand normal wave heights for the project area. Based on similar projects, it is estimated that approximately 6,000 yd^3 of fill will be needed for PGSII and approximately 96,000 yd^3 of fill will be needed for Sanders Beach. To avoid potential impacts to protected species, the proposed project will use a hydraulic cutterhead pipeline dredge rather than a hopper dredge. Floating turbidity screens will be used to control turbidity levels and meet State of Florida requirements (Chapter 62-302.530 F.A.C.). Sediment controls will remain in place throughout the dredging and filling process. Construction is anticipated to take between 6-10 months for all elements, occurring between August-October 2015.

4. The Cat Point Living Shoreline project is located at 29.73093°N, 84.88433°W, along an area just off the Apalachicola National Estuarine Research Reserve Office Complex and Nature Center in Eastpoint, Florida (Figure 4). Proposed activities include expanding an existing breakwater structure by up to 0.3 miles and creating 1 acre of salt marsh habitat. The extensions

to the existing breakwater will be added on the north end (689 ft) and south end (750 ft). The structure is approximately 30 ft from the shoreline, has a crest width of 5 ft, and a total height of 2.5 ft. The extensions will be similar in measurement. Gaps ranging in size from 3-25 ft wide will be built into the breakwater to allow for tidal flow. Expansion of the breakwater will be undertaken during the winter season (November through early March), when low tides in the project area expose the tidal flats. Then materials can be placed from shore with a backhoe or crane (the area is too shallow to use a barge). Materials and equipment will be staged on state-owned lands adjacent to the road right-of-way, and will be accessed by an existing road (Millender Street). Native marsh plant species will be planted behind the breakwater structures, along the shoreline, to create approximately 1 acre of new marsh. Marsh creation will involve planting species on 2- to 3-ft centers. This activity would commence once the constructed breakwater extensions are complete and stabilized so the restored areas will be protected to the fullest extent possible.

We believe that sea turtles (the endangered Kemp's ridley; the threatened loggerhead,[1] and the threatened/endangered green[2]) and the threatened Gulf sturgeon may be present in the action areas and may be affected by the projects. We believe leatherback and hawksbill sea turtles will not be present, thus, they will not be affected, because their very-specific foraging and life history requirements are not met in or near the action areas: leatherbacks are deepwater, pelagic species and hawksbills are associated with coral reefs. Smalltooth sawfish also are not likely to be encountered at any of the project sites and therefore will not be affected. Their current distribution has contracted to peninsular Florida and, within that area, they can only be found with regularity off the extreme southern portion of Florida. Of the proposed projects, 3 fall within ESA-designated Gulf sturgeon critical habitat (Units 8, 9, and 13); Swift Tract is not located in designated critical habitat.

NMFS has identified the following potential effects to sea turtles and Gulf sturgeon and has concluded that the species are not likely to be adversely affected by the proposed actions for several reasons. Effects include the risks of being struck by transiting vessels, cutterhead and mechanical dredge-related activities, and deployment of material from the barges. Due to the species' mobility, natural avoidance behaviors, and the slow transit speed of the towed barges (5 knots or less), the risk of injury will be discountable. Compliance with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, dated March 23, 2006 (enclosed), will further reduce the risk as it requires work to stop if a listed species is observed within 50 ft of operating or moving machinery. NMFS believes that the temporary pipeline put in place to pump sediment from the dredged material disposal site to the marsh creation area will not adversely affect or impede the passage or transit of any of these species, as they can simply avoid it, or swim over, under, or around it; thus, any effects of pipeline presence are insignificant.

Sea turtles and Gulf sturgeon may be temporarily unable to use the sites for foraging or shelter habitat due to avoidance of construction activities, related noise, and physical exclusion from areas blocked by turbidity curtains. These effects will be temporary and insignificant, given the projects' small footprints, short construction durations, and turbidity controls that will only

[1] Northwest Atlantic Ocean distinct population segment (DPS)
[2] Green turtles are listed as threatened except for the Florida and Pacific coast of Mexico breeding populations, which are listed as endangered.

enclose a small portion of the project sites and will be removed after construction. In addition, the Hancock County, Swift Tract, and Pensacola Bay project activities will occur between May and October when Gulf sturgeon are found primarily in freshwater rivers. Activities at Cat Point will occur during the winter months when the tide is at its lowest so cranes can work from shore. Due to the shallow water depths, that particular project area provides poor foraging and refuge habitat for sturgeon. Gulf sturgeon are suction feeders, using their relatively narrow mouths to funnel water and prey items. Because of their feeding morphology, they are usually found at slightly deeper depths (greater than 6 ft) where there is lower wave energy. There is ample available foraging and refuge habitat for Gulf sturgeon outside of, but adjacent to, the Cat Point site just offshore where the depths provide more suitable habitat to Gulf sturgeon.

The essential features for the conservation of Gulf sturgeon present in Units 8, 9, and 13 are: (1) abundant prey items; (2) water quality and sediment quality necessary for normal behavior, growth, and viability of all life stages; and (3) safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats. Of these essential features, NMFS believes prey abundance, water quality, and sediment quality may be affected.

The prey abundance essential feature may be affected by burial or excavation of Gulf sturgeon foraging sites during marsh creation, flotation channel dredging, and oyster reef creation. The temporary loss of prey species within the project area will not appreciably decrease the prey available to Gulf sturgeon as there are abundant, similar, nearby foraging habitats. Any decrease in numbers of these prey species would be minimal in relation to their numbers across the entire critical habitat units or nearby areas. Prey species can quickly recolonize the project areas after construction; thus, effects to the prey abundance essential feature of critical habitat will be insignificant. Furthermore, effects to the ecological functions and values of the critical habitat units for Gulf sturgeon will be insignificant.

The marsh creation projects will likely have a beneficial impact on Gulf sturgeon by increasing prey abundance in adjacent areas. Partyka and Peterson (2008) found even the smallest patches of marsh habitat supported a larger diversity of fauna than nearby areas.[3] Therefore, it is likely that Gulf sturgeon prey species (e.g., amphipods, lancelets, polychaetes, gastropods, ghost shrimp, isopods, mollusks, and crustaceans) will benefit from the restoration of a marsh area with native vegetation. While some of this enhanced prey abundance will remain in the marsh and not be available to Gulf sturgeon for foraging, we believe that directly (through spillover) or indirectly (through trophic movement) prey abundance will be increased in areas accessible to foraging Gulf sturgeon. This spillover effect is supported by Whaley and Minello's (2002) findings of the strong trophic link between infauna and nekton near the marsh edge and the high fishery productivity derived from Gulf coast marshes.[4]

Water quality will be temporarily affected by disturbance to the bottom sediments during dredging activities. The effects are expected to be insignificant, given that increases in turbidity

[3] Partyka, M.L. and M.S. Peterson. 2008. Habitat quality and salt-marsh assemblages along an anthropogenic estuarine shoreline. Journal of Coastal Research 24(6):1570-1581.

[4] Minello, T.J., K.W. Able, M.P. Weinstein, and C.G. Hays. 2003. Salt marshes as nurseries for nekton: testing hypotheses on density, growth, and survival through meta-analysis. Marine Ecology Progress Series 246:39-59.

will be temporary and minimized by the use of turbidity curtains. In addition, sediments will settle out of the water column quickly, and/or tidal currents will disperse the disturbed sediments to baseline conditions. We do not expect any adverse changes to the sediment quality from the proposed dredging, as the composition of the dredged materials to be replaced (put back into the flotation channels, post project construction) in critical habitat are from the same approximate area in critical habitat, and therefore are expected to be similar or identical to those that are currently present.

Finally, we concur with your project-effect determinations that the projects for which you requested ESA consultations are not likely to adversely affect Kemp's ridley, loggerhead, or green sea turtles, Gulf sturgeon, or Gulf sturgeon critical habitat in Units 8, 9, and 13.

This concludes the NOAA Restoration Center's consultation responsibilities under the ESA for species under NMFS's purview. Consultation must be reinitiated if a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat is designated that may be affected by the identified action.

We've enclosed additional relevant information for your review. We look forward to further cooperation with you on other projects to ensure the conservation of our threatened and endangered marine species and designated critical habitat. If you have any questions about this consultation, please contact Joyce Barkley-Hahn, Consultation Biologist, at (727) 551-5741, or by email at joyce.barkley-hahn@noaa.gov.

Sincerely,

Miles M Croom

for Roy E. Crabtree, Ph.D.
Regional Administrator

Enc.: 1. *Sea Turtle and Smalltooth Sawfish Construction Conditions* (Revised March 23, 2006)
2. *Measures for Reducing Entrapment Risk to Protected Species* (Revised May 22, 2012)
3. *Standard Manatee Conditions for In-Water Work* (Dated 2011).

File: 1514-22C.

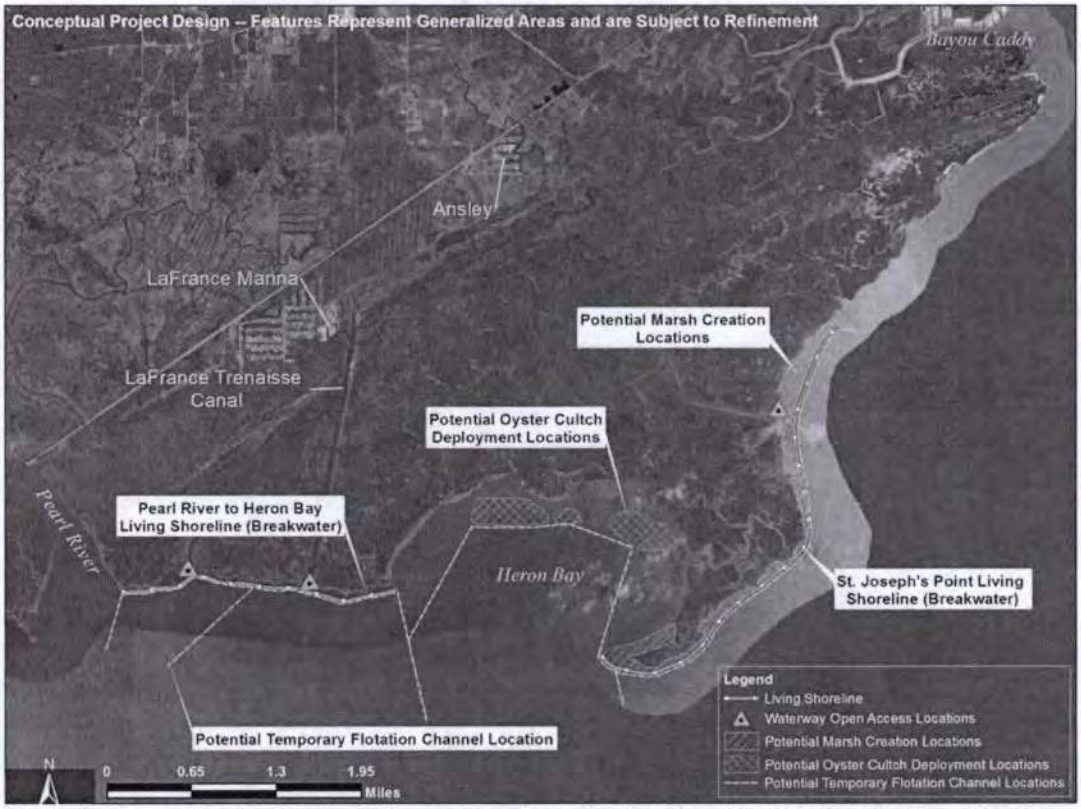


Figure 1. Image showing Hancock County Marsh project locations (©2012 Google, TerraMetrics)

Figure 2. Image showing Swift Tract project location (©2012 Google, TerraMetrics)

Figure 3. Image showing Pensacola Bay project locations (©2012 Google, TerraMetrics, data SIO, NOAA, U.S. Navy, NGA, GEBCO)

Figure 4. Image showing Cat Point project locations (©ESRI, DigitalGlobe, GeoEye, I-cubed, USDA, USGS, AEX, Getmapping, IGN, IGP, Swisstopo, GIS User Community)

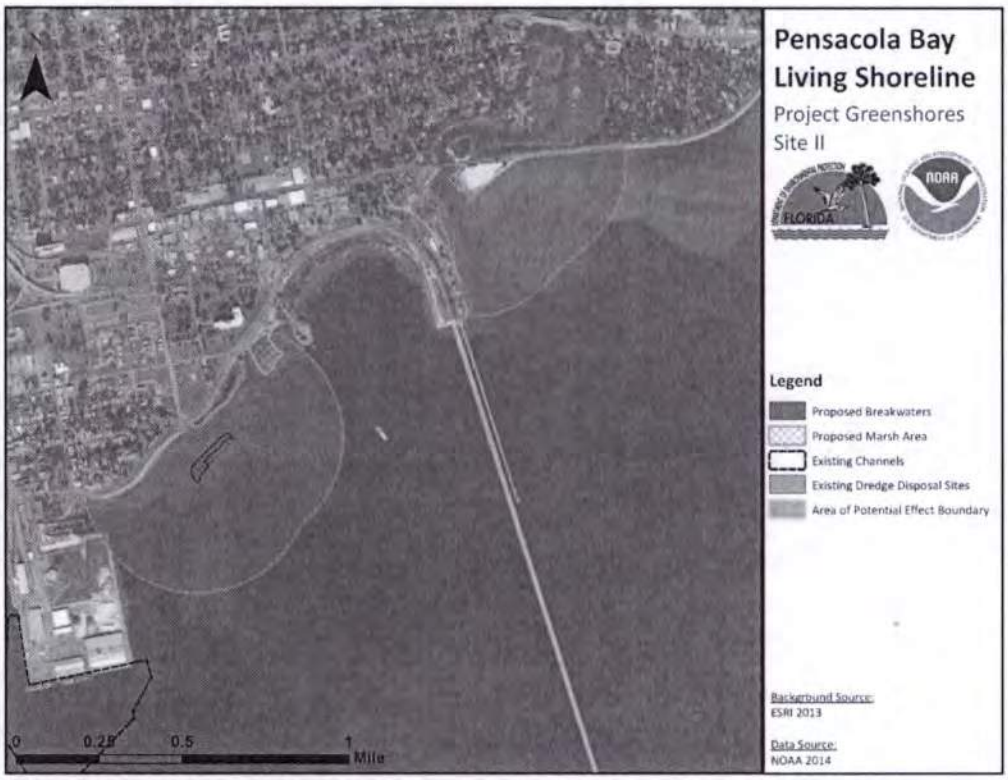


Figure 5. Image showing existing dredge disposal sites at PGSII

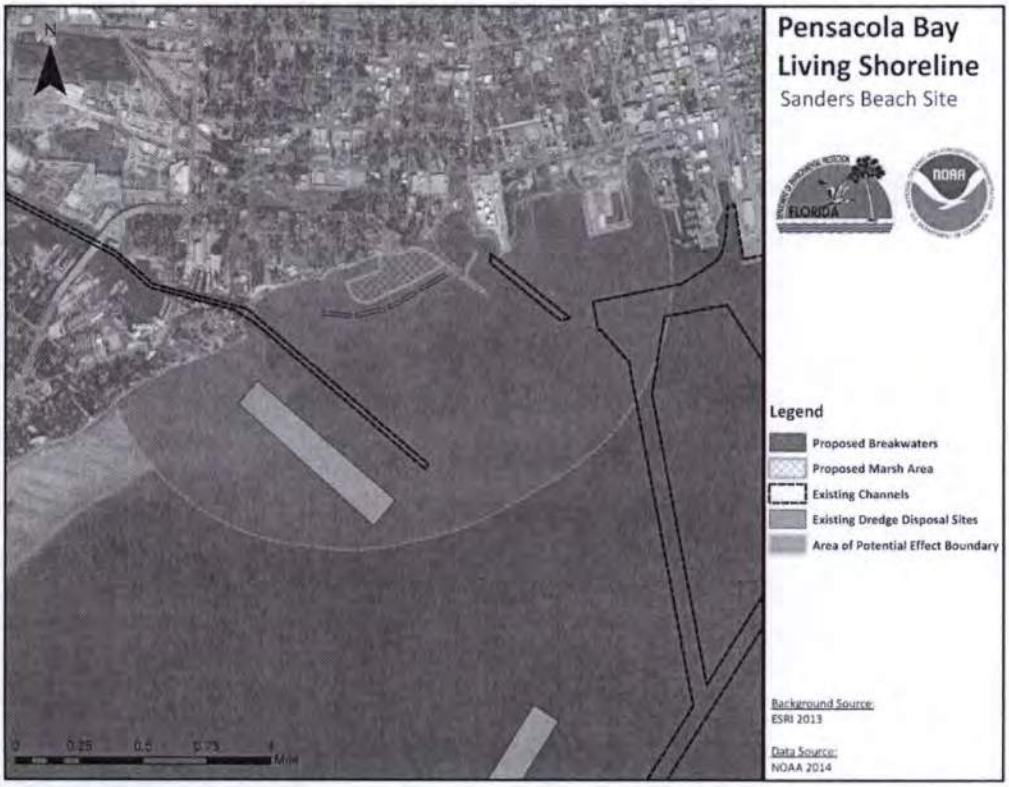


Figure 6. Image showing existing dredge disposal sites at Sanders Beach

SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS

The permittee shall comply with the following protected species construction conditions:

a. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.

b. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.

c. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.

d. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.

e. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.

f. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.

g. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

Revised: March 23, 2006

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
(727) 824-5312; FAX (727) 824-5309
http://sero.nmfs.noaa.gov

Measures for Reducing Entrapment Risk to Protected Species

Bottlenose dolphins, sea turtles, and Gulf sturgeon (protected species) are known to inhabit coastal waters of the northern Gulf of Mexico. Bottlenose dolphins are protected under the Marine Mammal Protection Act (MMPA) and sea turtles and Gulf sturgeon are protected under the Endangered Species Act (ESA). Because of the potential for these protected species to become entrapped within coastal waters of construction sites along the northern Gulf coast, projects that enclose shallow open water areas for wetland creation or nourishment will use the following measures to minimize the potential for entrapment:

1. **Pre-construction planning.** During project design, the Federal Action Agency or project proponents must incorporate at least one escape route into the proposed retention structure(s) to allow any protected species to exit the area(s) to be enclosed. Escape routes must lead directly to open water outside the construction site and must have a minimum width of 100 feet. Escape routes should also have a depth as deep as the deepest natural entrance into the enclosure site and must remain open until a thorough survey of the area, conducted immediately prior to complete enclosure, determines no Protected Species are present within the confines of the structure (see item 5 below for details).

2. **Pre-construction compliance meeting.** Prior to construction, the Federal Action Agency, project proponents, the contracting officer representative, and construction personnel should conduct a site visit and meeting to develop a project-specific approach to implementing these preventative measures.

3. **Responsible parties.** The Federal Action Agency will instruct all personnel associated with the project of the potential presence of protected species in the area and the need to prevent entrapment of these animals. All construction personnel will be advised that there are civil and criminal penalties for harming, harassing, or killing protected species. Construction personnel will be held responsible for any protected species harassed or killed as a result of construction activities. All costs associated with monitoring and final clearance surveys are the responsibility of project proponents and must be incorporated in the construction plan.

4. **Monitoring during retention structure construction.** It is the responsibility of construction personnel to monitor the area for protected species during dike or levee construction. If protected species are regularly sighted over a 2 or 3 day period within the enclosure area during retention structure assembly, construction personnel must notify the Federal Action Agency. It is the responsibility of the Federal Action Agency

to then coordinate with the National Marine Fisheries Service (NMFS) Marine Mammal Health and Stranding Response team (1-877-WHALE HELP [1-877-942-5343]) or the appropriate State Coordinator for the Sea Turtle Stranding and Salvage Network (see http://www.sefsc.noaa.gov/species/turtles/stranding_coordinators.htm) to determine what further actions may be required. Construction personnel may not attempt to scare, herd, disturb, or harass the protected species to encourage them to leave the area.

5. **Pre-closure final clearance.** Prior to completing any retention structure by closing the escape route, the Federal Action Agency will insure that the area to be enclosed is observed for protected species. Surveys must be conducted by experienced marine observers during daylight hours beginning the day prior to closure and continuing during closure. This is best accomplished by small vessel or aerial surveys with 2-3 experienced marine observers per vehicle (vessel/helicopter) scanning for protected species. Large areas (e.g. >300 acres) will likely require the use of more than one vessel or aerial survey to insure full coverage of the area. These surveys will occur in a Beaufort sea state (BSS) of 3 feet or less, as protected species are difficult to sight in choppy water. Escape routes may not be closed until the final clearance determines the absence of protected species within the enclosure sight.

6. **Post closure sightings.** If protected species become entrapped in an enclosed area, the Federal Action Agency and NMFS must be immediately notified. If observers note entrapped animals are visually disturbed, stressed, or their health is compromised then the Action Agency may require any pumping activity to cease and the breaching of retention structures so that the animals can either leave on their own or be moved under the direction of NMFS.

    a. In coordination with the local stranding networks and other experts, NMFS will conduct an initial assessment to determine the number of animals, their size, age (in the case of dolphins), body condition, behavior, habitat, environmental parameters, prey availability and overall risk.
    b. If the animal(s) is/are not in imminent danger they will need to be monitored by the Stranding Network for any significant changes in the above variables.
    c. Construction personnel may not attempt to scare, herd, disturb, or harass the protected species to encourage them to leave the area. Coordination by the Federal Action Agency with the NMFS SER Stranding Coordinator may result in authorization for these actions.
    d. NMFS may intervene (catch and release and/or rehabilitate) if the protected species are in a situation that is life threatening and evidence suggests the animal is unlikely to survive in its immediate surroundings.
    e. Surveys will be conducted throughout the area at least twice or more in calm surface conditions (BSS 3 feet or less), with experienced marine observers, to determine whether protected species are no longer present in the area.

While NMFS recommends these best management practices to prevent the future takes of marine mammals by entrapment, use of these measures cannot guarantee a take will not occur. Following these measures does not constitute compliance with the MMPA's Incidental Take requirements and take is not authorized.

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK

2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.

b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.

d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.

e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or in Vero Beach (1-772-562-3909) for south Florida, and emailed to FWC at ImperiledSpecies@myFWC.com.

f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8½ " by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at http://www.myfwc.com/WILDLIFEHABITATS/manatee_sign_vendors.htm. Questions concerning these signs can be forwarded to the email address listed above.

CAUTION: MANATEE HABITAT

All project vessels

IDLE SPEED / NO WAKE

When a manatee is within 50 feet of work all in-water activities must

SHUT DOWN

Report any collision with or injury to a manatee:

Wildlife Alert:

1-888-404-FWCC(3922)

cell *FWC or #FWC

From: Jamie Schubert-NOAA Federal [mailto:jamie.schubert@noaa.gov] **Sent:** Friday, May 16, 2014 3:55 PM **To:** Dan Van-Nostrand - NOAA Affiliate; Laurie Rounds - NOAA Affiliate; Stephen Parker **Cc:** Leslie Craig; Denise Walker - NOAA Federal **Subject:** Fwd: Amendments to SER-2014-12925, 12926, 13016, and 13083

Hello all (from Steve's region--I am in Kansas City)- Below is an email from Joyce from Joyce outlining the proposed amendments she will be making to the Living Shoreline concurrence letter. Joyce is working on getting this amendment through the review process, but it is highly unlikely that it will be completed in time for referencing in the FERP. My suggestion is that we leave the language as it is in the FERP as we cited the consults as including the below amendments. A suggestion on citing is that we should cite the consults as (XXXX, 2014 as amended via email on May 15) and note that we expect an amended concurrence letter by ROD. Once we get it, we can put that in the AR and in the ROD cite only the amended concurrence. Joyce will be sending an email in the same vein for Popp's Ferry. Jamie

-------- Original Message --------

Subject: Amendments to SER-2014-12925, 12926, 13016, and 13083
Date: Thu, 15 May 2014 13:17:40 -0400
From: Joyce Barkley-Hahn - NOAA Affiliate <joyce.barkley-hahn@noaa.gov>
To: Jamie Schubert-NOAA Federal <jamie.schubert@noaa.gov>

Mr. Schubert,

It is our understanding that you would like to amend the above referenced documents to reflect changes in construction timing and use of turbidity curtains.

You indicated these projects will be constructed within the May to October timeframe, to the extent possible, to avoid potential impacts to migrating Gulf sturgeon. However, due to the variable nature of construction (e.g., scheduling conflicts, weather impacts, etc), it may be necessary to complete the construction activites outside of this window. Based on the location, short-term nature of the activities, and implementation of the Smalltooth Sawfish and Sea Turtle Construction Conditions for all in-water construction phases, we expect this change to be insignificant in the risk to listed species.

In our letter, we erroneously included the use of floating turbidity curtains in SER-2014-12925 and 12926. In the State of Florida, the use of floating turbidty curtains are required; however, it is our understanding that for the Swift Tract project in Alabama curtains are not required if the water clarity is monitored and found to remain under 50 NTUs. At the Hancock County project in Mississippi, Florence Watson, MS Department of Environmental Quality, said in an email to the applicant, "Turbidity screens are required for activities that will be ongoing for a significant period of time. [The Hancock County project] is temporary in nature, has minimal construction activities in water, and the construction timeframe is very short. Also, the water quality standard establishes that turbidity shall not exceed 50 NTUs of the ambient turbidity outside a 750 foot mixing zone. This activity will likely occur well within this mixing zone and is not expected to disturb the water bottoms to an extent to exceed this standard."

We will forward you a signed amendment letter containing these new conditions, as soon as practicable, considering we are dealing with a serious backlog of consultations. If you have any questions, please don't hesitate to call me.

Thank you!
Joyce Barkley-Hahn
ESA Specialist, Sr.
ERT Contractor for NOAA Fisheries Service Southeast Regional Office 263 13th Avenue South Saint Petersburg, Florida 33701
Phone: 727-551-5741
Fax: 727-824-5309

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

January 13, 2014

David Bernhart
Assistant Regional Administrator for Protected Resources
NOAA Fisheries Service, Southeast Regional Office
263 13th Avenue South
Saint Petersburg, Florida 33701

Re: DWH-ERP-Request for section 7 Endangered Species Act Informal Consultation for *Deepwater Horizon* Oil Spill Phase III Early Restoration Plan Living Shoreline projects (a total of 2) in Mississippi and Alabama; *Hancock County Marsh Living Shoreline and Swift Tract Living Shoreline*

Dear David,

The National Oceanic and Atmospheric Administration (NOAA) Restoration Center requests informal consultation with your office, under section 7 of the Endangered Species Act (ESA), for impacts from two living shoreline projects. These projects have the potential to affect the following federally listed species administered by NOAA Fisheries:

Sea Turtles (Green-T, Hawksbill-E, Leatherback-E, Loggerhead-T, Kemp's Ridley-E)

Gulf sturgeon-T and Critical Habitat (critical habitat is only at the Hancock County project site)

The NOAA Restoration Center, a Lead Federal Agency, is requesting consultation on behalf of the Natural Resource Trustees for *Deepwater Horizon* Oil Spill. Enclosed please find Biological Assessments and NMFS ESA Checklists for these Phase III Early Restoration Projects. It is our expectation that the proposed projects will have a significant net benefit to the Gulf of Mexico ecosystem.

For further questions about the project, please contact Jamie Schubert of our staff at 409-621-1248.

Thank you for your assistance.

Sincerely,

Leslie Craig

Supervisor, Southeast Region, NOAA Restoration Center
NOAA Fisheries Office of Habitat Conservation

Printed on Recycled Paper

NMFS Endangered Species Act Section 7 Checklist for Federal Action Agencies

A) Project Identification

Lead Action Agency:	NOAA/Mississippi Dept. of Environmental Quality
Agency Contact: (Phone, E-mail)	Jamie Schubert, jamie.schubert@nooa.gov, ph (409) 621-1248; Prepared by Stephen Parker (representing MSDEQ), sparker@adaptivemngmt.com, ph (228) 224-9057
Applicant Name:	Mississippi Department of Environmental Quality
Project Name & ID #:	Hancock County Marsh Living Shorelines SEE ATTACHED MEMORANDUM: Supplemental Information for HCMLS; Gulf Sturgeon Migration Patterns in the Mississippi Sound (SEE PROJECT INFORMATION SUMMARY FOR ADDITIONAL INFORMATION)

B) Project Location

1. Address and description of property (i.e., public, residential, commercial, industrial, etc.):

This marsh complex is part of the extensive Pearl River Mouth estuary where the land is largely in public ownership and managed by the Mississippi Department of Marine Resources as part of the Coastal Preserves of the State of Mississippi, although private parcels do exist in terrestrial habitats within the study area.

2. Latitude & Longitude:
   i. Decimal Degrees and Datum [e.g., 27.71622° N, 80.25174° W (NAD83)]
   ii. Online conversion: http://transition.fcc.gov/mb/audio/bickel/DDDMMSS-decimal.html

Bounding Coordinates: West -89.530339 W, 30.184 N; South: -89.462 W, 30.169 N; East: -89.415 W, 30.233 N; North: -89.53 W, 30.184 W. Centroid = -89.457 W, 30.19 N

3. Waterbody:
   i. Name of the body of water on which the project is located (e.g., St. Johns River, Tampa Bay, Suwannee River)
   ii. If riverine or estuarine, approximate navigable distance from marine environment (e.g., Atlantic, Gulf of Mexico)

Mississippi Sound near mouth of Pearl River. Approximately 3.5 miles NNW to Ansley, MS from project centroid.

C) Project Description

1. Existing Structures: (Describe current and historical structures in project area.)
   i. Marina, seawall, riprap, dock, etc.
   ii. Number of slips, size (area of overwater structures), liner footage, location, orientation, etc.

There are no structures

2. Existing Conditions: (Describe the project area.)
   i. Substrate type, water quality, depth, current, etc.

The shoreline proposed for this project is located in western Hancock County, Mississippi between Bayou Caddy and the mouth of the East Pearl River. This marsh complex is part of the extensive Pearl River Mouth estuary. The 5,900 acres of marsh in the area include tidal channels, lagoons, and bays. The area receives an abundance of freshwater inflow from the Pearl River and is also influenced by tidal action. Substrates from East Pearl River to Heron Bay include very soft to soft silty clays with an interbedded layer of loose silty sands. From Heron Bay northeastward the sediments are primarily very soft to soft silty clays with a loose silty sand starting at a depth of about 35 feet to at least 40 feet (terminal depth of boring data). Substrate data was collected from a geotechnical survey in April 2013. Bathymetry in the study area ranges from approximately 0-12 ft. below MLLW, although the living shoreline, oyster deployment, and marsh creation areas range roughly from 1-4 ft. below MLLW.

3. Seagrasses & Other Marine Vegetation:

i. If a benthic survey was conducted , provide date of survey and a copy of the report.
ii. Species area of coverage estimates and density of species coverage (percentage) estimates.
iii. Location relative to proposed structures. Provide detailed sketch of action area and location of seagrasses.

There is no known SAV habitat in the area.

4. Mangroves:

i. Species (red, black, or white)
ii. Area (square footage and linear footage). Provide detailed sketch of action area and location of mangroves.

No mangroves are present.

5. Corals:

i. Species area of coverage estimates (percentage) and density of species estimates.
ii. Location relative to proposed structures. Provide detailed sketch of action area and location of corals.

No corals are present.

D) Project Construction Methods

1. Methods:

i. Construction methodology (Please provide detail)
ii. Demolition/removal of existing structures/debris
iii. Location of work (e.g., barge, upland, or both)

Construction Process – Based on the MLLW elevation of 0.00' NAVD88 and 1.68' NAVD88 for MHW, construction of submerged reefs will be in very shallow water. Minimum depth of water is assumed to be 3' for the St. Joseph's Point Submerged Reef and 1.5' for the Pearl River to Heron Bay Submerged Reef to MLLW. Construction will require various types of shallow draft vessels and equipment to get into work areas.

The alignment and limits of the submerged reefs will be surveyed in with the outer limits of the submerged reef being marked with poles driven into the bottom and extended approximately 3' above the water surface. Elevation controls along the alignment will be established. Prior to working in an area, existing bottom elevations along the alignment will be surveyed. Height of submerged reef along the alignment will be constructed based on bottom elevations and the submerged reef's crest elevation (0.87' NAVD88 – Mean Tide Level). Barriers, navigation warning signs (lighted and unlighted), etc. will be established along the work area to protect boaters. These will be maintained throughout the project until permanent markers are established.

St. Joseph's Point Area Submerged Reef – This area has deeper water (3' – 4.6' depth, on average) and a soft bottom. It is anticipated that one or more work barges with a backhoe with a long reach will be positioned along the seaward side of the submerged reef. The work barge(s) will be selected to safely meet the draft requirements in this area. A material barge will be positioned seaward of the work barge in sufficient depth of water, but within reach of the backhoe. The material barge will be loaded so as not to exceed the draft requirements in the work area. Barges will be operated and maintained in sufficient draft to the extent practical.

Pearl River to Heron Bay Submerged Reef – This area has shallower water (1.5' – 3.1' depth, on average) and a soft bottom. It is anticipated that a tracked backhoe with a long reach or mounted on a marsh buggy will be positioned along the alignment of the submerged reef. The material barge will be positioned seaward of the submerged reef in sufficient depth of water, but within reach of the backhoe. The material barge will be loaded so as not to exceed the draft requirements in the work area. Barges will be placed and maintained in sufficient draft to the extent practical.

Assuming that the submerged reef will have an initial settlement of 1.5', the core of the submerged reef may be constructed with gabion baskets filled with 165-lb. per cubic foot granite rip rap. The gabion baskets will be constructed either on the material barge, then filled with rip rap or on-shore then loaded onto the material barge(s). The material barge(s) will then be moved into position along the submerged reef alignment for placement by the backhoe.

Prior to placement of the gabion baskets for the core of the submerged reef, a settlement plate will be positioned at designated locations to monitor settlement of the submerged reef. Gabion baskets will then be placed by the backhoe to construct the core of the submerged reef.

A second work barge with backhoe or tracked backhoe will place loose rip rap over and around the gabion baskets to complete the construction of the rip rap core of the submerged reef. The loose rip rap will be placed on material barge(s) delivered to the work area. Placement of the loose rip rap will be monitored to insure the submerged reef dimensions, slopes and crest elevation is achieved.

After the rip rap core of the submerged reef has been confirmed to be complete, bags of shell will be placed over the rip rap core to provide the shell veneer. The bags of shell will be placed, by hand, from shallow draft boats. Bags of shell will be prepared on-shore, loaded onto material barges and delivered to the work area. The material barges will be anchored in deeper water. The skiffs will return to the work barge to obtain more bags of shell for deployment. Placement of bags of shell will be monitored to insure the bags are

properly placed and the shell veneer requirements have been met.
Final construction of the submerged reefs will be surveyed (alignment, elevation, representative cross-sections, settlement plates, etc.). Permanent navigation signage will be installed in accordance with safety requirements. The project may utilize flotation channels dug to get the work barges into the work area. These barges will parallel the alignment of the living shoreline structure with channels dug periodically along the alignment and at each end to get the work barges in and out of the work area. The spoil will be cast on the seaward side of the flotation channel so that it will fill naturally back in over time. The bottom elevation of the flotation channel will be -10' to accommodate barge draft. The bottom width of the flotation channel will be 80' with 3H:1V side slopes. The length of the flotation channel will be about 10,000' in length west of Heron Bay and approximately 19,500' in length east of Heron Bay, plus periodic flotation channels along alignment and at end of each alignment. The other option is to float barges in and out at high tides.

Oyster Reefs in Heron Bay: Water depths in proposed reef areas seem to be 4'-5' (MLLW) and 5.67' – 6.67' (MHW). The limits of the oyster reef(s) will be established with buoys or poles driven into the bottom. Deployment of oyster shells will consist of a barge mounted crane with clam shell bucket. A material barge will be loaded with the oyster shells and attached to the seaward side of the work barge. The oyster shell will be deployed by the crane with clam shell bucket. A GPS reading will be taken for each bucket load deployed. A download of all GPS readings will be made daily and provided to MDEQ. Deployment will continue until the entire oyster reef area(s) has received one inch to no more than a 6" layer of oyster shell. Upon completion of the deployment, an "after deployment" survey of the oyster reef area(s) will be conducted in situ. As a construction alternative, water jetting of loose shell off of a material barge could be used depending on depths. This method may not be applicable in shallow areas.

Marsh Creation at St. Joseph's Point: After the submerged reef along St. Joseph's Point has been installed, selected areas landward of the submerged reef will be filled with dredge material obtained from a suitable offshore area near St. Joseph's Point. A dike will be constructed at the seaward extent of the marsh utilizing a tracked backhoe or backhoe mounted on a marsh buggy. The dike will be constructed by excavating existing material from the landward side of the dike. Once an area of the marsh is diked, the area landward of the dike will be filled with dredged material beginning at the most landward extent of the marsh and filling toward the dike. This will allow the area between the dredged material and dike to serve as a sediment pond. Filling with dredge material will continue until final marsh grades are achieved. Pumps and sediment controls will remain in place throughout the dredging and filling process. Once the entire marsh area(s) are constructed, the area will be monitored for re-vegetation through natural processes.

2. Docks:

i. Is this a fishing pier? (public or private)
    1. If so, how many people are expected to fish per day?
    2. How do you plan to address hook and line captures?

ii. Type of decking
    1. Grated (In Florida) -
        Dock Guidelines - http://sero.nmfs.noaa.gov/pr/endangered%20species/Section%207/DockGuidelines.pdf
        Dock Key - http://sero.nmfs.noaa.gov/pr/endangered%20species/Section%207/DockKey.pdf
        a. Grating type/design
        b. Manufacturer's name and address
        c. Percent light transmittance (%LT)
    2. Wooden planks or composite planks
        a. Proposed spacing between boards (0.50-inch, 0.75-inch, etc.)

ii. Height above Mean High Water (MHW) elevation

iii. Directional orientation

iv. Shading impacts (calculate square footage)

v. Sea Turtle and Smalltooth Sawfish Construction Conditions, dated March 23, 2006
http://sero.nmfs.noaa.gov/pr/endangered%20species/Sea%20Turtle%20and%20Smalltooth%20Sawfish%20Construction%20Conditions%203-23-06.pdf

N/A

3. Pilings & Sheetpiles

i. Construction methodology (i.e., pile driving, vibratory hammer, jetting).

ii. Must provide piling size, material, and number of pilings.

iii. Have potential impacts to species been adequately addressed (including marine vegetation)?

N/A

4. Boat Slips

i. Number and size of new slips, change from existing
ii. High-and-dry boat storage: vessel storage capacity
iii. Estimated shadow effect of the boat (square footage of shaded area beneath boat)

N/A

5. Boat Ramp

i. Number of ramps and size of ramps
ii. Number of vessels that can be moored (i.e., staging area)
iii. Trailer parking lot capacity

N/A

6. Shoreline Armoring: Seawalls, jetties, etc.

i. Project description, linear footage, square footage, material, etc. Provide detailed sketch of action area and location of structure.

Two living shoreline structures:
• Pearl River to Heron Bay Submerged Reef: This stretch of reef is anticipated to be 1.9 miles long with a crest width of 15 feet and a total height of approximately 2.5 feet (to +0.87 ft, NAVD). Reef is proposed to have a 9-inch (0.75-foot) bagged shell veneer. Average water depth is assumed to be -1.5 NAVD (1.5 feet to Mean Low Water, 3.1 feet to Mean High Water). The calculated volume of material is 18,752 cu. yd. riprap and 5,045 cu. yd. shell. A footprint of approximately 10.95 acres of fine-grained sediment will be covered with a riprap core and shell veneer.

• St. Joseph's Point Area Submerged Reef: This stretch is anticipated to be 4 miles long with a crest width of 15 feet and total height of approximately 4 feet (to +0.87 ft, NAVD). Reef is proposed to have a 9-inch (0.75- foot) bagged shell veneer. The average water depth is assumed to be -3 feet NAVD (3 feet to Mean Low Water, 4.6 feet to Mean High Water). The calculated volume of material is 66,442 cu. yd. riprap and 12,513 cu. yd. shell. A footprint of approximately 4.21acres of fine-grained sediment will be covered with a riprap core and shell veneer. The footprint and placement of the structure may change during the iterative design process.

7. Dredging

i. Dredge type (hopper, cutterhead, clamshell, etc.)
ii. Depth of cut
iii. Area (square feet) to be dredged
iv. Volume of material (cubic yards)
v. Spoil disposition plans (i.e., where is dredged material being disposed of? Location of disposal area (upland/openwater/ beneficial use site), sediment type at disposal area, thickness of fill placement)
vi. Hydrodynamic description (i.e., average current speed/direction)

Flotation channels may be dug to facilitate working barges that will deploy living shoreline structures, oyster cultch, and sediment for marsh creation. These barges will parallel the alignment of the living shoreline structure with channels dug periodically along the alignment and at each end to get the work barges in and out of the work area. The spoil will be cast on the seaward side of the flotation channel so that it will fill naturally back in over time. The bottom elevation of the flotation channel will be -10' below water surface to accommodate barge draft. The bottom width of the flotation channel will be 40' with 3H:1V side slopes. The length of the flotation channel will be about 10,032' in length west of Heron Bay and approximately 21,120' in length east of Heron Bay, plus periodic flotation channels along alignment and at end of each alignment. The other option is to float barges in and out at high tides if feasible. Bottom sediments from the East Pearl River to Heron Bay s are very soft to soft silty clays with an inter-bedded layer of loose silty sands. From Heron Bay northeastward the sediments are primarily very soft to soft silty clays with a loose silty sand starting a at a depth of about 35 feet to at least 40 feet (terminal depth of the boring).

8. Blasting

i. Explosive weights
ii. Blasting plan

N/A

9. Artificial Reefs

Please refer to the Section 7 Checklist procedures for directions on how to complete this question. For additional information and detailed guidance on artificial reefs, please refer to the *Guidelines and Management Practices for Artificial Reef Siting, Use, Construction, and Anchoring in Southeast Florida* http://www.dep.state.fl.us/coastal/programs/coral/reports/MICCI/MICCI_18_19.pdf

N/A

10. Construction Schedule

i. In-water work

ii. Number of days/weeks/months

Construction Start: May-October 2016
Construction Complete: Fall 2017

11. Mitigation/ Protective Measures:

Will the project follow the August 2001 (2008 Revision) Dock Construction Guidelines?	N/A
Will the project follow the October 2002 Johnson's Seagrass Key?	N/A
Will the project follow the March 2006 Sea Turtle and Smalltooth Sawfish Construction Conditions?	N/A

If NO, please explain why the deviation is necessary for this project.

Not applicable in state of Mississippi

E) Effects of the Project

1. Listed Species and Critical Habitat within the Action Area (see effects determination guidance)

Not Likely to Adversely Effect	Green Sea Turtles
Critical Habitat	Not in Critical Habitat
Not Likely to Adversely Effect	Hawksbill Sea Turtles
Critical Habitat	Not in Critical Habitat
Not Likely to Adversely Effect	Kemp's Ridley Sea Turtles
Critical Habitat	No Critical Habitat
Not Likely to Adversely Effect	Leatherback Sea Turtles
Critical Habitat	Not in Critical Habitat
Not Likely to Adversely Effect	Loggerhead Sea Turtles
Critical Habitat	No Critical Habitat
Species Not in Action Area	Olive Ridley Sea Turtle
Critical Habitat	No Critical Habitat
Species Not in Action Area	Smalltooth sawfish
Critical Habitat	Not in Critical Habitat
Species Not in Action Area	Largetooth sawfish
Critical Habitat	No Critical Habitat
Species Not in Action Area	Shortnose sturgeon

Critical Habitat	No Critical Habitat
Species Not in Action Area	Atlantic sturgeon
Critical Habitat	No Critical Habitat
Not Likely to Adversely Effect	Gulf sturgeon
Critical Habitat	NLAA - Unit 8 - Lake Pontchartrain - Mississippi Sound
Species Not in Action Area	Johnson's seagrass
Critical Habitat	Not in Critical Habitat
Species Not in Action Area	Staghorn coral
Critical Habitat	No Critical Habitat
Species Not in Action Area	Elkhorn coral
Critical Habitat	No Critical Habitat
Species Not in Action Area	Pillar coral
Critical Habitat	No Critical Habitat
Species Not in Action Area	Lobed star coral
Critical Habitat	No Critical Habitat
Species Not in Action Area	Mountainous star coral
Critical Habitat	No Critical Habitat
Species Not in Action Area	Knobby star coral
Critical Habitat	No Critical Habitat
Species Not in Action Area	Rough cactus coral
Critical Habitat	No Critical Habitat
Species Not in Action Area	Lamarck's sheet coral
Critical Habitat	No Critical Habitat
Species Not in Action Area	Elliptical star coral
Critical Habitat	No Critical Habitat
Species Not in Action Area	North Atlantic right whales
Critical Habitat	Not in Critical Habitat
Species Not in Action Area	Humpback whales
Critical Habitat	No Critical Habitat
Species Not in Action Area	Blue whales
Critical Habitat	No Critical Habitat
Species Not in Action Area	Fin whales
Critical Habitat	No Critical Habitat
Species Not in Action Area	Sei whales
Critical Habitat	No Critical Habitat

2. Effects to Species

i. Explain potential effects to each species checked above
ii. Consider vessel traffic impacts, speed zones (if present), anchoring impacts, keel/propeller impacts
iii. Noise impacts from construction (i.e., pile driving, blasting, etc.)

i. We do not expect any effects from sea turtle species checked above. No sea turtle nesting habitat exists in the area. In Mississippi, the leatherback is observed sporadically. Observations of green turtles and hawksbills in state coastal water are very rare. The loggerhead occasionally nests on Mississippi's offshore barrier islands and are regularly seen around offshore oil rigs. The rarest species of sea turtle globally, the Atlantic (or Kemp's) ridley is the sea turtle most frequently encountered in Mississippi's coastal waters. Ridleys do not nest in

Mississippi but juveniles are regularly seen in the Mississippi Sound. Project components will be constructed very close to the shoreline and are not expected to impede transitory routes. The sea turtles listed are highly mobile marine species and are capable of swimming away from impacted areas. Awareness of sea turtle presence in the project area will result in a stop work order until species are observed leaving the area.
The project is not likely to adversely affect the Gulf sturgeon or its critical habitat. There will be no long term impacts to primary constituent elements identified or individual fish. All restoration activities will take place in shallow waters near the shoreline allowing sufficient area for passage of individuals. Nonetheless, to avoid disturbance, the project aims to construct restoration features from May-October while the species occupies riverine habitat. This provides ample opportunity for Gulf sturgeon to migrate through the immediate area. Moreover, if any Gulf sturgeon species are observed in the project area, a stop work order will be implemented until the species leaves the area. Additionally, the benthic habitat in the project area is not preferred foraging habitat for Gulf sturgeon. It is expected that living shoreline habitat will provide benefit to the species through enhanced water quality from oyster productivity.
See memorandum (Supplemental Information for Hancock County Marsh Living Shorelines Project; Gulf Sturgeon Migration Patterns in the MS Sound)

ii. Work barges and skiffs will initially impact bottom sediments, but impacts will be temporary. Vessel impacts are not expected post-construction.

iii. Noise from construction activities will be minimal. Placement of living shoreline structures and oyster cultch are not expected to adversely affect species due to noise harassment.

3. Effects to Critical Habitat:

i. Identify which essential feature(s) are present, if they will be impacted, and how they will be impacted
ii. Size of area affected (square footage) - Mangroves (linear footage of shoreline)
iii. How will the habitat be changed/altered as a result of the action

i. Gulf sturgeon critical habitat features:
1) Abundance of prey items in estuarine and marine environments: the benthic habitat in the project area is not preferred foraging habitat for Gulf sturgeon. Well oxygenated, clear water with sandy substrates are primarily used for feeding by the species. Benthic habitat in the project footprint is largely composed of soft, silty substrates with turbid waters. Additionally, the project features will be constructed in shallow water (1-4 ft.). Gulf sturgeon typically forage in depths greater than 6 ft. 2) Water Quality: Placement of material (osyter shell, riprap) is expected to produce some degree of turbidity in excess of normal conditions. Impacts from sediment disturbance during construction are expected to be temporary and minimal. Suspended particles are expected settle in a short time frame with no measurable effects on water quality. No changes in temperature, salinity, pH, hardness, oxygen content or other chemical characteristics are expected. 3) Sediment Quality: Modification of sediment composition may only occur in areas where dredged spoil material will be placed for marsh restoration activities and areas where oyster cultch will be placed for reef restoration. Oyster material will be likely be placed in areas where historical oyster beds have been documented. Additionally, given the close proximity of the project area to the Pearl River, natural sedimentation processes are expected nourish the area over time. 4) Migratory Pathways: Within Unit 8, subadult and adult Gulf Sturgeon move from the rivers through estuarine and marine areas to feeding areas. Unit 8 is known to support migratory pathways for Gulf sturgeon sub-populations (e.g. Pearl River population) and it is likely that the species use the project area during intra-annual migrations. Restoration activities will occur in very shallow water (1-6 ft) allowing sufficient area for passage of individuals. Construction working dates will be managed to work around migration seasons.

ii. Project footprint (permanant impact) is 107 acres including 10.95 acres for St. Joe's Point submerged reef; 4.21 acres for Pearl River to Heron Bay submerged reef 46 acres of created tidal marsh; and 46 acres of oyster reefs in Heron Bay.
The temporary construction footprint includes potential flotation channels that would parallel the living shoreline structures. Approximately 31, 152 feet of channel would be dredged at an 80 ft surface width and 40 ft bottom width. Acreage impact for dredging operations equals approximately 57 acres.

iii. The purpose of the project is to protect, create, and enhance coastal and marine habitat. Living shoreline structure footprints will cover the current water bottom habitat at the 2-4 ft contour from the Pearl River to Heron Bay and the 3-6 foot contour at the St. Joe's Point location. Bottom width of structures is expected to be approximately 25 ft. Approximately 15.2 acres of benthic habitat will be converted from soft sediments to riprap and oyster shell. It is expected that these hardened structureswill become living shorelines with thriving biological communities. An oyster cultch deployment will be placed on historic reef areas in Heron Bay. Forty-six acres of cultch will be planted to replace the current habitat. This area once supported large patches of oyster habitat. Dredge spoil will be used to create 46 acres of marsh habitat in areas that currently experience extremely high erosion rates. Material will be placed in between the living shoreline at St. Joe's Point and the marsh edge to restore lost marsh habitat. This area is currently composed of soft to very soft silty clays. We expect the adverse impact to species to be short in duration and anticipate transition to intermediate and long term benefit to species through increased biological productivity and habitat preservation.

Memorandum:
Date: June 13, 2013
From: MDEQ-NOAA Project Development Team
To: NOAA Protected Resource Division

Re: Supplemental Information for Hancock County Marsh Living Shorelines Project; Gulf Sturgeon Migration Patterns in the Mississippi Sound

Purpose: The memorandum is provided to supplement the Hancock County Marsh Living Shoreline-NMFS Endangered Species Act Section 7 Checklist for Federal Action Agencies. It is a summary of literature on Gulf Sturgeon seasonal movements in the Mississippi Sound. A summary of measures to minimize impacts to Gulf Sturgeon is also provided.

Project Area: Restoration proposed for this project is located in western Hancock County, Mississippi between Bayou Caddy and the mouth of the East Pearl River (Figure 1). This marsh complex is part of the extensive Pearl River Mouth estuary which encompasses ~ 5,900 acres of marsh, tidal channels, lagoons, and bays. The marine environment in the study area is a shallow system increasing in depth to over 12 ft. toward St. Joe's Pass which is periodically used as a passage channel by large vessels. The benthic habitats can be divided into two classes including intertidal and subtidal. Intertidal zones (typical tidal range of 0.5 ft.) in the area are composed of mud flats, small areas of natural sand beach, and a small number of Native American shell middens. Recent geotechnical sampling of the benthic habitat in the project footprint found substrates to be composed of very soft to soft silty clays with an inter-bedded layer of loose silty sands from East Pearl River to Heron Bay. From Heron Bay northeastward the sediments are primarily very soft to soft silty clays. Bathymetry in the study area ranges from approximately 0-12 ft. below MLLW, although the living shoreline, oyster deployment, and marsh creation areas range roughly from 1-4 ft. below MLLW. Bathymetric survey data and engineering designs are provided as an attachment to this memorandum.

Gulf Sturgeon Migration Studies: The principal section 7 concern in the project area is compliance with Gulf sturgeon critical habitat regulation. We have identified four primary constituent elements (PCEs) in the area and described potential effects to each in the NMFS checklist. The PCEs include abundance of prey items, water quality, sediment quality, and safe and unobstructed migratory pathways. In addition, the projectwould not adversely affect any of the PCEs identified. The project sponsors intend to manage construction activities to avoid seasonal migration pathways in and out of the adjacent Pearl River mouth.

Numerous studies in the northern Gulf have documented habitat use and seasonality of Gulf sturgeon movement from spawning areas in riverine habitat to foraging grounds in the nearshore environment (Fox et al., 2002; Heise et al., 2004, 2005; Rogillio et al., 2007; Ross et al., 2009; Havrylkoff et al., 2012). Telemetry data from Gulf sturgeon that are natal to the Pearl River drainage system show clear seasonal migration patterns. Movement chronologies show summer habitat use upriver to take place between April and November and winter habitat use at Cat, Ship, Horn, and Petit Bois islands in the Mississippi Sound to occur between November and early March (Rigillio et al., 2007). Data from two separate telemetry studies in the Pearl River area (Rigillio et al., 2007; Ross et al., 2009) document Gulf sturgeon migrating to and from the Rigolets Pass to the west of the Pearl River mouth in high concentrations before heading toward spawning and foraging grounds upriver and nearshore at the barrier islands, respectively (Figure 2). Ross et al. (2009) noted that in March and April, the majority of tagged fish

began to move from offshore waters to the Rigolets Pass near the mouth of the Pearl River, their movement continuing upstream into the river system through June. Telemetry data from 2010 and 2011 extracted from the GulfTOPP (Tagging of Pelagic Predators Gulf of Mexico) website show Gulf sturgeon movement in waters off of the Hancock County Pearl River marsh in March and November at depths greater than six feet. Given the dates associated with the tags, the fish were likely migrating to the Rigolets Pass in March before heading upriver and to the Mississippi barrier islands in November for foraging on sandy substrates.

Although the living shoreline project footprint exists within Gulf sturgeon critical habitat and is located adjacent to a migratory river system, the project is not likely to adversely impact the species or PCEs/critical habitat. All restoration activities will take place in shallow waters near the shoreline allowing sufficient area for passage of individuals. Nonetheless, to avoid migration disturbance, the project aims to construct restoration features from May-October while the species occupies riverine habitat. We feel that this provides ample opportunity for Gulf sturgeon to migrate through the immediate area. Moreover, if any Gulf sturgeon species are observed in the project area, a stop work order will be implemented until the species leaves the area. Additionally, the benthic habitat in the project area is not preferred foraging habitat for Gulf sturgeon. Well oxygenated, clear water with sandy substrates are primarily used for feeding by the species (Fox et al., 2002; Ross et al., 2009). Benthic habitat in the project footprint is largely composed of soft, silty substrates with turbid waters. Potential water quality impacts as a result of dredging and disposal have also been considered. Dredging and disposal is expected to produce turbidity levels in excess of natural conditions, however sediment disturbance during these operations are expected to be temporary and minimal. If floatation channels are created for work barges, dredging will likely impact benthic invertebrates. These impacts are primarily short-term in nature, consisting of a temporary loss of populations in the footprint of the channel. The shallow areas and substrate type that the channels may be constructed in are not considered suitable foraging habitat for sturgeon, therefore we do not expect any effect to abundance of prey items for the Gulf sturgeon.

Summary of Measures to Minimize Impacts: The following statements summarize project characteristics and outline measures to minimize impacts to Gulf sturgeon in the area

- Project restoration features will be built close the shoreline in shallow water (1-4 ft) and will not impede any migratory paths
- Project components will be constructed in the months of May-October to avoid inter-riverine migration movements
- Project construction activities will be subject to a stop work order if the species is observed in the project footprint. Work will continue once the species leaves the area
- Benthic substrates in the project area are composed of soft, silty sediments and are not preferred winter foraging habitat for Gulf sturgeon
- Water quality impacts will be temporary and will occur while the species occupies riverine habitat

References

Fox, D.A., J.E. Hightower, and F.M. Parauka. 2000. Gulf sturgeon spawning migration and habitat in the Choctawhatchee River system, Alabama–Florida. Transactions of the American Fisheries Society 129: 811–826.

Heise, R.J., W.T. Slack, S.T. Ross, and M.A. Dugo. 2004. Spawning and associated movement patterns of Gulf sturgeon in the Pascagoula River drainage, Mississippi. Transactions of the American Fisheries Society 133: 221–230.

Heise, R.J., W.T. Slack, S.T. Ross, and M.A. Dugo. 2005. Gulf sturgeon summer habitat use and fall migration in the Pascagoula River, Mississippi, USA. Journal of Applied Ichthyology 21: 461–468.

J.-M. Havrylkoff, M. S. Peterson and W. T. Slack. 2012. Assessment of the seasonal usage of the lower Pascagoula River estuary by Gulf sturgeon (Acipenser oxyrinchus desotoi). J. Appl. Ichthyol. 28. 681-686.

Rogillio, H.E., R.T. Ruth, E.H. Behrens, C.N. Doolittle, W.J. Granger, and J.P. Kirk. 2007. Gulf sturgeon movements in the Pearl River drainage and the Mississippi Sound. North American Journal of Fisheries Management 27: 89–95.

Ross, S. T., W. T. Slack, R. J. Heise, M. A Dugo, H. Rogillio, B. R. Bowen, P. Mickle, and R. Heard. 2009 Estuarine andcoastal habitat use of Gulf sturgeon (Acipenser oxyrinchus desotoi) in the North-Central Gulf of Mexico. Estuar. Coast 32. 360-364.

360–374.

Figures

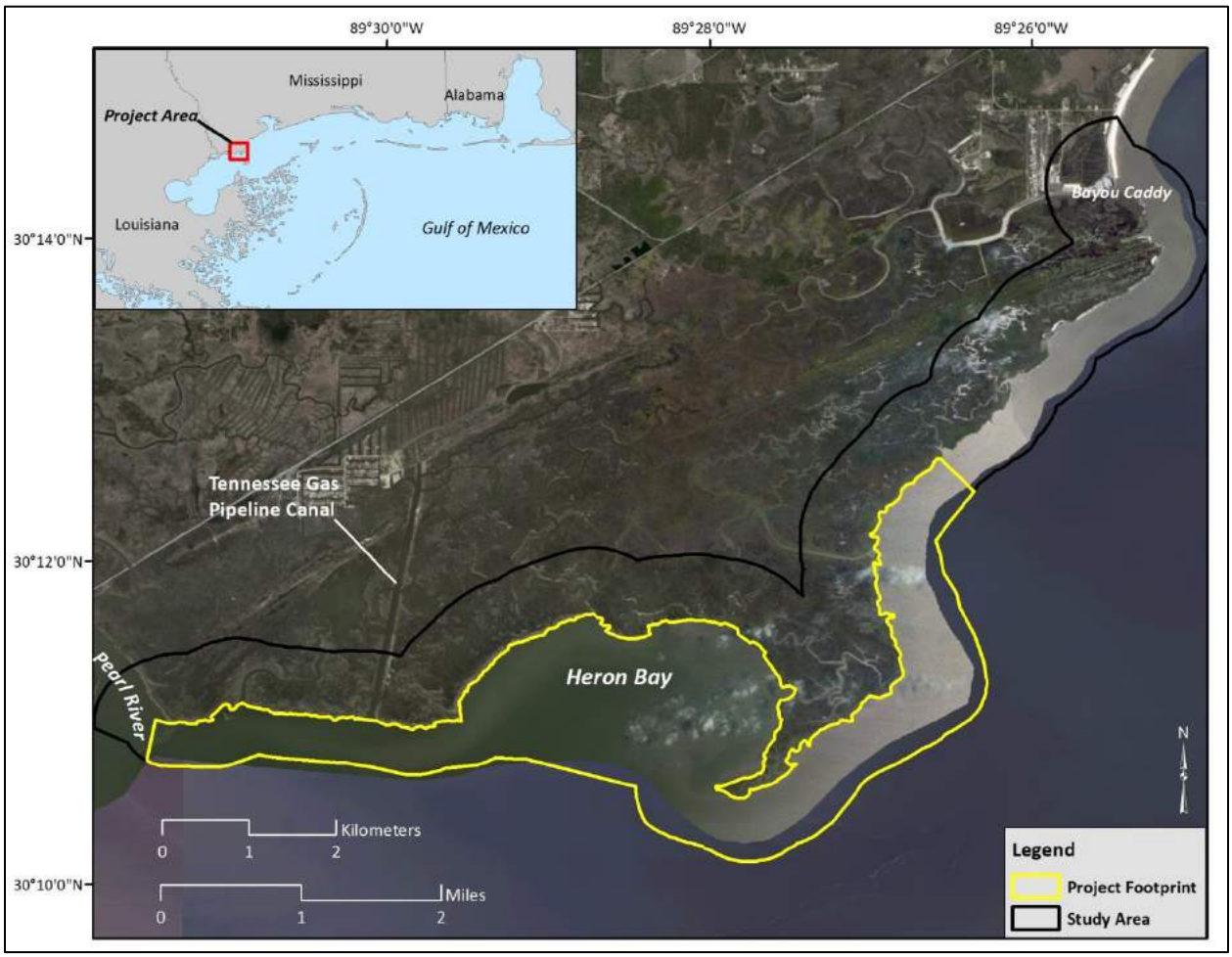


Figure 1. Location map of project area. Project footprint represents area where construction activities for restoration will take place and may impact habitats. The study area includes habitat that is expected to benefit long-term from restoration activities. The bottom portion of the project footprint shares the boundary with the study area.

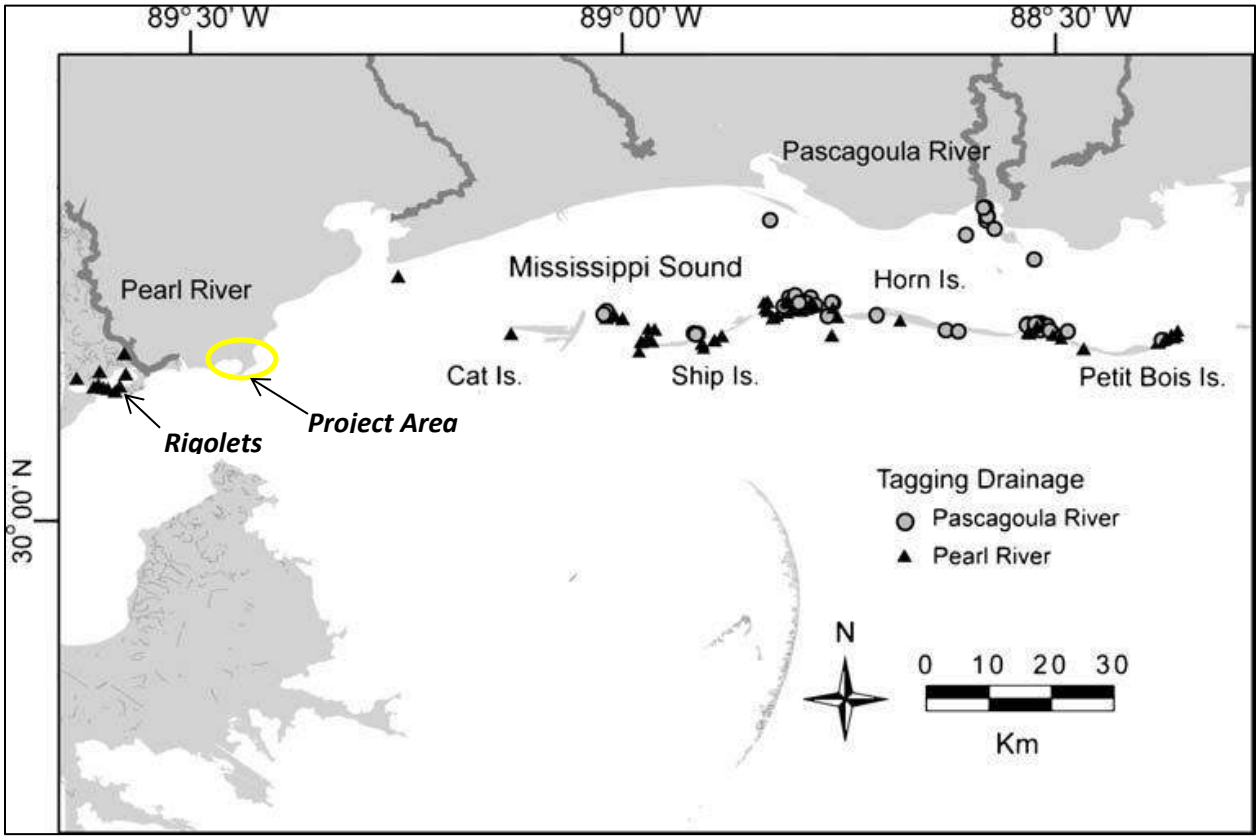
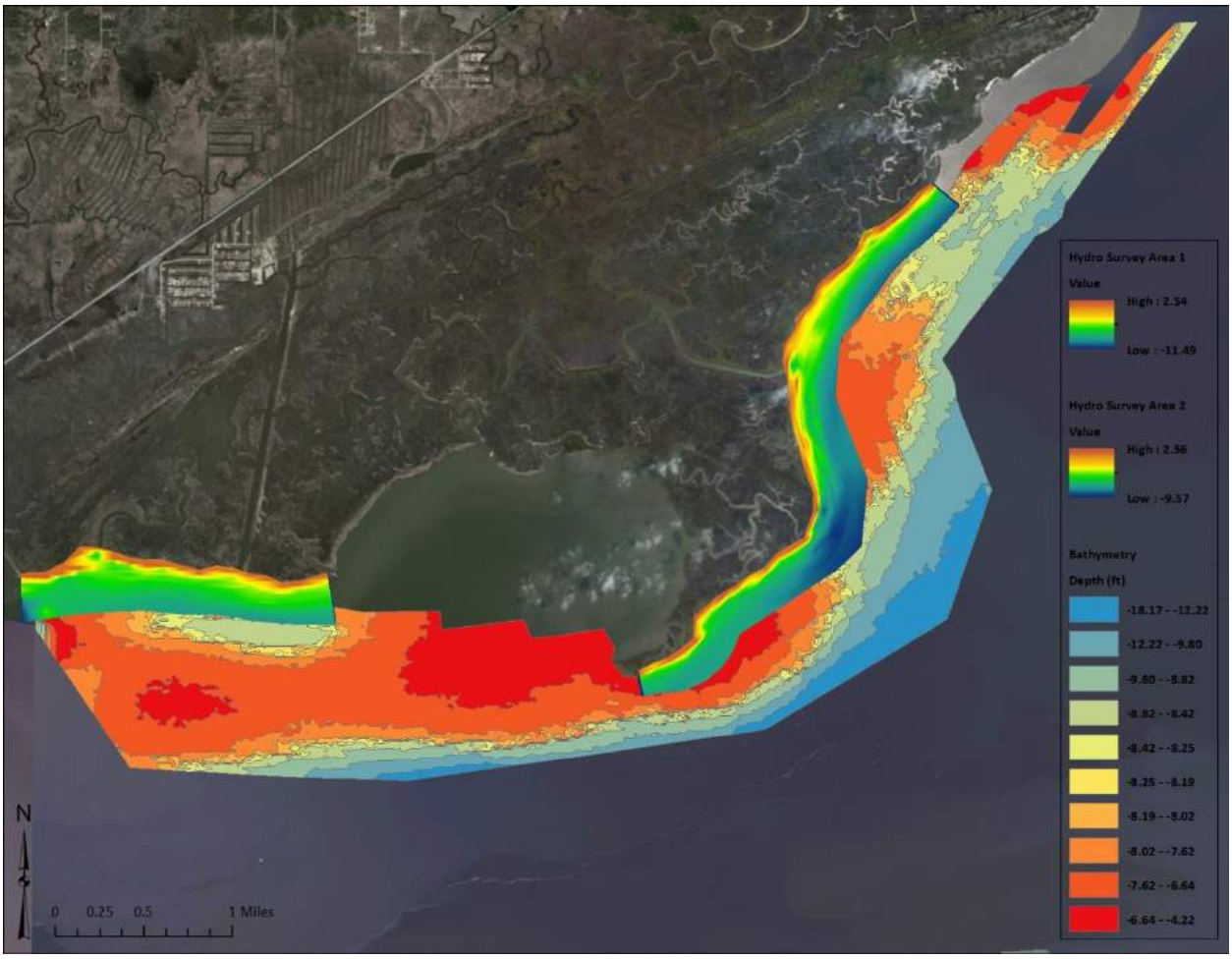


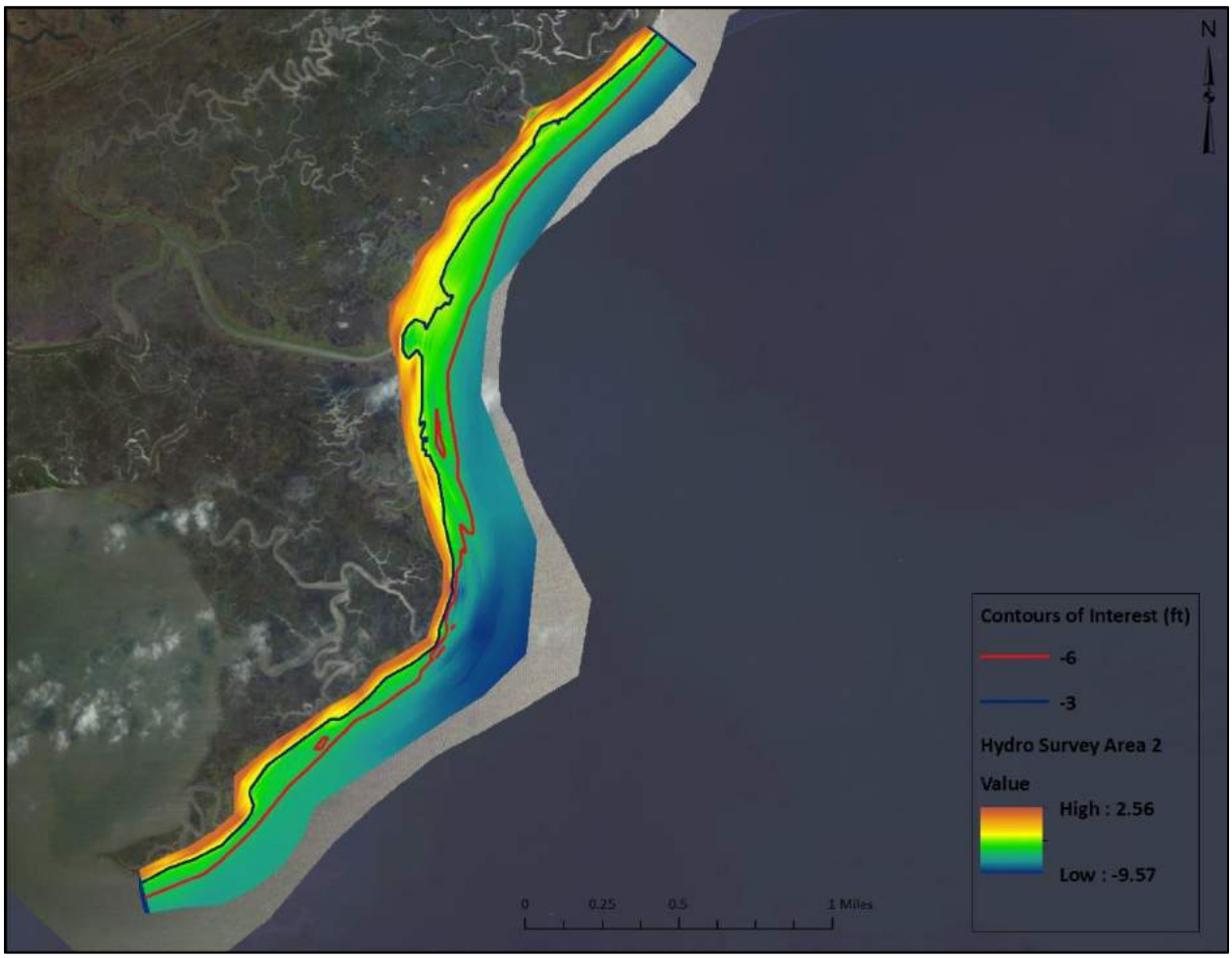
Figure 2. Telemetry locations of Gulf sturgeon in the estuarine and marine environment. Note that no telemetry locations in this study were found in the project area. Modified from Ross et al., 2009.

ATTACHMENT: Bathymetry and Engineering Design

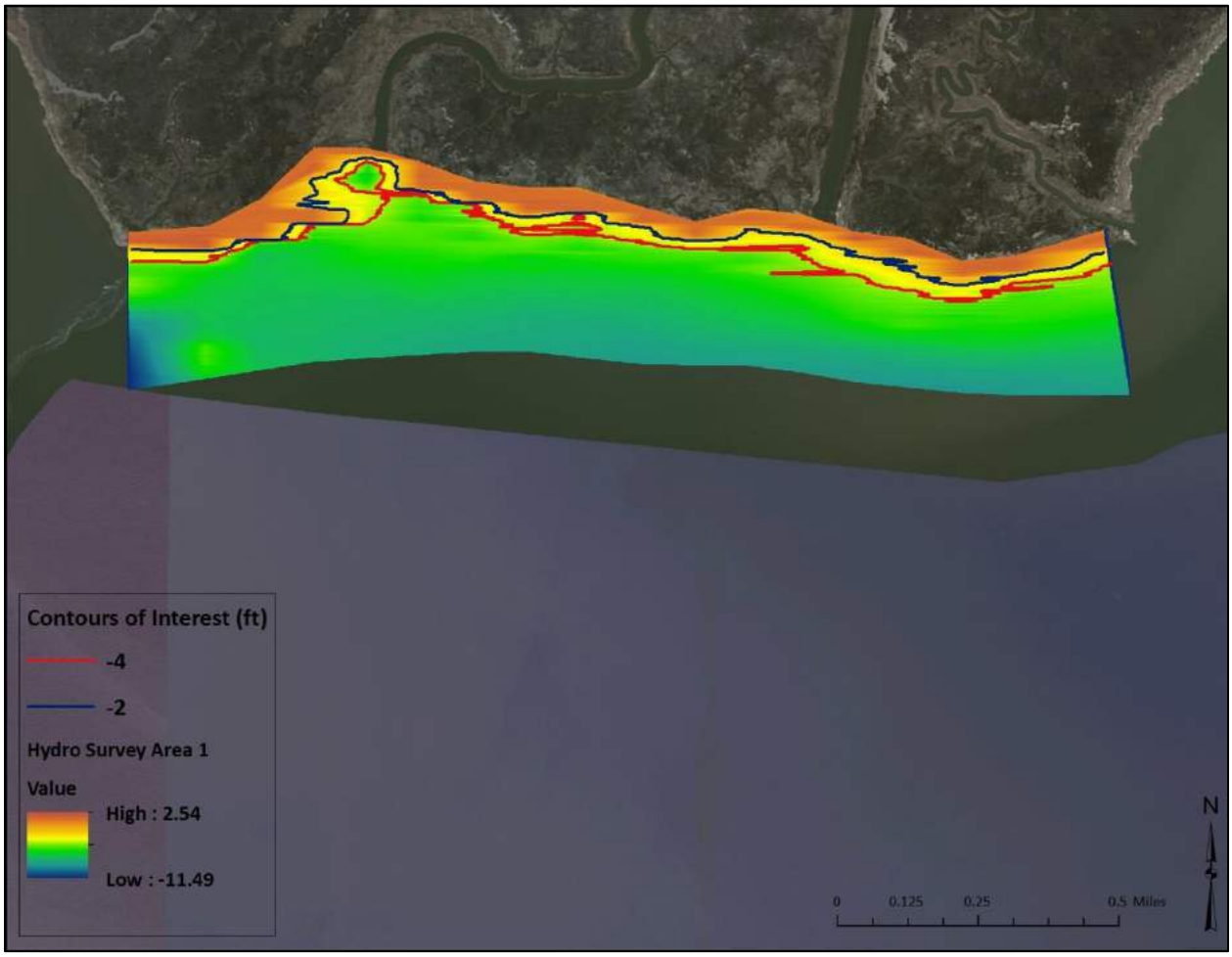
Bathymetry Survey Data



St. Joe's Pass Living Shoreline Bathymetry. Placement of the structure is planned within the 3 and 6 ft isobaths pictured in the map below.



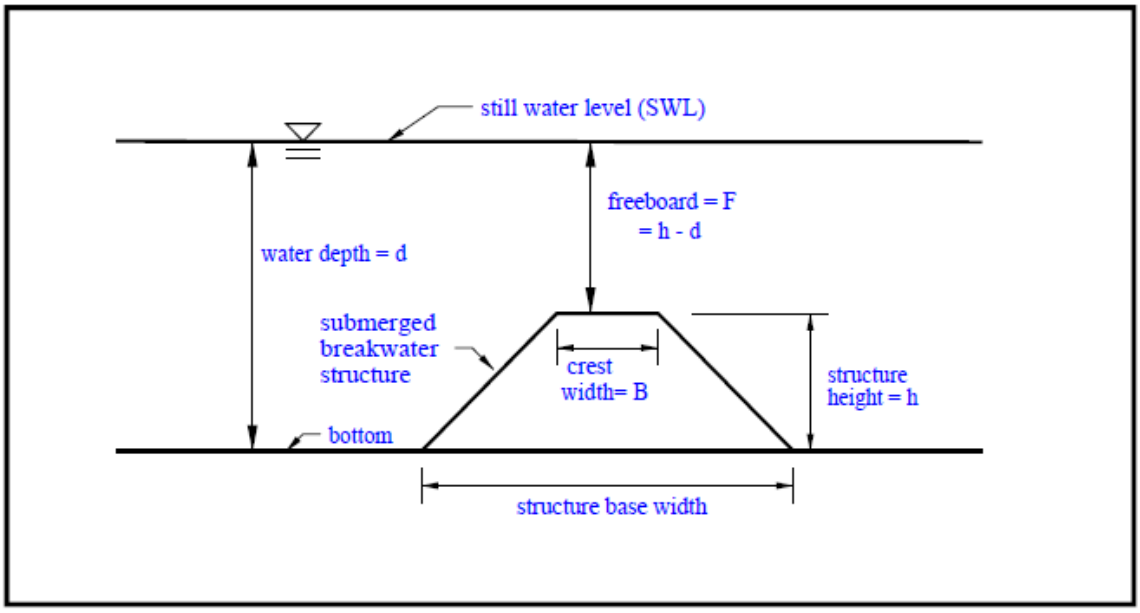
Pearl River to Heron Bay Living Shoreline Bathymetry. Placement of the structure is planned within the 2 and 4 ft isobaths pictured in the map below.



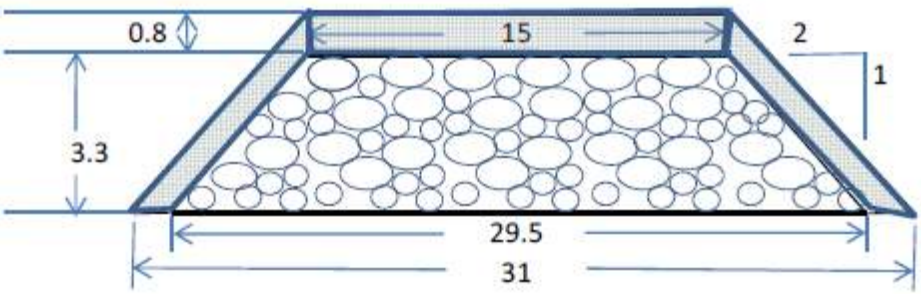
Engineering Design

The transmission coefficient is dependent upon the available freeboard, structure height, and crest width, wave height, wave length, and material diameter.

$$K_t = 1 - \left[e^{0.65(F/H) - 1.09(H/B)} - 0.047\left(\frac{BF}{LD_{n50}}\right) + 0.067\left(\frac{FH}{BD_{n50}}\right) \right]$$



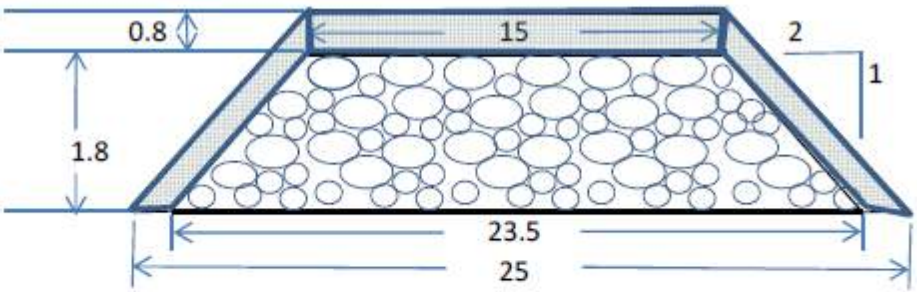
Material Quantity Estimate - St. Joseph's Point
Mississippi



Inputs

Top Width =	15	ft	
Side Slopes =	2	h : 1 v	
Average water depth below MLLW =	3	ft	
MTL to MLLW Difference =	0.87	ft	
Initial Depth =	4.0	ft	
Estimated Immediate Settlement =	1.5	ft	
Project Length =	20,889	feet =	3.96 miles
Depth of Shell Veneer =	0.75	ft	
Breakwater Distance from Shoreline (Y_b) =	100	feet	
Length of each breakwater (L_b) =	70	feet	
Length of each breakwater gap (L_g) =	25	feet	
Density of Material =	165	lb/ft^3	

Material Quantity Estimate - Pearl River to Heron Bay
Mississippi



Inputs

Top Width =	15	ft	
Side Slopes =	2	h : 1 v	
Average water depth below MLLW =	1.5	ft	
MTL to MLLW Difference =	0.87	ft	
Initial Depth =	2.5	ft	
Estimated Immediate Settlement =	1.5	ft	
Project Length =	9,965	feet =	1.89 miles
Depth of Shell Veneer =	0.75	ft	
Breakwater Distance from Shoreline (Y_b) =	100	feet	
Length of each breakwater (L_b) =	70	feet	
Length of each breakwater gap (L_g) =	25	feet	
Density of Material =	165	lb/ft^3	

Hancock County Marsh Living Shoreline Biological Assessment

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4. Environmental Baseline in Action Area
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6. Conservation Measures
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Hancock County Marsh Living Shorelines Project Biological Assessment

1.0 Introduction

On April 20, 2011, DOI, the National Oceanic and Atmospheric Administration (NOAA) and the Trustees for the five Gulf states affected by the Oil Spill entered into an agreement with BP, a responsible party for the Oil Spill, under which BP agreed to provide $1 billion for early restoration projects in the Gulf to address injuries to natural resources caused by the Oil Spill. The above-referenced project is being evaluated by the Trustees as a potential early restoration project. If the project is proposed in a draft restoration plan, and then selected by the Trustees, after publication of the plan and consideration of public comment, and final agreement is reached with BP, it will be implemented by the Mississippi Department of Environmental Quality (the Trustee) and NOAA. DOI, acting through the Service, will be a co-Trustee for the project, if it is selected and implemented.

The proposed Hancock County Marsh Living Shoreline project is intended to employ living shoreline techniques that utilize natural and/or artificial breakwater material to reduce shoreline erosion by dampening wave energy while encouraging reestablishment of habitat that was once present in the region. In areas that have experienced erosion, marsh creation and subtidal oyster reefs would be used in combination with the breakwater structures. The project would provide for construction of up to six miles of breakwaters. An additional component includes, approximately 46 acres of marsh would be constructed to protect and enhance the existing shoreline and 46 acres of sub-tidal oyster reef would be created in Heron Bay to protect the shallow bay and increase oyster production in the area. The project would include reduction of shoreline erosion, re-establishment of oyster habitat, enhanced fisheries resources and marsh habitat.

Table 1 summarizes affect determinations for threatened and endangered species that have the potential to exist at the project site that are under the purview of the National Marine Fisheries Service (NMFS) for ESA Section 7 compliance.

Table 1. Summary of affect determinations for threatened and endangered species.

SPECIES/ CRITICAL HABITAT	DETERMINATION		
	NE	NLAA	AA
Green turtle		x	
Gulf sturgeon		x	
Critical Habitat Gulf sturgeon		x	
Kemp's ridley		x	
Leatherback turtle		x	
Loggerhead turtle		x	

SPECIES/ CRITICAL HABITAT	DETERMINATION		
	NE	NLAA	AA
Hawksbill sea turtle		x	

2.0 Project Description

Oyster breakwater/living shorelines would be constructed along the marsh shoreline in two locations: from the eastern limit of Heron Bay to approximately 4 miles to the northeast towards Bayou Caddy (eastern reach), and from the western limit of Heron Bay to approximately 1.9 miles to the mouth of the Pearl River (western reach). Construction activities could include placement of linear structures that may utilize artificial and/or shell-based materials within the -3 to -5 foot Mean Lower Low Water contour. Approximately 46 acres of marsh would be constructed in the St. Joseph's point area to protect and restore marsh areas that experience the historical rates of erosion. A total of 46 acres of subtidal oyster reef would be created using oyster shell in northeastern Heron Bay to protect the shallow embayment and to increase oyster production in the area.

2.1 Project Location

The proposed project is located in Hancock County, Mississippi (Bounding Coordinates: West -89.530339 W, 30.184 N; South: -89.462 W, 30.169 N; East: -89.415 W, 30.233 N; North: -89.53 W, 30.184 W. Centroid = -89.457 W, 30.19 N). The Hancock County marsh is a 13,570-acre preserve managed by the Mississippi Department of Marine Resources (MDMR) and is the second largest continuous marsh area in the state. The preserve includes adjoining marshlands bordering the Mississippi Sound from the Pearl River to St. Joseph's Point.

The Hancock County marsh area is composed largely of estuarine emergent marsh and estuarine shallow water intertwined by a network of tidal creeks. The benthic habitats can be divided into two classes including intertidal and subtidal. Intertidal zones (typical tidal range of 0.5 ft.) in the area are composed of mud flats, small areas of natural sand beach, and a small number of Native American shell middens. The nearshore subtidal benthic habitat is composed mostly of unconsolidated bottom types including sand, muddy sand, and mud bottom (Wieland 1994). Bathymetry in the study area ranges from approximately 0-12 ft. below MLLW, although the breakwater, oyster deployment, and marsh creation areas range roughly from 1-4 ft. below MLLW.

Estuarine emergent plants dominate the southernmost regions of the Pearl River marsh adjacent to the Mississippi Sound. Elevation and tidal inundation influence the zonation and distribution of these plants. The estuarine areas are composed of low, mid, and high marsh zones. In the low marsh areas, regularly flooded by tidal activity, the mesohaline habitat consists of smooth cordgrass (*Spartina alternaflora)*. The intermediate-marsh zone is irregularly flooded by tidal activity and is typically dominated by black needlerush (*Juncus roemerianus*), which can be intermixed with salt grass (*Distichlis spicata*) in

oligohaline areas. In higher elevation areas, it is not uncommon to observe numerous species intermixed including salt grass, black needlerush, and salt meadow cordgrass (*Spartina patens*).

Palustrine habitats occur on high relief areas in the vicinity of the project area and consist of a dominant overstory of live oak (*Quercus virginiana)* with some slash pine (*Pinus elliottii)*. A variety of understory species are found with wax myrtle (*Myrica cerifera)* and yaupon holly (*Ilex vomitoria)* as the dominant species. Often, the salt-tolerant shrubs marsh elder (*Iva frutescens)* and saltbush (*Baccharis halimifolia)* border these areas. Saw palmetto (S*erenoa repens*) is also found at higher elevations outside of the tidal boundary.

A recent survey of SAV and oysters in Heron Bay noted that SAV presence was primarily documented in very shallow waters along the fringe of the marsh edge growing on eroded submerged marsh platform. Sparse amounts of *Ruppia maritima* were found growing in a matrix of mud and relict plant rhizomes. Oyster shell locations were present primarily in the northern and middle sections of Heron bay. Presence was documented in areas that had been delineated as supporting historic oyster reefs by the MDMR. Most of the shell was dead and silted in below the bottom surface.

Gulf sturgeon is the only critical habitat that exists in the project footprint (Figure 1).

2.2 Action Area

The action area includes the shoreline of the Hancock County marsh from the mouth of the Pearl River on the west to approximately 1.9 miles past the heel of St. Joseph's Point, including Heron Bay. Oyster breakwater/living shorelines would be constructed along the marsh shoreline in two locations: from the eastern limit of Heron Bay to approximately 4 miles to the northeast towards Bayou Caddy (eastern reach), and from the western limit of Heron Bay to the mouth of the Pearl River (western reach).On the seaward side, the project area extends approximately to the -8 ft. contour from the proposed breakwater to incorporate potential impacts from temporary flotation channels that will be utilized by work barges during construction (Figure 2).

2.3 Proposed Action

The Hancock County Marsh Living Shoreline project will include shoreline/marsh protection, marsh creation, restoration and increased benthic secondary productivity. Specifically, the proposed project consists of three restoration components (Figure 2):

- Use of living shoreline techniques that utilize natural and/or artificial breakwater material to reduce shoreline erosion by dampening wave energy while encouraging reestablishment of habitat that was once present in the region.
- Creation of 46 acres of salt marsh habitat in areas that have experienced high rates of shoreline and marsh habitat erosion.
- Placement of 46 acres of oyster cultch in areas that have historically supported oyster habitat.

Living Shorelines (Breakwaters)

A breakwater can be defined as linear structures that may utilize artificial and/or shell-based materials placed parallel to the shore in medium to high energy open-water environments for the purpose of dissipating wave energy to reduce shoreline erosion. The breakwaters would be constructed at two locations: along St. Joseph's Point (eastern reach) and from Pearl River to Heron Bay (western reach).

- **St. Joseph's Point Breakwater (eastern reach):** The conceptual design for the breakwater would be approximately four miles long, extending from Heron Bay to approximately four miles to the northeast, which includes openings throughout, with a crest width of approximately 15.0 ft. and total height of approximately 4.0 ft. (to +0.87 ft., North American Vertical Datum [NAVD]). The breakwater would have a footprint of approximately 14.4 acres and would be placed on a substrate of fine-grained sediment. It would be composed of a core of riprap and some or all could be covered by a 9-inch-thick layer of bagged oyster shell.
- **Pearl River to Heron Bay Breakwater (western reach):** This conceptual breakwater would be approximately 1.9 miles long, with openings throughout, with a crest width of 15.0 ft. and a total height of approximately 4.0 ft. (to +0.87 ft., NAVD). Its design and sediment substrate are to be similar to the St. Joseph's Point breakwater. The Pearl River to Heron Bay breakwater project area footprint would be approximately 5.5 acres, consisting of fine-grained sediment. The conceptual design is subject to refinement.

Creation of Marsh in the Vicinity of St. Joseph's Point

A total of 46 acres of marsh would be created in one to several locations. Salt marshes are defined as transitional marsh areas between land and water that occur in coastal areas at salinities at or approaching that of ocean water. Typical vegetation in salt marsh habitat includes species such as smooth cordgrass (*Spartina alterniflora*), black needlerush (*Juncus romerianus*), and saltgrass (*Distichlis spicata*). The area behind the constructed breakwater at St. Joseph's Point would be backfilled with dredged material and allowed to re-vegetate by natural colonization of estuarine marsh species. Dredged fill material would be obtained through the Mississippi Beneficial Sediment Use Program as available or excavated from a suitable borrow source. Dredged material would be hydraulically placed to obtain the target elevation.

Placement of Oyster Reef Cultch in Heron Bay

Oyster cultch would be deployed over 46 acres in Heron Bay in areas that currently support or previously supported oyster production. Oyster reefs are typically colonial aggregations of living oysters and other bi-valves that can have subtidal as well as intertidal portions and that provide habitat for a community of other species. Oyster cultch deployment would occur generally in water depths of approximately -3 to -5 ft. MLLW. The reef(s) would be sited based on data gathered from an oyster presence survey and would consist of an approximately 6- to 9-inch-thick layer of oyster shell or limestone placed on the marsh platform.

Construction and Installation

Construction methods and activities are included in order to assess the impact on the environment. Actual construction methods and activities would be determined after final design and would likely be comparable to activities described below. It is expected that actual construction methods would be similar to those presented in this section.

Living Shorelines (Breakwaters)

The specific breakwater construction elevation was selected to maximize shoreline protection (see Table 2). Construction could include placement of linear structures that would utilize artificial and/or shell-based materials. The alignment and limits of the breakwaters would be surveyed; the outer limits of the breakwaters would be marked with poles driven into the bottom and extended approximately 3 ft. above the water surface. The height of the breakwaters along the alignment would be constructed based on bottom elevations and the reef's crest elevation (0.87 ft. NAVD88 – Mean Tide Level). Barriers, navigation warning signs (lighted and unlighted), and other safety devices would be installed along the work area to protect boaters.

Table 2. Preliminary living shoreline (breakwater) specifications for the Hancock County Marsh Living Shoreline project.

Living Shoreline (Breakwater) Design Data	St. Joseph's Point Breakwater (eastern reach)	Pearl River to Heron Bay Breakwater (western reach):
Total project length	Approx. 4 miles	Approx. 1.9 miles
Total project acreage	14.4 acres	5.5 acres
Crest width	15.0 ft.	15.0 ft.
Base width	30 ft.	30 ft.
Assumed bottom elevation	-3.5 MLLW	-3.5 MLLW
Total structure height	3.75 ft.	3.75 ft.
Bagged shell veneer thickness	9 inches	9 inches
Riprap core volume	51,600 cubic yards	16,900 cubic yards
Bagged shell volume	16,400 cubic yards	6,300 cubic yards
Depth of material (riprap/marine mattress)	3 ft.	3 ft.
Estimate initial settlement	1 ft.	1 ft.
Design side slopes	2v:1h	2v:1h
Breakwater distance from shoreline	30 – 90 ft.	30 – 90 ft.
Reach of each breakwater	75 ft.	75 ft.
Length of each gap between breakwater	25 ft.	25 ft.

The dimensions for the breakwaters would be approximately 30 ft. wide at the base and approximately 15 ft. wide at the crest (Table 2).

The riprap core of the breakwaters would either be constructed using loose boulders or "marine mattresses," which would consist of 2- to 6-inch-diameter rocks assembled on land. The core material would be transported to the work area on barges and installed by a crane located on a separate barge. Placement of the riprap core would be monitored to ensure the breakwater dimensions, slopes, and crest elevations are achieved. After installation of the riprap core, some or all could be covered with bags of shell. The deployment of the breakwaters may extend over a period of ten to twelve months; construction activities would be limited to the months of May to October. Total installed volumes would be as follows:

- ***St. Joseph's Point Breakwater (eastern reach):*** The target depth for deployment is approximately -3.5 ft. MLLW, but could be between -3.0 and -5.0 ft. MLLW. The volume of placed material would be approximately 51,600 cubic yards of riprap and 16,400 cubic yards of

shell. The breakwater would cover a footprint of approximately 14.4 acres of fine-grained sediment.

- ***Pearl River to Heron Bay Breakwater (western reach):*** The target depth for deployment is approximately -3.5 MLLW, but could be between -2.0 ft. and -5.0 ft. MLLW. The volume of placed material would be approximately 16,900 cubic yards of riprap and 6,300 cubic yards of shell. The breakwater would cover a footprint of approximately 5.5 acres of fine-grained sediment.

The project is designed to use temporary flotation channels (Table 3) to facilitate access for work barges into the work area. A channel would be excavated parallel to the alignments of the two breakwaters (Figure X). Additional channels would be excavated perpendicular to these channels to provide access from the Mississippi Sound to allow work barges entry and exit for the project area. The excavated dredged material would be cast on the seaward side of the channels so they naturally fill back in after construction. The depth of the channels would be 8 ft. below MLLW to accommodate barge draft. The bottom width of the channels would be approximately 80 ft. with 3H:1V side slopes. The entry locations for the channels would be determined by analyzing the shortest distance from the breakwaters to the appropriate depth of -8 ft. and excavated using best management practices (BMPs) to minimize environmental impacts. For the purposes of project planning, the preliminary temporary flotation channel footprint was calculated based on an estimate of a heavily loaded barge. Proposed temporary flotation channel dimensions are summarized in Table 3.

Table3. Preliminary temporary flotation channel footprint for the Hancock County Marsh Living Shoreline project.

COMPONENT	DIMENSION
Channel Length	55,008 ft.
Barge Draft	8 ft.
Channel Width	80 ft.
Area Temporarily Impacted	101 acres

After completion of construction, the breakwater structure would be surveyed and permanent navigation signs would be installed in accordance with safety requirements.

Creation of Marsh in the Vicinity of St. Joseph's Point

After the breakwater along St. Joseph's Point has been installed, selected areas landward of the breakwater would be filled with dredged material obtained from the MDMR Beneficial Use of Sediment Program if material is available, or a suitable borrow source. It is anticipated that a dike would be constructed at the seaward extent of the marsh. Upon location of suitable material, the dike would be constructed by excavating existing material from the landward side of the proposed dike location, but not borrowing from the existing marsh. Once an area of the marsh is diked, the area landward of the dike would be filled with dredged material until final marsh grades are achieved. Sediment would be pumped through a floating pipeline from a hydraulic dredge located where suitable fill material is available. Pumps and sediment controls would remain in place throughout the dredging and filling

process and after initial settling has occurred. Once the entire marsh area(s) is constructed, the area would be monitored for natural re-vegetation.

Placement of Oyster Cultch in Heron Bay
Oyster cultch would be deployed in Heron Bay in water depths of -3 to -5 ft. MLLW in areas that currently support or previously supported oyster production. An oyster presence survey has been completed that identified suitable areas. The cultch would be deployed as a 6- to 9-inch-thick layer of oyster shell or limestone. Prior to deployment, the limits of the oyster cultch deployment area(s) would be marked with buoys or poles. Oyster shells would be deployed by a barge-mounted crane with a clam shell bucket. A material barge loaded with oyster shells would be moored to the crane barge. As a construction alternative, water jetting of loose shell off of a material barge may be used in case of water-depth constraints. Upon completion, the deployment area would be surveyed.

Operations and Maintenance

Anticipated pre- and post-construction monitoring activities
Monitoring activities would be performed prior to construction and for up to seven years after construction. Monitoring activities would include:

- Topographic/bathymetric surveys
- Vegetation surveys (species composition and percent cover)
- Oyster and other invertebrate monitoring (density and biomass)

The project would incorporate a mix of monitoring efforts to ensure project designs are correctly implemented during construction. Monitoring efforts would occur in a subsequent period, where corrective action could be taken.

Post-construction performance monitoring would be conducted to observe the performance of the physical breakwater structures (breakwater height, structural integrity, settling rate, etc.) and marsh (elevation, settling rate, etc.) to allow for corrective action as needed or as defined by the Trustees.

Post-construction performance monitoring would also evaluate the project's performance over time with respect to the agreed-upon restoration goals and objectives. Specifically, this monitoring would evaluate the production and support of organisms on the breakwater (e.g., secondary productivity) and the performance of the created marsh and the reduced erosion rate of the existing shoreline. Monitoring parameters would include the following: water quality (e.g., salinity, dissolved oxygen); vegetative monitoring; and invertebrate infauna and epifauna composition and biomass.

Anticipated short-term maintenance activities
Within four years following construction, it may be necessary to add more riprap or shell material on the breakwater structure as a maintenance activity. The breakwater is anticipated to experience the greatest consolidation of the subgrade in the first years following construction. The need for additional placement of rock and/or shell on the breakwater would be assessed during the regular monitoring.

Maintenance construction methods would be similar to the construction methods of the original breakwater structure.

3.0 Description of Species and Habitat

Fish

T- Gulf sturgeon- (*Acipenser oxyrinchus desotoi*)

Turtles

T- Green sea turtle - (*Chelonia mydas*)

E- Kemp's ridley sea turtle - (*Lepidochelys kempii*)

E- Leatherback sea turtle - (*Dermochelys coriacea*)

T- Loggerhead sea turtle - (*Caretta caretta*)

E- Hawksbill sea turtle – (*Eretmochelys imbricata)*

3.1 Gulf Sturgeon

Life History/Distribution

The Gulf sturgeon (*Acipenser oxyrinchus desotoi*), also known as the Gulf of Mexico sturgeon, was listed as threatened throughout its range in 1991 (56 FR 49653). The Gulf sturgeon is a subspecies of *Acipenser oxyrinchus*, which also includes the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). The Gulf sturgeon is distinguished from the Atlantic sturgeon based upon geographical restrictions, morphological characteristics, and genetic differences (Vladykov 1955; Wooley 1985; King et al. 2001).

The Gulf sturgeon's status and protection is collaboration between the U.S. Fish and Wildlife Service (USFWS) and NOAA Fisheries. Due to its anadromous nature and migration patterns, the sturgeon spends time in freshwater, estuarine, and marine habitats. NMFS is responsible for all consultations regarding Gulf sturgeon and critical habitat in marine units. The USFWS is responsible for all consultations regarding Gulf Sturgeon and critical habitat in riverine units. Responsibility for estuarine units is divided based upon the action agency involved. The USFWS consults with the Department of Transportation, Environmental Protection Agency, U.S. Coast Guard (USCG), and Federal Emergency Management Agency. NMFS consults with the Department of Defense, U.S. Army Corps of Engineers, Bureau of Ocean Energy Management (formerly Minerals Management Service) and any other Federal agencies not mentioned explicitly. Any Federal projects that extend into the jurisdiction of both the Services will be consulted on by the USFWS with internal coordination with NOAA Fisheries.

The following information regarding Gulf sturgeon is summarized from the final critical habitat designation (68 FR 13370 and references within) unless otherwise stated. The Gulf sturgeon is a nearly cylindrical primitive fish embedded with bony plates or scutes. The head has a hard, extended snout. The mouth is inferior and protrusible (capable of being thrust outward) and is preceded by four conspicuous barbels. The caudal fin (tail) is heterocercal (upper lobe is longer than the lower lobe). Adults range from 1.2 to 2.4 m (4 to 8 ft.) in length, with adult females larger than males. The Gulf sturgeon is an anadromous species spending 6-8 months in freshwater to reproduce and rest and the remaining time over wintering in estuaries, bays, and the Gulf of Mexico. Historically, the Gulf sturgeon occurred from the Mississippi River east to Tampa Bay. Presently, the Gulf sturgeon can be found in most river systems spanning from Lake Pontchartrain, Louisiana east to the Suwannee River in Florida. Sporadic occurrences have been recorded as far west as the Rio Grande River bordering Texas and Mexico, and as far east and south as Florida Bay in the Florida Keys (Wooley and Crateau 1985; Reynolds 1993).

Gulf sturgeon are long-lived, with some individuals reaching at least 42 years in age (Huff 1975). Age at sexual maturity ranges from 8 to 17 years for females and from 7 to 21 years for males (Huff 1975). As with any long-lived, slow-maturing and wide-ranging species, an exact population estimate is difficult to obtain because life history characteristics necessitate long-term datasets and sampling and estimation methods differ over time and across the range of the species. There are currently spawning populations in seven rivers across its range, all of which are designated as critical habitat: (1) Pearl River, (2) Pascagoula River, (3) Escambia River, (4) Yellow River, (5) Choctawhatchee River, (6) Apalachicola River, and (7) Suwannee River. Critical habitat was designated in all seven of these spawning rivers partly because gene flow is low in Gulf sturgeon stocks (i.e., each stock exchanges less than one mature female per generation) (Waldman and Wirgin 1998). The estimated subpopulation size is presented by river system in Table 4. Each subpopulation is currently considered stable or slightly increasing in all systems except the Pearl and Pascagoula rivers where the trend is unknown due to a lack of survey data.

Gulf sturgeon use a variety of freshwater, estuarine, and marine habitats for breeding, foraging, and resting. In the spring, generally March to May, most adult and subadult Gulf sturgeon return to their natal freshwater rivers, where sexually mature sturgeon spawn (Odenkirk 1989; Foster 1993; Clugston et al. 1995; Fox et al. 2000). Spawning occurs over bedrock, cobble, clean gravel, marl, soapstone, or hard clay substrates (Sulak and Clugston 1999).

After spawning, most sturgeon move downstream to a resting or holding area and remain there until October or November. Adults and subadults are not distributed uniformly throughout the river, but show a preference for these discrete holding areas (Hightower et al. 2002). These resting or holding areas are generally in the lower and middle reaches of the river often near natural springs (but not within the spring itself). They range from shallow areas (2 m) to deep holes (19 m) (6.6 to 62.3 feet), and contain substrates of limestone and sand, sand and gravels, or sandy substrate (Clugston et al. 1995; Foster and Clugston 1997; Hightower et al. 2002; Wooley and Crateau 1985; Morrow et al. 1998; Ross et al. 2001a, b; Craft et al. 2001). In the Suwannee river, young of the year disperse widely downstream of spawning sites, using extensive portions of the river as nursery habitat (Sulak and Clugston 1999). Suwannee River young of the year are typically found in open sand-bottom habitat away from the shoreline and vegetated habitat and may also remain near the river mouth and estuary during the winter and spring (Randall and Sulak 1999; Clugston et al. 1995). Information on young of the year Gulf sturgeon from other river systems is not available.

Most subadult and adult Gulf sturgeon spend cool months (October or November through March or April) in estuarine areas, bays, or in the Gulf of Mexico near unvegetated sandy shorelines, shallow shoals, and other areas containing mostly sand with benthic prey items (such as barrier islands) at depths ranging from 1.5 m to 6 m deep (Odenkirk 1989; Foster 1993; Clugston et al. 1995; Parauka et al. 2001; Ross et al. 2001a; Fox et al. 2002; Harris et al. 2005; Craft et al. 2001; Rogillio et al. 2001). Gulf sturgeon will migrate along barrier islands and are often found in passes between islands or in deep holes near the passes (Ross et al. 2001a; Rogillio et al. 2001). Ninety-one percent of subadult Gulf sturgeon (ages 4 to 7) in Choctawhatchee Bay (91%) remained in the bay or a connecting bay the entire winter (USFWS 1998c); while, adult Gulf sturgeon were more likely to overwinter or spend extended periods of time in the Gulf of Mexico (Fox and Hightower 1998; Fox et al. 2002). Subadults from the Suwannee River subpopulation remain in the mouth of the Suwannee River over winter while adults are known to migrate into the nearshore waters, where they remain for up to two months and then depart to unknown feeding locations in the open Gulf of Mexico (Carr et al. 1996; Edwards et al. 2003). Sonic-tracking evidence suggests that Gulf sturgeon target and share certain wintering grounds. A summary of Gulf sturgeon wintering habitat is presented in Table 5.

Table4. Estimated size of known reproducing subpopulations of Gulf sturgeon.

River System	**States**	**Estimated Subpopulation Size*** (95% Confidence Interval)	**Source**
Pascagoula	MS	216 (124-429)	Ross et al. 2001b
Pearl	LA, MS	430 (323-605)	Rogillio et al. 2001
Escambia	AL, FL	451 (338-656)	USFWS 2007
Yellow	AL, FL	1,036 (724-1348)	Herrington and Kaeser 2013
Choctawhatchee	AL, FL	3,314**	Herrington and Kaeser 2013
Apalachicola	FL	1,292 (525-1,968)	Herrington and Kaeser 2013
Suwannee	FL	14,000**	Sulak et al. 2009

* Estimates refer to numbers of individuals greater than a certain size, which varies between sources depending on sampling gear, and in some cases, to numbers of individuals that use a particular portion of the river (e.g., a summer holding area or one migratory pathway among several). Estimates are not necessarily comparable between researchers due to key differences in methods and assumptions.
** Confidence interval not reported.

Table 5. Summary of known Gulf sturgeon wintering areas.

Subpopulation	**Wintering sites**	**Source**
Pascagoula	Barrier Islands, Mississippi Sound, Pascagoula Estuary	Ross et al. (2009)
Pearl	The Rigolets, Barrier Islands, Mississippi Sound	Ross et al. (2009)
Choctawhatchee	Choctawhatchee Bay, Escambia Bay, nearshore Gulf of Mexico, Santa Rosa Sound, Pensacola Bay	Fox et al. (2002); Duncan et al. (2011)
Escambia	Pensacola Bay, Santa Rosa Sound, nearshore Gulf of Mexico	Parauka et al. (2011); Duncan et al. (2011)
Yellow	Pensacola Bay, Santa Rosa Sound, nearshore Gulf of Mexico	Parauka et al. (2011); Duncan et al. (2011)
Apalachicola	Apalachicola Bay, nearshore Gulf of Mexico, Saint Vincent Sound	Parauka et al. (2011); Sulak et al. (2009)
Suwannee	Suwannee Sound, nearshore Gulf of Mexico	Sulak et al. (2009)

The Gulf sturgeon is a benthic (bottom dwelling) suction feeder. Gulf sturgeon subadults and adults primarily feed in estuaries, bays, and other marine habitats and do not feed significantly in freshwater (Wooley and Crateau 1985; Mason and Clugston 1993; Clugston et al. 1995; Gu et al. 2001). Adult and subadult Gulf sturgeon are thought to forage opportunistically (Huff 1975), primarily on benthic invertebrates including: brachiopods, brittle stars, amphipods, lancelets, polychaetes, gastropod mollusks, shrimp, isopods, bivalve mollusks, and crustaceans (Huff 1975; Mason and Clugston 1993; Carr et al. 1996; Heard et al. 2000; Fox et al. 2000; Fox et al. 2002; Harris et al. 2005). We presume that adult and subadult sturgeon begin feeding immediately upon leaving the river of summer residency having spent at least six months in the river fasting. If so, the bays at the mouths of the river systems where Gulf sturgeon occur are especially important because they offer the first opportunity for feeding and to regain the weight lost while in the river system. To maintain positive growth on a yearly basis, adults and subadults need to consume sufficient quantities of prey while in estuarine and marine waters outside of the spawning season. Young of the year sturgeon overwinter in the freshwater systems for 10 to 12 months, where they feed on aquatic invertebrates (including aquatic insects, worms, and bivalve molluscs) and detritus (Huff 1975; Mason and Clugston 1993; Sulak and Clugston 1999).

Threats

In the late 19th and early 20th centuries, Gulf sturgeon were an important commercial fishery, providing eggs for caviar, flesh for smoked fish, and swim bladders for isinglass (Huff 1975; Carr 1983). Gulf sturgeon numbers declined due to overfishing throughout most of the 20th century. The decline was exacerbated by habitat loss associated with the construction of dams and sills (low dams), mostly after 1950, which severely restricted access to historic migration routes and spawning areas (Wooley and Crateau 1985; McDowall 1988). Directed harvest is no longer a threat to the species since all directed fisheries of the sturgeon have been closed since 1972 in Alabama, 1974 in Mississippi, 1984 in Florida, and 1990 in Louisiana.

Continuing and new or potential threats to the Gulf sturgeon include: construction of dams, modifications to habitat associated with dredging, dredged material disposal, de-snagging (removal of trees and their roots) and other navigation maintenance activities; incidental take by commercial fishermen; poor water quality associated with contamination by pesticides, heavy metals, and industrial contaminants; hurricanes, red tides, boat collisions, climate change, aquaculture and incidental or accidental introductions of non-native species; and the Gulf sturgeon's long maturation and limited ability to recolonize areas from which it is extirpated (USFWS 1991; USFWS and NMFS 2009).

These threats persist to varying degrees in different portions of the species range. In recent years, dredging for channel maintenance and beach nourishment has resulted in death and injury of a few Gulf sturgeon in the marine environment. Trawling has also resulted in the capture of several Gulf sturgeon. Collisions with boats traveling at high speeds have occurred on numerous occasions in the Suwannee and Choctawhatchee rivers. A sturgeon colliding with a boat can occur when the fish leaps out of the water towards the boat or when the sturgeon is physically struck by the boat propellers. Shallow waters will increase the likelihood of a ship strike to sturgeons due to the lack of buffer space between boat and fish (USFWS and NMFS 2009).

Gulf Sturgeon Critical Habitat

NOAA Fisheries and USFWS jointly designated Gulf sturgeon critical habitat on April 18, 2003 (68 FR 13370, March 19, 2003). The term "critical habitat" is defined in section 3(5)(A) of the Endangered Species Act (ESA) as (i) the specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. "Conservation" is defined in section 3(3) of the ESA as the use of all methods and procedures that are necessary to bring any endangered or threatened species to the point at which listing under the ESA is no longer necessary. Critical habitat for the Gulf sturgeon within the project vicinity is identified as Unit 8 (approximately 881,280 acres), Lake Pontchartrain, (east of causeway), Lake Catherine, Little Lake, the Rigolets, Lake Borgne, Pascagoula Bay, and Mississippi Sound systems in Louisiana and Mississippi, and sections of the state waters within the Gulf of Mexico.

This unit provides juvenile, subadult and adult feeding, resting, and passage habitat for Gulf sturgeon from the Pascagoula and the Pearl River subpopulations (68 FR 13395). One or both of these subpopulations have been documented by tagging data, historic sightings, and incidental captures as using Pascagoula Bay, the Rigolets, the eastern half of Lake Pontchartrain, Little Lake, Lake St. Catherine, Lake Borgne, Mississippi Sound, within one nautical mile of the nearshore Gulf of Mexico adjacent to the barrier islands and within the passes (Reynolds, 1993; Morrow et al., 1998; and Ross et al., 2001). Substrate in these areas range from sand to silt, all of which contain known Gulf sturgeon prey items (Menzel, 1971; Abele and Kim, 1986; and American Fisheries Society, 1989). Incidental captures and recent studies confirm that both Pearl River and Pascagoula River adult Gulf sturgeon winter in the Mississippi Sound, particularly around barrier islands and barrier islands passes (Reynolds, 1993 and Ross et al., 2001). Gulf sturgeon exiting the Pascagoula River move both east and west, with telemetry locations as far east as
Dauphin Island and as far west as Cat Island and the entrance to Lake Pontchartrain, Louisiana (Ross et al., 2001a). Tagged Gulf sturgeon from the Pearl River subpopulation have been located between Cat Island, Ship Island, Horn Island, and east of Petit Bois Island to the Alabama state line (Rogillio et al., 2002). Habitat used by Gulf sturgeon in the vicinity of the barrier islands is 6.2 to 19.4 feet deep (average 13.8 feet), with clean sand substrata (Heise et al., 1999 and Ross et al., 2001). Inshore locations where Gulf sturgeon were located were 6.2 to 9.2 feet deep and all had mud (mostly silt and clay) substrata (Heise et al., 1999), typical of substrates supporting known Gulf sturgeon prey.

The primary constituent elements essential for the conservation of the Gulf sturgeon are those habitat components that support foraging, water quality, sediment quality, and safe unobstructed migratory pathways. The Mississippi Sound provides: foraging, water quality, sediment quality, and migration habitat for Gulf sturgeon.

Foraging: Unit 8 provides foraging habitat for the Gulf sturgeon. Little data is available on Gulf sturgeon feeding habitats. Their threatened status limits sampling efforts. Generally, adults and subadults could be described as opportunistic benthivores typically feeding on benthic marine invertebrates including amphiopods, lancelets, polychaetes, gastropods, shrimp, isopods, mollusks, and crustaceans. The benthic community noted by Vittor and Associates (1982) within Mississippi Sound provides suitable forage habitat for adult and subadult fish. As Gulf sturgeon feed principally on benthic invertebrates, potential impacts to the foraging constituent element would be confined to possible impacts to the benthic community. Vittor and Associates (1982) classified the benthic community in a study of Mississippi Sound and selected sites in the Gulf of Mexico. In the Sound, a total of 437 taxa were

collected at densities ranging from 1,097 to 35,537 individuals per square meter. Generally, densities increase from fall through the spring months since most of the dominant species exhibit a late winter to early spring peak in production. Species diversity, evenness, and species richness (number of taxa) demonstrate only minor inconsistent temporal fluctuations. Biomass per unit area also increases from fall to spring, primarily as a result of higher densities. Vittor and Associates (1982) named several opportunistic species that are ubiquitous in Mississippi Sound and nearshore Gulf of Mexico. These species, though sometimes low to moderate in abundance, occur in a wide range of environmental conditions. They are usually the most successful at early colonization and thus tend to strongly dominate the sediment subsequent to disturbances. These species include *Mediomastus spp*., *Paraprionospio pinnata, Myriochele oculata, Owenia fusiformis, Lumbrineris spp., Sigambra tentaculata,* the *Linopherus-Paraphinome* complex, and *Magelona cf. phyllisae*. The phoronid, *Phoronis sp*., and the cumacean, *Oxyurostylis smithi*, also fit this category. *M. oculata* and *O. fusiformis* are predominate species in Mississippi Sound. The numerically dominant species collected during the study, were *Mediomastus californiensis* and *Paraprionospio pinnata*.

Water Quality: The "water quality" constituent element is of concern to Gulf sturgeon critical habitat. Temperature, salinity, pH, hardness, turbidity, oxygen concentrations, and other chemical characteristics must be protected in order to preserve normal behavior, growth, and viability of all Gulf sturgeon life stages. If water quality is severely degraded, adverse impacts to Gulf sturgeon and its critical habitat may result. Water quality within the Mississippi Sound is influenced by several factors, including the discharge of freshwater from rivers, seasonal climate changes, and variations in tide and currents. The primary driver of water quality is the rivers, including the Pascagoula River that feed into the Sound. Freshwater inputs provide nutrients and sediments that serve to maintain productivity both in the Sound and in the extensive salt marsh habitats bordering the estuaries of the Sound. The salt marsh habitats act to regulate the discharge of nutrients to coastal waters and serve as a sink for pollutants. Suspended sediments enter the Sound from freshwater sources, but are hydraulically restricted due to the barrier islands. The barrier islands, combined with the Sound's shallow depth and mixing from wind, tides, and currents, promote re-suspension of sediments. These suspended sediments give Mississippi Sound a characteristic brownish color (MDEQ, 2006).

Sediment Quality: The "sediment quality" constituent element is listed to ensure sediment suitable (i.e. texture and other chemical characteristics) for normal behavior, growth, and viability of all life stages. In addition, sediment quality is of a concern to support a viable benthic community in order to allow the Gulf sturgeon continual foraging of the area.

Migration Habitat: The "migration habitat" constituent element is concerned with ensuring safe unobstructed passage for the species. It is intended primarily for the more confined areas near the river mouths or the rivers themselves. Gulf sturgeon exiting the Pascagoula River move both east and west, with telemetry locations as far east as Dauphin Island and as far west as Cat Island and the entrance to Lake Pontchartrain, Louisiana (Ross et al., 2001). Tagged Gulf sturgeon from the Pearl River subpopulation have been located between Cat Island, Ship Island, Horn Island, and east of Petit Bois Island to the Alabama state line (Rogillio et al., 2002). The species could potentially migrate through the project area. (Figure 3).

3.2 Green Sea Turtle

Life History/Distribution

Although green sea turtles are found worldwide, this species is concentrated primarily between the 35° North and 35° South latitudes. Green sea turtles tend to occur in waters that remain warmer than 68° F; however, there is evidence that they may be buried under mud in a torpid state in waters to 50° F (Ehrhart 1977; Carr et al. 1979).

This species migrates often over long distances between feeding and nesting areas (Carr and Hirth 1962). During their first year of life, green sea turtles are thought to feed mainly on jellyfish and other invertebrates. Adult green sea turtles prefer an herbivorous diet frequenting shallow water flats for feeding (Fritts et al. 1983). Adult turtles feed primarily on seagrasses, such as *Thalassia testudinum*. This vegetation provides the turtles with a high fiber content and low forage quality (Bjorndal 1981a).

In the Gulf of Mexico, principal foraging areas are located in the upper west coast of Florida (Hirth 1971). Nocturnal resting sites may be a considerable distance from feeding areas, and distribution of the species is generally correlated with grassbed distribution, location of resting beaches, and possibly ocean currents (Hirth 1971). Major nesting areas for green sea turtles in the Atlantic include Surinam, Guyana, French Guyana, Costa Rica, the Leeward Islands, and Ascension Island in the mid-Atlantic. Historically in the U.S., green turtles have been known to nest in the Florida Keys and Dry Tortugas. Yet, these turtles primarily nest on selected beaches along the coast of eastern Florida, predominantly Brevard through Broward Counties. However, they probably nested along the Gulf Coast before their decline. In the southeastern U.S., nesting season is roughly June through September. Nesting occurs nocturnally at 2, 3, or 4-year intervals. Only occasionally do females produce clutches in successive years. Estimates of age at sexual maturity range from 20 to 50 years (Balazs 1982; Frazer and Ehrhart 1985) and they may live over 100 years. Immediately after hatching, green turtles swim past the surf and other shoreline obstructions, primarily at depths of about 8 inches or less below the water surface, and are dispersed both by vigorous swimming and surface currents (Balzas 1980). The whereabouts of hatchlings to juvenile size is uncertain. Green turtles tracked in Texas waters spent more time on the surface, with fewer submergences at night than during the day, and a very small percentage of the time was spent in the federally maintained navigation channels. The tracked turtles tended to utilize jetties, particularly outside of them, for foraging habitat (Renaud et. Al. 1993).

Threats

Most green turtle populations have been depleted or endangered because of direct exploitation or incidental drowning in trawl nets (King 1981). A major factor contributing to the green turtle's decline worldwide is commercial harvest for eggs and meat. In Florida, the nesting population was nearly extirpated within 100 years of the initiation of commercial exploitation (King 1981). Fibropapillomatosis, a disease of sea turtles characterized by the development of multiple tumors on the skin and internal organs, is also a mortality factor and has seriously impacted green turtle populations in Florida, Hawaii, and other parts of the world. These tumors interfere with swimming, eating, breathing, vision, and reproduction, and turtles with heavy tumor burdens become severely debilitated and die. Other threats include loss or degradation of nesting habitat from coastal development and beach armoring; 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; and incidental take from commercial fishing operations.

<u>3.3 Kemp's Ridley Turtle</u>

Life History/Distribution

The Kemp's ridley occurs mainly in coastal areas of the Gulf of Mexico and the northwestern Atlantic Ocean with occasional individuals reaching European waters. Adults of this species are generally confined to the Gulf of Mexico, although some adults are sometimes found on the east coast of the U.S. Females return to their nesting beach about every other year with nesting occurring from April into July and usually limited to the western Gulf of Mexico. The mean clutch size for this species is about 100 eggs per nest and an average of 2.5 nests per female per season.

Benthic immature turtles have been found along the eastern seaboard of the U.S. and in the Gulf of Mexico. In Gulf, studies suggest that immature turtles stay in shallow, warm, nearshore waters in the northern Gulf until cooling waters force them offshore or south along the Florida coast (Renaud 1995). Little is known of the movements of the post-hatching stage (pelagic stage) within the Gulf. Studies have indicated that this stage varies from 1 to 4 or more years and the benthic immature stage lasts about 7 to 9 years (Schmid and Witzell 1997). The maturity age of this species is estimated to be 7 to 15 years.

Threats

Of the seven extant species of sea turtles, the Kemp's ridley has declined to the lowest population level. However, recent studies have indicated that increased nesting activities and suggest that the decline in ridley population has stopped and the population is now increasing (USFWS 2000). A period of steady increase in the benthic immature turtles has been occurring since 1990 and suggests a result of increased hatchling production and survival rates of the immature turtles. The increased survival of immature individuals is believed to be in part a result of the use of turtle exclusion devices (TEDs) in the commercial shrimping fleets. Future threats to the species include interaction with fishery gear; marine pollution; destruction of foraging habitat; illegal poaching; and impacts to nesting beaches associated with rising sea level, development, and tourism pressure.

3.4 Leatherback Turtle

Life History/Distribution

The leatherback sea turtles are the largest of all sea turtles. These turtles may reach a length of about 7 feet and weigh as much as 1,600 pounds. The carapace is smooth and is colored gray, green, brown, and black. The plastron is yellowish white. Juveniles are black on top and white on the bottom.
This species is highly migratory and is the most pelagic of all sea turtles (NMFS and USFWS 1992). They are commonly found along continental shelf waters (Pritchard 1971; Hirth 1980; Fritts et al. 1983). Leatherback sea turtles' range extends from Cape Sable, Nova Scotia, south to Puerto Rico and the U.S. Virgin Islands. Leatherbacks are found in temperate waters while migrating to tropical waters to nest (Ross 1981). Distribution of this species has been linked to thermal preference and seasonal fluctuations in the Gulf Stream and other warm water features (Fritts et al. 1983). General decline of this species is attributed to exploitation of eggs (Ross 1981).

Leatherback sea turtles are omnivorous. Leatherbacks feed mainly on pelagic soft-bodied invertebrates, such as jellyfish and tunicates. Their diet may also include squid, fish, crustaceans, algae, and floating seaweed. Highest concentrations of these prey animals are often found in upwelling areas or where ocean currents converge. They will also ingest plastic bags and other plastic debris, which are commonly generated by oil drilling rigs and production platforms in coastal Florida, Alabama, Mississippi, and

Louisiana (Fritts et al. 1983). Nesting of leatherback sea turtles is nocturnal with only a small number of nests occurring in the United States in the Gulf of Mexico (Florida) from April to late July (Pritchard 1971; Fuller 1978; Fritts et al. 1983). Leatherback sea turtles prefer open access beaches possibly to avoid damage to their soft plastron and flippers. Unfortunately, such open beaches with little shoreline protection are vulnerable to beach erosion triggered by seasonal changes in wind and wave direction. Thus, eggs may be lost when open beaches undergo severe and dramatic erosion. The Pacific coast of Mexico supports the world's largest known concentration of nesting leatherbacks. There is very little nesting in the U. S. (Gunter 1981).

Threats

Disturbance of the nesting grounds is the most serious threat to leatherback sea turtles. Although the flesh of this sea turtle is not eaten, the population has been threatened by egg-harvesting in countries, such as Malaysia, Surinam, the Guianas, the west coast of Mexico, Costa Rica, and in several Caribbean islands. Leatherbacks were killed in the past for the abundant oil they yield, which was used for oil lamps and for caulking wooden boats. Ingesting plastic bags and other plastic wastes are another cause of death for leatherbacks turtles. The sea turtles confuse plastic wastes with one of their favorite foods jellyfish. When swallowed, plastics can clog a turtle's throat, esophagus, and intestines.

3.5 Loggerhead Turtle

Life History/Distribution

Loggerhead sea turtles occur throughout the temperate and tropical regions of the Atlantic, Gulf of Mexico, Pacific, and Indian Oceans. This species may be found hundreds of miles out to sea, as well as in inshore areas such as bays, lagoons, salt marshes, creeks, and the mouths of large rivers. In shallow Florida lagoons, loggerheads were found during the morning and evening, leaving the area during mid-day when temperatures reached 87° F. At dusk, turtles moved to a sleeping site and remained there until morning, possibly in response to changes in light or water temperature (Nelson 1986). Loggerhead turtles are essentially carnivores, feeding primarily on sea urchins, sponges, squid, basket stars, crabs, horseshoe crabs, shrimp, and a variety of mollusks. Their strong beak-like jaws are adapted for crushing thick-shelled mollusks. Although loggerhead sea turtles are primarily bottom feeders, they also eat jellyfish and mangrove leaves obtained while swimming and resting near the sea surface. Presence of fish species such as croaker in stomachs of stranded individuals may indicate feeding on the by-catch of shrimp trawling (Landry, 1986). Caldwell et al. (1955) suggest that the willingness of the loggerhead to consume any type of invertebrate food permits its range to be limited only by the presence of cold water.

As loggerheads mature, they travel and forage through nearshore waters until their breeding season, when they return to the nesting beach areas. The majority of mature loggerheads appear to nest on a two or three year cycle. Major nesting beaches for loggerheads include the Sultanate of Oman, southeastern United States, and eastern Australia. From a global perspective, the southeastern U.S. nesting aggregation is of paramount importance to the survival of the species and is second in size only to the nesting aggregation on Masirah Island, Oman. This species nests within the U.S. from Texas to Virginia, although the major nesting concentrations are found along the Atlantic coast of Florida, Georgia, South Carolina, and North Carolina. About 80 percent of all loggerhead nesting in the southeastern U.S. occurs in six Florida counties (Brevard, Indian River, St. Lucie, Martin, Palm Beach, and

Broward Counties). Total estimated nesting in the U.S. is approximately 50,000 to 70,000 nests per year. Nesting in the northern Gulf outside of Florida occurs primarily on the Chandeleur Islands in Louisiana and to a lesser extent on adjacent Ship, Horn, and Petit Bois Islands in Mississippi (Ogren 1977). Ogren (1977) reported a historical reproductive assemblage of sea turtles, which nested seasonally on remote barrier beaches of eastern Louisiana, Mississippi, and Alabama. Loss or degradation of suitable nesting habitat may be the most important factor affecting the nesting population in northern Gulf of Mexico.

Loggerhead sea turtles are considered turtles of shallow water. Juvenile loggerheads are thought to utilize bays and estuaries for feeding, while adults prefer waters less than 165 feet deep (Nelson 1986). Aerial surveys suggest that loggerheads (benthic immature and adults) in U.S. waters are distributed in the following proportions: 54% in the southeast U.S. Atlantic, 29% in the northeast U.S. Atlantic, 12% in the eastern Gulf of Mexico, and 5% in the western Gulf of Mexico. During aerial surveys of the Gulf of Mexico, the majority (97 percent) of loggerheads was seen off the east and west coasts of Florida (Fritts 1983). Most were observed around mid-day near the surface, possibly related to surface basking behavior (Nelson 1986). Although loggerheads were seen off the coast of Alabama, Mississippi, and Louisiana, they were 50 times more abundant in Florida than in the western Gulf. The majority of the sightings were in the summer (Fritts et al. 1983). An individual tagged in Perdido Bay, Alabama was recaptured one year later only about a mile from the original capture site. Loggerheads are frequently observed near offshore oil platforms, natural rock reefs, and rock jetties along the Gulf Coast. Large numbers of stranded turtles were observed inshore of such areas (Rabalais and Rabalais 1980). In a recent tracking study, loggerheads spent more than 90 percent of the time underwater, tended to avoid colder water, and spent much of the time in the vicinity of oil and gas structures, such as those found offshore of Mississippi and Alabama.

Threats

Overall the loss of nesting beaches, hatchling disorientation from artificial light, drowning in fishing and shrimping trawls, marine pollution, plastics, and styrofoam have led to the decline of loggerheads.

3.6 Hawksbill Sea Turtle

Life History/Distribution

Hawksbills generally inhabit coastal reefs, bays, rocky areas, passes, estuaries and lagoons, in water depths of less than 70 feet. Similar to green sea turtles, hatchlings are sometimes found floating in masses of pelagic marine algae (NFWL 1980). When they reach a carapace length of approximately 20 to 25 centimeters, hawksbill juveniles reenter coastal waters. Coral reefs are widely recognized as the resident foraging habitat of juveniles, sub-adults, and adults. This habitat association is likely related to their diet of sponges, which need solid substrate for attachment. Hawksbills are omnivorous and prefer invertebrates, especially encrusting organisms, and will feed on plant material such as algae, seagrasses and mangroves (Carr 1952; Rebel 1974; Pritchard 1977; Musick 1979; Mortimer 1982). Hawksbills also occur around rocky outcrops and high energy shoals, which are also optimum sites for sponge growth.

Hawksbills nest on average about 4.5 times per season at intervals of approximately 14 days (Corliss et al. 1989). In Florida and the U.S. Caribbean, clutch size is approximately 140 eggs, although several records exist of over 200 eggs per nest (NMFS 2013d). On the basis of limited information, nesting

migration intervals of two to three years appear to predominate. Hawksbills are recruited into the reef environment at about 14 inches in length and are believed to begin breeding about 30 years later. However, the time required to reach 14 inches in length is unknown and growth rates vary geographically. As a result, actual age at sexual maturity is unknown.

Threats

Hawksbill sea turtles are typically tracked nesting and foraging in warm Caribbean waters (Seaturtle.org 2009) and the Yucatan Peninsula of Mexico. The Hancock County Living Shoreline project area does not provide appropriate foraging substrate since Hawksbill turtles typically feed on coral related organisms such as sponges and encrusting organisms, which are not found in coastal Mississippi. Given the range and the observed traveling distances of some Hawksbill turtles, it is possible that they would forage in the Hancock County Living Shoreline project area; however, due to the lack of appropriate food sources and the absence of direct observation of hawksbill sea turtles in coastal Mississippi, their occurrence within the action area is highly unlikely.

4.0 Environmental Baseline in Action Area

Status of the Species and Critical habitat in the Action Area

The sea turtle species that may be affected by the proposed action are all highly migratory and individual animals of any of the species are likely to be year-round residents of the action area. Individuals will enter the project area during migrations as well as other areas of the northern Gulf, Atlantic, and Caribbean, therefore, the range-wide status and distribution as discussed above most accurately indicates the status in the action area.

The Gulf sturgeon is found in the Gulf of Mexico primarily from Tampa bay, FL to the mouth of the Mississippi River. Gulf sturgeon are not likely to be present in the action area during summer months (May-September) when they are occupying riverine habitat for spawning. Numerous studies in the northern Gulf have documented habitat use and seasonality of Gulf sturgeon movement from spawning areas in riverine habitat to foraging grounds in the nearshore environment (Fox et al., 2002; Heise et al., 2004, 2005; Rogillio et al., 2007; Ross et al., 2009; Havrylkoff et al., 2012). Telemetry data from Gulf sturgeon that are natal to the Pearl River drainage system show clear seasonal migration patterns. Movement chronologies show summer habitat use upriver to take place between April and November and winter habitat use at Cat, Ship, Horn, and Petit Bois islands in the Mississippi Sound to occur between November and early March (Rogillio et al., 2007). Data from two separate telemetry studies in the Pearl River area (Rogillio et al., 2007; Ross et al., 2009) document Gulf sturgeon migrating to and from the Rigolets Pass to the west of the Pearl River mouth in high concentrations before heading toward spawning and foraging grounds upriver and nearshore at the barrier islands, respectively (Figure 2). Ross et al. (2009) noted that in March and April, the majority of tagged fish began to move from offshore waters to the Rigolets Pass near the mouth of the Pearl River, their movement continuing upstream into the river system through June. Unit 8 of the Gulf sturgeon critical habitat includes Lake Pontchartrain (east of causeway), Lake Catherine, Little Lake, the Rigolets, Lake Borgne, Pascagoula Bay

and Mississippi Sound systems in Louisiana and Mississippi, and sections of the state waters within the Gulf of Mexico. The action area represents a very small acreage when considering the total area of Unit 8.

Factors Affecting Species' Environment in Action Area

Sea turtles found in the action area are not year-round residents and may travel widely throughout the Gulf of Mexico and other water bodies. Therefore, individuals found in the action area can potentially be affected by activities anywhere within their range of distribution. Gulf sturgeon critical habitat Unit 8 is a defined area that includes foraging and migratory habitat for subpopulations. Designated critical habitat includes areas that are known to contain primary constituent elements (PCE's) essential to the survival of the species. Upland activities could impact water quality in the unit.

There are no known Federal activities that have taken place in the action area that would have impacted listed species, however there are impacts outside of the project area. NOAA has commenced numerous ESA section 7 consultations to address the impact of federally permitted fisheries on threatened and endangered sea turtles in an effort to reduce adverse effects from several types of fishing gear. Additionally, potential adverse effects from Federal marine vessels and their operations throughout sea turtle ranges including operations from the Navy, Coast Guard, USACE, and NOAA have resulted in formal consultations. In coastal areas, sea-turtles have been affected by entrainment in cooling water systems at power generating plants that have Federal oversight.

Hydropower plants with Federal oversight can impact Gulf sturgeon. Sturgeon migrating up and down river systems can be adversely impacted by entrainment in cooling water systems. Additionally, larvae can be impacted by heated water discharge. Incidental catch of Gulf sturgeon by state and federally regulated fisheries, particularly the shrimping fishery, has been documented and can impact populations.

Private-entity activities can also an adverse effect on threatened and endangered species in the action area. Commercial and recreational boat traffic can have an adverse effect on sea turtles and Gulf sturgeon via propeller and vessel strike damage. Private vessels use the area for fishery resources including crab, shrimp, and game fish. A number of activities that may indirectly affect the listed species and critical habitat in the action area include wastewater discharge, nutrient loading, and other pollutants from upland sources.

5.0 Effects of Proposed Action

During construction of the breakwater, marsh, and oyster cultch deployment, the fine-grained soft bottom habitat would be altered by the placement of breakwater materials. The footprint of the combined project is approximately, 212.9 acres (Table 6). Approximately 111.9 acres would be filled for construction of project elements including breakwater construction (19.9 acres), marsh creation (46 acres) and oyster reef creation (46 acres), resulting in a long-term, moderate impact to a relatively small project footprint. In addition, the flotation channels would be constructed to transport the barges carrying the fill material (approximately 101 acres). The sidecast material from the construction of the flotation channels would temporarily alter the seafloor morphology until waves naturally push the sidecast material back into excavated channels after construction over several months, possibly longer. To the extent possible, materials from the flotation channel may be used beneficially to create marsh.

Table 6. Summary of proposed action.

Project Activity	Acreage Impacted	Habitat	Nature of Impact Improvement
Living Shoreline (Breakwater)	19.9 acres	intertidal sediments off marsh edge; -3 to 6 ft. contour.	Covering sediments with breakwater; establishment of a high relief reef/living shoreline
Marsh Creation	46 acres	~0-4 ft. subtidal and intertidal Open water/marsh edge; soft sediments landward of submerged reef;	Beneficial use of dredge material or sediment from other sources to back fill and create a marsh on the shoreline side of the living shoreline
Oyster Reef	46 acres	Hard bottom substrate; previous oyster reefs	Cultch deployment of 46 acres of high relief oyster reef
Flotation Channel	101 acres	Soft sediment	Dredge and side cast a 55,008 ft. of channel 80 ft. wide facilitating a barge draft of 8 ft.
Total	212.9 acres		

<u>Gulf Sturgeon</u>

All activities will take place in shallow waters near the shoreline allowing sufficient area for passage of individuals. Gulf sturgeon are highly mobile and will likely avoid the area due to project activity and noise. Normal behavior patterns of Gulf sturgeon are not likely to be disrupted by the project activities because of the short-term localized nature of the activities and the ability of Gulf sturgeon to avoid the immediate area. Dredging operations for the creation of temporary flotation channels would use a mechanical method, such as a clamshell or crane combo in which the dredged material would be scooped up and sidecast. Gulf sturgeon takes are not anticipated using this method.

Gulf Sturgeon Critical Habitat

Gulf sturgeon critical habitat exists in the project area and is represented on the habitat resources map (Figure 1). However, no effects to PCEs from the proposed project are expected in the riverine ecosystems as no work will occur in these habitats. PCEs include abundance of prey items, water quality, sediment quality, and safe and unobstructed migratory pathways. All restoration activities will take place in shallow estuarine waters near the shoreline allowing sufficient area for passage of individuals if present during implementation. Additionally, the benthic habitat in the project area is not preferred foraging habitat for Gulf sturgeon. Well oxygenated, clear water with sandy substrates are primarily used for feeding by the species (Fox et al., 2002; Ross et al., 2009). Benthic habitat in the project footprint is largely composed of soft, silty substrates with turbid waters. Potential water quality impacts as a result of dredging and disposal have also been considered. Dredging and disposal is expected to produce turbidity levels in excess of natural conditions, however sediment disturbance during these operations are expected to be temporary and minimal. If floatation channels are created for work barges, dredging will likely impact benthic invertebrates. These impacts are primarily short-term in nature, consisting of a temporary loss of populations in the footprint of the channel. These impacts will not result in permanent habitat alteration due to the fact that the areas will re-colonize with similar benthic species upon completion of the project, remaining functionally identical to the existing habitat. The shallow areas and substrate type that the channels may be constructed in are not considered suitable foraging habitat for sturgeon, therefore we do not expect any effect to abundance of prey items for the Gulf sturgeon.

Sediment Quality

The non-motile benthic community within the project area would be temporarily, adversely impacted as a result of the dredging and placement operations, but would recover within several months to 1 year following the dredging event. The majority of the motile species present within the project area will abandon the area during dredging and placement activities. They will return once the activities have been completed.

During construction of the breakwater, marsh, and oyster cultch deployment, the fine-grained soft bottom habitat would be altered by the placement of breakwater materials. The footprint of the combined project is approximately, 212.9 acres (Table 4). Approximately 111.9 acres would be filled for construction of project elements including breakwater construction (19.9 acres), marsh creation (46 acres) and oyster reef creation (46 acres), resulting in a long-term, moderate impact to a relatively small project footprint. In addition, the flotation channels would be constructed to transport the barges carrying the fill material (approximately 101 acres). The sidecast material from the construction of the flotation channels would temporarily alter the seafloor morphology until waves and currents naturally push the sidecast material or other sediment back into excavated channels after construction. To the extent possible, materials from the flotation channel may be used beneficially to create marsh. Adverse impacts to the submerged habitat during construction are expected to be short-term and minor.

There will be long-term, moderate adverse impacts to the bottom habitats (approximately 111.9 acres) over the life of the project because fine-grained sediment will be covered with hard structure and sediment for the creation of breakwaters, marsh and oyster reefs. However, the project area constitutes a small fraction of the total available habitat for the listed species in the area. There will be short-term

minor impacts to approximately 101 acres of fine-grained sediment for the creation of temporary flotation channels. The net benefits of the habitat protection and restoration would include increased benthic habitat diversity, structural complexity, greater diversity and abundance of marine aquatic species. In addition, the entire Hancock County marsh would experience reduced shoreline erosion.

Water Quality

Placement of the breakwater, created marsh, and deployment of oyster cultch would result in short-term, minor adverse impacts to water quality as a result of re-suspension of sediment by vessels (barges, tugs, skiffs, etc.) moving in and out of the project area, excavation of the flotation channels, and filling of the marsh. The suspended sediment may be transported into surrounding wetlands, waterways, and the Mississippi Sound. However, the area is currently exposed to elevated turbidity levels as a result of re-suspension of sediment during frequent storms, tides and other typical events. It is expected during dredging and placement that suspended particles will settle out within a short time frame, with no measurable effects on water quality.

Prey Abundance

As Gulf sturgeon feed principally on benthic invertebrates, potential impacts to the foraging constituent element would be confined to possible impacts to the benthic community. However, past observances have recorded subpopulations found within the Pearl and Pascagoula Rivers utilize sandy substrates around the Mississippi barrier islands in depths from 5-20 feet as foraging grounds during the fall migration and winter months (Fox et al., 2002; Ross et al., 2009). Additionally, construction would occur in depths shallower than those typically utilized by Gulf sturgeon. Benthic habitat in the project footprint is largely composed of soft, silty substrates with turbid waters, therefore there would be no adverse impact on prey abundance.

Safe and Unobstructed Migratory Pathways

Within Unit 8, subadult and adult Gulf sturgeon move from the rivers through estuarine and marine areas to feeding areas (Figure 3). Unit 8 is known to support migratory pathways for Gulf sturgeon sub-populations (Pascagoula and Pearl Rivers). It is believed that Gulf sturgeon that are neo-natal to the Pearl River system swim through the action area during intermittent inter-riverine movements (November to March) . Construction would occur in water depths of around 3.5 feet and less except for the excavation of the temporary flotation channels, which will be constructed out to the 8 ft. contour. To avoid migration disturbance, the project aims to construct restoration features from May-October while the species occupies riverine habitat. This provides ample opportunity for Gulf sturgeon to migrate through the immediate area. Given this information, no adverse impacts to migratory pathways are anticipated.

<u>Sea Turtles</u>

The five sea turtles species on the list are rarely observed in Mississippi waters (MDWFP 2001). Most of these species nest in locations far from Mississippi although it is possible that both Kemp's ridley and loggerhead sea turtles could use the offshore barrier islands for nesting (NOAA Fisheries 2012; NOAA Fisheries 2013b; NOAA Fisheries 2013c). Both the Kemp's ridley and loggerhead have been caught close to the shoreline by land-based fishermen indicating use of the Mississippi nearshore areas for foraging

and/or movement (MDWFP 2001). The shoreline habitat in the action area is unsuitable for sea turtle nesting (i.e., no sandy beach above high tide) and we do not expect nesting in the action area.

The green sea turtle, Kemp's Ridley sea turtle, leatherback sea turtle, and loggerhead sea turtle do not have more than a transient occurrence within the project area. Dredging operations for the creation of temporary flotation channels would use a mechanical method, such as a clamshell or crane combo in which the dredged material would be scooped up and sidecast. This method is not known to take sea turtles; sea turtles are highly mobile and will likely avoid the area due to project activity and noise. Additionally, project components would be constructed very close to the shoreline and are therefore not expected to impede sea turtle migratory routes. In summary, impacts to these species, if any, would be short-term and minor. If any sea turtles are found to be present in the immediate project area during restoration activities, construction would be halted until species moves away from project area. Best management practices as outlined by NOAA (NOAA 2006) will be utilized to prevent and minimize impacts to sea turtles. These practices include construction personnel education, use of "no wake/idle" speeds in proper locations, adhering to protection guidelines when a sea turtle is within 100 yards or activities, and reporting turtle injuries (NOAA 2006).

Direct Effects

Direct impacts will be limited to the area directly around the construction site where sediments will be disturbed by placement of hardened reef and breakwater material, dredging flotation channels, marsh material, and installing pilings. These adverse direct impacts would be short term to the listed species and it is expected that ambient conditions will be restored following cessation of work each day. Once the structures are stabilized, a long-term benefit is expected due to the newly created habitat that will attract infauna (aquatic animals that live in the sediment), shellfish, crustaceans, and transient fish.

Indirect Effects

Indirect adverse impacts are not expected in the short or long term. Long-term indirect benefits are expected due to anticipated increased habitat use of restoration features.

Cumulative Effects

Within the action area, major future changes are not anticipated at the project site and recreational use of the area is expected to continue at present levels in the near future. Listed species of sea turtle and Gulf sturgeon are not expected to be affected during their life cycles from project activities. The Hancock County Marsh Living Shoreline project will have a beneficial effect on the estuarine habitats in the area very shortly after construction. Fish and invertebrates would colonize the breakwaters relatively quickly, while marsh growth and oyster development may take longer; 3 to 5 years. The cumulative impact of these structures and the anticipated calm water conditions landward of the breakwaters are expected to create conditions favorable to SAV and oyster reef colonization and to generally improve water quality. Increases in SAV coverage, structural habitat, and shoreline erosion reduction will improve many habitats in the area.

6.0 Conservation Measures

General BMPs

1. Watch for and avoid collisions with wildlife while traveling on foot, equipment, vehicles or vessel.
    a. Activities shall occur during daylight (dawn to dusk) hours only.
    b. Vehicles and equipment shall be operated at speeds slow enough to avoid wildlife while still safely operating the vehicle.
    c. Avoid marked wildlife or other conservation areas.

2. Minimize the risk of attracting invasive species and predators to the action area.
    a. Prior to bringing any equipment (including personal gear, machinery, vehicles or vessels) to the work site, inspect each item for mud or soil, seeds, and vegetation. If present, the equipment, vehicles, or personal gear shall be cleaned until they are free from mud, soil, seeds, and vegetation. This inspection will occur each time equipment, vehicles, and personal gear are being prepared to go to a site or prior to transferring between sites to avoid spreading exotic, nuisance species.
    b. Inspect sites periodically to identify and control new colonies/individuals of an invasive species not previously observed prior to construction.
    c. Remove trash or anything that would attract nuisance wildlife to work areas daily.
    d. Project related trash or debris shall not be allowed to blow into open water or onto beaches.

3. Minimize unnecessary habitat disturbance.
    a. The nearest, existing staging, access and egress areas, travel corridors, pathways, and roadways shall be used (including those provided by the State, local governments, land managers, trustee, or private property owner, with proper permissions).
    b. Do not modify existing access.
    c. Minimize vegetation removal.
    d. Avoid driving over the wrack line or areas of dense seaweed, as these habitats may contain baby birds or other organisms that are difficult to see.

4. Minimize lighting impacts to wildlife
5. Prevent spills. Conduct daily inspections of all construction and related equipment to assure there are no leaks of antifreeze, hydraulic fluid, or other substances.
6. Prohibit use of hazardous materials, such as: lead paint, creosote, pentachlorophenol, and other wood preservatives during construction in, over, or adjacent to, sensitive sites during construction and routine maintenance.

Gulf Sturgeon

1. Project components will be constructed in the months of May-October to avoid inter-riverine migration movements.
2. Project construction activities will be subject to a stop work order if the species is observed in the project footprint. Work will continue once the species leaves the area.

The five sea turtles species on the endangered species list are rarely observed in Mississippi waters (MDWFP 2001). There is no sawtooth critical habitat in or near the project action area. The Trustee would adhere to the Sea turtle and Smalltooth Sawfish Construction Guidelines as a cooperative and voluntary measure, working cooperatively with NOAA and in order to avoid any possible adverse effect.

Sea turtle and Smalltooth Sawfish Construction Guidelines 2006

The permittee shall comply with the following protected species construction conditions:

1. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.

2. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.

3. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.

4. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.

5. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft. radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.

6. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.

7. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

Measures for Reducing Entrapment Risk to Protected Species

Bottlenose dolphins, sea turtles, and Gulf sturgeon (protected species) are known to inhabit coastal waters of the northern Gulf of Mexico. Bottlenose dolphins are protected under the Marine Mammal Protection Act (MMPA) and sea turtles and Gulf sturgeon are protected under the Endangered Species Act (ESA). Because of the potential for these protected species to become entrapped within coastal waters of construction sites along the northern Gulf coast, projects that enclose shallow open water areas for wetland creation or nourishment will use the following measures to minimize the potential for entrapment:

1. *Pre-construction planning.* During project design, the Federal Action Agency or project proponents must incorporate at least one escape route into the proposed retention structure(s) to allow any protected species to exit the area(s) to be enclosed. Escape routes must lead directly to open water outside the construction site and must have a minimum width of 100 feet. Escape routes should also have a depth as deep as the deepest natural entrance into the enclosure site and must remain open until a thorough survey of the area, conducted immediately prior to complete enclosure, determines no Protected Species are present within the confines of the structure (see item 5 below for details).

2. *Pre-construction compliance meeting.* Prior to construction, the Federal Action Agency, project proponents, the contracting officer representative, and construction personnel should conduct a site visit and meeting to develop a project-specific approach to implementing these preventative measures.

3. *Responsible parties.* The Federal Action Agency will instruct all personnel associated with the project of the potential presence of protected species in the area and the need to prevent entrapment of these animals. All construction personnel will be advised that there are civil and criminal penalties for harming, harassing, or killing protected species. Construction personnel will be held responsible for any protected species harassed or killed as a result of construction activities. All costs associated with monitoring and final clearance surveys are the responsibility of project proponents and must be incorporated in the construction plan.

4. *Monitoring during retention structure construction.* It is the responsibility of construction personnel to monitor the area for protected species during dike or levee construction. If protected species are regularly sighted over a 2 or 3 day period within the enclosure area during retention structure assembly, construction personnel must notify the Federal Action Agency. It is the responsibility of the Federal Action Agency to then coordinate with the National Marine Fisheries Service (NMFS) Marine Mammal Health and Stranding Response team (1-877-WHALE HELP [1-877-942-5343]) or the appropriate State Coordinator for the Sea Turtle Stranding and Salvage Network (see http://www.sefsc.noaa.gov/species/turtles/stranding_coordinators.htm) to determine what further actions may be required. Construction personnel may not attempt to scare, herd, disturb, or harass the protected species to encourage them to leave the area.

5. *Pre-closure final clearance.* Prior to completing any retention structure by closing the escape route, the Federal Action Agency will insure that the area to be enclosed is observed for protected species. Surveys must be conducted by experienced marine observers during daylight hours beginning the day prior to closure and continuing during closure. This is best accomplished by small vessel or aerial surveys with 2-3 experienced marine observers per vehicle (vessel/helicopter) scanning for protected species. Large areas (e.g. >300 acres) will likely require the use of more than one vessel or aerial survey to insure full coverage of the area.

These surveys will occur in a Beaufort sea state (BSS) of 3 feet or less, as protected species are difficult to sight in choppy water. Escape routes may not be closed until the final clearance determines the absence of protected species within the enclosure sight.

6. *Post closure sightings.* If protected species become entrapped in an enclosed area, the Federal Action Agency and NMFS must be immediately notified. If observers note entrapped animals are visually disturbed, stressed, or their health is compromised then the Action Agency may require any pumping activity to cease and the breaching of retention structures so that the animals can either leave on their own or be moved under the direction of NMFS.

    a. In coordination with the local stranding networks and other experts, NMFS will conduct an initial assessment to determine the number of animals, their size, age (in the case of dolphins), body condition, behavior, habitat, environmental parameters, prey availability and overall risk.

b. If the animal(s) is/are not in imminent danger they will need to be monitored by the Stranding Network for any significant changes in the above variables.

c. Construction personnel may not attempt to scare, herd, disturb, or harass the protected species to encourage them to leave the area. Coordination by the Federal Action Agency with the NMFS SER Stranding Coordinator may result in authorization for these actions.

d. NMFS may intervene (catch and release and/or rehabilitate) if the protected species are in a situation that is life threatening and evidence suggests the animal is unlikely to survive in its immediate surroundings.

e. Surveys will be conducted throughout the area at least twice or more in calm surface conditions (BSS 3 feet or less), with experienced marine observers, to determine whether protected species are no longer present in the area.

> While NMFS recommends these best management practices to prevent the future takes of marine mammals by entrapment, use of these measures cannot guarantee a take will not occur. Following these measures does not constitute compliance with the MMPA's Incidental Take requirements and take is not authorized.

7.0 Conclusion

Based upon the findings of this BA, the proposed action "may affect, but is not likely to adversely affect" the following species under the purview of the NOAA Fisheries:

- Loggerhead Sea Turtle - The restoration operations associated with this project may affect, but not likely to adversely affect and will not jeopardize the continued existence of the species.

- Green Sea Turtle - The restoration operations associated with this project may affect, but not likely to adversely affect and will not jeopardize the continued existence of the species.

- Leatherback Sea Turtle - The restoration operations associated with this project may affect, but not likely to adversely affect and will not jeopardize the continued existence of the species.

- Hawksbill Sea Turtle- Due to the lack of appropriate food sources and the absence of direct observation of hawksbill sea turtles in coastal Mississippi, their occurrence within the action area is highly unlikely. The proposed action is not likely to adversely impact hawksbill sea turtle individuals or populations. There is no critical habitat located in the project area.

- Gulf Sturgeon - The restoration operations associated with this project may affect, but not likely to adversely affect and will not jeopardize the continued existence of the species.

- Gulf Sturgeon Critical Habitat – The project footprint does fall within Gulf sturgeon critical habitat (Unit 8); however, it has been determined that the construction activities associated with this project will not adversely modify designated Gulf sturgeon critical habitat.

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9.0 Figures

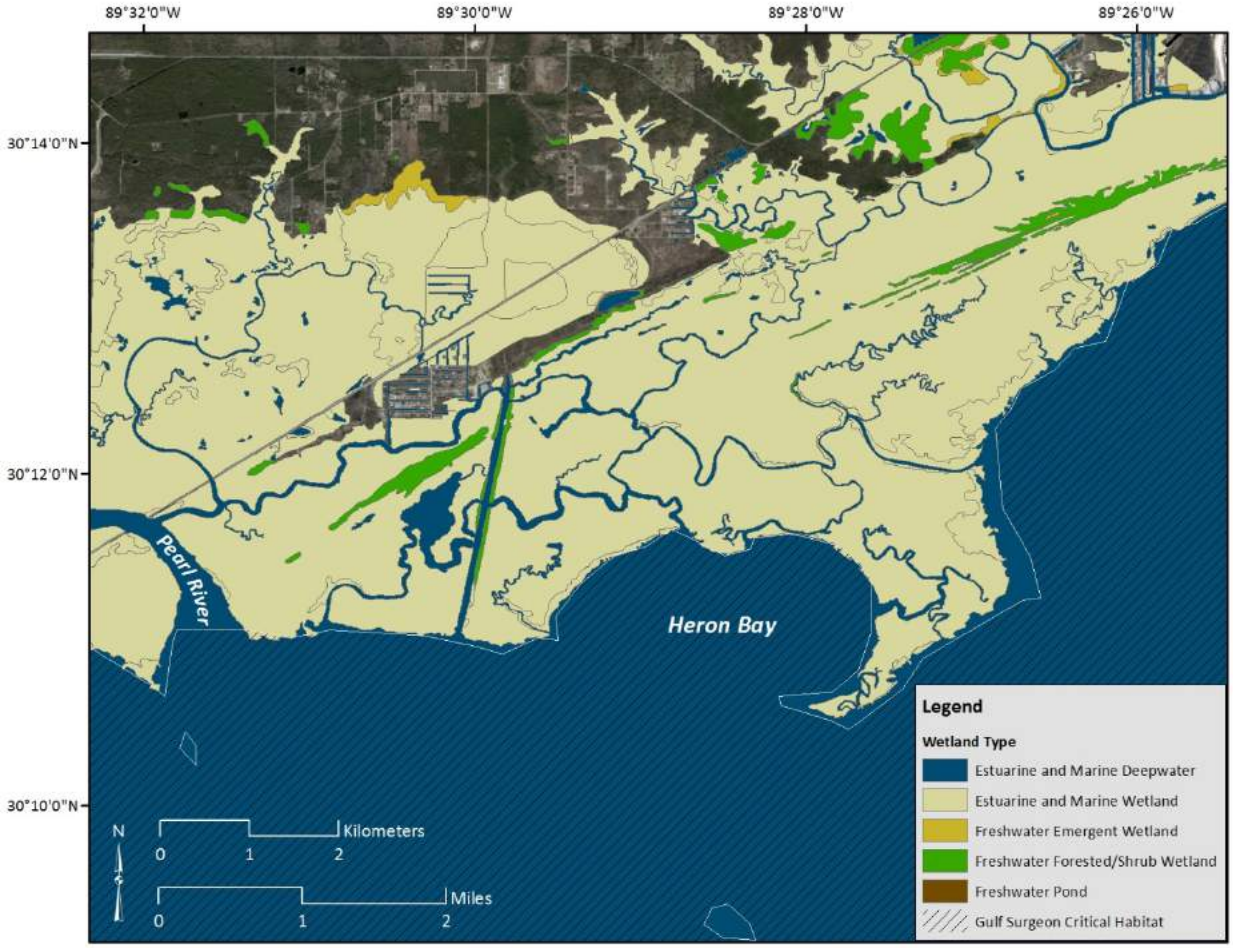

Figure 1. Project site area depicting wetland habitat and Gulf sturgeon critical habitat.

Figure 2. Conceptual project design with construction features.

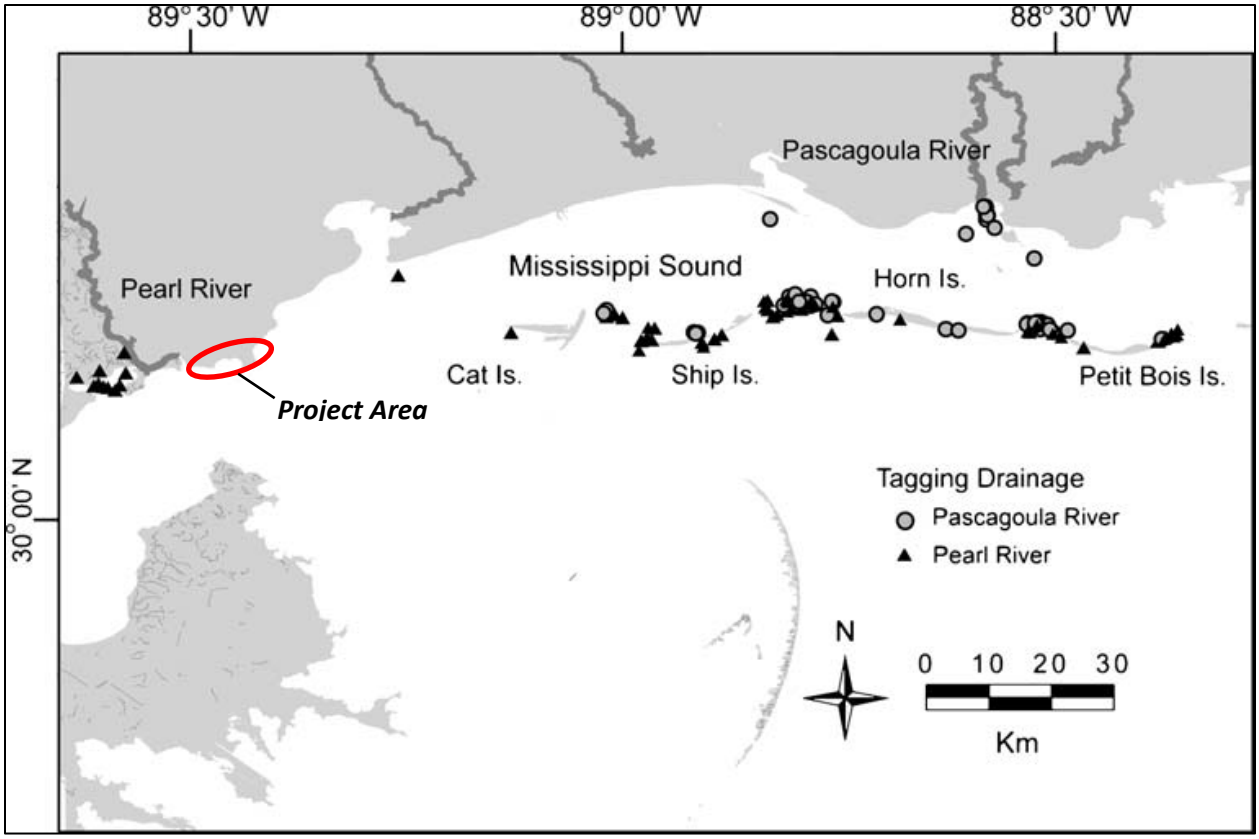

Figure 3. Telemetry locations of Gulf sturgeon in the estuarine and marine environment. Note that no telemetry locations in this study were found in the project area. Modified from Ross et al., 2009.

APPENDIX F

Magnusson-Stevenson Act (Essential Fish Habitat) Consultation with NOAA Habitat Conservation Division

UNITED STATES DEPARTMENT OF COMMERCE
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NATIONAL MARINE FISHERIES SERVICE
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263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

October 15, 2015

MEMORANDUM FOR: Leslie Craig
Southeast Region Supervisor, NOAA Restoration Center

FROM: Virginia M. Fay
Assistant Regional Administrator, Habitat Conservation Division

SUBJECT: Essential fish habitat review of the revised Hancock County breakwater, submerged reef and marsh creation project

In response to the Deepwater Horizon oil spill, NOAA and the other Trustee agencies propose to fund the construction of 5.9 miles of intertidal breakwaters, 46 acres of submerged reef, and 46 acres of marsh in shallow waters of Hancock County, Mississippi. The construction cost will be funded using Phase III Early Restoration funds. The NOAA's Restoration Center prepared an essential fish habitat (EFH) assessment for this project in 2014 and by letter dated March 26, 2014, the Southeast Region's Habitat Conservation Division (SER HCD) concurred with the finding the project may result in minor, adverse short-term impacts to EFH, but that it was also anticipated to result in long-term benefits to EFH.

According to information transmitted by your August 14, 2015, memorandum pertaining to this project, recent surveying, engineering and design activities have resulted in project refinements. Specifically, the breakwater base has widened and the height increased, the subtidal reef and marsh creation locations have changed, and the need for the dredging of flotation channels has been eliminated. Your memorandum indicates NOAA's Restoration Center believes the proposed project refinements will not significantly change the EFH impact and are requesting our concurrence the project, as revised, would result in minor, adverse short-term impacts, as well as long-term benefits, to EFH.

The SER HCD has reviewed the revised EFH assessment transmitted by your August 14, 2015, memorandum and concurs with the statements that the project revisions would not change the EFH impact and that the project would result in minor, adverse short-term impacts and long-term benefits, to EFH. Further consultation on this matter is not necessary unless future modifications are proposed and such actions may result in adverse impacts to EFH.

cc:
F/SER – Giordano
F/HC3 – Schubert
F/SER4 – Dale
F/SER46 - Hartman

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

March 26, 2014

MEMORANDUM TO: Leslie Craig
Southeast Region Supervisor, NOAA Restoration Center

FROM: Virginia M. Fay
Assistant Regional Administrator, Habitat Conservation Division

SUBJECT: Essential Fish Habitat (EFH) assessment review for the Hancock County Marsh Living Shoreline project in Heron Bay and Mississippi Sound, Hancock County, Mississippi

In response to the Deepwater Horizon oil spill, the Hancock County Marsh Living Shoreline project will employ living shoreline techniques utilizing natural and artificial breakwater material to stabilize eroding shorelines by dampening wave energy, while encouraging reestablishment of habitat once present in the region. In areas that have experienced erosion, marsh creation and subtidal oyster reefs would be used in combination with the living shoreline. The project would provide for construction of up to six miles of living shoreline and approximately 46 acres of marsh to protect and enhance existing shorelines in Mississippi Sound. Additionally, 46 acres of sub-tidal oyster reef would be created in Heron Bay to protect this shallow embayment and to increase oyster production in the area. Nearshore estuarine water column and sand and mud substrates will be impacted and are identified and described as EFH under provisions of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

As specified in the Magnuson-Stevens Act, EFH consultation is required for federal actions which may adversely affect EFH. As the federal action agency, NOAA's Restoration Center prepared an EFH assessment and provided that document for our review by electronic mail dated February 20, 2014. The Southeast Region's Habitat Conservation Division (SER HCD) has reviewed the EFH assessment and finds the Restoration Center adequately evaluated potential project impacts to the federally managed species occurring within the influence of the project. We concur with the EFH assessment that the project may result in minor, adverse short-term impacts to EFH; however, the project is anticipated to result in long-term benefits to EFH. The SER HCD has no EFH conservation recommendations to provide pursuant to Section 305(b)(2) of the Magnuson-Stevens Act at this time. Further consultation is not necessary unless future modifications are proposed and such actions may result in adverse impacts to EFH.

cc:
F/SER-Giordano
F/HC3-Schubert
F/SER4-Dale
F/SER46-Thompson

From: Jamie Schubert-NOAA Federal
To: Dan Van-Nostrand - NOAA Affiliate, Stephen Parker
Date: Thu, 20 Feb 2014 16:18:12 -0600
Subject: 2/20/2014 4:18 PM-Essential Fish Habitat Consultation Initiation-Hancock County Living Shoreline Project-Mississippiration- Esse
Attachment(s): 1

-------- Original Message --------
Subject: DWH-Early Restoration- Essential Fish Habitat Consultation Initiation-Hancock County Living Shoreline Project-Mississippi
Date: Thu, 20 Feb 2014 15:23:26 -0600
From: Jamie Schubert-NOAA Federal <jamie.schubert@noaa.gov>
To: Mark Thompson (NOAA Federal) <mark.thompson@noaa.gov>
CC: Rusty Swafford <Rusty.Swafford@noaa.gov>, Virginia Fay <virginia.fay@noaa.gov>, Leslie Craig <leslie.craig@noaa.gov>, Jamey Redding <Jamey.Redding@noaa.gov>, "Jeff Shenot (Jeff.Shenot@noaa.gov)" <Jeff.Shenot@noaa.gov>

Mr. Thompson,
Attached is the Essential Fish Habitat Assessment for the Hancock County
Living Shoreline Project in Mississippi. This project is being proposed
in the Deepwater Horizon Draft Phase III Early Restoration Plan and
Programmatic Environmental Impact Statement. Please consider this our
initiation of our Essential Fish Habitat consultation. If you
anticipate this consultation requiring more than 30 days (March 24,
2014) please let me know.

If you have any questions or require additional information, please
contact me at 409-621-1248 or at jamie.schubert@noaa.gov.
Thanks,

--
Jamie Schubert
NOAA Fisheries-Restoration Center

4700 Avenue U
Galveston, Texas 77551

Phone-409-621-1248

Essential Fish Habitat Assessment

for the Hancock County Marsh Living Shoreline Project

1.0 INTRODUCTION

The purpose of this document is to present the findings of the Essential Fish Habitat (EFH) assessment conducted for the proposed Hancock County Marsh Living Shoreline project as required by the Magnuson-Stevens Fishery Conservation and Management Act of 1976, as amended through 1996 (Magnuson-Stevens Act). The objectives of this EFH Assessment are to describe how the actions proposed by Hancock County Marsh Living Shoreline project may affect EFH designated by the National Marine Fisheries Service (NMFS) and Gulf of Mexico Fisheries Management Council (GMFMC), for the area of proposed action. According to the GMFMC, EFH within the Gulf of Mexico (Gulf) includes all estuarine and marine waters and substrates from the shoreline to the seaward limit of the Exclusive Economic Zone (EEZ). The area of proposed action of the Hancock County Marsh Living Shoreline project would be the project footprint. All anticipated maneuvering for construction vessels near the area of proposed action would be within the flotation channels (described in Section 2.0). This assessment will include a description of the proposed action; a summary of EFH within the vicinity of the Hancock County Marsh; a description of each Fishery Management Plan; an analysis of the direct, indirect and cumulative effects on EFH for the managed fish species and their major food sources; our views regarding the effects of the proposed action; and proposed minimization measures selected to minimize expected project negative effects.

2.0 PROJECT DESCRIPTION

The proposed Hancock County Marsh Living Shoreline project is intended to employ living shoreline techniques that utilize natural and artificial breakwater material to stabilize eroding shorelines by dampening wave energy while encouraging reestablishment of habitat that was once present in the region. In areas that have experienced erosion, marsh creation and subtidal oyster reefs would be used in combination with the living shoreline. The project would provide for construction of up to six miles of living shoreline. An additional component includes, approximately 46 acres of marsh would be constructed to protect and enhance the existing shoreline near Heron Bay and 46 acres of sub-tidal oyster reef would be created in Heron Bay to protect the shallow bay and increase oyster production in the area of proposed action. The project would include stabilization of the shoreline, re-establishment of oyster habitat, enhanced fisheries resources and marsh habitat. The estimated cost for this project is $50,000,000.

The shoreline within the Hancock County Marsh Coastal Preserve has been receding for many years mainly due to wave erosion. Schmid (2013) determined that the shoreline regression rate from 1850 to 2001 was an average one-meter per year, although rates varied locally (Figure 1). For example, the area from Three Oaks Bayou to Heron Bay Point receded at a rate higher than one meter per year. This area is important because once it is breached, shoreline erosion will likely increase along Heron Bay. Schmid (2013) also estimated an annual shoreline loss of approximately 6.2 acres. Thus, over the next 25 years,

between 200 and 500 acres in the Hancock County Marsh are at risk. An accelerated rate of sea level rise would result in further losses of marsh habitat. Additionally, shoreline regression may have been exacerbated as a result of marsh injury stemming from the oil spill.

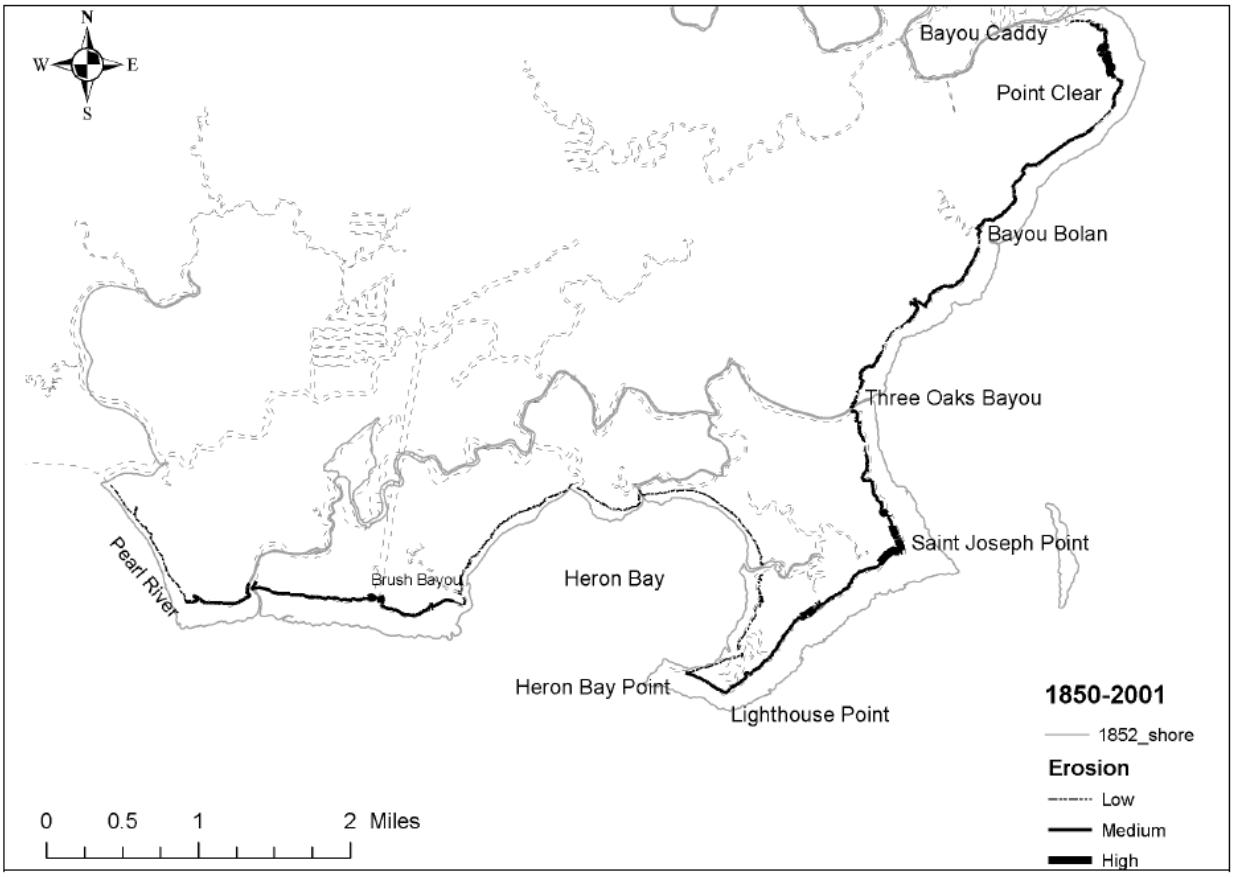


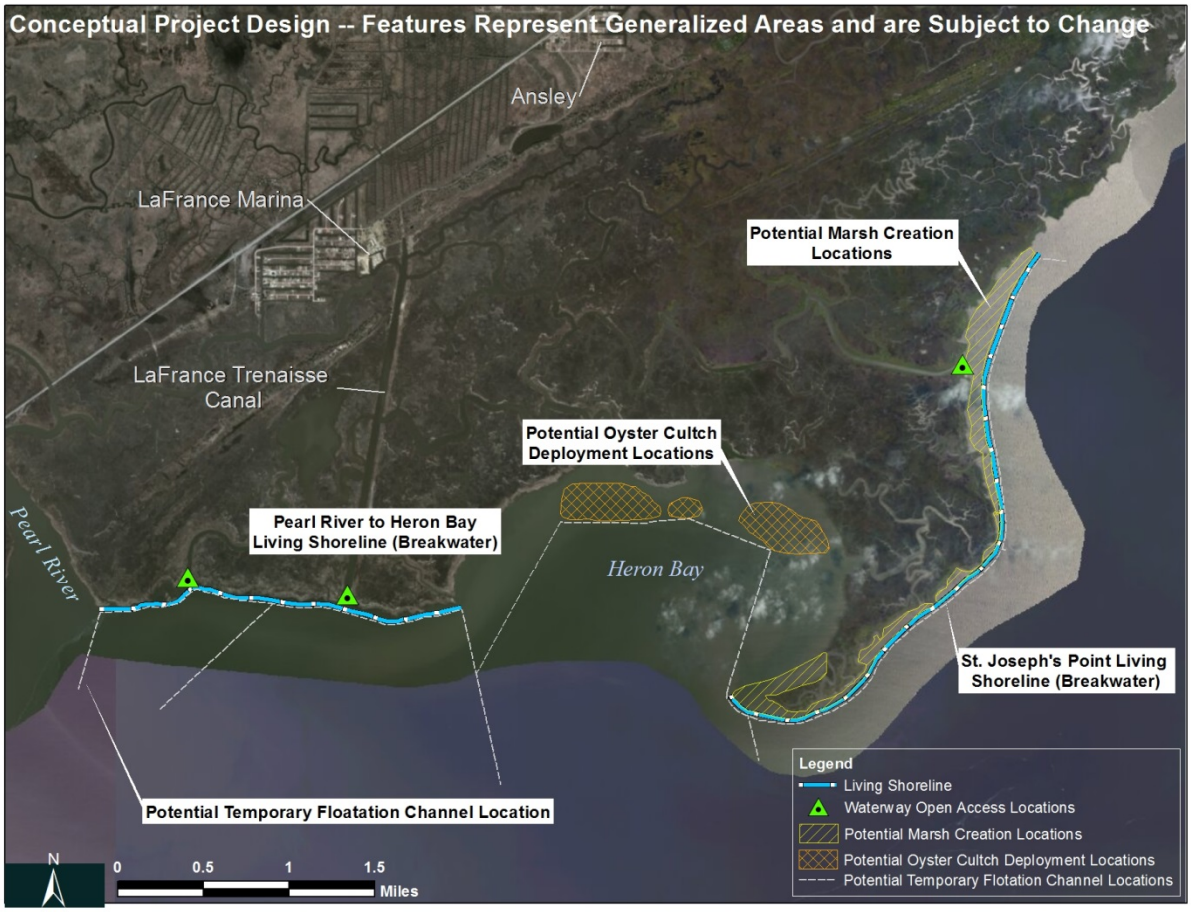
FIGURE 1 – SHORELINE EROSION RATES FROM 1850 TO 2001 (SCHMID 2013)

The project is located in western Hancock County, Mississippi, between Bayou Caddy and the mouth of the East Pearl River (Figure 2). The 13,570 acre Hancock County Marsh complex, one of the largest in Mississippi, is part of the extensive Pearl River estuary and is owned and managed by the Mississippi Department of Marine Resources as part of the Coastal Preserves of the State of Mississippi. Historically, there were extensive, prolific reefs of the American Oyster (*Crassostrea virginica*) in the shore zone and nearshore areas of lower Hancock County that provided natural protection from shoreline erosion. Historical erosion rates, particularly at St. Joseph's Point, make this shoreline a priority for protection and marsh creation. The living shoreline would help protect the Hancock County Marsh complex that includes estuarine and marine deepwater habitats, estuarine and marine wetlands, freshwater emergent wetlands and freshwater forested and scrub shrub wetlands.

Oyster breakwater/living shorelines would be constructed along the marsh shoreline in two locations: from the eastern limit of Heron Bay to approximately 4 miles to the northeast towards Bayou Caddy (eastern reach), and from the western limit of Heron Bay to the mouth of the Pearl River (western reach). Construction activities could include placement of linear structures that may utilize artificial

and/or shell-based materials within the -3 to -5 foot Mean Lower Low Water contour. Approximately 46 acres of marsh would be constructed in the St. Joseph's point area to protect and restore marsh areas that experience the historical rates of erosion. A total of 46 acres of subtidal oyster reef would be created using oyster shell in northeastern Heron Bay to protect the shallow embayment and to increase oyster production in the area.

FIGURE 2: PROPOSED HANCOCK COUNTY MARSH LIVING SHORELINE PROJECT



Construction and Installation

Living Shorelines (Breakwaters)

The specific breakwater elevation and design was selected to maximize shoreline protection and meet individual state regulatory requirements. Construction would include placement of linear structures that would utilize artificial and/or shell-based materials at approximately the -3.5 ft msl contour.

The alignment and limits of the breakwaters would be surveyed in with the outer limits of the breakwaters being marked with poles driven into the bottom and extended approximately 3 feet above the water surface. The height of the breakwaters along the alignment would be constructed based on

bottom elevations and the reef's crest elevation (0.87 foot NAVD88 – Mean Tide Level). Barriers, navigation warning signs (lighted and unlighted), and other safety devices would be installed along the work area to protect boaters.

The breakwaters would be approximately 30 feet wide at the base, 15 feet wide at the crest, to approximately 4 feet thick. The riprap core of the breakwaters would either be constructed using loose boulders or 'marine mattresses', consisting of 2 to 6 inch diameter rocks assembled on land. The core material would be transported to the work area on barges and installed by a crane located on a separate barge. Placement of the riprap core would be monitored to ensure the breakwater dimensions, slopes, and crest elevations are achieved. After installation of the riprap core, it would be covered with bags of shell. The deployment of the breakwaters may extend over a period of ten to twelve months. Total installed volumes would be as follows:

- *St. Joseph's Point Breakwater (Eastern Reach):* The target depth for deployment is approximately -3.5 MLLW. The volume of placed material would be approximately 51,600 cubic yards of riprap and 16,400 cubic yards of shell. The breakwater would cover a footprint of approximately 14.4 acres of fine-grained sediment.

- *Pearl River to Heron Bay Breakwater (Western Reach):* The target depth for deployment is between approximately -3.5 MLLW. The volume of placed material would be approximately 16,900 cubic yards of riprap and 6,300 cubic yards of shell. The breakwater would cover a footprint of approximately 5.5 acres of fine-grained sediment.

The project is designed to use temporary flotation channels to facilitate access for work barges into the work area. A channel will be excavated parallel to the alignments of the two breakwaters. Additional channels will be excavated perpendicular to these channels to provide access from the Mississippi Sound to allow work barges entry and exit for the area of proposed action. The excavated dredged material would be cast on the seaward side of the channels so that they would naturally fill back in after construction. The depth of the channels would be 8 feet below MLLW to accommodate barge draft. The bottom width of the channels would be approximately 80 feet with 3H:1V side slopes. The entry locations for the channels would be determined by analyzing the shortest distance from the breakwaters to the appropriate depth on -8 ft. and excavated using best management practices to minimize environmental impacts. The preliminary flotation channel footprint for the purposes of project planning was calculated based on an estimate of a heavy loaded barge. Proposed flotation channel dimensions are summarized in Table 1.

Table 1 – Preliminary Temporary Flotation Channel Footprint

Component	Dimension
Channel Length	55,008 ft.
Barge Draft	8 ft.
Channel Width	80 ft.
Area Temporarily Impacted	101 acres

After completion of construction, the breakwater structure would be surveyed and permanent navigation signs would be installed in accordance with safety requirements.

Creation of Marsh in the Vicinity of St. Joseph's Point

After the breakwater along St. Joseph's Point has been installed, selected areas landward of the breakwater would be filled with dredged material obtained from the MDMR Beneficial Use of Sediment Program if material is available, or a suitable borrow source. A dike would be constructed at the seaward extent of the marsh. The dike would be constructed by excavating existing material from the landward side of the dike. Once an area of the marsh is diked, the area landward of the dike would be filled with dredged material until final marsh grades are achieved. Sediment would be pumped through a floating pipeline from a hydraulic dredge located where suitable fill material is available. Pumps and sediment controls would remain in place throughout the dredging and filling process, and after initial settling has occurred. Once the entire marsh area(s) is constructed, the area would be monitored for natural re-vegetation.

Placement of Oyster Cultch Reefs in Heron Bay

Oyster cultch would be deployed in Heron Bay in water depths of -3 to -5 feet MLLW in areas that currently support or previously supported oyster production. An oyster presence survey has been completed that identified suitable areas. The cultch would be deployed as a 6 to 9-inch thick layer of oyster shell. Prior to deployment, the limits of the oyster cultch deployment area(s) would be marked with buoys or poles. Oyster shells would be deployed by a barge-mounted crane with a clam shell bucket. A material barge loaded with oyster shells would be moored to the crane barge. As a construction alternative, water jetting of loose shell off of a material barge may be used in case of water depth constraints. Upon completion, the deployment area would be surveyed.

Best Management Practices

Construction timing would be limited to the May to October timeframe to avoid disturbance to Gulf Sturgeon migration patterns in the area. Work barges would be moored for overnight and weekends/holidays in areas where previous impacts have occurred (flotation channels, deployment

areas). Spoil from flotation channels will be placed on the seaward side of the channel to facilitate current-driven backfilling of channels.

Anticipated pre- and post-construction monitoring activities

Monitoring activities would be performed prior to construction as well as for up to seven years after construction. Monitoring activities would include:

- Topographic/bathymetric surveys
- Vegetation surveys (species composition and percent cover)
- Oyster and invertebrate monitoring (density and biomass)

The project will incorporate a mix of monitoring efforts to ensure project designs are correctly implemented during construction and in a subsequent period, where corrective action could be taken.

Post-construction performance monitoring will be conducted to observe the performance of the physical breakwater structures (breakwater height, structural integrity, settling rate, etc.), and marsh (elevation, settling rate, etc.) to allow for corrective action, as needed or as defined by the Trustee.

Post-construction performance monitoring would also evaluate the project's performance over time with respect to the agreed-upon restoration goals and objectives. Specifically, this monitoring would evaluate the production and support of organisms on the breakwater (e.g., secondary production) and the performance of the created marsh. Monitoring parameters would include the following: water quality (e.g., salinity, dissolved oxygen); vegetative monitoring; and invertebrate infauna and epifauna composition and biomass.

Anticipated short-term maintenance activities

Within four years following construction, a maintenance activity on the breakwater structure may be necessary to add more riprap or shell material. The breakwater is anticipated to experience the greatest consolidation of the subgrade in the first years following construction. Additional placement of rock and/or shell on the breakwater would be assessed during the regular monitoring. Maintenance construction methods would be similar to the construction methods of the original breakwater structure.

Anticipated long-term maintenance activities

No other operations or maintenance activities are anticipated.

3.0 ESSENTIAL FISH HABITAT

The 1996 amendments to the Magnuson-Stevens Act set forth a mandate for NMFS, regional Fishery Management Councils (FMC), and other Federal agencies to identify and protect EFH of economically important marine and estuarine fisheries. To achieve this goal, suitable fishery habitats need to be

maintained. EFH in the area of proposed action is identified and described for various life stages of 12 managed fish and shellfish (GMFMC 1998). A provision of the Magnuson-Stevens Act requires that FMC's identify and protect EFH for every species managed by a Fishery Management Plan (FMP) (U.S.C. 1853(a)(7)). There are FMP's in the Gulf region for shrimp, red drum, reef fishes, coastal migratory pelagics, and highly migratory species (e.g., sharks). Table 2 presents the EFH within northern Gulf of Mexico, and includes species that may not be present within the area of proposed action.

Table 2. EFH in the Northern Gulf

Management Unit	Lifestage(s) Found at Location	FMP^
Red Drum	ALL	Red Drum
Highly Migratory Species		
Scalloped Hammerhead Shark	Neonate, Juvenile	HMS*
Bonnethead Shark	Adult	HMS*
Blacktip Shark	Neonate, Juvenile	HMS*
Bull Shark	Juvenile, Adult	HMS*
Spinner Shark	Juvenile	HMS*
Atlantic Sharpnose Shark	Neonate	HMS*
Shrimp (4 Species) Brown shrimp (*Farfantepenaeus aztecus*) White shrimp (*Litopenaeus setiferus*) Pink shrimp (*Farfantepenaeus duorarum*) Royal red shrimp (*Pleoticus robustus*)	ALL	Shrimp
Coastal Migratory Pelagics King mackerel (*Scomberomorus cavalla)* Spanish mackerel (*Scomberomorus maculatus*) Cobia (*Rachycentron canadum*) Dolphin (*Coryphaena hippurus*) Little tunny (*Euthynnus alletteratus*) Cero mackerel (*Scomberomorus regalls*) Bluefish (*Pomatomus saltatrix*)	ALL	Coastal Migratory Pelagics
Reef Fish (43 Species) Balistidae - Triggerfishes Gray triggerfish (*Balistes capriscus*) Carangidae - Jacks Greater amberjack (*Seriola dumeril*i) Lesser amberjack (*Seriola fasciata*) Almaco jack (*Seriola rivoliana*) Banded rudderfish (*Seriola zonata*) Labridae - Wrasses	ALL	Reef Fish

Management Unit	Lifestage(s) Found at Location	FMP^
Hogfish (*Lachnolaimus maximus*)		
Lutjanidae - Snappers		
Queen snapper (*Etelis oculatus*)		
Mutton snapper (*Lutjanus analis*)		
Schoolmaster (*Lutjanus apodus*)		
Blackfin snapper (*Lutjanus buccanella*)		
Red snapper (*Lutjanus campechanus*)		
Cubera snapper (*Lutjanus cyanopterus*)		
Gray (mangrove) snapper (*Lutjanus griseus*)		
Dog snapper (*Lutjanus jocu*)		
Mahogany snapper (*Lutjanus mahogoni*)		
Lane snapper (*Lutjanus synagris*)		
Silk snapper (*Lutjanus vivanus*)		
Yellowtail snapper (*Ocyurus chrysurus*)		
Wenchman (*Pristipomoides aquilonaris*)		
Vermilion snapper (*Rhomboplites aurorubens*)		
Malacanthidae – Tilefishes		
Goldface tilefish (*Caulolatilus chrysops*)		
Blackline tilefish (*Caulolatilus cyanops*)		
Anchor tilefish (*Caulolatilus intermedius*)		
Blueline tilefish (*Caulolatilus microps*)		
(Golden) Tilefish (*Lopholatilus chamaeleonticeps*)		
Serranidae – Groupers		
Dwarf sand perch (*Diplectrum bivittatum*)		
Sand perch (*Diplectrum formosum*)		
Rock hind (*Epinephelus adscensionis*)		
Speckled hind (*Epinephelus drummondhayi*)		
Yellowedge grouper (*Epinephelus flavolimbatus*)		
Red hind (*Epinephelus guttatus*)		
Goliath grouper (*Epinephelus itajara*)		
Red grouper (*Epinephelus morio*)		
Misty grouper (*Epinephelus mystacinus*)		
Warsaw grouper (*Epinephelus nigritus*)		
Snowy grouper (*Epinephelus niveatus*)		
Nassau grouper (*Epinephelus striatus*)		

Management Unit	Lifestage(s) Found at Location	FMP^
Marbled grouper (*Epinephelus inermis*) Black grouper (*Mycteroperca bonaci*) Yellowmouth grouper (*Mycteroperca interstitialis*) Gag (*Mycteroperca microlepis*) Scamp (*Mycteroperca phenax*) Yellowfin grouper (*Mycteroperca venenosa*)		

^FMP-Fisheries Management Plan, *HMS- Highly Migratory Species

4.0 MANAGED FISH SPECIES

The seasonal and year-round locations of designated EFH for the managed fisheries are depicted on the figures available on the NMFS website (http://sero.nmfs.noaa.gov/hcd/efh.htm) and species abundance maps, both inshore and offshore, are available on the National Ocean Service (NOS) website (http://ccma.nos.noaa.gov/products/biogeography/gom-efh/). EFH figures for HMS are found in the 2009 amendments to the Consolidated Atlantic Highly Migratory Species Fisheries Management Plan. EFH for each managed fishery within the project's footprint is described below:

Red Drum FMP – EFH for red drum consists of all Gulf of Mexico estuaries; waters and substrates extending from Vermilion Bay, Louisiana to the eastern edge of Mobile Bay, Alabama out to depths of 25 fathoms; waters and substrates extending from Crystal River, Florida to Naples, Florida between depths of 5 and 10 fathoms; waters and substrates extending from Cape Sable, Florida to the boundary between the areas covered by the Gulf of Mexico Fishery Management Council and the South Atlantic Fishery Management Council between depths of 5 and 10 fathoms.

Shrimp FMP – EFH for shrimp consists of Gulf of Mexico waters and substrates extending from the US/Mexico border to Fort Walton Beach, Florida from estuarine waters out to depths of 100 fathoms; waters and substrates extending from Grand Isle, Louisiana to Pensacola Bay, Florida between depths of 100 and 325 fathoms; waters and substrates extending from Pensacola Bay, Florida to the boundary between the areas covered by the Gulf of Mexico Fishery Management Council and the South Atlantic Fishery Management Council out to depths of 35 fathoms, with the exception of waters extending from Crystal River, Florida to Naples, Florida between depths of 10 and 25 fathoms and in Florida Bay between depths of 5 and 10 fathoms.

Coastal Migratory Pelagics FMP – EFH for coastal migratory pelagics consists of Gulf of Mexico waters and substrates extending from the US/Mexico border to the boundary between the areas covered by the Gulf of Mexico Fishery Management Council and the South Atlantic Fishery Management Council from estuarine waters out to depths of 100 fathoms. Managed fish in this fishery include king mackerel, Spanish mackerel, and cobia. Non-managed fish in this fishery include cero mackerel, little tunny, dolphin, and bluefish.

These areas are connected by currents and water patterns that influence the occurrence of HMS at particular times of the year. Due to habitat specific requirements of each species, EFH for each HMS potentially occurring in the vicinity of the Hancock County Marsh Living Shoreline is described below (EFH information from NMFS, 2009):

Scalloped Hammerhead Shark:

•Neonate/YOY (≤60 cm TL): Coastal areas in the Gulf of Mexico from Texas to the southern west coast of Florida. Atlantic east coast from the mid-east coast of Florida to southern North Carolina.

• Juveniles (61 to 179 cm TL): Coastal areas in the Gulf of Mexico from the southern to mid-coast of Texas, eastern Lousainia to the southern west coast of Florida, and the Florida Keys. Offshore from the mid-coast of Texas to eastern Louisiana. Atlantic east coast of Florida through New Jersey.

• Adults (≥180 cm TL): Coastal areas in the Gulf of Mexico along the southern Texas coast, and eastern Lousainia through the Florida Keys. Offshore from southern Texas to eastern Louisiana. Atlantic east coast of Florida to Long Island, NY.

Bonnethead Shark:

• Neonate/YOY (≤55 cm TL): Coastal areas in the Gulf of Mexico along Texas, and from eastern Mississippi through the Florida Keys. Atlantic east coast from the midcoast of Florida to South Carolina.

• Juveniles (56 to 81 cm TL): Coastal areas in the Gulf of Mexico along Texas, and from eastern Mississippi through the Florida Keys. Atlantic east coast from the midcoast of Florida to South Carolina.

• Adults (≥82 cm TL): Coastal areas in the Gulf of Mexico along Texas, and from eastern Mississippi through the Florida Keys. Atlantic east coast from the mid-coast of Florida to Cape Lookout.

Blacktip Shark:

• Neonate/YOY (≤75 cm TL): Coastal areas in the Gulf of Mexico from Texas through the Florida Keys. In Atlantic coastal areas from northern Florida through Georgia, and the mid-coast of South Carolina.

• Juvenile (76 to 136 cm TL): Coastal areas in the Gulf of Mexico from Texas through the Florida Keys. In Atlantic coastal areas localized off of the southeast Florida coast and from West Palm Beach, Florida to Cape Hattaras.

• Adult (≥137 cm TL): Coastal areas in the Gulf of Mexico from Texas through the Florida Keys. In Atlantic coastal areas southeast Florida to Cape Hattaras.

Bull Shark:

• Neonate/YOY (≤95 cm TL): Gulf of Mexico coastal areas along Texas, and localized areas off of Mississippi, the Florida Panhandle, and west coast of Florida;

as well as the Atlantic mid-east coast of Florida.
• Juveniles (96 to 219 cm TL): Gulf of Mexico coastal areas along the Texas coast, eastern Louisiana to the Florida Panhandle, and the west coast of Florida through the Florida Keys. Atlantic coastal areas localized from the mid-east coast of Florida to South Carolina.
• Adults (≥220 cm TL): Gulf of Mexico along the southern and mid-coast of Texas to western Louisiana, eastern Louisiana to the Florida Keys. East coast of Florida to South Carolina in the Atlantic.

Spinner Shark:
• Neonate/YOY (≤70 cm TL): Localized coastal areas in the Gulf of Mexico along Texas, eastern Louisiana, the Florida Panhandle, Florida west coast, and the Florida Keys; and in the Atlantic along the east coast of Florida to southern North Carolina.
• Juveniles (71 to 179 cm TL): Gulf of Mexico coastal areas from Texas to the Florida Panhandle, and the mid-west coast of Florida to the Florida Keys. Atlantic east coast of Florida through North Carolina.
• Adults (≥180 cm TL): Localized areas in the Gulf of Mexico off of southern Texas, Louisiana through the Florida Panhandle, and from the mid-coast of Florida through the Florida Keys. In the Atlantic along the east coast of Florida, and localized areas from South Carolina to Virginia.

Atlantic Sharpnose Shark
• Neonate/YOY (≤60 cm TL): Gulf of Mexico coastal areas from Texas through the Florida Keys. In the Atlantic from the mid-coast of Florida to Cape Hattaras.
• Juveniles (61 to 71 cm TL): Gulf of Mexico coastal areas from Texas through the Florida Keys. In the Atlantic from the mid-coast of Florida to Cape Hattaras, and a localized area off of Delaware.
• Adults (≥72 cm TL): Gulf of Mexico from Texas through the Florida Keys out to a depth of 200 meters. In the Atlantic from the mid-coast of Florida to Maryland.

Reef Fish FMP – EFH for reef fish consists of Gulf of Mexico waters and substrates extending from the US/Mexico border to the boundary between the areas covered by the Gulf of Mexico Fishery Management Council and the South Atlantic Fishery Management Council from estuarine waters out to depths of 100 fathoms.

4.1 ECOLOGICAL NOTES ON THE EFH FISHERIES AND SPECIES

Habitats in Proposed Project Area

The Hancock County Marsh Living Shoreline area of proposed action is composed largely of estuarine emergent marsh and estuarine shallow water intertwined by a network of tidal creeks. The benthic habitats can be divided into two classes including intertidal and subtidal.

Intertidal zones (typical tidal range of 0.5 ft.) in the area are composed of mud flats, small areas of natural sand beach, and a small number of Native American shell middens. The nearshore subtidal benthic habitat is composed mostly of unconsolidated bottom types including sand, muddy sand, and mud bottom (Wieland 1994). Bathymetry in the area of proposed action ranges from approximately 0-12 ft. below MLLW, although the living shoreline, oyster deployment, and marsh creation areas range roughly from 1-4 ft. below MLLW. A recent survey of SAV and oysters in Heron Bay noted that SAV presence was primarily documented in very shallow waters along the fringe of the marsh edge growing on eroded submerged marsh platform. Sparse amounts of *Ruppia maritima* were found growing in a matrix of mud and relict plant rhizomes. Oyster shell locations were present primarily in the northern and middle sections of Heron bay. Presence was documented in areas that had been delineated as supporting historic oyster reefs by the MDMR. Most of the shell was dead and silted in below the bottom surface. Both habitat classes support an array of neonate, juvenile, and adult fish. Table 4 is a summary of restoration activities by habitat type.

The following section describes the EFH within the area of proposed action. Table 3 lists the EFH species that utilized the area of proposed action.

Table 3: EFH within the Area of Proposed Action

GoM FMP Group	Species	Habitat Type	Eggs	Larvae	Post Larvae	Early Juveniles	Late Juveniles	Adults	Spawning Adults
Red Drum Fishery	Red Drum (*Scianops ocellatus*)	SAV, soft bottom, hard bottom, sand/shell, emergent marsh		growth; feeding	growth; feeding	growth; feeding	growth; feeding	feeding	feeding
Reef Fish Fishery	Mutton Snapper (*Lutjanus analis*)	SAV				growth; feeding	growth; feeding	feeding	
	Cubera Snapper (*Lutjanues cyanopterus*)	SAV, emergent marsh				growth	growth		
	Gray Snapper (*Lutjanus griseus*)	SAV, soft bottom, sand/shell, emergent marsh			growth; feeding	growth; feeding	growth; feeding	feeding	
	Lane Snapper (*Lutjanus synagris*)	SAV, soft bottom, sand/shell			growth	growth; feeding	growth; feeding		
	Yellowtail Snapper (*Ocyurus chrysurus*)	SAV, soft bottom				growth; feeding			
	Goliath Grouper (*Epinephelus itajara*)	SAV, hard bottom				growth; feeding	growth; feeding		
	Red Grouper (*Epinephelus morio*)	SAV, hard bottom				growth; feeding	growth; feeding		
	Black Grouper (*Mycteroperca bonaci*)	SAV				growth; feeding			
Coastal Pelagic Fishery	Spanish Mackerel (*Scomberomorus maculatus*)	pelagic				growth; feeding	growth; feeding	growth; feeding	
Shrimp Fishery	Brown Shrimp (*Farfantepenaeus aztecus*)	SAV, soft bottom, sand/shell, emergent marsh, oyster reef			growth; feeding	growth; feeding	growth; feeding		
	White Shrimp (*Litopenaeus setiferus*	emergent marsh, soft bottom			growth; feeding	growth; feeding	growth; feeding		

4.1.1 Red Drum

In the Gulf, red drum occur in a variety of habitats, ranging from depths of about 130 feet offshore to very shallow estuarine waters. Red drum utilize SAV, soft bottom, sand/shell, and emergent marsh habitat during all life cycle stages (Table 3). They commonly occur in all of the Gulf's estuaries where they are associated with a variety of substrate types including sand, mud, and hardened bottom. Throughout the Gulf, red drum use seagrass meadows as nursery and foraging habitat (GMMFC 2004). Estuaries provide habitat for red drum and species that it preys on. The GMFMC considers all estuaries to be EFH for the red drum. Schools of large red drum are common in the deep Gulf waters with spawning occurring in deeper water near the mouths of bays and inlets, and on the Gulf side of the barrier islands.

In the area of proposed action the red drum fishery is very common. The estuarine zone is used by this species in all life stages. Habitat use is highest for nearshore hard bottoms, nearshore sand/shell, estuarine SAV, and estuarine soft bottoms (GMFMC 2005). Larvae, juveniles, and young adults spend the majority of their time in estuarine habitats and prey on a large array of species including blue crab eggs and numerous juvenile fish.

4.1.2 Reef Fish

The reef fishes FMP in the area of proposed action include snappers and groupers. Reef fish utilize a variety of habitats including SAV, soft bottom, hard bottom, sand/shell, and emergent march during their juvenile and adult life cycle stages (Table 3). They are often found as adults associated with coral reef, limestone, hard bottom, and artificial reef substrates. Occasionally adults occur over sand, away from reefs, but these appear to be foraging individuals. There is some evidence that adults have restricted movement and do not display long migrations. Juveniles of many of the reef fish species are located in shallow, inshore areas associated especially with SAV beds and inshore reefs. There is a general tendency for older and larger fish to occur in deeper water extending to the edge of the continental shelf. Reef fish feed on a variety of invertebrates including shrimp, craps, amphipods, octopus, and squid. Larger reef fish also have a tendency to eat small fish and other larger food items (GMFMC 1981).

Reef fish utilize both pelagic and benthic habitats during their life cycle. A planktonic larval stage lives in the water column and feeds on zooplankton and phytoplankton. Juvenile and adult reef fish are typically demersal and usually associated with bottom topographies on the continental shelf that have high relief: i.e., coral reefs, artificial reefs, rocky hard-bottom substrates, ledges and caves, sloping soft-bottom areas, and limestone outcroppings. More detail on these habitat types is found in the Fishery Management Plan (FMP) for Corals and Coral Reefs (GMFMC and SAFMC 1983). However, several species are found over sand and soft-bottom substrates. Some juvenile snapper and grouper such as mutton, gray, lane, and yellowtail snappers and red grouper have been documented in inshore seagrass beds, mangrove estuaries, lagoons, and larger bay systems (GMFMC 1981).

In the area of proposed action the reef fish fishery includes numerous species that utilize the estuarine zone in certain life stages. Most are transitory species use inshore environments part of the year. Only mutton (*Lutjanus analis*) and gray snapper (*Lutjanus griseus*) use the estuarine zone as adults for feeding. Reef species have the potential to use this zone as early or late juveniles for growth and feeding habitat.

4.1.3 Coastal Migratory Pelagics FMP

The managed coastal migratory pelagics in the area of proposed action include Spanish mackerel. Spanish mackerel is jointly managed by the GMFMC and the South Atlantic Fisheries Management Council. Spanish mackerel migrate south during the winter months and return north in the spring to their spawning grounds (GMFMC & SAFMC, 1983). Mackerel tend to feed on other fishes.

In the area of proposed action, only the Spanish mackerel (*Scomberomorus maculatus*) uses the estuarine zone during the early and late juvenile and adult life stages (Table 3).

4.1.4 Shrimp

Shrimp use a variety of estuarine and marine habitats in the Gulf of Mexico. Brown shrimp are found within the estuaries to offshore depths of 110 meters (m) throughout the Gulf; white shrimp inhabit estuaries and to depths of about 40 m offshore in the coastal area extending from Florida's Big Bend area through Texas. Brown and white shrimp are generally more abundant in the central and western Gulf.

Brown Shrimp

"Brown shrimp range in the Gulf of Mexico from Florida to the northwestern coast of Yucatan. The range is not continuous but is marked by an apparent absence of brown shrimp along Florida's west coast between the Sanibel and the Apalachicola shrimping grounds. In the U.S. Gulf of Mexico, catches are high along the Texas, Louisiana, and Mississippi coasts. Shrimp are typically found as post larvae and juveniles in shallow vegetated habitats (including SAV, soft bottom, sand/shell, emergent marsh, and oyster reef habitat), and occasionally, in silty sand and non-vegetated bottoms (Table 3). Juveniles and sub-adults generally prefer shallow estuaries and marsh edges (plant-water interfaces). Sub-adults migrate from estuaries during outgoing high tides and adult brown shrimp typically inhabit Gulf waters from the Mean Low Water line to the continental shelf" (GMFMC, 2006). Post-larvae, early juvenile, and late-juvenile brown shrimp use estuarine habitat for survival. Emergent marsh and marsh edge are particularly important microhabitats for these species, and they would use the tidal cycle to enter low emergent marsh adjacent to the shoreline (GMFMC 2004).

White Shrimp

White shrimp are offshore and estuarine dwellers, and are pelagic or demersal depending on their life stage. The eggs are demersal and larval stages are planktonic, and both occur in nearshore marine eaters. Post larval white shrimp become benthic upon reaching the nursery areas of estuaries, seeking shallow water with muddy-sand bottoms that are high in organic detritus. Juveniles move from estuarine areas to coastal waters as they mature. Adult white shrimp are demersal and generally inhabit

nearshore Gulf waters in depths less than 100 feet on soft mud or silty bottoms (GMFMC, 2006). Post-larvae, early juvenile, and late-juvenile white shrimp use estuarine habitat (emergent marsh and soft bottom habitat) for survival (Table 3). Emergent marsh and marsh edge are particularly important microhabitats for these species, and they would use the tidal cycle to enter low emergent marsh adjacent to the shoreline (GMFMC 2004).

4.1.5 Highly Migratory Species

Estuarine waters like those found at the Hancock County marsh site provide EFH resources for various life stages of HMS. Sharks enter the shallow estuarine bay waters to forage and feed. The shark species discussed in this assessment generally feed on a variety of small fish (such as menhaden, seatrout, croaker, and perch), shrimp, small sharks, crabs, and seagrass (most likely a result of foraging behavior) (Adams and Paperno, 2007; Barry, 1996; Curtis, No Date; Bethea et. al., 2007).

5.0 ASSESSMENT OF IMPACTS AND MITIGATIVE MEASURES

The Trustee, in consultation with the contractors, will take all practicable precautions to minimize unavoidable negative impacts to EFH. The project will not result in adverse, direct impacts to emergent wetlands, existing oyster reefs, or Submerged Aquatic Vegetation (SAV). Most motile fauna such as crab, shrimp, and finfish will likely avoid the area of proposed action during the construction process. Following construction, there is expected to be increased habitat utilization of the breakwaters and near-shore environment by these species and a beneficial, long-term impact is anticipated. The project may result in minor, adverse short-term impacts to benthic organisms and temporarily affect habitat utilization by individuals considered under EFH fishery management plans. The potential impacts and minimization/mitigative measure are discussed in greater detail below (Section 5.3).

5.1 IMPACTS TO EFH

Minor and temporally limited impacts to EFH components are expected to soft bottom substrates, since the Hancock County marsh project will be constructed in an area that is considered EFH for various lifestages of the species managed under FMPs. Because of SAV's overall significance to nearly all managed fisheries, a brief description of effects is provided here. A recent survey of submerged aquatic vegetation (SAV) and oyster presence in Heron Bay revealed scarce amounts of Widgeon grass (*Ruppia maritima)* in very shallow water along eroded marsh edge platform. None of the construction areas associated with the breakwater or marsh creation development contain SAVs. Therefore these construction activities would have no impact on submerged vegetation. Construction of the breakwater could provide areas conducive to SAV growth. The deployment of the oyster cultch could result in short-term, minor, adverse impacts to SAV. Widgeon grass (*Ruppia maritima)* exists in scarce amounts in very shallow waters along the fringe of the marsh edge in Heron Bay and grows on eroded marsh platforms. Any disturbance would be re-vegetated naturally. Therefore, due to the lack of existing SAV beds or minimal coverage of SAV in the area of proposed action, only very minimal adverse impacts from the proposed activities would be expected.

Impacts for each project components are listed in Table 4 and discussed briefly below:

Living Shoreline (breakwater): Construction 19.9 acres of breakwater structures would eliminate soft bottom sediments and have a short term, minor adverse effect on various life stages of red drum, gray snapper, lane snapper, yellowtail snapper, Spanish mackerel, brown shrimp and white shrimp.

Oyster Reef (46 acres): Deployment of oyster cultch over 46 acres of previously hard structure would result in short term minor impacts to various life stages of red drum, gray snapper, goliath grouper, red grouper and brown shrimp.

Marsh Creation (46 acres) : Creation of 46 acres of marsh would result in short term, minor impacts to various life stages of red drum, gray snapper, lane snapper, yellowtail snapper, Spanish mackerel, brown shrimp and white shrimp.

Flotation Channels (101 acres): Excavation of flotation channels would result in a temporary short term, minor impact to various life stages of gray snapper, lane snapper, yellow tail snapper, Spanish mackerel, brown shrimp and white shrimp.

Table 4: Impact Summary

Species	Habitats Utilized	Life stages within the Area of Proposed Action	Living Shoreline (breakwater) (19.9 acres)	Oyster Reef (46 acres)	Marsh Creation (46 acres)	Flotation Channels (101 acres)
Red Drum (*Scianops ocellatus*)	SAV, soft bottom, hard bottom, sand/shell, emergent marsh	Larvae, post larvae, juvenile, adult, spawning adults	Short term, minor	Short term, minor	Short term, minor	
Mutton Snapper (*Lutjanus analis*)	SAV	Juvenile, adult				
Cubera Snapper (*Lutjanues cyanopterus*)	SAV, emergent marsh	juvenile				
Gray Snapper (*Lutjanus griseus*)	SAV, soft bottom, sand/shell, emergent marsh	Post larvae, juvenile, adult,	Short term, minor	Short term, minor	Short term, minor	Short term, minor
Lane Snapper (*Lutjanus synagris*)	SAV, soft bottom, sand/shell	Post larvae, juvenile	Short term, minor	Short term, minor	Short term, minor	Short term, minor
Yellowtail Snapper (*Ocyurus chrysurus*)	SAV, soft bottom	juvenile	Short term, minor		Short term, minor	Short term, minor
Goliath Grouper (*Epinephelus itajara*)	SAV, hard bottom	juvenile		Short term, minor		
Red Grouper (*Epinephelus morio*)	SAV, hard bottom	juvenile		Short term, minor		
Black Grouper (*Mycteroperca*	SAV	juvenile				

bonaci)						
Spanish Mackerel (*Scomberomorus maculatus*)	pelagic	Juvenile, adult	Short term, minor		Short term, minor	Short term, minor
Brown Shrimp (*Farfantepenaeus aztecus*)	SAV, soft bottom, sand/shell, emergent marsh, oyster reef	Post larvae, juvenile	Short term, minor	Short term, minor	Short term, minor	Short term, minor
White Shrimp (*Litopenaeus setiferus*	emergent marsh, soft bottom	Post larvae, juvenile	Short term, minor		Short term, minor	Short term, minor

Bottom Disturbance and Turbidity

Structural Placement and Access Channels

Placement of the breakwaters, created marsh, and deployment of oyster cultch would result in short-term, minor adverse impacts to water quality as a result of re-suspension of sediment by vessels (barges, tugs, skiffs, etc.) moving in and out of the area of proposed action, excavation of the temporary flotation channels, and filling of the marsh. Dredge material from the temporary flotation channel excavation will be placed on the seaward side of the channeled and allowed to fill in naturally with influence from currents. The suspended sediment may be transported into surrounding wetlands, waterways, and the Mississippi Sound. However, the area is currently exposed to elevated turbidity levels as a result of re-suspension of sediment during frequent storms, tides and other typical events.

Disturbance of the bottom sediment by dredging and placing hardened structure may affect prey availability in the area of proposed action for juvenile and adult fish. The adverse impacts from dredging and placing material will be localized and temporary, affecting individuals and not entire populations. Since potential impacts will be localized and temporary, there are no expected impacts to populations since spawning, feeding, and resting occurs over broad areas. Following construction and stabilization of the access channel areas, if constructed, and breakwater structure, it is expected that the hardened breakwater structure will attract transient fish, blue crabs, shrimp, and other shellfish (Gregalis et. al., 2009).

Best management practices along with other avoidance and mitigation measures required by state and federal regulatory agencies would be employed to minimize potential water quality and sedimentation impacts. U.S. Army Corps of Engineers Section 10/404 and State Water Quality Certifications would be required and permit conditions would be adhered to. Impacts from turbidity would be moderate, but short-term and limited in spatial extent.

Piling Installation

Installation of pilings for navigational signage can be accomplished using different methods including driving or jetting. Driving pilings creates less turbidity than jetting pilings. If pilings are jetted, there may

be a minor adverse impact to the water column due to increased turbidity. Either piling installation technique will result in minor adverse impacts to the benthic community and the use of the area of proposed action by transient fish. These impacts will be temporary and small scale and will not have wide-ranging impacts to EFH beyond the piling installation footprint. This project intends to employ the driving method for piling installation.

Natural Shell Sourcing

Adverse impacts to EFH may result depending on the source from which shell for the reef is obtained. Shells are commonly acquired via two methods. Dredge shell programs obtain buried shells by dredging areas, which can cause short-term turbidity problems. In addition, any aquatic organisms in the area would be eliminated. The other method of obtaining shell is to purchase them through commercial seafood processors or shucking houses. This method has no adverse impacts to the aquatic environment. In addition, shell should only be obtained from commercial sources where no impacts to habitat were made during shell acquisition. There are several commercial sources of riprap and shell, and no one source has been specified for use at the Hancock County Marsh site.

5.2 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

During construction of the breakwater, marsh, and oyster cultch deployment, the fine-grained soft bottom habitat would be altered by the placement of breakwater materials. The footprint of the combined project is approximately, 212.9 acres (Table 5). Approximately 111.9 acres would be filled for construction of project elements including breakwater construction (19.9 acres), marsh creation (46 acres) and oyster reef creation (46 acres), resulting in a long-term, moderate impact to a relatively small project footprint. In addition, the flotation channels would be constructed to transport the barges carrying the fill material (approximately 101 acres). The sidecast material from the construction of the flotation channels would temporarily alter the seafloor morphology until waves naturally push the sidecast material back into excavated channels after construction. To the extent possible, materials from the flotation channel may be used beneficially to create marsh.

Direct

Direct impacts will be limited to the area directly around the construction site and piling installation areas where sediments will be disturbed by placement of hardened reef and breakwater material, dredging flotation channels, marsh material, and installing pilings. These adverse direct impacts will be short term and it is expected that ambient conditions will be restored following cessation of work each day. Once the structures are stabilized, a long-term beneficial impact is expected due to the newly created habitat that will attract infauna (aquatic animals that live in the sediment), shellfish, crustaceans, and transient fish.

Table 5. Summary of Proposed Action			
Project Activity	**Acreage Impacted**	**Habitat**	**Nature of Impact Improvement**
Living Shoreline (Breakwater)	19.9 acres	intertidal sediments off marsh edge; -3 to 6 ft contour.	Covering sediments with breakwater; establishment of a high relief reef/living shoreline
Marsh Creation	46 acres	~0-4 ft subtidal and intertidal Open water/marsh edge; soft sediments landward of submerged reef;	Beneficial use of dredge material or sediment from other sources to back fill and create a marsh on the shoreline side of the living shoreline
Oyster Reef	46 acres	Hard bottom substrate; previous oyster reefs	Cultch deployment of 46 acres of high relief oyster reef
Flotation Channel	101 acres	Soft sediment	Dredge and side cast a 55,008 ft of channel 80 ft wide facilitating a barge draft of 8 ft.
Total	212.9 acres		

Indirect

Indirect adverse impacts are not expected in the short or long term. Long-term indirect benefits are expected to EFH resources in close proximity to the Hancock County Marsh project due to anticipated increases in use of this area by transient adult and juvenile fish as foraging grounds.

Cumulative

Within the action area, major future changes are not anticipated at the project site and recreational use of the area is expected to continue at present levels in the near future. Listed species of sea turtle and Gulf sturgeon are not expected to be affected during their life cycles from project activities. The Hancock County Marsh Living Shoreline project will have a beneficial effect on the estuarine habitats in the area very shortly after construction. Fish and invertebrates would colonize the breakwaters relatively quickly, while marsh growth and oyster development may take longer; 3 to 5 years. The cumulative impact of these structures and the anticipated calm water conditions landward of the breakwaters are expected to create conditions favorable to SAV and oyster reef colonization and to generally improve water quality. Increases in SAV coverage, structural habitat, and reducing shoreline erosion will improve EFH in the area.

5.3 PROPOSED MITIGATIVE MEASURES AND GUIDELINES FOR EFH PROTECTION

1. Use of Best Management Practices (BMP)
Best management practices (BMPs) are measures to minimize and avoid all potential adverse impacts to EFH during Hancock County Marsh Living Shoreline project construction and monitoring. This conservation measure recommends the use of BMPs during construction to reduce impacts from project implementation. BMPs shall include but are not limited to:

a. Work barges would be moored for overnight and weekends/holidays in areas where previous impacts have occurred (flotation channels, deployment areas).
b. Spoil from flotation channels will be placed on the seaward side of the channel to facilitate current-driven backfilling of channels.

2. Drive Pilings Instead of Jetting Pilings
Pilings would be driven instead of jetting to reduce the disturbance of bottom sediments and bottom dwelling organisms.

3. Obtain Shell from Commercial Vendors Instead of From Dredged Sites
Where practicable, shell obtained from commercial vendors that did not or will not impact the aquatic environments will be utilized for reef construction.

4. Monitor Structures & Adaptively Manage Structures
Monitoring will be conducted before, during, and after project implementation to ensure compliance with project design and completion. If immediate post-construction monitoring reveals that unavoidable impacts to EFH have occurred, appropriate coordination with regional EFH personnel will take place to determine appropriate response measures, possibly including mitigation. If additional adaptive management of the breakwater structure is necessary after monitoring evens, all minimization measures discussed above will be followed.

5. Post-Project Implementation Removal
Any temporary access channels will be filled in naturally following construction to re-establish baseline elevations. Monitoring will assess whether unexpected impacts to EFH have occurred.

6.0 CONCLUSIONS

Overall, there will not be a substantial adverse impact to EFH. The potential adverse impacts related to the Hancock County Marsh Living Shoreline project construction will be minimal and temporary. The potential long-term benefits to EFH, especially for shrimp, red drum, and juvenile coastal pelagics and reef fish include increased foraging habitat, increased cover for juveniles, improved water quality, and the potential for conditions favorable to SAV colonization (due to decreased wave energy).

7.0 REFERENCES/LITERATURE CITED

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APPENDIX G

Marine Mammal Protection Act Consultation with NSFWS Natural Resource Damage Assessment and Restoration (NRDAR) Office

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

In Reply Refer To:
FWS/R4/DH NRDAR

JUN 04 2014

Memorandum

To: Manatee Recovery Coordinator, North Florida Ecological Services Field Office

From: Deepwater Horizon, Department of the Interior Natural Resource Damage Assessment and Restoration (NRDAR), Case Manager Kevin D. Reynolds

Subject: Compliance with Marine Mammal Protection Act

As you are no doubt aware, on or about April 20, 2010, the mobile offshore drilling unit *Deepwater Horizon* experienced an explosion, leading to a fire and its subsequent sinking in the Gulf of Mexico (the Gulf). These events resulted in the discharge of millions of barrels of oil into the Gulf over a period of 87 days. In addition, various response actions were undertaken in an attempt to minimize impacts from spilled oil. These events are hereafter collectively referred to as the Oil Spill.

The Department of the Interior (DOI), acting through the U.S. Fish and Wildlife Service (the Service) and other Bureaus, is a designated natural resource trustee agency authorized by the Oil Pollution Act of 1990 (OPA) and other applicable federal laws to assess and assert a natural resource damages claim for this Oil Spill. DOI is only one of several Trustees, so authorized. Consistent with their federal and state authorities, the Trustees are investigating the resource injuries and losses that occurred as a result of the Oil Spill and have initiated restoration planning to identify the actions that will be needed or appropriate to restore injured resources and to make the public whole for the injuries and losses that occurred. This process is known as a Natural Resource Damage Assessment (NRDA).

On April 20, 2011, DOI, National Oceanic and Atmospheric Administration, and the Trustees for the five Gulf states affected by the Oil Spill entered into an agreement with BP, a responsible party for the Oil Spill, under which BP agreed to provide $1 billion for early restoration projects in the Gulf to address injuries to natural resources caused by the Oil Spill. Pursuant to this agreement, the Trustees have developed a draft early restoration plan that, among other things, proposes a number of early restoration projects for implementation. The plan was released for public comment and review on December 6, 2013. The Trustees may ultimately select some, none, or all of the projects for implementation after consideration of public comment and a stipulated agreement is reached with BP. Any restoration project so selected will be implemented by the appropriate Trustee. DOI, will be a co-Trustee for each project that is selected and implemented.

Many of the proposed projects will involve in-water work in areas where West Indian manatee could be present and as such consultations under Section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*), were initiated (Table 1). Table 1 includes for each relevant project: its title, general description of the in-water work, conservation measures, effect determination, and field office concurrance date.

Because take of manatees, incidental or otherwise, is not presently authorized under the Marine Mammal Protection Act (MMPA) of 1972, as amended (16 U.S.C. 1461 *et seq.*), each consultation where manatees may be affected included conservation measures to ensure potential effects were avoided or minimized to an insignificant and discountable level. These consultations considered the likelihood of mantee presence and the potential adverse effects of the proposed projects to the manatee. While manatees are not likely to be present at most of the project locations, they could be transiting the project areas. Therefore, conservation measures for manatee were incorporated into all of the consultations proposing in-water work where manatees could be present. In general, where in-water work will occur and manatees could be present, the Trustees will implement the Service's "Standard Manatee Conditions for In-Water Work" dated 2011[1]. Other conservation measures are project specific and are listed in the attached table.

Based on the consultations, DOI has determined that each consultation resulted in either a No Effect or May Affect, Not Likely to Adversely Affect determination for the West Indian manatee. Each Service Field Office reviewed the proposed projects within their jurisdiction under sesction 7 of the ESA and concurred with our determinations[2]. As stated previously, each relevant project title, general description of the in-water work, conservation measures, determination, and field office concurrance date are summarized in Table 1. A copy of each ESA consultation is available upon request.

DOI believes the procedures contained within these consultations constitute appropriate and responsible steps to promote compliance with MMPA prohibitions on take by requiring the proposed activities to achieve a standard of No Effect or May Affect, Not Likely to Adversely Affect for manatees. As such, we do not anticipate any take, incidental or otherwise, under the ESA or MMPA for West Indian manatee due to implementation of any of the proposed projects.

In addtion, the National Marine Fisheries Service (NFMS) is also coordinating with all of the Trustees under MMPA in order to protect other species of marine mammals that could be present in project areas. NMFS may require additional avoidance measures to protect dolphins or other marine mammals at several of the project locations. These measures could include, but are not limited too: an on-site marine mammal monitor; hydrojetting piles or use of a vibratory hammer versus pile driving; use of bubble curtains, and other similar measures. While we have not attempted to catalogue avoidance and minimization measures from NMFS, we believe any

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[1] For projects in Alabama and Mississippi project applicants were asked to implement conditions a. through d. of the "Standard Manatee Conditions for In-Water Work." With respect to condition e., we note that no collisions or injuries are expected; though local contact information will be made available. If temporary signs are needed (condition f) we suggested they follow the guidance in condition f modifying the signs with their local resource agency information. In Louisiana, the "Standard Conditions for In-Water Work in the Presence of Manatees" will be implemented.

[2] Three projects in Louisiana are currently under review.

additional measures they require will further avoid impacts to manatees should they be present at these action areas.
If modifications are made to any of the projects in a manner that may affect the manatee or its habitat; if additional information involving potential effects to the manatee or other listed species not previously considered becomes available; or if in the unlikely event that the take of a manatee occurs during the project, consultation will be reinitiated.

If you have any questions or concerns regarding this response, please immediately contact Ms. Holly Herod of my staff at (404) 679-7089 or via email at holly_herod@fws.gov.

Attachment

Table 1. Summary of projects proposed for Deepwater Horizon Early Restoration, ESA determination for West Indian manatee, and ESA concurrence date, and Conservation Measures to protect manatee. No project will proceed with implementation until concurrence under ESA (and other relevant laws) is received. N/A = Not Applicable; NE = No Effect; NLAA = May Affect, Not Likely to Adversely Affect; D = design of intake pipe excludes manatees; E = educational signage will be posted to remind visitors of the potential presence of marine mammals and measures to protect these species while boating and fishing; S = Standard Manatee Conditions for In-Water Work dated 2011 (for FL, AL[1], MS, see attached) or Standard Conditions for In-Water Work in the Presence of Manatees (for LA, no date available, see attached); T = If possible, complete in-water work when temperatures are below 68°F; V = Dock Construction Guidelines in Florida for docks and other minor structures constructed in or over submerged aquatic vegetation (SAV), marsh, or mangrove habitat (USACE/NMFS, 2001, see attached); W = piles will be installed by water jetting and/or mechanical auguring.

State	Title	In-Water Work	ESA Determination for Manatee	Conservation Measures for Manatee	Date of FO Concurrence
AL	Gulf State Park Enhancement Project	None	N/A	N/A	---
AL	Swift Tract Living Shoreline	Placement of living shoreline materials; vessel use	NLAA	S	1/21/2014
AL	Oyster Reef Restoration in Bon Secour, Heron, and Portersville Bays and Mississippi Sound, Alabama	Placement of oyster reef materials; vessel use	NLAA	S	10/28/2013
FL	Franklin County Parks and Boat Ramps (4 Projects): Waterfront Park Improvement Project; Indian Creek Park Boat Ramp Project; Eastpoint Fishing Pier Improvement Project; St. George Island Fishing Pier Improvement Project)	No in-water work will occur at Eastpoint. Installation of piles potentially at Waterfront park; bulkhead and ramp renovation using heavy equipment at Indian Creek Park; bulkhead repair using heavy equipment at St. George Island pier and vessel use for construction at these four locations.	NLAA	S; E	3/24/2014
FL	Bald Point State Park Recreation Areas	Construct floating dock and canoe/kayak launch	NE	N/A	3/10/2014
FL	Walton County Boardwalks and Dune Crossovers (7 Projects): Bayside Ranchettes Park; Palms of Dune Allen West; Ed Walline; Gulfview Heights; Grayton Dunes; Dothan Beach; Deer Lake State Park Development	Construct dock for water access at Bayside Ranchettes; no other project has in-water work	NLAA	S	3/10/2014
FL	Beach Enhancement Project at Gulf Island National Seashore	Heavy equipment use in-water to remove asphalt	NLAA	S	11/4/2013

[1] Alabama and Mississippi will not need to implement condition e and f as written. With respect to condition e., we note that no collisions or injuries are expected; though local contact information will be made available. If temporary signs are needed (condition f) we suggested they follow the guidance in condition f modifying the signs with their local resource agency information.

State	Title	In-Water Work	ESA Determination for Manatee	Conservation Measures for Manatee	Date of FO Concurrence
FL	Beacon Hill Veterans' Memorial Park	None	NE	N/A	3/10/2014
FL	Big Lagoon State Park Boat Ramp Improvements	Construct a new lane for existing boat ramp	NLAA	S; E	3/20/2014
FL	Bob Sikes Pier, Parking and Trail Restoration	None	NE	N/A	1/28/2014
FL	Apalachicola River Wildlife and Environmental Area Fishing and Wildlife Viewing Access Improvements (2 Projects): Cash Bayou and Sand Beach	Construct a fishing structure/dock/wildlife viewing structure at Cash Bayou; No in-water work at Sand Beach	NE	N/A	2/18/2014
FL	Cat Point (Franklin County) Living Shoreline	Placement of living shoreline materials; vessel use	NLAA	S	3/20/2014
FL	City of Mexico Beach Marina	Installation of piles for new and replacement finger piers, increasing width of boardwalk dock; vessel use	NLAA	S, E	3/24/2014
FL	Bay County Docks, Ramps and Piers (4 Projects): St. Andrews Marina Docking Facility Expansions, Earl Gilbert Dock and Boat Ramp Improvements, Oak Shore Drive Pier, Panama City Marina Improvements	Add three new boat slips, replace boat ramp, replace wooden dock with floating dock at St. Andrews; repair existing dock and renovate ramp at Earl Gilbert; Installation of Piles for new pier construction at Oak Shore Drive; Installation of Piles for new pier, renovate ramp, construct new staging docks at Panama City Marina. Vessels will be used all locations for construction. Vessels will be used by visitors at St. Andrews, Earl Gilbert, and Panama City Marina.	NLAA	S, E, V	3/24/2014
FL	Florida Artificial Reef Creation and Restoration	Placement of artificial reef material; vessel use	NLAA	S	1/23/2014
FL	Florida Oyster Reef Restoration	Placement of oyster reef materials; vessel use	NLAA	S	1/23/2014
FL	Florida Seagrass Recovery Project (St. Joe)	Placement of seagrasses; vessel use	NLAA	S	10/21/2014
FL	Gulf Breeze Wayside Boat Ramp	Ramp and seawall repair; vessel use	NLAA	S, E	2/6/2014
FL	Gulf Coast Marine Fisheries Hatchery/Enhancement Center	Installation of Pilings; installation and operation of a water in-take pipe	NLAA	S, D	12/23/2013

State	Title	In-Water Work	ESA Determination for Manatee	Conservation Measures for Manatee	Date of FO Concurrence
FL	Gulf County Boat Ramps (2 Projects): Highland View Boat Ramp, Frank Pate Boat Launch	Repair planking and bumpers of existing pier at Highland View; and Installation of piles for dock expansion, ramp extension at Frank Pate Launch; Vessel use at all locations	NLAA	S, W, E	5/1/2014
FL	Lafayette Creek Boat Dock Improvements	Installation of piles for boardwalk and docking facilities; vessel use	NLAA	S, E	2/6/2014
FL	Navarre Beach Park (2 Projects): Coastal Access and Dune Restoration; Gulfside Walkover Complex	Construct canoe/kayak launch to Santa Rosa sound. No in-water work for Gulfside Walkover Complex	NLAA	S	5/1/2014
FL	Norriego Point Restoration and Recreation Project	Installation of two T-groins including pile driving and jetting of sheet piling	NLAA	S	3/24/2014
FL	Northwest Florida Estuarine Habitat Restoration, Protection, and Education (Fort Walton Beach)	Installation of boardwalk, oyster reef creation, salt marsh restoration	NLAA	S	3/10/2014
FL	Pensacola Bay Living Shorelines	Placement of living shoreline materials; vessel use	NLAA	S	2/6/2014
FL	Perdido Key (2 Projects): Dune Restoration and State Park Beach Boardwalk Improvements	None	N/A	N/A	---
FL	Purchase Two Ferries to Service Fort Pickens, the City of Pensacola, and Pensacola Beach; City Pier (DOI Lead)	Installation of Piles; vessel use	NLAA	S	4/1/2010 and 2/6/2014
FL	Restoring the Escribano Point Portion of the Yellow River Wildlife Management Support	None	N/A	N/A	---
FL	Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle- may just be spat deployment	Vessel use	NLAA	S	1/23/2014
FL	Shell Point Beach Nourishment	None	NE	N/A	2/6/2014
FL	St. Marks Boat Ramp	Installation of pilings for a new dock; vessel use	NLAA	S, E	2/6/2014
FL	Wakulla County Mashes Sands Park Improvements	Installation of Pilings for observation platforms, boardwalks, walking paths; install a canoe/kayak launch	NE	S, E	3/24/2014
FL	Windmark Fishing Pier	Installation of Piles; vessel use	NLAA	S, E, W	5/1/2014

State	Title	In-Water Work	ESA Determination for Manatee	Conservation Measures for Manatee	Date of FO Concurrence
LA	Louisiana Marine Fisheries Enhancement, Research and Science Center	Installation and Operation of water in-take and effluent pipes.	NLAA	S, D	5/16/2014
LA	Louisiana Outer Coast Restoration: North Breton	Dredge operation; nourishment	NLAA	S	5/9/2014
LA	Louisiana Outer Coast Restoration: Shell Island	Dredge operation; nourishment	NLAA	S	9/26/2012; and Requested 5/13/2014
LA	Louisiana Outer Coast Restoration: Chenier-Ronquille	Dredge operation; nourishment	NLAA	S	Requested 5/13/2014
LA	Louisiana Outer Coast Restoration: Caillou Lake Headlands (Whiskey Island)	Dredge operation; nourishment	NLAA	S	9/23/2010 and 8/12/2013
MS	Hancock County Marsh Living Shoreline	Placement of living shoreline materials; vessel use	NLAA	S, T	1/24/2014 and 5/20/2014
MS	Pascagoula Beachfront Promenade	None	NE	N/A	1/3/2014
MS	Popp's Ferry Causeway Park	Installation of Piles for piers	NLAA	T, S	1/24/2014
MS	Restoration Initiatives at the INFINITY Science Center	None	N/A	N/A	---
TX	Development of Additional Artificial Reefs Ship	Explosives to sink ship	NE	N/A	12/2/2013
TX	Development of Nearshore Artificial Reefs in the Texas Waters of the Gulf of Mexico, Freeport	Placement of artificial reef material; vessel use	NE	N/A	12/2/2013
TX	Enhancement of the Matagorda Nearshore Artificial Reef (BA-439) in Texas State Waters of the Gulf of Mexico	Placement of artificial reef material; vessel use	NE	N/A	12/2/2013
TX	Galveston Island State Park Beach Development	None	N/A	N/A	---
TX	Sea Rim State Park	Installation of Piles	NE	N/A	1/29/2014

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK
2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.

b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.

d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.

e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or in Vero Beach (1-772-562-3909) for south Florida, and emailed to FWC at ImperiledSpecies@myFWC.com.

f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8½ " by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at http://www.myfwc.com/WILDLIFEHABITATS/manatee_sign_vendors.htm. Questions concerning these signs can be forwarded to the email address listed above.

CAUTION: MANATEE HABITAT

All project vessels

IDLE SPEED / NO WAKE

When a manatee is within 50 feet of work
all in-water activities must

SHUT DOWN

Report any collision with or injury to a manatee:

Wildlife Alert:

1-888-404-FWCC(3922)

cell *FWC or #FWC

APPENDIX A

Standard Conditions for In-water Work in the Presence of Manatees

Guidelines for Activities in Proximity to Manatees and Their Habitat

A. All personnel associated with the project should be informed of the potential presence of manatees, manatee speed zones, and the need to avoid collisions with and injury to manatees. Such personnel instruction should also include a discussion of the civil and criminal penalties for harming, harassing, or killing manatees, which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973.

B. All contract and/or construction personnel are responsible for observing water-related activities for the presence of manatee(s).

C. Temporary signs should be posted prior to and during all construction/dredging activities to remind personnel to be observant for manatees during active construction/dredging operations or within vessel movement zones (i.e., work area), and at least one sign should be placed where it is visible to the vessel operator.

D. Siltation barriers, if used, should be made of material in which manatees could not become entangled, and should be properly secured and regularly monitored. Barriers should not impede manatee movement.

E. If a manatee is sighted within 100 yards of the active work zone, special operating conditions should be implemented, including: no operation of moving equipment within 50 feet of a manatee; all vessels should operate at no wake/idle speeds within 100 yards of the work area; and siltation barriers, if used, should be re-secured and monitored. Once the manatee has left the 100-yard buffer zone around the work area on its own accord, special operating conditions are no longer necessary, but careful observations would be resumed.

F. Any manatee sighting should be immediately reported to the Fish and Wildlife Service's (Service) Lafayette, Louisiana, Field Office (337-291-3100) and the Louisiana Department of Wildlife and Fisheries (LDWF), Natural Heritage Program (225-765-2821).

APPENDIX E: Dock Construction Guidelines in Florida for docks or other minor structures constructed in or over submerged aquatic vegetation (SAV), marsh, or mangrove habitat (U.S. Army Corps of Engineers/National Marine Fisheries Service, August 2001)

Note: These conditions may be subject to revision at any time. It is our intention that the most recent version of these conditions will be utilized during the evaluation of the permit application.

Submerged Aquatic Vegetation

1. Avoidance. The pier shall be aligned so as to minimize the size of the footprint over SAV.

2. The height of pier shall be a minimum of 5 feet above Mean High Water / Ordinary High Water (MHW/OHW) as measured from the top surface of the decking.

3. The width of the pier is limited to a maximum of 4 feet. A turnaround area is allowed for piers greater than 200 feet in length. The turnaround is limited to a section of the pier no more than 10 feet in length and no more than 6 feet in width. The turnaround shall be located at the midpoint of the pier.

4. Portions of the pier over SAV shall be oriented in a north-south orientation to the maximum extent that is practicable.

5. If possible, terminal platforms shall be placed in deep water, waterward of SAV or in an area devoid of SAV.

    a. If a terminal platform is placed over SAV areas and constructed of grated decking, the total size of the platform shall be limited to 160 square feet. The grated deck material shall conform to the specifications stipulated below. The configuration of the platform shall be a maximum of 8 feet by 20 feet. A minimum of 5 feet by 20 feet shall conform to the 5-foot height requirement; a 3-foot by 20-foot section may be placed 3 feet above MHW to facilitate boat access. The long axis of the platform should be aligned in a north-south direction to the maximum extent that is practicable.

    b. If the terminal platform is placed over SAV areas and constructed of planks, the total size of the platform shall be limited to 120 square feet. The configuration of the platform shall be a maximum of 6 feet by 20 feet of which a minimum 4-foot wide by 20-foot long section shall conform to the 5-foot height requirement. A section may be placed 3 feet above MHW to facilitate boat access. The 3 feet above MHW section shall be cantilevered. The long axis of the platform should be aligned in a north-south direction to the maximum extent that is practicable. If the 3feet above MHW section is constructed with grating material, it may be 3 feet wide.

6. One uncovered boat lift area is allowed. A narrow catwalk (2 feet wide if planks are used, 3 feet wide if grating is used) may be added to facilitate boat maintenance along the outboard side of the boat lift and a 4-foot wide walkway may be added along the stern

APPENDIX E: Dock Construction Guidelines in Florida for docks or other minor structures constructed in or over submerged aquatic vegetation (SAV), marsh, or mangrove habitat (U.S. Army Corps of Engineers/National Marine Fisheries Service, August 2001)

end of the boat lift, provided all such walkways are elevated 5 feet above MHW. The catwalk shall be cantilevered from the outboard mooring pilings (spaced no closer than 10 feet apart).

7. Pilings shall be installed in a manner which will not result in the formation of sedimentary deposits ("donuts" or "halos") around the newly installed pilings. Pile driving is the preferred method of installation, but jetting with a low pressure pump may be used.

8. The spacing of pilings through SAV beds shall be a minimum of 10 feet on center.

9. The gaps between deck boards shall be a minimum of ½ inch.

Marsh

1. The structure shall be aligned so as to have the smallest over-marsh footprint as practicable.

2. The over-marsh portion of the dock shall be elevated to at least 4 feet above the marsh floor.

3. The width of the dock is limited to a maximum of 4 feet. Any exceptions to the width must be accompanied by an equal increase in height requirement.

Mangroves

1. The width of the dock is limited to a maximum of 4 feet.

2. Mangrove clearing is restricted to the width of the pier.

3. The location and alignment of the pier should be through the narrowest area of the mangrove fringe.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

In Reply Refer To:
FWS/R4/DH NRDAR

JAN 13 2014

Memorandum

To: Field Supervisor Mississippi Field Office

From: Deputy Deepwater Horizon Department of the Interior Natural Resource Damage Assessment and Restoration (NRDAR) Case Manager

Subject: Informal Consultation Request for the proposed Hancock County Marsh Living Shoreline Restoration, Mississippi

As you are no doubt aware, on or about April 20, 2010, the mobile offshore drilling unit *Deepwater Horizon* experienced an explosion, leading to a fire and its subsequent sinking in the Gulf of Mexico (the Gulf). These events resulted in the discharge of an estimated 5 million barrels (210 million gallons) of oil into the Gulf over a period of approximately 3 months. In addition, various response actions were undertaken in an attempt to minimize impacts from spilled oil. These events are hereafter collectively referred to as the Oil Spill.

The Department of the Interior (DOI), acting through the U.S. Fish and Wildlife Service (the Service) and other Bureaus, is a designated natural resource trustee agency authorized by the Oil Pollution Act of 1990 (OPA) and other applicable federal laws to assess and assert a natural resource damages claim for this Oil Spill. DOI is only one of several Trustees, including the state of Mississippi Trustee, Mississippi Department of Environmental Quality, so authorized. Consistent with their federal and state authorities, the Trustees are investigating the resource injuries and losses that occurred as a result of the Oil Spill and have initiated restoration planning to identify the actions that will be needed or appropriate to restore injured resources and to make the public whole for the injuries and losses that occurred. This process is known as a Natural Resource Damage Assessment (NRDA).

On April 20, 2011, DOI, the National Oceanic and Atmospheric Administration and the Trustees for the five Gulf states affected by the Oil Spill entered into an agreement with BP, a responsible party for the Oil Spill, under which BP agreed to provide $1 billion for early restoration projects in the Gulf to address injuries to natural resources caused by the Oil Spill. The early restoration project has been proposed in a draft early restoration plan that was released for public comment and review on December 6, 2013. If the Trustees select the project after consideration of public comment and a stipulated agreement is reached with BP, the early restoration project will be implemented by the Mississippi Department of Environmental Quality. DOI, acting through the Service, will be a co-Trustee for the project, if it is selected and implemented.

The above facts lead us to the conclusion that consultation (and conference) under Section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*), is required for this project and we wish to engage in such consultation. Accordingly, we have reviewed the proposed Hancock County Marsh Living Shoreline Restoration, Mississippi for potential impacts to listed, proposed, and candidate species and proposed and designated critical habitats in accordance with section 7 of the ESA. We have determined that the proposed project may affect, but is not likely to adversely affect West Indian manatee (*Trichechus manatus*). We have also reviewed the proposed project for impacts to bald eagles and migratory birds in accordance with the Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 U.S.C. 668-668c) and the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703–712), respectively. Consultation will also be initiated with National Marine Fisheries Service for species where ESA regulatory authority is shared and in regards to Marine Mammal Protection Act (MMPA) of 1972, as amended (16 U.S.C. 1461 *et seq.*).

We request your review of and concurrence/conference with the attached intra-Service Section 7 Biological Evaluation form describing the proposed project, potential effects, conservation measures and justifications for our determinations. If you have questions or concerns regarding this request for consultation, please contact Holly Herod, Fish and Wildlife Biologist, at 404-679-7089 or holly_herod@fws.gov.

Attachment

SOUTHEAST REGION
INTRA-SERVICE SECTION 7
BIOLOGICAL EVALUATION FORM

Originating Person: Holly Herod; prepared by Stephen Parker (representing MS DEQ)
Telephone Number: Holly Herod: 404-679-7089; Stephen Parker 228-224-9057
E-Mail: holly_herod@fws.gov; sparker@adaptivemngmt.com
Date: December 31, 2013

PROJECT NAME (Grant Title/Number): Hancock County Marsh Living Shoreline (Early Restoration Project)

I. Service Program:

_X_ **NRDAR**
___ **Ecological Services**
___ **Federal Aid**
- ___ **Clean Vessel Act**
- ___ **Coastal Wetlands**
- ___ **Endangered Species Section 6**
- ___ **Partners for Fish and Wildlife**
- ___ **Sport Fish Restoration**
- ___ **Wildlife Restoration**

___ **Fisheries**
___ **Refuges/Wildlife**

II. State/Agency: Mississippi Department of Environmental Quality

III. Station Name: DOI Deepwater Horizon Case Management Team, USFWS Southeast Regional Office, Atlanta, Georgia 30345

IV. Location (attach map): *See Figure 1*

A. **Ecoregion Number and Name:** 4/Southeast

B. **County and State:** Hancock County, Mississippi

C. **Section, township, and range (or latitude and longitude):** Centroid = -89.457, 30.19

D. **Distance (miles) and direction to nearest town:** Approximately 3.5 miles NNW to Ansley, MS from project centroid.

V. Description of Proposed Action and Habitats in the Action Area (attach additional pages as needed):

Introduction and Background

The restoration activities proposed for this project would be located in western Hancock County, Mississippi, between Bayou Caddy and the mouth of the East Pearl River (Figure 1). This marsh complex is part of the extensive Pearl River estuary where the land is largely in public ownership

and managed by the Mississippi Department of Marine Resources (MDMR) as part of the Coastal Preserves of the State of Mississippi. The 13,570-acre preserve consists of marsh, including tidal channels, lagoons, and bays, representing one of the largest marsh habitats in Mississippi. Historically, there were extensive, prolific reefs of the American oyster (*Crassostrea virginica*) in the shore zone and nearshore areas of lower Hancock County that provided natural protection to the shore from erosion. High erosion rates particularly at St. Joseph's Point make this shoreline a priority for protection and marsh creation. Both the *Mississippi Coastal Improvement Plan* and the *Project Management Plan for Beneficial Use Projects along Coastal Mississippi* cite this area as a priority project site.

The Hancock County Marsh Living Shoreline project will include shoreline/marsh protection, marsh creation, restoration and increased benthic secondary productivity. Specifically, the proposed project consists of three restoration components:

- Use of living shoreline techniques that utilize natural and artificial breakwater material to stabilize eroding shorelines by dampening wave energy while encouraging reestablishment of habitat that was once present in the region.
- Creation of 46 acres of salt marsh habitat in areas that have experienced high rates of shoreline and marsh habitat erosion.
- Placement of 46 acres of oyster cultch in areas that have historically supported oyster habitat.

Living Shorelines (Breakwaters)

For this project, the living shoreline is defined as a breakwater made of limestone with oyster shell veneer that provides erosion control benefits and enhances natural shoreline habitat. The breakwaters would be constructed at two locations: along St. Joseph's Point (eastern reach) and Pearl River to Heron Bay (western reach).

- **St. Joseph's Point Breakwater (eastern reach):** This breakwater would be approximately 4 miles long, extending from Heron Bay to approximately 4 miles to the northeast, with a crest width of 15 feet and total height of approximately 4 feet (to +0.87 ft., North American Vertical Datum [NAVD]). The breakwater would have a footprint of approximately 14.4 acres and would be placed on a substrate of fine-grained sediment. It would be composed of a core of limestone riprap covered by a 9-inch thick layer of bagged oyster shell.

- **Pearl River to Heron Bay Breakwater (western reach):** This breakwater would be approximately 1.9 miles long with a crest width of 15 feet and a total height of approximately 4.0 feet (to +0.87 ft., NAVD). Its design and sediment substrate are to be similar to the St. Joseph's Point breakwater, described above. The Pearl River to Heron Bay breakwater project area footprint will be approximately 5.5 acres consisting of fine-grained sediment.

Creation of Marsh in the Vicinity of St. Joseph's Point

A total of 46 acres of marsh would be created in one to several locations. Salt marshes are defined as transitional marsh areas between land and water that occur in coastal areas at salinities at or approaching that of ocean water. Typical vegetation in salt marsh habitat includes species such as *Spartina alterniflora*, *Juncus romerianus*, and *Distichlis spicata.* The area behind the constructed breakwater at St. Joseph's Point would be backfilled with dredged material and allowed to re-vegetate by natural colonization of estuarine marsh species. Dredged fill material would be obtained through the Mississippi Beneficial Sediment Use Program as available or excavated from a suitable, nearshore/offshore borrow source. Dredged material would be hydraulically placed to obtain the target elevation.

Placement of Oyster Reef Cultch in Heron Bay

Oyster cultch would be deployed over 46 acres in Heron Bay in areas that currently support or previously supported oyster production. Oyster reefs are defined as large colonial aggregations of living oysters and other bivalves that can have subtidal as well as intertidal portions, and provide habitat for a community of other species (e.g., tunicates, fish, crabs, worms, mussels, bryozoans, and barnacles). Oyster cultch deployment would occur generally in water depths of -3 to -5 feet Mean Lower Low Water (MLLW). The reef(s) would be sited based on data gathered from an oyster presence survey, and would consist of a 6 to 9-inch thick layer of oyster shell. marsh platform.

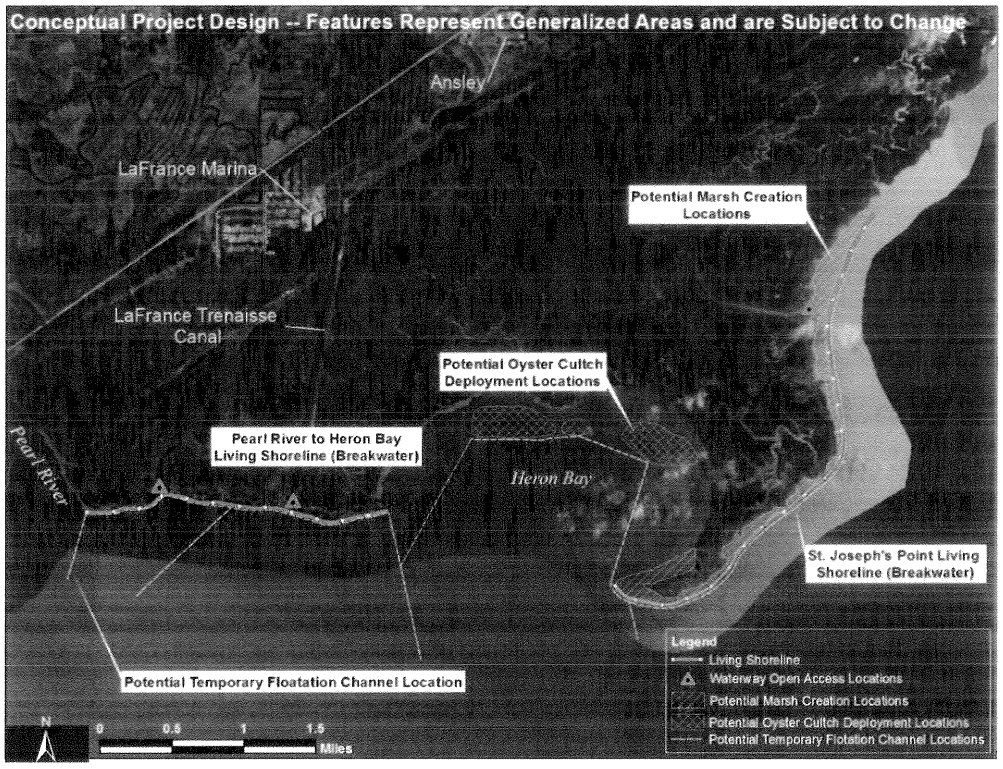

Figure 1: Conceptual Hancock County Marsh Living Shoreline Project Components

Project Location

The proposed project is located in Hancock County, Mississippi (Bounding Coordinates: West -89.530339 W, 30.184 N; South: -89.462 W, 30.169 N; East: -89.415 W, 30.233 N; North: -89.53 W, 30.184 W. Centroid = -89.457 W, 30.19 N). The Hancock County marsh is a 13,570-acre preserve managed by the MDMR and is the second largest continuous marsh area in the state. The preserve includes adjoining marshlands bordering the Mississippi Sound from the Pearl River to St. Joseph's Point. The project area includes the shoreline of the Hancock County marsh from the mouth of the Pearl River on the west to approximately 1.86 miles past the heel of St. Joseph's Point, including Heron Bay. On the seaward side, the project area extends approximately to the -8 ft. contour from the proposed breakwater to incorporate temporary flotation channels that will be utilized by work barges during construction.

Construction and Installation

Living Shorelines (Breakwaters)

The specific breakwater elevation and design was selected to maximize shoreline protection and meet individual state regulatory requirements. Construction would include placement of linear structures that would utilize artificial and/or shell based materials at approximately the -3.5 ft msl contour.

The alignment and limits of the breakwaters would be surveyed with the outer limits of the breakwaters being marked with poles driven into the bottom and extended approximately 3 feet above the water surface. The height of the breakwaters along the alignment would be constructed based on bottom elevations and the reef's crest elevation (0.87 foot NAVD88 – Mean Tide Level). Barriers, navigation warning signs (lighted and unlighted), and other safety devices would be installed along the work area to protect boaters.

The breakwaters would be approximately 30 feet wide at the base, 15 feet wide at the crest, to approximately 4 feet thick. The riprap core of the breakwaters would either be constructed using loose boulders or 'marine mattresses', consisting of 2 to 6 inch diameter rocks assembled on land. The core material would be transported to the work area on barges and installed by a crane located on a separate barge. Placement of the riprap core would be monitored to ensure the breakwater dimensions, slopes, and crest elevations are achieved. After installation of the riprap core, it would be covered with bags of shell. The deployment of the breakwaters may extend over a period of ten to twelve months. Total installed volumes would be as follows:

- *St. Joseph's Point Breakwater (Eastern Reach):* The target depth for deployment is approximately -3.5 MLLW. The volume of placed material would be approximately 51,600 cubic yards of riprap and 16,400 cubic yards of shell. The breakwater would cover a footprint of approximately 14.4 acres of fine-grained sediment.

- *Pearl River to Heron Bay Breakwater (Western Reach):* The target depth for deployment is between approximately -3.5 MLLW. The volume of placed material would be

approximately 16,900 cubic yards of riprap and 6,300 cubic yards of shell. The breakwater would cover a footprint of approximately 5.5 acres of fine-grained sediment.

The project is designed to use temporary flotation channels (Figure 1) to facilitate access for work barges into the work area. A channel will be excavated parallel to the alignments of the two breakwaters (Figure 1). Additional channels will be excavated perpendicular to these channels to provide access from the Mississippi Sound to allow work barges entry and exit for the project area. The excavated dredged material would be cast on the seaward side of the channels so that they would naturally fill back in after construction. The depth of the channels would be 8 feet below MLLW to accommodate barge draft. The bottom width of the channels would be approximately 80 feet with 3H:1V side slopes. The entry locations for the channels would be determined by analyzing the shortest distance from the breakwaters to the appropriate depth on -8 ft. and excavated using best management practices to minimize environmental impacts. The preliminary flotation channel footprint for the purposes of project planning was calculated based on an estimate of a heavy loaded barge. Proposed flotation channel dimensions are summarized in Table 1.

Table 1 – Preliminary Temporary Flotation Channel Footprint

Component	Dimension
Channel Length	55,008 ft.
Barge Draft	8 ft.
Channel Width	80 ft.
Area Temporarily Impacted	101 acres

After completion of construction, the breakwater structure would be surveyed and permanent navigation signs would be installed in accordance with safety requirements.

Creation of Marsh in the Vicinity of St. Joseph's Point

After the breakwater along St. Joseph's Point has been installed, selected areas landward of the breakwater would be filled with dredged material obtained from the MDMR Beneficial Use of Sediment Program if material is available, or a suitable nearshore/offshore borrow source. A dike would be constructed at the seaward extent of the marsh. The dike would be constructed by excavating existing material from the landward side of the dike. Once an area of the marsh is diked, the area landward of the dike would be filled with dredged material until final marsh grades are achieved. Sediment would be pumped through a floating pipeline from a hydraulic dredge located where suitable fill material is available. Pumps and sediment controls would remain in place throughout the dredging and filling process, and after initial settling has occurred. Once the entire marsh area(s) is constructed, the area would be monitored for natural re-vegetation.

Placement of Oyster Cultch Reefs in Heron Bay

Oyster cultch would be deployed in Heron Bay in water depths of -3 to -5 feet MLLW in areas that currently support or previously supported oyster production. An oyster presence survey has been completed that identified suitable areas. The cultch would be deployed as a 6 to 9-inch thick layer of oyster shell. Prior to deployment, the limits of the oyster cultch deployment area(s) would be marked with buoys or poles. Oyster shells would be deployed by a barge-mounted crane with a clam shell bucket. A material barge loaded with oyster shells would be moored to the crane barge. As a construction alternative, water jetting of loose shell off of a material barge may be used in case of water depth constraints. Upon completion, the deployment area would be surveyed.

Best Management Practices

Construction timing would be limited to the May to October timeframe to avoid disturbance to Gulf Sturgeon migration patterns in the area. Work barges would be moored for overnight and weekends/holidays in areas where previous impacts have occurred (flotation channels, deployment areas). Spoil from flotation channels will be placed on the seaward side of the channel to facilitate current-driven backfilling of channels.

Operations and Maintenance

Anticipated pre- and post-construction monitoring activities

Monitoring activities would be performed prior to construction as well as for up to seven years after construction. Monitoring activities would include:

- Topographic/bathymetric surveys
- Vegetation surveys (species composition and percent cover)
- Oyster and invertebrate monitoring (density and biomass)

The project will incorporate a mix of monitoring efforts to ensure project designs are correctly implemented during construction and in a subsequent period, where corrective action could be taken.

Post-construction performance monitoring will be conducted to observe the performance of the physical breakwater structures (breakwater height, structural integrity, settling rate, etc.), and marsh (elevation, settling rate, etc.) to allow for corrective action, if needed in the opinion of the MDEQ..

Post-construction performance monitoring would also evaluate the project's performance over time with respect to the restoration goals and objectives. Specifically, this monitoring would evaluate the production and support of organisms on the breakwater (e.g., secondary production) and the performance of the created marsh. Monitoring parameters would include the following: water quality (e.g., salinity, dissolved oxygen); vegetative monitoring; and invertebrate infauna and epifauna composition and biomass.

Anticipated short-term maintenance activities

The breakwater is anticipated to experience the greatest consolidation of the subgrade in the first years following construction. Within four years following construction, a maintenance activity on the breakwater structure may be necessary to add more riprap or shell material. Need for additional placement of rock and/or shell on the breakwater would be assessed during the regular monitoring. Maintenance construction methods would be similar to the construction methods of the original breakwater structure as described in Section 1.3.

Anticipated long-term maintenance activities

No other operations or maintenance activities are anticipated.

VI. Federally Listed Species and Critical Habitat in Project County (Hancock, MS species list and habitat descriptions dated Feb 2013 obtained from Mississippi Ecological Services Field Office website):

SPECIES/CRITICAL HABITAT	STATUS[1]	HABITAT PREFERENCE	HABITAT OR PCE'S PRESENT
Green turtle (*Chelonia mydas*) **Also Consulting with NOAA NMFS**	T	Shallow coastal waters with SAV and algae, nests on open beaches	Terrestrial – No Aquatic - Yes
Gulf sturgeon (*Acipenser oxyrhynchus desotoi*) **Consulting with NOAA NMFS**	T	Migrates from large coastal rivers to coastal bays, estuaries, and barrier islands	Yes
Critical Habitat Gulf sturgeon **Consulting with NOAA NMFS**	CH	PCEs as summarized: include abundant food items within riverine habitats for larval and juvenile life stages; and estuarine and marine habitats and substrates for subadult and adult life stages; riverine spawning sites with substrates suitable for egg deposition and development; riverine aggregation areas; a flow regime necessary for normal behavior, growth, and survival of all life stages in the riverine environment; water quality chemical characteristics necessary for normal behavior,	Yes

SPECIES/CRITICAL HABITAT	STATUS[1]	HABITAT PREFERENCE	HABITAT OR PCE'S PRESENT
		growth, and viability of all life stages; sediment quality necessary for normal behavior, growth, and viability of all life stages; and safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats.	
Hawsbill turtle (*Eretmochelys imbricata*) **Also Consulting with NOAA NMFS**	E	Coral reefs, open ocean, bays, estuaries, nests on open beaches; not on Hancock Co. species list, included for consideration with other sea turtles.	Terrestrial – No Aquatic - Yes
Kemp's ridley turtle (*Lepidochelys kempii*) **Also Consulting with NOAA NMFS**	E	Nearshore and inshore coastal waters; neritic zones with muddy or sandy substrate, nests on open beaches	Terrestrial – No Aquatic - Yes
Leatherback turtle (*Dermochelys coriacea*) **Also Consulting with NOAA NMFS**	E	Open ocean, coastal waters, nests on open beaches	Terrestrial – No Aquatic - Yes
Loggerhead turtle (*Caretta caretta*) **Also Consulting with NOAA NMFS**	T	Open ocean; also inshore areas, bays, salt marshes, ship channels, and mouths of large rivers, nests on open beaches	Terrestrial – No Aquatic - Yes
West Indian manatee (*Trichechus manatus*)	E	Fresh, brackish, and salt water in large coastal rivers, bays and estuaries	Yes
Piping Plover (*Charadrius melodus*)	T	Beaches and mudflats in southeastern coastal areas	nearby
Critical Habitat Piping plover	CH	PCEs: Sand or mud flats (or both) with no or sparse emergent vegetation.; Adjacent unvegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important, especially for roosting piping plovers; Important components of the beach/dune ecosystem include surf-cast algae, sparsely	nearby

SPECIES/CRITICAL HABITAT	STATUS[1]	HABITAT PREFERENCE	HABITAT OR PCE'S PRESENT
		vegetated back beach and salterns, spits, and washover areas; Washover areas are broad, unvegetated zones, with little or no topographic relief, that are formed and maintained by the action of hurricanes, storm surge, or other extreme wave action.	
Red knot (*Calidris canutus rufa*)	P	Sandy beaches, tidal mudflats, salt marshes, and peat banks. May forage along beaches, oyster reefs, and exposed bay bottoms while roosting on high sand, flats, reefs, and other sites protected from high tides.	Nearby
Inflated heelsplitter (*Potamilus inflatus*)	T	Riverine, Lower Pearl River, Noxubee, and Tombigbee watersheds in areas with moderate to swift currents, riffle/shoals areas with stable bottoms of sandy gravel or firm mud, gravel, and cobble.	No
Pearl darter (*Percina aurora*)	C	Stable gravel riffles or sandstone exposures with large sized gravel or rock; freshwater riverine in the Pearl and Pascagoula river systems.	No
Louisiana quillwort (*Isoetes louisianensis*)	E	Mineral soil, usually light gray in color, in bottomlands that are periodically washed free of leaves and debris, lives in water or in very wet habitats	No
Louisiana black bear (*Ursus americanus luteolus*)	T	Bottomland Hardwood and flooplain Forest; habitats must contain hard mast, soft mast, escape cover, denning sites, forested dispersal corridors, and limited human access	No
Ringed map turtle (*Graptemys oculifera*)	T	Riverine, river stretches with moderate currents, abundant	No

SPECIES/CRITICAL HABITAT	STATUS[1]	HABITAT PREFERENCE	HABITAT OR PCE'S PRESENT
		basking sites, and sand bars for nesting	
Gopher tortoise (*Gopherus polyphemus)*	T	Open canopy longleaf pine/scrub oak habitats with well-drained sandy soils	No

[1]STATUS: E=endangered, T=threatened, PE=proposed endangered, PT=proposed threatened, CH=critical habitat, PCH=proposed critical habitat, C=candidate species

VII. Determination of Effects:

A. Explanation of effects of the action on species and critical habitats in item VI. (attach additional pages as needed):

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT
Gulf sturgeon	Impacts to Gulf sturgeon and Gulf sturgeon critical habitat in the estuarine and marine environments will be analyzed by National Marine Fisheries Service (NMFS) in coordination with the USFWS. Information presented in this consultation is meant to facilitate NMFS review. Numerous studies in the northern Gulf have documented habitat use and seasonality of Gulf sturgeon movement from spawning areas in riverine habitat to foraging grounds in the nearshore environment (Fox et al., 2002; Heise et al., 2004, 2005; Rogillio et al., 2007; Ross et al., 2009; Havrylkoff et al., 2012). Telemetry data from Gulf sturgeon that are natal to the Pearl River drainage system show clear seasonal migration patterns. Movement chronologies show summer habitat use upriver to take place between April and November and winter habitat use at Cat, Ship, Horn, and Petit Bois islands in the Mississippi Sound to occur between November and early March (Rigillio et al., 2007). Data from two separate telemetry studies in the Pearl River area (Rigillio et al., 2007; Ross et al., 2009) document Gulf sturgeon migrating to and from the Rigolets Pass to the west of the Pearl River mouth in high concentrations before heading toward spawning and foraging grounds upriver and nearshore at the barrier islands, respectively (Figure 3). Ross et al. (2009) noted that in March and April, the majority of tagged fish began to move from offshore waters to the Rigolets Pass near the mouth of the Pearl River, their movement continuing upstream into the river system through June. Telemetry data from 2010 and 2011

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT
	extracted from the GulfTOPP (Tagging of Pelagic Predators Gulf of Mexico) website show Gulf sturgeon movement in waters off of the Hancock County Pearl River marsh in March and November at depths greater than six feet. Given the dates associated with the tags, the fish were likely migrating to the Rigolets Pass in March before heading upriver and to the Mississippi barrier islands in November for foraging on sandy substrates. Though sturgeon are present seasonally, we expect no effects to sturgeon from the proposed project in the riverine ecosystems as no work will occur in these habitats. Furthermore, to avoid migration disturbance, the project aims to construct restoration features from May-October while the species occupies riverine habitat, prior to the onset of migration. Moreover, if any Gulf sturgeon species are observed in the project area, a stop work order will be implemented until the species leaves the area.
Critical Habitat Gulf sturgeon	Impacts to Gulf sturgeon and Gulf sturgeon critical habitat in the estuarine and marine environments will be analyzed by National Marine Fisheries Service (NMFS) in coordination with the USFWS. Information presented in this consultation is meant to facilitate NMFS review. Gulf sturgeon critical habitat exists in the project area and is represented on the habitat resources map (Figure 1). However, no effects to PCEs from the proposed project are expected in the riverine ecosystems as no work will occur in these habitats. PCEs include abundance of prey items, water quality, sediment quality, and safe and unobstructed migratory pathways. All restoration activities will take place in shallow estuarine waters near the shoreline allowing sufficient area for passage of individuals if present during implementation. Additionally, the benthic habitat in the project area is not preferred foraging habitat for Gulf sturgeon. Well oxygenated, clear water with sandy substrates are primarily used for feeding by the species (Fox et al., 2002; Ross et al., 2009). Benthic habitat in the project footprint is largely composed of soft, silty substrates with turbid waters. Potential water quality impacts as a result of dredging and disposal have also been considered. Dredging and disposal is expected to produce turbidity levels in excess of natural conditions, however sediment disturbance during these operations are expected to be temporary and minimal. If floatation channels are created for work barges, dredging will likely impact benthic invertebrates. These impacts are primarily short-term in nature, consisting of a temporary loss of populations in the footprint of the channel. The shallow areas and substrate type that the channels may be constructed in are not considered suitable foraging habitat for sturgeon, therefore we do not expect any effect to abundance of prey items for the Gulf sturgeon.

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT
Green turtle; Hawksbill turtle; Kemp's ridley turtle; Leatherback turtle; Loggerhead turtle	NMFS will consult on potential impacts to sea turtles in the estuarine and marine environments. The five sea turtles species on the list are rarely observed in Mississippi waters (MDWFP 2001). Most of these species nest in locations far from Mississippi although it is possible that both Kemp's ridley and loggerhead sea turtles could use the offshore barrier islands for nesting (NOAA Fisheries 2012; NOAA Fisheries 2013a; NOAA Fisheries 2013b; NOAA Fisheries 2013c). Both the Kemp's ridley and loggerhead have been caught close to the shoreline by land-based fishermen indicating use of the Mississippi nearshore areas for foraging and/or movement (MDWFP 2001). The shoreline habitat in the action area is unsuitable for sea turtle nesting (i.e., no sandy beach above high tide) and we do not expect nesting in the action area. Therefore, we anticipate no effects to sea turtles in terrestrial habitats from the proposed project.
West Indian manatee	The West Indian manatee occasionally occurs in Mississippi coastal habitats and these visits are becoming more common (Fertl et al. 2005). The manatee migrates from wintering habitats in Florida and possibly Mexico to Mississippi and Alabama waters from spring through fall, when project implementation is expected. Although the West Indian manatee could be present in the project area in warmer months, their presence is uncertain as the migration of this species is still not well understood. One study did indicate that when manatees were observed outside of Florida they were most likely found near estuaries and the mouths of rivers (Fertl et al. 2005). Manatees forage on a variety of plants, including submerged aquatic vegetation (SAV), floating plants, and emergent plants (MDWFP 2001). The estuarine shallow water habitat of the project area supports sparse growth of *Ruppia maritima* around the marsh edge, but given the high erosion rates of the headland area and wave fetch dynamics, it is unlikely that any large patches exist. Since the manatee may feed up to five hours per day, it is unlikely that any would stay in the area for a prolonged period of time. If manatees were present, in-water work could startle an individual or project debris or vessels could strike a manatee. Striking a manatee generally results in harm or mortality. We expect conservation measures listed below to minimize risk of startle and strike to an insignificant and discountable level.
Piping Plover and Red Knot	Piping Plover populations winter on the Gulf and Atlantic coasts. In Mississippi piping plover are commonly observed on barrier islands and beaches, both manmade and natural (MDWFP 2001) and are generally present between August and May. Red knots may stop over on the Gulf coast during their winter and spring migrations, but are generally not resident. They are also commonly found on the barrier islands (www.ebird.org as of August 23, 2013). Therefore, project

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT
	implementation may overlap with departure and arrival of wintering birds. The habitats in the action area surrounding the Pearl River to Heron Bay, Heron Bay proper, and St. Joseph's shoreline are estuarine marshes which piping plover and red knot do not use for resting or feeding. In addition, the closest observations of piping plover and red knot to these areas are over 2 kilometers away (see www.ebird.org as of August 27, 2013). Because there is no suitable habitat present within the action area and individuals are not known to use the action area, no effects to this species are anticipated.
Critical Habitat Piping plover	Figure 2 depicts Piping Plover critical habitat in the vicinity of the project area (http://www.fws.gov/plover/#maps) showing the habitat is over 2 kilometers from the edge of the construction footprint and not within the action area. Project implementation will change the way the shoreline accretes and erodes in the action area but will not affect PCEs in critical habitat due to the distance between the critical habitat and action area. Therefore no destruction or adverse modification of critical habitat will occur.
Inflated heelsplitter; Pearl darter; Louisiana quillwort; ringed map turtle	No suitable habitat for these species is present in or near the action area and these species are not known from the action area. Therefore no effects to these species are anticipated.
Louisiana black bear	No suitable habitat is present in or near the action area and this species is not known to occur within the action area. Therefore, no effects to this species are anticipated.
Gopher tortoise	No suitable habitat is present in or near the action area and this species is not known to occur within the action area. Therefore, no effects to this species are anticipated.

B. Explanation of actions to be implemented to reduce adverse effects:

SPECIES/ CRITICAL HABITAT	ACTIONS TO MINIMIZE IMPACTS
Green turtle; Hawksbill turtle; Kemp's ridley turtle; Leatherback turtle; Loggerhead turtle	Awareness of potential turtle presence. If any sea turtles are found to be present in the immediate project area during restoration activities, construction will be halted until species moves away from project area.
West Indian manatee	Awareness of manatee presence. If manatee(s) are found to be present in the immediate project area during restoration activities, construction will be halted until species moves away from project area. Will follow USFWS guidelines according to *STANDARD MANATEE CONDITIONS FOR IN-WATER WORK, 2011* (Attachment 1).

SPECIES/ CRITICAL HABITAT	ACTIONS TO MINIMIZE IMPACTS
Gulf sturgeon (*Acipenser oxyrhynchus desotoi*)	Project restoration features will be built close the shoreline in shallow water (1-4 feet) and will not impede any migratory paths. Project components will be constructed in the months of May-October to avoid inter-riverine migration movements. Project construction activities will be subject to a stop work order if the species is observed in the project footprint. Work will continue once the species leaves the area.

VIII. Effect Determination and Response Requested:

SPECIES/ CRITICAL HABITAT	DETERMINATION[1]			RESPONSE[1] REQUESTED
	NE	NLAA	AA	
Green turtle – terrestrial habitats only	X			Concurrence for terrestrial; consulting with NOAA NMFS for aquatic
Gulf sturgeon	—	—	—	Consulting with NOAA NMFS
Critical Habitat Gulf sturgeon	—	—	—	Consulting with NOAA NMFS
Hawsbill turtle	X			Concurrence for terrestrial; consulting with NOAA NMFS for aquatic
Kemp's ridley	X			Concurrence for terrestrial; consulting with NOAA NMFS for aquatic
Leatherback turtle	X			Concurrence for terrestrial; consulting with NOAA NMFS for aquatic
Loggerhead turtle	X			Concurrence for terrestrial; consulting with NOAA NMFS

SPECIES/ CRITICAL HABITAT	DETERMINATION[1]			RESPONSE[1] REQUESTED
	NE	NLAA	AA	
				for aquatic
West Indian manatee		X		concurrence
Piping Plover	X			concurrence
Critical Habitat Piping plover	X			concurrence
Red knot	X			Conference
Inflated heelsplitter (*Potamilus inflatus*)	X			concurrence
Pearl darter (*Percina aurora*)	X			Conference
Louisiana quillwort	X			concurrence
Louisiana black bear	X			concurrence
Ringed map turtle	X			concurrence
Gopher tortoise	X			concurrence

[1]DETERMINATION/ RESPONSE REQUESTED:

IX. Bald Eagles

Are bald eagles present in the action area? ___No X_

If "Yes", can you implement the conservation measures below? _ ___Yes ____ No

1. If bald eagle breeding or nesting behaviors are observed or a nest is discovered or known, all activities (walking, camping, cleanup, use of a UTV, ATV, or boat) should avoid the nest by a minimum of 660 feet. If the nest is protected by a vegetated buffer where there is *no* line of sight to the nest, then the minimum avoidance distance is 330 feet. This avoidance distance shall be maintained from the onset of breeding/courtship behaviors until any eggs have hatched and eaglets have fledged (approximately 6 months).
2. If a similar activity (like driving on a roadway) is closer than 660 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
3. If a vegetated buffer is present and there is no line of sight to the nest and a similar activity is closer than 330 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
4. In some instances activities conducted within 660 feet of a nest may result in disturbance, particularly for the eagles occupying the Mississippi barrier islands. If an activity appears to cause initial disturbance, the activity shall stop and all individuals and equipment will be moved away until the eagles are no longer displaying disturbance behaviors.

If not, contact the Service's Migratory Bird Permit Office to determine how to avoid impacts or if a permit may be needed.

X. Migratory Birds

A. Identify the species anticipated in the project area and behaviors (breeding, roosting, foraging) anticipated during project implementation.

SPECIES	BEHAVIOR	SPECIES/HABITAT IMPACTS
Wading birds (herons, egrets, ibises)	Foraging, feeding, resting, roosting, nesting	Wading birds primarily forage and feed at the water's edge. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily nest and roost in trees or shrubs (e.g. pines, *Baccharis*), which occur outside the project area.
Shorebirds (plovers, oystercatchers, stilts, sandpipers)	Foraging, feeding, resting, roosting, nesting	Shorebirds forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. The project will be constructed in areas where shorelines are substantially eroded. In the project area, there is limited natural beach and mudflat where shorebirds would nest.
Seabirds (terns, gulls, skimmers, double-crested cormorant, American white pelican, brown pelican)	Foraging, feeding, resting, roosting, nesting	Seabirds forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. Nesting habitat does not exist in the project area; therefore it is not anticipated to impact nesting.
Waterfowl (ducks, loons, and grebes)	Foraging, feeding, resting, roosting, nesting	Waterfowl forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily roost and nest in low vegetation, which is not directly inside the project area; therefore it is not anticipated to impact nesting.
Raptors (osprey, hawks, eagles, owls)	Foraging, feeding, resting, roosting, nesting	Raptors forage, feed, and rest in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. Most raptors are aerial foragers and soar long distances in search of food. Locations where these birds roost and nest are not within the project area.
Rails and coots	Foraging, feeding, resting, roosting, nesting	Rails and coots forage, feed, rest, or roost in the project area. As such, they may be impacted locally and temporarily by the project. However they are most likely to favor marshy areas. It is expected that they would be able to move to another nearby location to

SPECIES	BEHAVIOR	SPECIES/HABITAT IMPACTS
		continue foraging, feeding and resting if disturbed by the project. These birds primarily roost and nest in marshes, which are not directly within the project area; therefore it is not anticipated to impact nesting.

B. If species or habitat impacts could occur, identify avoidance and minimization measures to prevent incidental take. Incidental take of Migratory Birds cannot be authorized.

SPECIES/SPECIES GROUP	CONSERVATION MEASURES TO MINIMIZE IMPACTS
Wading birds (herons, egrets, ibises)	Care will be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. All disturbance will be localized and temporary. The general behavior of these birds is to mediate their own exposure to human activity when given the opportunity. Roosting should not be impacted because the project will occur during daylight hours only. These birds primarily roost in trees or shrubs, but project components will not impact these habitats. Nesting will not be impacted because the project will occur only in-water and there are no rookeries or habitat to establish rookeries in the area.
Shorebirds (plovers, oystercatchers, stilts, sandpipers)	Care will be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. All disturbance will be localized and temporary. The general behavior of these birds is to mediate their own exposure to human activity when given the opportunity. Roosting should not be impacted because the project will occur during daylight hours only. Nesting will not be impacted because the project will occur only in-water. If construction will occur during the nesting season within 300 feet of potential nesting habitat, pre-construction surveys could be conducted to ensure either no nesting birds are present in habitat adjacent to construction areas or to develop meaningful avoidance measures.
Seabirds (terns, gulls, skimmers, double-crested cormorant, American white pelican, brown pelican)	Care will be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. All disturbance will be localized and temporary. The general behavior of these birds is to mediate their own exposure to human activity when given the opportunity. Roosting should not be impacted because the project will occur during daylight hours only. Nesting will not be impacted because the project will occur only in-water. If construction will occur during the nesting season within 300 feet of potential nesting habitat, pre-construction surveys could be conducted to ensure either no nesting birds are present in habitat adjacent to construction areas or to develop meaningful avoidance measures.
Raptors (osprey, hawks, eagles, owls)	No work will occur within 660 feet of any bald eagle nests. Care will be taken to avoid working near other raptor nests, and to minimize noise and vibration in their vicinities. Roosting should not be impacted because the project will occur during daylight hours only, and because the areas where these birds nest are not within the project area. A staff biologist will advise

	the contractor of the nesting status of all identified raptor nests near the project area and approve of work in the vicinity. Nesting will not be impacted because the project will occur only in-water. If construction will occur during the nesting season within 300 feet (660 ft for eagles) of potential nesting habitat, pre-construction surveys could be conducted to ensure either no nesting birds are present in habitat adjacent to construction areas or to develop meaningful avoidance measures.
Waterfowl (ducks, loons, and grebes)	Care will be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. All disturbance will be localized and temporary. The general behavior of these birds is to mediate their own exposure to human activity when given the opportunity. Roosting should not be impacted because the project will occur during daylight hours only. Nesting will not be impacted because the project will occur only in-water. If construction will occur during the nesting season within 300 feet of potential nesting habitat, pre-construction surveys could be conducted to ensure either no nesting birds are present in habitat adjacent to construction areas or to develop meaningful avoidance measures.
Rails and coots	Care will be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. All disturbance will be localized and temporary. The general behavior of these birds is to mediate their own exposure to human activity when given the opportunity. Roosting should not be impacted because the project will occur during daylight hours only. Nesting will not be impacted because the project will occur only in-water. If construction will occur during the nesting season within 300 feet of potential nesting habitat, pre-construction surveys could be conducted to ensure either no nesting birds are present in habitat adjacent to construction areas or to develop meaningful avoidance measures.

XI. Signatures from the station preparing the Intra-Service Biological Evaluation:

/s/ Holly N. Blalock-Herod 12/31/2013
Signature (originating station - preparer) **date**
DOI Case Management Team, ESA Coordinator

Deborah L McCal 1/9/14
Signature (originating station) **date**
Deputy Case Manager

This analysis resulted in a determination that no "take" of a federally listed species would occur. If any of the following occur, then there must be reinitiation on this action:

(1) any incidental take occurs

(2) new information reveals effects of the Service's action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion;

(3) the Service's action is later 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 any incidental take occurs, the operations causing such take must cease until reinitiation.

If reinitiation is required, contact the Mississippi Ecological Services Field Office **about the action.**
Mississippi Ecological Services Field Office, 6578 Dogwood View Parkway, Suite A, Jackson, Mississippi 39213, (p) 601-965-4900, (f) 601-965-4340

XII. Reviewing Ecological Services Office Evaluation:

A. Concurrence _____ Nonconcurrence _____

B. Formal consultation required _____

C. Conference required _____

D. Informal conference required _____

E. Remarks (attach additional pages as needed):

_____ _____
Signature **date**

_____ _____
Title **office**

ATTACHMENT 1: STANDARD MANATEE CONDITIONS FOR IN-WATER WORK, 2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.

b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.

d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation.Animals must not be herded away or harassed into leaving.

e. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the Florida Fish and Wildlife Conservation Commission may be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8½ " by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at http://www.myfwc.com/WILDLIFEHABITATS/ manatee_sign_vendors.htm.

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APPENDIX H

Tribal Consultations

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

In Reply Refer To:
FWS/R4/DH NRDAR

March 14, 2016

Gary Rikard
Mississippi Department of Environmental Quality
Post Office Box 2261
Jackson, Mississippi 39225-2261

Re: Mississippi Hancock County Marsh Living Shoreline Project, *Deepwater Horizon* Oil Spill Natural Resources Damage Assessment and Restoration (NRDAR)

Dear Mr. Rikard:

The Department of the Interior (DOI), on behalf of the National Oceanic and Oceanographic Administration, the U.S. Department of Agriculture, and the U.S. Environmental Protection Agency, has completed a review of the Mississippi Hancock County Marsh Living Shoreline Project under section 106 of the National Historic Preservation Act (NHPA). As part of this review, DOI consulted with the Mississippi State Historic Preservation Office, the Choctaw Nation of Oklahoma, the Alabama-Coushatta Tribe of Texas, the Kiowa Tribe of Oklahoma, the Coushatta Tribe of Louisiana, the Muscogee (Creek) Nation, the Caddo Nation, and the Thlopthlocco Tribal Town. DOI has concluded that this project will have "no adverse effect" on historic properties contingent on the following stipulations:

- Those areas containing known archaeological sites as identified in the cultural resource surveys that were conducted for this project, and a sufficient buffer around those sites adequate to protect those resources, will be designated as "no go zones" during project implementation. Construction crews will be provided with maps that identify the "no go zones' but do not specifically identify the location of the cultural resource.
- Training will be provided to the construction crews in the identification of potential cultural resources.
- The construction crews will be provided with procedures on the measures to take if such resources are discovered.
- In the event that archaeological locus JLC022B-0, identified during the pedestrian survey conducted as part of this project, cannot be avoided, additional archaeological assessment of the locus will take place to identify the site's significance prior to any work being conducted which may impact the site.

If any cultural or historic resources are discovered during the implementation of this project,

work must cease in the vicinity of the discovery and staff must contact James Chapman, DOI *Deepwater Horizon* Oil Spill NRDAR Section 106 Coordinator, at (404) 679-7060 or james_chapman@fws.gov. The discovery of cultural or historic resources may necessitate additional review of this project under NHPA Section 106.

If you have any questions, please contact James Chapman using the contact information listed above.

Sincerely yours,

Debora L. McClain
Deputy DOI DH NRDAR Case Manager

APPENDIX I

National Environmental Policy Act (NEPA) Documentation

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CHAPTER 10: PROPOSED PHASE III EARLY RESTORATION PROJECTS: MISSISSIPPI

10.1 Introduction

The *Deepwater Horizon* (DWH) spill had a large impact on Mississippi's natural resources and resulted in damage to those resources in addition to a loss of recreational services and ecological services provided by these natural resources. Mississippi, along with the other Trustees, is beginning a restoration process that includes projects designed to compensate for damages to natural resources and the services that those resources provide to the ecosystems or to humans. Following the Spill, the Mississippi Trustee engaged stakeholders including coastal municipal and county governments, non-governmental organizations, state and regional agencies, and the public through a variety of public outreach and coordination efforts to discuss NRDA, the restoration planning process, and potential restoration projects related to the Spill. Meetings are summarized In Section 2.1.5 of this document. In addition, the Trustee met with stakeholders to provide information and solicit suggestions.

As a result of these outreach efforts, Mississippi compiled a list of potential projects for restoration of injured natural resources and services, including recreational loss services. More than 270 project ideas have been received and have been evaluated for Early Restoration[1]. The Mississippi Trustee will continue to accept restoration project ideas. To submit a project idea online, or to view project ideas that have already been submitted, please visit http://www.restore.ms. Projects not selected by the Trustees for this phase of Early Restoration planning may be considered for future phases of both early and long-term restoration.

Based on analysis by Mississippi of the selection criteria set forth in the OPA regulations and the Framework Agreement as outlined in Chapter 2, and NOAA screening considerations for federal trust resources (see Chapter 2), the following projects in Mississippi were identified for Phase III Early Restoration (**Error! Reference source not found.**):

1. Hancock County Marsh Living Shoreline Project (jointly with NOAA)
2. Restoration Initiatives at the INFINITY Science Center
3. Popp's Ferry Causeway Park
4. Pascagoula Beach Front Promenade

These projects are consistent with the goal of compensating the public for natural resource injuries resulting from the Spill. The Early Restoration projects proposed in this Programmatic and Phase III Early Restoration Plan and Final Early Restoration Programmatic Environmental Impact Statement (Final Phase III ERP/PEIS) are not intended to fully compensate the public for injuries caused by the Spill. Additional restoration actions would be required.

Within the remainder of this chapter, there is a subsection for each proposed Phase III project. Each project-specific subsection begins with a general description of the project and relevant background information, followed by: 1) a discussion of the project's consistency with project evaluation criteria; 2)

[1] As of May 15, 2014.

a description of planned performance criteria, monitoring, and maintenance; 3) a description of the type and quantity of Offsets BP would receive if the project is selected for implementation; and 4) information about estimated project costs.

Following this project information is a project-specific environmental review, which provides information about the project's affected environment and analysis about anticipated environmental consequences of the proposed project. Although each of the proposed projects is consistent with the Trustees' preferred Programmatic Alternative (Alternative 4) identified and evaluated in previous sections of this document (Chapters 5 and 6), the Trustees also have undertaken project-specific environmental reviews to help ensure proposed project locations, methods, timing, and other factors to reasonably maximize project benefits, minimize potential adverse consequences, and otherwise address environmental compliance needs.

A cumulative impacts analysis follows the environmental review for all of Mississippi's projects. The cumulative impacts section analyzes how current environmental and socioeconomic conditions may be affected by the proposed actions when their impacts are considered with past, present and reasonably foreseeable future actions.

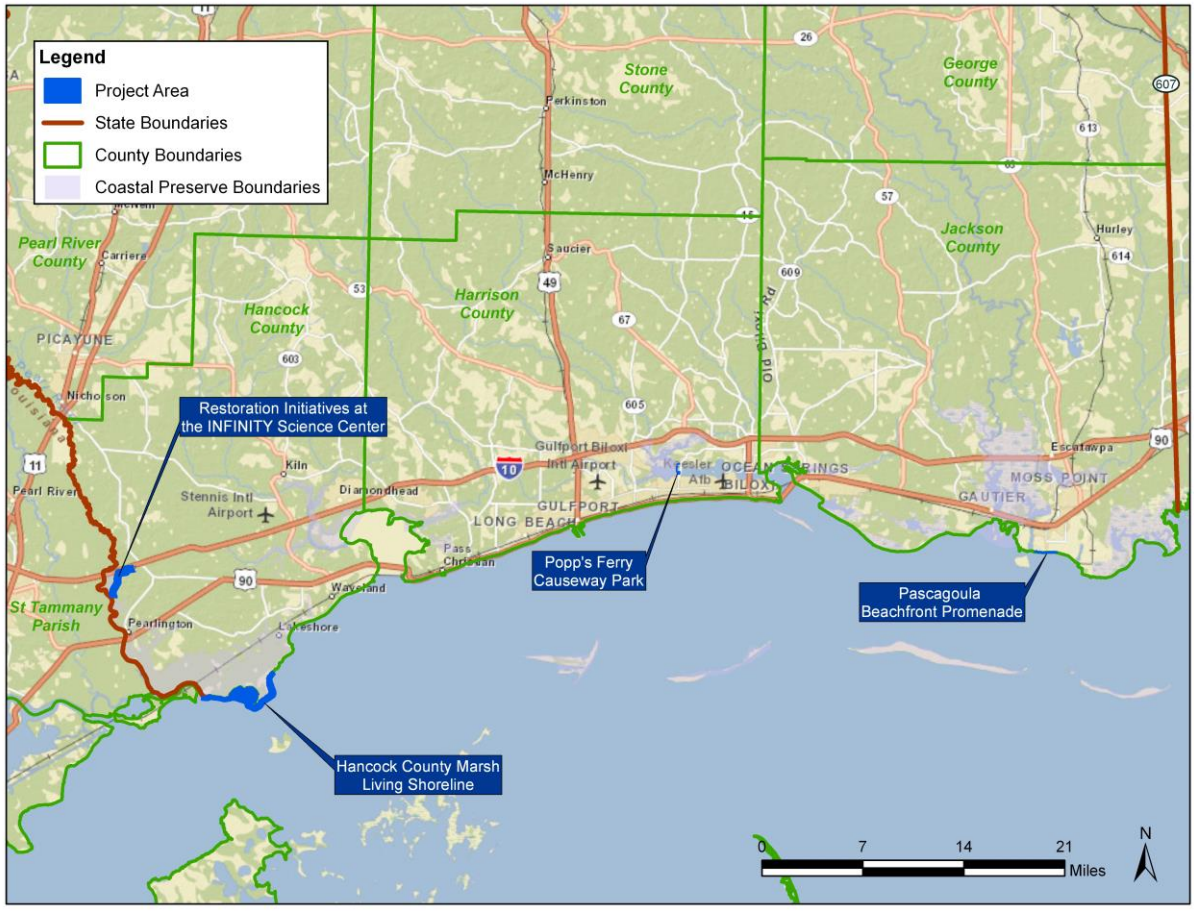

Figure 10-1. Location of Mississippi Phase III Early Restoration projects.

10.2 Hancock County Marsh Living Shoreline Project: Project Description

10.2.1 Project Summary

The proposed Hancock County Marsh Living Shoreline project is intended to employ living shoreline techniques including natural and artificial breakwater material and marsh creation to reduce shoreline erosion by dampening wave energy while encouraging reestablishment of habitat that was once present in the region. The project would provide for construction of up to 5.9 miles of living shoreline, approximately 46 acres of marsh creation, and 46 acres of subtidal oyster reef would be created in Heron Bay to increase secondary productivity in the area. The project would include shoreline erosion reduction, creation of habitat for secondary productivity, and protection and creation of salt marsh habitat. The estimated cost for this project is $50,000,000.

10.2.2 Background and Project Description

The Hancock County Marsh Living Shoreline project is located in western Hancock County, Mississippi, between Bayou Caddy and the mouth of the East Pearl River (Figure 10-2). The 20,909-acre Hancock County Marsh complex, one of the largest in Mississippi, is part of the extensive Pearl River estuary and is partially owned and managed by the Mississippi Department of Marine Resources (MDMR) as part of the Coastal Preserves of the State of Mississippi. Historically, there were extensive, prolific reefs of the American oyster (*Crassostrea virginica*) in the shore zone and nearshore areas of lower Hancock County that provided natural protection from shoreline erosion. Historical erosion rates, particularly at St. Joseph's Point, make this shoreline a priority for protection and marsh creation. The breakwater component of the living shoreline would help protect the existing Hancock County Marsh complex that includes estuarine and estuarine marine deepwater habitats, estuarine and estuarine marine wetlands, freshwater emergent wetlands, and freshwater forested and scrub shrub wetlands.

Breakwaters would be constructed along the marsh shoreline in two locations: from the Pearl River to the western limit of Heron Bay (western reach) and from the eastern limit of Heron Bay to approximately four miles to the northeast toward (eastern reach) approximately 1.86 miles past the heel St. Joseph's Point. Construction activities could include placement of linear structures that may utilize artificial and/or shell-based materials within the -3 to -5 foot (ft.) Mean Lower Low Water (MLLW) contour. Approximately 46 acres of marsh would be constructed in the St. Joseph's Point area to protect and restore marsh areas that experience the historical rates of erosion. A total of 46 acres of subtidal oyster reef would be created using oyster shell in northeastern Heron Bay to protect the shallow embayment and to increase oyster production in the area.

10.2.3 Evaluation Criteria

This project meets the evaluation criteria for the Framework Agreement and OPA. The project would restore injured salt marsh and lost benthic secondary productivity resulting from the Spill in an effort to make the environment whole by restoring, rehabilitating, replacing, or acquiring comparable natural resources injured by the Spill (Section 7.1; Table 7.1). The nexus to resources injured by the Spill is clear (see C.F.R. § 990.54(a) (2) and Sections 6(a)-(c) of the Early Restoration Framework Agreement). The project is technically feasible and utilizes proven techniques with established methods and documented results. Government agencies have successfully implemented similar projects in the region. For these reasons, the project has a high likelihood of success. Further, cost estimates are based on similar past projects, and the project can be conducted at a reasonable cost (see C.F.R. § 990.54(a) (1) and (3) and

Section 6e of the Early Restoration Framework Agreement). A thorough environmental review, including review under applicable environmental statutes and regulations, is described in section 10.3, indicates that adverse effects from the project would largely be minor, localized, and often of short duration. In addition, the best management practices and measures to avoid or minimize adverse effects described in 10.3 would be implemented. As a result, collateral injury would be avoided and minimized during project implementation (construction and installation and operations and maintenance) (15 C.F.R. § 990.54(a)(4)). The project is not inconsistent with long-term restoration needs and was included in *The Project Management Plan for Beneficial Use Projects along Coastal Mississippi* (CH2MHill 2011), which includes shoreline restoration in the Hancock County Marsh Preserve (see Section 6d of the Early Restoration Framework Agreement). The project would not adversely affect public health and safety; see Sections 3.3.6 and 10.2.6.15 of this document. The Hancock County Marsh Living Shoreline project, along with other similar type projects located across the Gulf of Mexico, was submitted as a restoration project on the NOAA website (http://www.gulfspillrestoration.noaa.gov).

Figure 10-2. Proposed Hancock County Marsh Living Shorelines in the vicinity of the Hancock County Marsh complex.

10.2.4 Performance Criteria, Monitoring and Maintenance

Monitoring would be used to evaluate the restoration objectives of the project: 1) construct reef structures to protect shoreline from erosion and support secondary productivity; 2) restore marsh habitat, and 3) restore oyster reefs to support secondary productivity. Post-construction performance

monitoring is proposed for seven years following completion of the project and would evaluate the project's performance over time with respect to the production and support of organisms on the living shoreline (e.g., secondary productivity) and the performance of the created marsh.

Components of this monitoring may include collecting information with respect to:

- Water quality (e.g., salinity, dissolved oxygen)
- Structural integrity of breakwater structure;
- Height/elevation and area of breakwater structure;
- Consolidation rate of breakwater structure;
- Shoreline profile;
- Shoreline position;
- Bivalve density, size, biomass, and survival;
- Non-bivalve invertebrate density and biomass; and
- Percent cover of marsh vegetation.

This project would incorporate a mix of monitoring efforts to ensure project designs are correctly implemented during construction and would allow for corrective actions to be taken where necessary.

10.2.5 Offsets

For the purposes of negotiation of Offsets with BP in accordance with the Framework Agreement, the Trustees used Resource Equivalency Analysis and Habitat Equivalency Analysis to estimate appropriate biological and habitat Offsets for the Hancock County Marsh Living Shoreline project. Habitat Offsets (expressed in DSAYs) were estimated for salt marsh habitat created and/or protected by this restoration, based on the expected spatial extent and duration of improvements attributable to the project. In estimating DSAYs, the Trustees considered a number of factors, including, but not limited to, anticipated protection of existing marsh provided by the project, new marsh created by the project, the time period it would take for created marsh to provide different levels of ecological benefits, the time period over which the project would continue to provide benefits, and the ecological benefits of created marsh relative to existing marsh habitats that were not affected by the Spill. The Trustees and BP agreed that if this restoration is selected for implementation, BP would receive Offsets of 347.45 DSAYs of Salt Marsh Habitat[2], applicable to Salt Marsh Habitat injuries in Mississippi, as determined by the Trustees' total assessment of injury for the Spill.

[2] **Salt Marsh Habitat** refers to transitional marsh areas between land and water that occur in coastal areas at salinities at or approaching that of ocean water. Typical vegetation in salt marsh habitat includes species such as *Spartina alterniflora*, *Juncus romerianus*, and *Distichlis spicata.*

Benthic Secondary Productivity[3] Offsets (expressed in DKg-Ys[4]) were estimated for expected increases in invertebrate infaunal and epifaunal biomass attributable to the project. In estimating DKg-Ys, the Trustees considered a number of factors, including, but not necessarily limited to, typical productivity in the project area, estimated project lifespan, and project size. The Trustees and BP agreed that if this restoration is selected for implementation, BP would receive Offsets of 1,594,166 DKg-Ys of benthic Secondary Productivity, applicable to benthic Secondary Productivity injuries in Mississippi, as determined by the Trustees' total assessment of injury for the Spill. If these benthic Secondary Productivity Offsets exceed the specified injury, the Trustees and BP will apply "excess" Offsets to benthic Secondary Productivity within federal waters on the continental shelf, excluding those associated with mesophotic reefs. These Offsets would not apply to injuries in Alabama, Florida, Louisiana, and/or Texas.

These Offset types and amounts are reasonable for this project.

10.2.6 Cost

The estimated cost to implement this project is $50,000,000. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, monitoring, and potential contingencies.

[3] The strict definition of secondary productivity is the rate of production of consumers (heterotrophs) in an ecosystem (Edmondson & Winberg 1971). For purposes of the offsets for the living shoreline projects, it is more narrowly defined as production of herbivores and detritivores, (the P2 production level in Odum 1959) and in particular, the net production of mobile and sessile invertebrate infauna and epifauna associated with hard bottom substrates.

[4] Discounted kilogram-years of Ash-Free-Dry-Weight

10.3 Hancock County Marsh Living Shoreline Project: Environmental Review

10.3.1 Introduction and Background

The restoration activities proposed for this project would be located in western Hancock County, Mississippi, from the mouth of the Pearl River on the west to approximately 1.86 miles past the heel of St. Joseph's Point, including Heron Bay (Figure 10-3). This marsh complex is part of the extensive Pearl River estuary where the land is largely in public ownership and managed by the Mississippi Department of Marine Resources (MDMR) as part of the Coastal Preserves of the State of Mississippi. The total acreage of the area designated as the Hancock County Marsh Coastal Preserve is 20,909 (Clark 2013). A total of 12,837 acres in Hancock County Marsh Coastal Preserve is owned by the state, with the remainder owned by various other entities or private landowners (Clark 2013). The preserve, which represents one of the largest marsh habitats in Mississippi, consists of marsh, including tidal channels, lagoons, and bays. Historically, extensive and prolific reefs of the American oyster (*Crassostrea virginica*) in the shore zone and nearshore areas of lower Hancock County provided natural protection to the shore from erosion. High erosion rates, particularly at St. Joseph's Point, make this shoreline a priority for protection and marsh creation. The *Project Management Plan for Beneficial Use Projects along Coastal Mississippi* cites this area as a priority project site (CH2MHill 2011).

The Hancock County Marsh Living Shoreline project would include shoreline/marsh protection, marsh creation, subtidal reef restoration, and increased benthic secondary productivity. Specifically, the proposed project consists of three restoration components:

- Use of living shoreline techniques that utilize natural and artificial breakwater material to reduce shoreline erosion by dampening wave energy while encouraging reestablishment of habitat that was once present in the region
- Creation of 46 acres of salt marsh habitat in areas that have experienced high rates of shoreline and marsh habitat erosion
- Placement of 46 acres of oyster cultch in areas that have historically supported oyster habitat

In order to assess the impact on the environment, the project is described based on the current design concept. Final engineering and design could result in revisions to the project. The following is intended to be a conservative description of the project components in order to evaluate a maximum environmental impact during the National Environmental Policy Act (NEPA) review environmental permitting. Project refinement(s) are anticipated as part of the design process. To the extent possible, revisions would be restricted to the current project footprint.

10.3.1.1 Living Shorelines

Breakwaters

For this project, the living shoreline approach includes constructing breakwaters made of limestone with oyster shell veneer that provides erosion control benefits and enhances natural shoreline habitat. A breakwater can be defined as linear structures that may utilize artificial and/or shell-based materials placed parallel to the shore in medium- to high-energy open-water environments for the purpose of

dissipating wave energy to reduce shoreline erosion. The breakwaters would be constructed at two locations: along St. Joseph's Point (eastern reach) and from Pearl River to Heron Bay (western reach).

Figure 10-3. Conceptual Hancock County Marsh Living Shoreline project components.

- **St. Joseph's Point Breakwater (eastern reach):** The conceptual design for the breakwater would be approximately four miles long, extending from Heron Bay to approximately four miles to the northeast, which includes openings throughout, with a crest width of approximately 15.0 ft. and total height of approximately 4.0 ft. (to +0.87 ft., North American Vertical Datum [NAVD]). The breakwater would have a footprint of approximately 14.4 acres and would be placed on a substrate of fine-grained sediment. It would be composed of a core of riprap and some or all could be covered by a 9-inch-thick layer of bagged oyster shell.
- **Pearl River to Heron Bay Breakwater (western reach):** This conceptual breakwater would be approximately 1.9 miles long, with openings throughout, with a crest width of 15.0 ft. and a total height of approximately 4.0 ft. (to +0.87 ft., NAVD). Its design and sediment substrate are to be similar to the St. Joseph's Point breakwater. The Pearl River to Heron Bay breakwater project area footprint would be approximately 5.5 acres, consisting of fine-grained sediment. The conceptual design is subject to refinement.

10.3.1.2 Creation of Marsh in the Vicinity of St. Joseph's Point

In addition to the breakwaters, the living shoreline approach would include creating a total of 46 acres of salt marsh in one to several locations. Salt marshes are defined as transitional marsh areas between land and water that occur in coastal areas at salinities at or approaching that of ocean water. Typical vegetation in salt marsh habitat includes species such as smooth cordgrass (*Spartina alterniflora*), black needlerush (*Juncus romerianus*), and saltgrass (*Distichlis spicata*). The area behind the constructed breakwater at St. Joseph's Point would be backfilled with dredged material and allowed to re-vegetate by natural colonization of estuarine marsh species. Dredged fill material would be obtained through the Mississippi Beneficial Sediment Use Program as available or excavated from a suitable borrow source. Dredged material would be hydraulically placed to obtain the target elevation.

10.3.1.3 Placement of Oyster Reef Cultch in Heron Bay

In addition to the living shoreline components, oyster cultch would be deployed over 46 acres in Heron Bay in areas that currently support or previously supported oyster production. Oyster reefs are typically colonial aggregations of living oysters and other bi-valves that can have subtidal as well as intertidal portions and that provide habitat for a community of other species. Oyster cultch deployment would occur generally in water depths of approximately -3 to -5 ft. MLLW. The reef(s) would be sited based on data gathered from an oyster presence survey and would consist of an approximately 6- to 9-inch-thick layer of oyster shell or limestone placed on the marsh platform.

10.3.2 Project Location

The proposed project is located in Hancock County, Mississippi (Bounding Coordinates: West -89.530339 W, 30.184 N; South: -89.462 W, 30.169 N; East: -89.415 W, 30.233 N; North: -89.53 W, 30.184 W. Centroid = -89.457 W, 30.19 N). The Hancock County Marsh Preserve is managed by the MDMR and is the second largest continuous marsh area in the state. The preserve includes adjoining marshlands bordering the Mississippi Sound from the Pearl River to St. Joseph's Point. The project area includes the shoreline of the Hancock County marsh from the mouth of the Pearl River on the west to approximately 1.86 miles past the heel of St. Joseph's Point, including Heron Bay. On the seaward side, the project area extends approximately to the -8 ft. contour from the proposed breakwater to incorporate potential impacts from temporary flotation channels that would be utilized by work barges during construction.

10.3.3 Construction and Installation

Construction methods and activities are included in order to assess the impact on the environment. Actual construction methods and activities would be determined after final design and would likely be comparable to activities described below. It is expected that actual construction methods would be similar to those presented in this section.

10.3.3.1 Living Shorelines

Breakwaters

The specific breakwater construction elevation was selected to maximize shoreline protection (see Table 10-1). Construction could include placement of linear structures that would utilize artificial and/or shell-based materials. The alignment and limits of the breakwaters would be surveyed; the outer limits of the breakwaters would be marked with poles driven into the bottom and extended approximately 3 ft. above the water surface. The height of the breakwaters along the alignment would be constructed

based on bottom elevations and the anticipated crest elevation (0.87 ft. NAVD 88 – Mean Tide Level). Barriers, navigation warning signs (lighted and unlighted), and other safety devices would be installed along the work area to protect boaters.

Table 10-1. Preliminary Breakwater specifications for the Hancock County Marsh Living Shoreline project.

Breakwater Design Data	St. Joseph's Point Breakwater (eastern reach)	Pearl River to Heron Bay Breakwater (western reach):
Total project length	Approx. 4 miles	Approx. 1.9 miles
Total project acreage	14.4 acres	5.5 acres
Crest width	15.0 ft.	15.0 ft.
Base width	30 ft.	30 ft.
Assumed bottom elevation	-3.5 MLLW	-3.5 MLLW
Total structure height	3.75 ft.	3.75 ft.
Bagged shell veneer thickness	9 inches	9 inches
Riprap core volume	51,600 cubic yards	16,900 cubic yards
Bagged shell volume	16,400 cubic yards	6,300 cubic yards
Depth of material (riprap/marine mattress)	3 ft.	3 ft.
Estimated initial settlement	1 ft.	1 ft.
Design side slopes	2v:1h	2v:1h
Breakwater distance from shoreline	30 – 90 ft.	30 – 90 ft.
Reach of each breakwater	75 ft.	75 ft.
Length of each gap between breakwater	25 ft.	25 ft.

The dimensions for the breakwaters would be approximately 30 ft. wide at the base and approximately 15 ft. wide at the crest (Table 10-2).

The riprap core of the breakwaters would either be constructed using loose boulders or "marine mattresses," which would consist of 2- to 6-inch-diameter rocks assembled on land. The core material would be transported to the work area on barges and installed by a crane located on a separate barge. Placement of the riprap core would be monitored to ensure the breakwater dimensions, slopes, and crest elevations are achieved. After installation of the riprap core, some or all could be covered with bags of shell. The deployment of the breakwaters may extend over a period of ten to twelve months; major construction activities to the extent practicable, would be limited to the months of May to October after sturgeon have migrated to their riverine habitat. If work continues beyond the May to October window, continued adherence to the Sea turtle and Smalltooth Sawfish Construction Conditions (NMFS, 2006) will minimize the potential for impacting Gulf Sturgeon. Total installed volumes would be as follows:

- ***St. Joseph's Point Breakwater (eastern reach):*** The target depth for deployment is approximately -3.5 ft. MLLW, but could be between -3.0 and -5.0 ft. MLLW. The volume of placed material would be approximately 51,600 cubic yards of riprap and 16,400 cubic yards of shell. The breakwater would cover a footprint of approximately 14.4 acres of fine-grained sediment.

- ***Pearl River to Heron Bay Breakwater (western reach):*** The target depth for deployment is approximately -3.5 MLLW, but could be between -2.0 ft. and -5.0 ft. MLLW. The volume of placed material would be approximately 16,900 cubic yards of riprap and 6,300 cubic yards of shell. The breakwater would cover a footprint of approximately 5.5 acres of fine-grained sediment.

The project is designed to use temporary flotation channels (Table 10-2) to facilitate access for work barges into the work area. A channel would be excavated parallel to the alignments of the two breakwaters (Figure 10-3). Additional channels would be excavated perpendicular to these channels to provide access from the Mississippi Sound to allow work barges entry and exit for the project area. The excavated dredged material would be cast on the seaward side of the channels so they naturally fill back in after construction. The depth of the channels would be 8 ft. below MLLW to accommodate barge draft. The bottom width of the channels would be approximately 80 ft. with 3H:1V side slopes. The entry locations for the channels would be determined by analyzing the shortest distance from the breakwaters to the appropriate depth of -8 ft. and excavated using best management practices (BMPs) to minimize environmental impacts. For the purposes of project planning, the preliminary temporary flotation channel footprint was calculated based on an estimate of a heavily loaded barge. Proposed temporary flotation channel dimensions are summarized in Table 10-2.

Table 10-2. Preliminary temporary flotation channel footprint for the Hancock County Marsh Living Shoreline project.

COMPONENT	DIMENSION
Channel Length	55,008 ft.
Barge Draft	8 ft.
Channel Width	80 ft.
Area Temporarily Impacted	101 acres

After completion of construction, the breakwater structure would be surveyed and permanent navigation signs would be installed in accordance with safety requirements.

10.3.3.2 Creation of Marsh in the Vicinity of St. Joseph's Point

After the breakwater along St. Joseph's Point has been installed, selected areas landward of the breakwater would be filled with dredged material obtained from the MDMR Beneficial Use of Sediment Program if material is available, or a suitable borrow source. It is anticipated that a dike would be constructed at the seaward extent of the marsh. Upon location of suitable material, the dike would be constructed by excavating existing material from the landward side of the proposed dike location, but not borrowing from the existing marsh. Once an area of the marsh is diked, the area landward of the dike would be filled with dredged material until final marsh grades are achieved. Sediment would be pumped through a floating pipeline from a hydraulic dredge located where suitable fill material is available. Pumps and sediment controls would remain in place throughout the dredging and filling process and after initial settling has occurred. Once the entire marsh area(s) is constructed, the area would be monitored for natural re-vegetation.

10.3.3.3 Placement of Oyster Cultch in Heron Bay

Oyster cultch would be deployed in Heron Bay in water depths of -3 to -5 ft. MLLW in areas that currently support or previously supported oyster production. An oyster presence survey has been completed that identified suitable areas. The cultch would be deployed as a high-profile 6- to 9-inch-thick layer of oyster shell or limestone. Prior to deployment, the limits of the oyster cultch deployment area(s) would be marked with buoys or poles. Oyster shells would be deployed by a barge-mounted crane with a clam shell bucket. A material barge loaded with oyster shells would be moored to the crane barge. As a construction alternative, water jetting of loose shell off of a material barge may be used in case of water-depth constraints. Upon completion, the deployment area would be surveyed.

10.3.4 Best Management Practices

Throughout the design process, every practical attempt would be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The BMPs and conservation measures that would be utilized to minimize impacts to resources are listed in Section 10.3.7, Summary and Next Steps.

10.3.5 Operations and Maintenance

10.3.5.1 Anticipated Pre- and Post-construction Monitoring Activities

Monitoring activities would be performed prior to construction and for up to seven years after construction. Monitoring activities would include:

- Topographic/bathymetric surveys
- Vegetation surveys (species composition and percent cover)
- Oyster and other invertebrate monitoring (density and biomass)

The project would incorporate a mix of monitoring efforts to ensure project designs are correctly implemented during construction. Monitoring efforts would occur in a subsequent period, where corrective action could be taken.

Post-construction performance monitoring would be conducted to observe the performance of the physical breakwater structures (breakwater height, structural integrity, settling rate, etc.) and marsh (elevation, settling rate, etc.) to allow for corrective action as needed or as defined by the Trustees.

Post-construction performance monitoring would also evaluate the project's performance over time with respect to the agreed-upon restoration goals and objectives. Specifically, this monitoring would evaluate the production and support of organisms on the breakwater (e.g., secondary productivity) and the performance of the created marsh and the reduced erosion rate of the existing shoreline. Monitoring parameters would include the following: water quality (e.g., salinity, dissolved oxygen), vegetative monitoring, and invertebrate infauna and epifauna composition and biomass.

10.3.5.2 Anticipated short-term maintenance activities

Within four years following construction, it may be necessary to add more riprap or shell material on the breakwater structure as a maintenance activity. The breakwater is anticipated to experience the greatest consolidation of the subgrade in the first years following construction. The need for additional placement of rock and/or shell on the breakwater would be assessed during the regular monitoring.

Maintenance construction methods would be similar to the construction methods of the original breakwater structure.

10.3.6 Affected Environment and Environmental Consequences

Under the NEPA, federal agencies must consider environmental effects of their actions that include, among others, impacts on social, cultural, and economic resources, as well as natural resources. The following sections describe the affected resources and environmental consequences of the project.

In order to determine whether an action has the potential to result in significant impacts, the **context and intensity** of the action must be considered. **Context** refers to area of impacts (local, state-wide, etc.) and their duration (e.g., whether they are short- or long-term impacts). **Intensity** refers to the severity of impact and could include the timing of the action (e.g., more intense impacts would occur during critical periods like high visitation or wildlife breeding/rearing, etc.). Intensity is also described in terms of whether the impact would be beneficial or adverse.

10.3.6.1 No Action

Both OPA and NEPA require consideration of the No Action alternative. For this Final Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue the Hancock County Marsh Living Shoreline as part of Phase III Early Restoration.

Under the No Action alternative, the existing conditions described for the project site in the affected resources subsection would prevail. Restoration benefits associated with this project would not be achieved at this time.

10.3.6.2 Physical Environment

Geology and substrates, hydrology, water quality, air quality, greenhouse gas emissions, and noise will be discussed in this section.

10.3.6.3 Geology and Substrates

Affected Resources

Geology

The project area is located within the Gulf Coastal Plain and the Mississippi Alluvial Plain physiographic regions. Landforms are generally comprised of Holocene sediments. These sediments are composed of sand, silt, and clay with comparatively high organic matter content (Schmid 2013a). Recent geotechnical sampling within the project footprint observed soft silty clays with an interbedded layer of loose silty sands from East Pearl River to Heron Bay. From Heron Bay eastward, the sediments consisted primarily of soft silty clays.

Seismic activity in the project area is low. Since the late 1800s, about ten earthquakes large enough to be detected have occurred in the Gulf of Mexico. These earthquakes were mostly small-magnitude events (magnitudes of 3 – 4 on the Richter scale).

Substrates

The shoreline within the Hancock County Marsh Coastal Preserve has been receding for many years mainly due to wave erosion. Schmid (2013b) determined that the shoreline regression rate from 1850 to

2001 was an average of one meter per year, although rates varied locally (Figure 10-4). For example, the area from Three Oaks Bayou to Heron Bay Point receded at a rate higher than one meter per year. This area is important because once it is breached, shoreline erosion will likely increase along Heron Bay. Schmid (2013b) also estimated an annual shoreline loss of approximately 6.2 acres. Thus, over the next 25 years, between 200 and 500 acres in the Hancock County marsh are at risk. An accelerated rate of sea level rise would result in further losses of marsh habitat. Additionally, shoreline regression has been exacerbated as a result of marsh injury stemming from the Spill.

Environmental Consequences

During construction of the breakwater, marsh, and oyster cultch deployment, the fine-grained soft-bottom habitat would be altered by the placement of breakwater materials and oyster shell. The footprint of the combined project is approximately 212.9 acres. Approximately 111.9 acres would be filled for construction of project elements including breakwater construction (19.9 acres), marsh creation (46 acres), and oyster reef creation (46 acres), resulting in a long-term, moderate impact to a relatively small project footprint. In addition, the temporary flotation channels would be constructed to transport the barges carrying the fill material (approximately 101 acres). The sidecast material from the construction of the temporary flotation channels would temporarily alter the seafloor morphology until waves naturally push the sidecast material back into excavated channels after construction. To the extent possible, materials from the temporary flotation channel may be used beneficially to create marsh. Adverse impacts to the submerged substrate during construction are expected to be short term and minor.

The placement of breakwater along 5.9 miles of shoreline and marsh creation/shoreline protection zone between the breakwater and the existing shore would reduce the wave energy, thereby slowing shoreline and marsh erosion and resulting in the long-term protection of the entire Hancock County Marsh Preserve. Therefore, the project would have a long-term beneficial impact on shoreline soils, geology, and substrate.

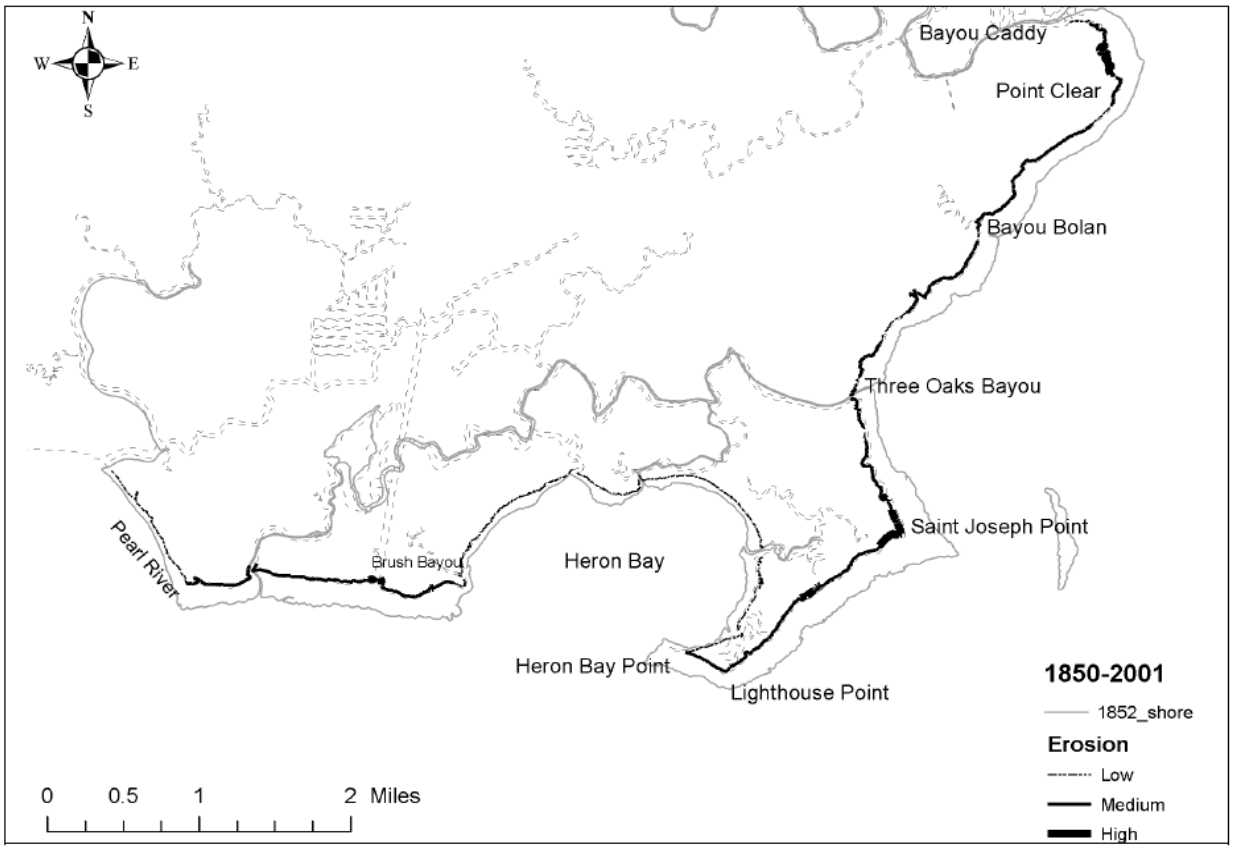

Figure 10-4. Shoreline erosion rates from 1850 to 2001 (Schmid 2013b).

Findings: There would be long-term, moderate adverse impacts to geologic and soil (substrates) resources (approximately 111.9 acres) over the life of the project because fine-grained sediment would be covered with hard structure and sediment by the creation of breakwaters, marsh, and oyster reefs. There would be short-term minor impacts to approximately 101 acres of fine-grained sediment for the creation of temporary flotation channels. The net benefits of the habitat protection and restoration would include increased benthic habitat diversity, structural complexity, greater diversity, and abundance of marine aquatic species. In addition, the entire Hancock County Marsh Preserve would experience reduced shoreline erosion. Overall, there would be a long-term benefit to geology and substrates in the Hancock County marsh. There would be no long-term adverse impact as a result of excavation of temporary flotation channels.

10.3.6.4 Hydrology and Water Quality

Affected Resources

Hydrology

The affected resources consist of estuarine and marine wetlands and shallow water habitats such as tidal creeks, lagoons, bayous, and bays along the Pearl River estuary, the Hancock County marsh shoreline, and the Mississippi Sound. The area is influenced by freshwater flow from the Pearl River as well as by tidal action from the Mississippi Sound.

The project is located in the Lower Pearl River watershed and the Mississippi Coastal Streams watershed. The Lower Pearl River watershed has a drainage area of approximately 8,760 square miles (PRBDD 2013) and includes portions of St. Tammany and Washington parishes in Louisiana and Hancock, Lamar, Marion, and Pearl River counties in Mississippi. Major tributaries within the Lower Pearl watershed include the Pearl River, Yockanookany River, Lobutcha Creek, Strong River, and Bogue Chitto River.

The Mississippi Coastal Streams watershed drainage area is approximately 1,550 square miles (MDEQ 2012) and includes portions of Lamar, Hancock, Pearl River, Stone, Harrison, and Jackson counties. Major tributaries within the Mississippi Coastal Streams watershed include Bayou Casotte, Wolf River, Rotten Bayou, DeLisle Bayou, Bayou La Croix, Bayou Bacon/Jourdan River, Turkey Creek/Bernard Bayou, Biloxi River, and Tuxachanie Creek.

Water Quality

Mississippi's water quality standards specify the appropriate levels for which various water quality parameters or indicators support a water body's designated use(s). Each use assessed for a water body is determined to be either "Attaining" or "Not Attaining" in accordance with the applicable water quality standards and U.S. Environmental Protection Agency (EPA) guidelines for assessments pursuant to §305(b). A water body's use is said to be impaired when—based on current and reliable site-specific data of sufficient quantity, quality, and frequency of collection—it is not attaining its designated use(s). Where data and information of appropriate quality and quantity indicate non-attainment of a designated use or uses for an assessed water body, the water body will be placed on the Mississippi 2012 Section 303(d) List of Impaired Water Bodies (MDEQ 2012).

The project area is represented by two uses as designated by the state in two watershed basins. These include "recreational use" in both the Coastal Streams and Pearl River Basins and "fish and wildlife use" in the Pearl River Basin. Waters in the fish and wildlife classification are intended for fishing and for propagation of fish, aquatic life, and wildlife. Coastal waters in the recreational classification are to be suitable for recreational purposes, including such water contact activities as swimming and water skiing.

Major rivers such as the Pearl River and the Pascagoula River carry high sediment loads into the Mississippi Sound. Inland fresh water drainage from these and other smaller rivers, as well as St. Louis and Biloxi Bays, create an estuarine environment in the Sound. Variable salinity levels can affect the productivity and survival of organisms living in the Sound, as well as economic and recreational activities. Pollution from agriculture, improperly treated sewage, roadways, accidental spills, industry discharges, and other sources also affect the health of the Mississippi Sound. The Pearl River, from its mouth up to the Bogue Homa, is not listed as impaired on the State of Mississippi 303(d) list.

Tides and Currents
Average tidal range is 1.96 ft.; wind affects local water depth and surface level fluctuations.

A tidal datum is referenced to a fixed point known as a benchmark and is typically expressed in terms of mean high water (MHW), mean low water (MLW), mean tidal levels (MTL) over the observed period of time, and mean low low water (MLLW). MHW is the average of all the high-water heights observed over one tidal epoch. MLW is the average of all the low-water heights observed over one tidal epoch. MTL is the mean of the MHW and MLW for that period of time.

The Bay Waveland Yacht Club gage (Station ID: 8747437) was selected to determine historical water levels, as it is the closest water level gage to the project area. This gage is located at 30° 19.5'N, 89° 19.5'W, approximately 12 miles northeast of the project area. The results of the tidal datum determination are as follows:

- MHW = 1.63 ft. NAVD 88
- MTL = 0.87 ft. NAVD 88
- MLW = 0.10 ft. NAVD 88
- MLLW = 0.00 ft. NAVD 88

Floodplains
The project is located in the Federal Emergency Management Agency (FEMA) designated flood zones according to the Flood Insurance Rate Maps (FIRM) for Hancock County (FEMA 2013). FIRM Panel Numbers within the project area include 28045C0417D, 28045C0428D, 28045C0429D, 28045C0431D, 28045C0433D, 28045C0436D, and 28045C0437D (all with the effective date October 16, 2009). The project is located in Zone VE and the base flood elevation ranges from 25 to 27 ft. Zone VE areas are subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action.

Wetlands
The estuarine areas are composed of low, mid, and high marsh zones. In the low marsh areas, regularly flooded by tidal activity, the mesohaline habitat consists of smooth cordgrass (*Spartina alternaflora*). Mesohaline is a measurement of salinity and refers to a water salinity ranging from 8 to 15 parts per thousand (ppt), which means that the salt content in 1 gram of water equals 1/1,000. The intermediate (mid) marsh zone is irregularly flooded by tidal activity and is typically dominated by black needlerush (*Juncus roemerianus*), which can be intermixed with salt grass (*Distichlis spicata*) in oligohaline (salinity of 0.5 to 5.0 ppt) areas. In higher elevation areas, it is not uncommon to observe numerous species intermixed including salt grass, black needlerush, and salt meadow cordgrass (*Spartina patens*).

Environmental Consequences
Environmental consequences affecting hydrology, water quality, tides and currents, wetlands and floodplains are discussed below.

Hydrology
No long-term impacts from the breakwater and the created marsh to the tidal hydrology of Hancock County marsh and surrounding areas are anticipated. Gaps would be present between breakwater segments and created marsh areas that would allow tidal exchange flows and waterway access.

Hydrology would be unaffected because the proposed project would have a minimal footprint and is located adjacent to the shoreline.

Water Quality

Turbidity

Placement of the breakwater, created marsh, and deployment of oyster cultch would result in short-term, minor adverse impacts to water quality as a result of resuspension of sediment by vessels (barges, tugs, skiffs, etc.) moving in and out of the project area, excavation of the temporary flotation channels, and filling of the marsh. The suspended sediment may be transported into surrounding wetlands, waterways, and the Mississippi Sound. However, the area is currently exposed to elevated turbidity levels as a result of resuspension of sediment from river transport and during frequent storms, tides, and other typical weather events. Best management practices along with other avoidance and mitigation measures required by state and federal regulatory agencies, would be employed to minimize potential water quality and sedimentation impacts. U.S. Army Corps of Engineers (USACE) Section 10/404 and State Water Quality Certifications would be required and permit conditions would be adhered to. Impacts from turbidity would be minor, but short term and limited in spatial extent.

Contaminants

In addition to turbidity, the water quality could be adversely impacted by leaks or spills of fuel and lubricants used by vessels and other equipment during the construction of the breakwater, marsh, and oyster cultch deployment. Appropriate BMPs such as routine maintenance, inspection, and proper refueling of construction equipment would be used to prevent, control, and mitigate impacts. Suitable maintenance dredge sediments that have been examined for levels of contamination, consistent with applicable requirements, would be used as fill material in the project area.

Tides and Currents

Tides and the ebb and flow current are influenced mostly by the position of the sun and moon in relation to the earth and, to a small extent, the shape of the shoreline. The general shape of the shoreline would remain the same; therefore, there would be no impacts to tides and currents as a result of the project activities.

Floodplains

The majority of the project is located below the MHW level and would not impact the floodplain in the project area.

Wetlands

Created wetlands would be sited in the area between the breakwater and existing shoreline. Dikes would be constructed and then sediment would be pumped through a floating pipeline until the area reaches final grade. Dike construction would result in no impacts to wetlands. There would be short-term, minor, and localized impacts from sediment placement at the shoreline edge. Natural vegetative colonization of these areas would occur within one to three years and would be expected to mitigate erosion from wind and wave activity in the long term. A total of 46 acres of created marsh would be established in the Hancock County Marsh Preserve. The project would result in long-term beneficial impacts to wetlands in the Hancock County Marsh complex.

The Trustee would apply for a Mississippi Coastal Wetland Protection Act Permit and authorization by the USACE. Under the Coastal Zone Management Act of 1972, selected restoration projects must be consistent to the maximum extent practicable with the federally-approved coastal management programs for the states in which the projects are to be conducted. On December 12, 2013, the Federal Trustees submitted a consistency determination to the MDMR for this project for appropriate state reviews coincident with public review of the Phase III DERP/ER. On February 4, 2014, the MDMR responded and concurred with the federal determination for the project for purposes of finalizing this early restoration plan (Miller 2014).

Coordination with the Corps and final authorization pursuant to Clean Water Act Section 404 and Rivers and Harbors Act (CWA/RHA) will be completed prior to project implementation. The Trustee would adhere to all conditions of the Mississippi Coastal Wetland Protection Act permit and the Clean Water Act permit.

10.3.6.5 Air Quality and Greenhouse Gas Emissions

Affected Resources

The EPA defines ambient air in 40 C.F.R. Part 50 as "that portion of the atmosphere, external to buildings, to which the general public has access." In compliance with the 1970 Clean Air Act (CAA) and the 1977 and 1990 Clean Air Act Amendments (CAAA), the EPA has promulgated National Ambient Air Quality Standards (NAAQS). Under the CAA, the EPA establishes primary and secondary air quality standards. Primary air quality standards protect the public health, including the health of "sensitive populations, such as people with asthma, children, and older adults." Secondary air quality standards protect public welfare by promoting ecosystems' health and by preventing decreased visibility and damage to crops and buildings. The EPA has set NAAQS for the following six criteria pollutants: ozone, particulate matter (PM 2.5 and 10), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and lead.

Air Quality

Mississippi has adopted the federal standards (Table 10-3). According to the MDEQ, the entire state of Mississippi (including Hancock County) is classified as in attainment, meaning criteria air pollutants do not exceed the NAAQS.

Greenhouse Gases

Greenhouse gases (GHGs) are chemical compounds found in the earth's atmosphere that absorb and trap infrared radiation as heat. Global atmospheric GHG concentrations are a product of continuous emission (release) and removal (storage) of GHGs over time. In the natural environment, this release and storage is largely cyclical. For instance, through the process of photosynthesis, plants capture atmospheric carbon as they grow and store it in the form of sugars. Human activities such as deforestation, soil disturbance, and burning of fossil fuels disrupt the natural cycle by increasing the GHG emission rate over the storage rate, which results in a net increase of GHGs in the atmosphere. The principal GHGs emitted into the atmosphere through human activities are carbon dioxide (CO_2), methane, nitrous oxide, and fluorinated gases (such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) with CO_2 as the major GHG emitted.

Table 10-3. State and Federal ambient standards for criteria air pollutants.

POLLUTANT	AVERAGING PERIOD	STATE AND FEDERAL PRIMARY STANDARD
Ozone	8-hour	0.075 ppm
	1-hour (daily max.)	0.12 ppm
PM2.5	Annual (arithmetic mean)	15.0 µg/m3
	24-hour	35 µg/m3
PM10	Annual (arithmetic mean)	NA
	24-hour	150 µg/m3
Carbon Monoxide	8-hour	9 ppm
	1-hour	35 ppm
Nitrogen Dioxide	Annual (arithmetic mean)	0.053 ppm
	1-hour	0.100 ppm
Sulfur Dioxide	Annual (arithmetic mean)	0.03 ppm
	24-hour	0.14 ppm
	1-hour (per annum)	NA
	1-hour (per 7 days)	NA
	5-minute	NA
Lead	Rolling 3-month average	0.15 µg/m3
	Quarterly average	1.5 µg/m3
Total Suspended Particulates	Annual (geometric mean)	NA
	24-hour	NA

Environmental Consequences

Air Quality

Project implementation would require the use of heavy equipment, which could temporarily lead to air quality impacts from equipment exhaust. In addition, fine particulate matter (fugitive dust) associated with the oyster cultch may become airborne during the deployment process. No air quality permits are required for this type of project, and violations of state air quality standards are not expected.

Air quality impacts, if any, during construction are expected to be localized, minor, and short term.

Greenhouse Gas Emissions

The use of gasoline and diesel-powered construction vehicles and equipment, including cars, trucks, cranes, crewboats, backhoes, small craft vessels, and tugboats, and other equipment would contribute to an increase in GHG emissions. Table 10-4 details the construction equipment needed to complete the project, the total hours used for each type of equipment, and the emissions resulting from the use of equipment.

Based on the assumptions detailed in Table 10-4, the project would generate approximately 7,152.04 metric tons of GHGs over the duration of all phases. The following mitigation measures have been identified to reduce or eliminate GHG emissions from the project.

- Shut down idling construction equipment, if feasible.

- Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
- Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
- Encourage the use of alternative fuels or power sources for generators at construction sites, such as propane or solar power, or use electrical power where practicable.

Table 10-4. Greenhouse gas impacts—Hancock County Marsh Living Shoreline.

EQUIPMENT DESCRIPTION	TOTAL HOURS USED	CO_2 FACTOR – MT*/100HRS	CO_2 (MT)	CH_4 FACTOR - MT/ 100HRS	CH_4 (MT)	NO_2 FACTOR- MT/ 100HRS	NO_2 (MT)	TOTAL CO_2 (MT)
Marine Mattress Fabrication								
Loader/bobcat (T-300 series)	11,880	2.65	314.82	0.90	106.92	10.60	1259.28	1681.02
100-ton crane (use at filling forms)	11,880	2.25	267.30	0.75	89.10	10.0	1188.00	1544.40
Flatbed truck	17,820	1.70	302.94	0.50	89.10	7.20	1283.04	1675.08
150-ton crane (offload and stockpile)	5,940	2.55	151.47	0.80	47.52	10.2	605.88	804.87
Marine Mattress Deployment								
Dredge Temporary Flotation Channel (60 ft. wide by 3 ft. deep)								
100-ton crane and clamshell	1,550	2.25	34.875	0.75	11.625	10.0	155	201.5
Tug (500 hp)	387.5	0.65	2.51875	0.20	0.775	2.60	10.075	13.37
Crewboat (single outboard motor)	310	0.065	0.2015	0.02	0.062	0.26	0.81	1.07
Waterside Equipment								
150-ton crane	5,940	2.55	151.47	0.80	47.52	10.20	605.88	804.87
Tug (500 hp)	5,795	0.65	37.6675	0.20	11.59	2.60	150.67	199.9275
Crewboat (single outboard motor)	1,159	0.065	0.75335	0.02	0.2318	0.26	3.0134	3.99855
Oyster Shell Deployment								
Small craft vessels (single outboard motor)	11,280	0.065	7.332	0.02	2.256	0.26	29.328	38.916
Reclamation of Shoreline								
Cutterhead Dredge Barge	840	0.65	5.46	0.20	1.68	2.60	21.84	28.98
84 days x 4500 cy/day								
46-acre Reef								
Crane and clamshell	1040	2.25	23.4	0.75	7.80	10	104	135.2
Tug	520	0.65	3.38	0.20	1.04	2.60	13.52	17.94
Crewboat	260	0.065	0.169	0.02	0.052	0.26	0.676	0.897
Total	**76,601.5**							**7,152.04**
*MT = metric tons; hp = horse power; cy= cubic yards								

Findings: Project construction would generate a total of 7,152 metric tons of carbon equivalents. Mitigation measures would further offset project impacts. The project would have short-term, minor impacts during construction.

10.3.6.6 Noise

Affected Resources

The Noise Control Act of 1972 (42 U.S.C. 4901 to 4918) was enacted to establish noise control standards and to regulate noise emissions from commercial products such as transportation and construction equipment. The standard measurement unit of noise is the decibel (dB), which represents the acoustical energy present. Noise levels are measured in A-weighted decibels (dBA), a logarithmic scale which approaches the sensitivity of the human ear across the frequency spectrum. A 3-dB increase is equivalent to doubling the sound pressure level, but is barely perceptible to the human ear. Table 10-5 presents some familiar sounds and their decibel levels.

Table 10-5. Familiar sounds and their decibel levels (DB).

SOUND	DECIBEL LEVEL (DB)
Whisper	30
Normal Conversation	50 – 65
Vacuum Cleaner at 10 ft.	70
Midtown Manhattan Traffic Noise	70 – 85
Lawnmower	85 – 90
Train	100
Nearby Jet Takeoff	130

Noise in the project area includes noise consistent with natural wetland and marine environments. Some minor noise from boats is also expected.

Environmental Consequences

Instances of increased noise are expected during the construction phases associated with the project. The proposed project would generate construction noise associated with equipment during construction of the breakwater, marsh, oyster cultch deployment, and temporary flotation channels. Fish, marine mammals, and nesting shorebirds could be exposed to construction noise. Construction noise would not impact human residences. The closest community is located two to three miles from the oyster cultch deployment and breakwater construction sites, respectively. However, construction noise may affect occasional boaters in the area. Potential adverse impacts to boaters and marine organisms during construction activities would be short term and minor. There would be no noise impacts after construction is completed except during maintenance of the breakwater after a few years and from vessel traffic during monitoring surveys. Appropriate BMPs would be employed to prevent, mitigate, and control potential impacts from noise to boaters, work crews, and marine organisms.

10.3.6.7 Biological Environment

The Mississippi Sound extends along the southern coasts of Mississippi and Alabama. The Mississippi Sound is separated from the Gulf of Mexico by several narrow barrier islands and sand bars (including Cat Island, Ship Island, Horn Island, and Petit Bois Island), which provide dynamic and diverse habitats especially for over 300 species of migratory or permanent resident bird species (USACE 2009). Along the Mississippi Sound, there are numerous coastal bays including St. Louis Bay, Biloxi Bay, Pascagoula Bay,

and Grand Bay. Coastal wetlands within the sound include swamps, tidal flats, brackish and salt-water marshes, and bayous. Expansive marsh systems include the Grand Bay marshes and the Pascagoula River marsh system to the east of the sound, and the Hancock County marshes in the west. These are rich in wildlife resources and provide nesting grounds and important stopovers for waterfowl and migratory birds, as well as spawning areas and valuable habitats for commercial and recreational fish.

The Mississippi Sound is shallow with water depths generally not exceeding 20 ft. Water is exchanged with the Gulf of Mexico through the openings between the barrier islands. Its partially protected nature and the influx of riverine freshwater create a salinity gradient within the Sound (Priddy et al. 1955). This delicate mix of fresh and salt water provides a suitable habitat for oysters, shrimp, and other fisheries. Christmas and Waller (1973) reported 138 fish species in 98 genera and 52 families taken from areas across Mississippi Sound. Vittor and Associates (1982) identified over 437 taxa of macrofauna from the sound with densities varying from approximately 1,200 to 38,900 individuals per square yard.

The biological environment section of this report includes a discussion of living coastal and marine resources including coastal and submerged aquatic vegetation, nearshore benthic invertebrates, protected species, essential fish habitat, and birds.

10.3.6.8 Living Coastal and Marine Resources

Coastal and Submerged Aquatic Vegetation (SAV)

Affected Resources

The plant communities of the project area are typical for palustrine, estuarine, and marine wetlands. Estuarine and palustrine habitats and submerged aquatic vegetation (SAV) are discussed in the affected resources section.

Estuarine and Palustrine Habitats

Estuarine emergent plants dominate the southernmost regions of the Pearl River marsh adjacent to the Mississippi Sound. Elevation and tidal inundation influence the zonation and distribution of these plants. The estuarine areas are composed of low-, mid-, and high-marsh zones. In the low-marsh areas, regularly flooded by tidal activity, the mesohaline habitat consists of smooth cordgrass (*Spartina alterniflora)*. The intermediate-marsh zone is irregularly flooded by tidal activity and is typically dominated by black needlerush (*Juncus roemerianus*), which can be intermixed with salt grass (*Distichlis spicata*) in oligohaline areas. In higher elevation areas, it is not uncommon to observe numerous species intermixed including salt grass, black needlerush, and salt meadow cordgrass (*Spartina patens*).

Palustrine habitats in the project area consist of a dominant overstory of live oak (*Quercus virginiana)* with some slash pine (*Pinus elliottii)*. A variety of understory species are found with wax myrtle (*Myrica cerifera)* and yaupon holly (*Ilex vomitoria)* as the dominant species. Often, the salt-tolerant shrubs marsh elder (*Iva frutescens)* and saltbush (*Baccharis halimifolia)* border these areas. Saw palmetto (*Serenoa repens*) is also found at higher elevations outside of the tidal boundary.

SAVs

The marine environment in the project area is a shallow system increasing in depth to over 12 ft. toward St. Joseph's Pass, which is periodically used as a passage channel by large vessels. In the summer of

2013, a survey of SAV and oyster presence in Heron Bay, revealed scarce amounts of Widgeon grass (*Ruppia maritima)* in very shallow water along eroded marsh edge platform.

Environmental Consequences

Estuarine and Palustrine Habitats

During marsh creation there would be short-term, minor, adverse impacts to the flora within the estuarine or palustrine habitats due to sediment placement at the shoreline edge. Natural vegetative colonization of these areas would occur within one to three years and would be expected to mitigate erosion from wind and wave activity in the long term. The project would provide a long-term benefit to flora by protecting habitat from shoreline erosion and by reestablishing marsh habitat in created wetland areas.

SAVs

None of the construction areas associated with the breakwater or marsh creation development contains SAVs. Therefore, these construction activities would have no impact on submerged vegetation. Construction of the breakwater could provide areas conducive to SAV growth.

The deployment of the oyster cultch could result in short-term, minor, adverse impacts to SAV. Widgeon grass exists in scarce amounts in very shallow waters along the fringe of the marsh edge in Heron Bay and grows on eroded marsh platforms. Any disturbance would be re-vegetated naturally.

Therefore, due to the lack of existing seagrass beds or minimal coverage of seagrass in the project area, only very minimal adverse impacts from the proposed activities would be expected.

Invasive Species

Affected Resources

The potential introduction of terrestrial and aquatic non-native invasive species of plants, animals, and microbes is a concern for any proposed project. Non-native invasive species could alter existing terrestrial or aquatic ecosystems, may cause economic damages and losses, and are frequently the second most common reason for protecting species under the Endangered Species Act. The species that are or may become introduced, established, and invasive are difficult to identify. The analysis focuses on pathway control or actions/mechanisms that may be taken or implemented to prevent the spread of invasive species on site or introduction of species to the site. Surveys have not been conducted to determine if invasive species are present.

Environmental Consequences

This project involves placement of breakwater, oyster cultch, marsh creation, and dredging of flotation channels. The marsh creations involve dredging sediments from a nearby marine environment and placing them in shallow waters to create marsh. A variety of in-water construction equipment will be used. Each of these actions and pieces of equipment serve as a potential pathway to introduce or spread invasive species. To ensure these pathways are “broken” and do not spread or introduce species the following BMPs will be implemented: all equipment to be used during the project, including personal gear, will be inspected and cleaned such that there is no observable presence of mud, seeds, vegetation, insects and other species. Sediments for marsh creation will come from the MDMR Beneficial Use of Sediment Program or nearby sources. Since the sediments are regional they are

expected to support the fauna in aquatic habitats at the project. Sediments used in marsh creation could contain invasive/opportunistic species. Oyster cultch and vegetation will be treated or inspected to remove "non-target" species.

BMPs to prevent the spread of invasive species through common pathways will be implemented thereby minimizing the potential for short and long-term adverse impacts from the proposed project. The implementation of these BMPs meets the spirit and intent of EO 13112. Due to the implementation of BMPs, the Trustees expect risk from invasive species introduction and spread to be short term and minor.

Nearshore Benthic Invertebrates

Affected Resources

Oysters

Oysters are important as both organisms and habitat with an integral role in the functioning of the ecosystem. The aggregations of oysters that comprise an oyster reef result in a complex and hard substrate that provides habitat for multiple benthic organisms and fish, increasing biodiversity in estuaries. Within an oyster reef community, oysters are the dominant species, though more than 300 other macrofauna species may be living on an oyster reef. Oysters are an ecological keystone species in most estuaries along the Atlantic and Gulf coasts, and oyster populations contribute to the integrity and functionality of estuarine ecosystems.

Oyster reefs of commercial importance are subtidal and form aggregates that cover thousands of acres of the Mississippi Sound. Mississippi's 17 oyster reefs, which cover 12,000 acres, are managed by the MDMR. Approximately 97 percent of the commercially harvested oysters in Mississippi come from reefs in the western part of the Mississippi Sound, primarily from Pass Marianne, Telegraph, and Pass Christian reefs.

Benthic Infauna and Epifauna

Benthic infauna are aquatic animals that live in the substrate of the sea bottom, whereas epifauna live on the surface of the sea floor. Nearshore benthic communities in the Gulf are largely composed of macroinvertebrate groups such as mollusks, sponges, polychaetes, corals, and crustaceans. These groups are diverse and are found in Gulf habitats spanning from the intertidal zone to the soft sediments on the continental shelf. Benthic communities perform important ecological functions in the nearshore food web; several groups (e.g., lobster, shrimp, and crabs) are also commercially important. This section presents a description of the key benthic resources of the Gulf, their ecological importance, and their distribution among Gulf habitats.

Sponges, mollusks, arthropods (including crustacea), and polychaetes are all important taxa and contribute substantially to benthic biomass. These taxa include many filter-feeding species, which remove and digest phytoplankton and particulate organic matter and deposit processed materials to the substrate (Felder and Camp 2009). Benthic fauna are often habitat forming and provide habitat and nursery areas for fish and crevices for mobile invertebrates to seek shelter; they also harbor diverse microbial communities (Taylor et al. 2007). Mollusks and crustaceans, including both shrimp and crab, are important ecologically and commercially throughout the Gulf region.

Environmental Consequences

Construction of the breakwater, marsh, and oyster cultch deployment would result in an alteration of 65.9 acres of benthic soft-bottom habitat and would enhance 46 acres of remnant oyster reef. In addition, approximately 101 acres of soft-bottom habitat would have minor, short-term, adverse impacts due to the excavation of temporary flotation channels.

Oysters, Infauna and Epifauna

Heron Bay was recently surveyed (summer 2013) for the presence of oysters. Remnant hard-bottom habitat was identified, but there were no existing oyster reefs in the area. In addition, the project area is a highly eroded shoreline with limited hard-bottom habitat. Cultch deployment would result in short-term minor adverse impact to remnant hard-surface bottom habitat that was historically oyster reefs in the project area. Approximately 46 acres of cultch placement would result in oyster colonization over a two-to-five-year period. Development of an oyster reef represents a long-term benefit to oysters and the infauna and epifauna that typically colonize subtidal oyster reefs.

Mollusks and crustaceans such as shrimp and crab are likely limited in soft-sediment areas where construction would occur. These mobile invertebrates would experience a short-term minor impact and would be positively impacted by the placement of hardened structure. The project would result in 19.9 acres of three-dimensional high-relief breakwater that would be colonized by oysters, infauna, and other epifauna. In addition, 46 acres of oyster reef and 46 acres of created marsh would serve as habitat for these species. The zone between the breakwater and the existing eroded shoreline would also become a more stable soft-bottom habitat for these species. This represents a substantial long-term benefit for these organisms.

Temporary flotation channel construction would temporarily displace sediment-dwelling invertebrates in 101 acres. The impact would be short term and minor. Channels would fill in and are anticipated to be recolonized by existing organisms in nearby sediments.

Effort would be made during construction and during placement of materials to avoid existing environmentally sensitive areas such as viable productive oyster reefs, emergent and SAV, and other live-bottom communities.

Findings: There would be a short-term minor impact to infauna, epifauna, and hard-bottom oyster habitat. The construction of the Hancock County Marsh Living Shoreline would result in a substantial increase in habitat and, consequently, colonization by invertebrates, essentially providing a long-term benefit to oysters, benthic infauna, and epifauna secondary productivity in the Hancock County marsh area. There would be a long-term impact to benthic communities in the 65.9 acres of soft-bottom habitat converted to hard substrate for breakwater and marsh creation. However, soft-sediment areas are prolific in the proposed project area and the proposed reef footprint would not result in a substantive change in available habitat in the region. Therefore, impacts to the benthic community would be minor.

Marine Mammals

Affected Resources

Marine mammals found within the Gulf of Mexico include 21 species of cetaceans (whales and dolphins) and the West Indian manatee. The Marine Mammal Protection Act (MMPA) prohibits the

"taking" of marine mammals incidental to a specified activity, unless such taking is appropriately authorized.

Dolphin Species

The bottlenose dolphin, *Tursiops truncatus*, and the Atlantic spotted dolphin, *Stenella frontalis*, are the two most common marine mammals found in the Gulf of Mexico. Both species feed primarily on fish, squid and crustaceans. While *S. frontalis* spends the majority of its life offshore, *T. truncatus* often travel into coastal bays and inlets for feeding and reproduction.

West Indian Manatee

The West Indian manatee (*Trichechus manatus latirostris*) is listed as endangered under the ESA. The species is endangered due to its small population size (less than 2,500 mature individuals with possible population decline), the possibility of at least a 50 percent future reduction in population size, and near- and long-term threats from human-related activities (FWS 2010; FWC 2007). Between October and April, manatees concentrate in areas of warmer water. During summer months, the species may migrate as far west as the Louisiana and Texas coast on the Gulf of Mexico. Manatees inhabit both salt and fresh water of sufficient depth (about 5 feet to usually less than 18 feet). Manatees will consume any aquatic vegetation available to them including sometimes grazing on the shoreline vegetation.

Marine Mammal Environmental Consequences

Noise and other activity associated with proposed construction may temporarily disturb certain dolphin species and manatee in the vicinity of the project area through temporary impacts on prey abundance, water quality (turbidity), and underwater noise, and may temporarily increase the potential for boat collisions with certain species in the project area. However, the mobility of these species reduces the risk of injury due to construction activity. Based on the mobility of these species, the short duration of construction activities, and the proposed construction methodology, effects on dolphin species are not anticipated.

Extreme care should be taken during construction not to disturb or injure manatees. If manatee(s) are found to be present in the immediate project area during restoration activities, construction would be halted until the species moves away from the project area.

The Trustees evaluated the potential for incidental take of marine mammals. The proposed project is located in shallow estuarine waters and will not involve construction methodologies known to impact marine mammals. In addition, the following conservation measures will be implemented to avoid impacts to marine mammals that could be in the area: Standard Manatee Conditions (A-D) for In-Water work (USFWS, 2011); Smalltooth Sawfish and Sea Turtle construction guidelines (NMFS, 2006); Measures for Reducing Entrapment Risk to Protected Species (NMFS, 2006). The Trustees do not anticipate any take, incidental or otherwise, under the MMPA due to the implementation of the project.

10.3.6.9 Protected Species

Affected Resources

The U.S. Fish and Wildlife Service (USFWS) lists species as threatened or endangered when they meet criteria detailed under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. §1531 et seq.). Additionally, Mississippi Wildlife Fisheries and Parks (MWFP) and NOAA National Marine Fisheries Service (NMFS) identify and list protected species. Section 7(a)(2) of the ESA requires that each federal

agency ensure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of those species. When the action of a federal agency may affect a protected species or its critical habitat, that agency is required to consult with either the NMFS or the USFWS, depending upon the protected species that may be affected. Endangered Species Act Section 7 consultations were conducted and the appropriate recommendations would be incorporated into the proposed project. Migratory Bird Treaty Act compliance and Bald and Golden Eagle Protection Act compliance are discussed in this section.

Federally protected species that are known to occur or could occur in Hancock County are listed in Table 10-6. However, only the piping plover, red knot, five sea turtle species, Gulf sturgeon, and West Indian manatee are likely to occur in or near the project area or could pass through the project area.

Table 10-6. Hancock County Marsh Living Shoreline—threatened, endangered, and proposed species in Hancock County, Mississippi.

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS	STATE STATUS	HABITAT
Birds				
Piping Plover	*Charadrius melodus*	Threatened	Endangered	Beaches and mudflats in southeastern coastal areas
Red Knot	*Calidris canutus rufa*	Proposed	--	Marine intertidal habitats including inlets, estuaries, and bays feeding in mud and sand flats on beaches and barrier islands
Ferns and Allies				
Louisiana Quillwort	*Isoetes louisianensis*	Endangered	--	Aquatic or wet habitats, mostly shallow streams in bottomland habitats (MDWFP 2001; HCBS 2012)
Mollusks				
Inflated Heelsplitter	*Potamilus inflatus*	Threatened	Endangered	Riverine, Lower Pearl River, Noxubee, and Tombigbee watersheds in areas with moderate to swift currents, riffle/shoals areas with stable bottoms of sandy gravel or firm mud, gravel, and cobble
Fishes				
Gulf Sturgeon	*Acipenser oxyrinchus desotoi*	Threatened	Endangered	Migrates from large freshwater coastal rivers to brackish and marine coastal bays and estuaries
Mammals				
West Indian Manatee	*Trichechus manatus*	Endangered	Endangered	Fresh and salt water in large coastal rivers, bays, bayous and estuaries
Louisiana Black Bear	*Ursus americanus luteolus*	Threatened	Endangered	Bottomland hardwood forest; dispersal corridors
Reptiles				
Hawksbill Sea Turtle	*Eretmochelys imbricate*	Endangered	Endangered	Coral reefs, open ocean, bays, estuaries
Leatherback Sea Turtle	*Dermochelys coriacea*	Endangered	Endangered	Open ocean, coastal waters
Kemp's Ridley Sea Turtle	*Lepidochelys kempii*	Endangered	Endangered	Nearshore and inshore coastal waters, often in salt marshes; neritic zones with muddy or sandy substrate (NOAA Fisheries 2013b)
Green Sea Turtle	*Chelonia mydas*	Threatened	Endangered	Shallow coastal waters with SAV and algae, nests on open beaches
Loggerhead Sea Turtle	*Caretta caretta*	Threatened	Endangered	Open ocean; also inshore areas, bays,

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS	STATE STATUS	HABITAT
				salt marshes, ship channels and mouths of large rivers
Ringed Map Turtle	*Graptemys oculifera*	Threatened	Endangered	Riverine, river stretches with moderate currents, abundant basking sites, and sand bars for nesting (MDWFP 2001; USFWS 2010)
Gopher Tortoise	*Gopherus Polyphemus*	Threatened	Endangered	Open canopy longleaf pine/scrub oak habitats with well-drained sandy soils and ground cover (USFWS 2010; HCBS 2012)

Birds

Piping Plover (*Charadrius melodus*): The piping plover does not nest in Mississippi; however, this species uses Gulf Coast beaches and barrier islands for wintering (MDWFP 2001). Plovers use sparsely vegetated sand beaches, mudflats, and salt marshes for roosting and foraging. Piping plover critical habitat occurs in the vicinity of the project area but does not occur within the project footprint.

Red Knot (*Calidris canutus rufa*): In coastal Mississippi, the red knot is mainly a migratory species that uses coastal beaches and marine intertidal areas as stopover feeding locations or staging areas on the way to and from their wintering grounds in South America and breeding areas in the Arctic. Foraging on ocean beaches, mud and sand flats, and salt marshes occurs from March to April during the northward spring migration and September and October during the southward autumn migration (Niles et al. 2007; USFWS 2013). Red knots have been observed wintering on the Gulf Coast and are observed from October to March (USFWS 2013). The nonbreeding diet of this species includes marine invertebrates such as snails, crustaceans, and small mollusks including the coquina clam *(Donax variabilis),* which is common on Gulf coast beaches, and the dwarf surf clam *(Mulinia lateralis)* (Niles et al. 2007; USFWS 2013). Roosting and resting habitat includes areas above the high tide line such as reefs and high sand flats (USFWS 2013).

Fishes

Gulf Sturgeon (*Acipenser oxyrinchus desotoi*): This anadromous species migrates from coastal bays and estuaries to large coastal rivers in the spring for spawning and then returns to brackish and marine environments from October through March for foraging. The riverine spawning habitats for sturgeon in the State of Mississippi include the Mississippi, Pearl, and Pascagoula rivers (Ross et al. 2009; MDWFP 2001) but not the Biloxi and Tchoutacabouffa rivers (USFWS, GSMFC, and NMFS 1995; NMFS and USFWS 2009). The marine wintering areas where individuals have been observed are nearshore and barrier island habitats from the Pearl River east to the barrier islands (Ross et al. 2009). Winter habitat is mainly around Cat, Ship, Horn, and Petit Bois islands with nearshore observations likely due to migratory movements to and from these offshore islands (Rogillio et al. 2007; Ross et al. 2009). The coastal Mississippi Sound waters of the State of Mississippi are designated as critical habitat.

Gulf Sturgeon Designated Critical Habitat

The entire project footprint area falls within Gulf sturgeon critical habitat (Unit 8-Lake Ponchartrain-Mississippi Sound). Critical habitat was designated in 2003 by the National Marine Fisheries Service (NMFS) and was based on seven primary constituent elements (PCEs) essential for its conservation. The

proposed project area contains four PCEs. The PCEs include abundance of prey items, water quality, sediment quality, and safe and unobstructed migratory pathways. In addition, the Trustee is working with NMFS to ensure that the project would not adversely affect any of the PCEs identified.

Mammals

West Indian Manatee (*Trichechus manatus*): This species uses both fresh and saltwater habitats such as coastal rivers, bays, bayous, and estuaries. The manatee is an occasional visitor to Mississippi's coasts, although migration into the area is poorly understood. After wintering in Florida, and perhaps Mexico, manatees migrate northward during spring, including to Mississippi and Alabama waters, although these migrations are not well understood (Fertl et al. 2005). Manatees frequently seek out freshwater sources such as rivers and river mouths and have been known to be found near estuaries (Fertl et al. 2005). Seagrasses are the typical manatee forage material; however, manatees can also consume other aquatic vegetation, algae, and terrestrial vegetation (Fertl et al. 2005). Given the lack of their main food source at the site, any manatee occurrence is expected to be transitory.

Reptiles

Hawksbill Sea Turtle (*Eretmochelys imbricata*): Although this species uses various habitats such as the open ocean, bays, and estuaries throughout different life stages, it is mainly associated with coral reefs. This species nests in Florida from April to November (NOAA Fisheries 2013a). It likely does not nest in Mississippi and observations are rare in the state (MDWFP 2001; NOAA Fisheries 2013a). The main dietary items of this species are sponges and other invertebrates (NOAA Fisheries 2013a).

Leatherback Sea Turtle (*Dermochelys coriacea*): This species mainly inhabits the offshore open ocean; however, it does use nearshore coastal waters during nesting or feeding. Nesting for this species occurs in Florida from April through November. Their main forage item is jellyfish. This species migrates long distances from nesting to feeding areas. While not common, there have been sporadic observations of leatherback sea turtles in Mississippi waters (MDWFP 2001).

Kemp's Ridley Sea Turtle (*Lepidochelys kempii*): Typical habitat for this species includes nearshore and inshore coastal waters and often salt marshes and neritic zones with muddy or sandy substrate (NOAA Fisheries 2013b). This species has been observed in nearshore waters of the Mississippi Sound during migration and foraging and has been accidentally caught by shore-based fishermen (MDWFP 2001; Shaver and Rubio 2008). Females typically nest from May through July (NOAA Fisheries 2013b). Males potentially use Gulf of Mexico habitats all year and females presumably use the Mississippi Sound and barrier island habitats for foraging when not nesting (NOAA Fisheries 2013b). Kemp's Ridley sea turtles do not nest in Mississippi (MDWFP 2001).

Green Sea Turtle (*Chelonia mydas*): This species typically prefers shallow coastal waters with SAV and algae for foraging and nests on open beaches (NOAA Fisheries 2012). Nesting typically does not occur on mainland beaches and there is likely no Mississippi nesting at all (MDWFP 2001; NOAA Fisheries 2012). This species migrates long distances in the open ocean from nesting to feeding areas. Observations of this species in Mississippi are rare (MDWFP 2001).

Loggerhead Sea Turtle (*Caretta caretta*): Loggerhead habitat for foraging and migration includes open ocean, inshore areas, bays, salt marshes, ship channels, and mouths of large rivers. This sea turtle feeds

on mollusks, fish, crustaceans, and other marine organisms. This species typically nests at night from late April through September (NOAA Fisheries 2013c). Although loggerheads occasionally use barrier islands for nesting, mainland nesting is rare (MDWFP 2001). Preferences for nesting beaches include high-energy coarse-grained beaches adjacent to the ocean that are narrow and steeply sloped (NOAA Fisheries 2013c). This species has been observed in nearshore waters of the Mississippi Sound during migration and foraging and has been accidentally caught by shore-based fishermen (MDWFP 2001).

Environmental Consequences

Potential impacts to threatened or endangered species and their critical habitat are presented in Table 10-7. The piping plover, red knot, five sea turtle species, Gulf sturgeon, and West Indian manatee are likely to occur in or near the project area or could pass through the project area and are discussed below.

Table 10-7. Threatened and endangered species impacts.

SPECIES /CRITICAL HABITAT	POTENTIAL IMPACTS TO SPECIES/CRITICAL HABITAT
Green sea turtle *(Chelonia mydas)*	While not likely to be impacted or to impede transitory routes, sea turtles are a mobile marine species and project activities would not impede transitory routes. There is no nesting habitat in the project area. There is no designated or proposed critical habitat for sea turtles within the action area. If individuals enter construction areas, construction would be halted and could result in short-term, minor impacts.
Hawksbill sea turtle *(Eretmochelys imbricata)*	
Kemp's Ridley sea turtle *(Lepidochelys kempii)*	
Leatherback sea turtle *(Dermochelys coriacea)*	
Loggerhead sea turtle *(Caretta caretta)*	
Piping plover *(Charadrius melodus)*	None expected. Piping plover are not known to occur in the footprint of construction and critical habitat is also outside of the construction footprint.
West Indian manatee *(Trichechus manatus)*	West Indian manatees are not likely to occur in the project area. Short-term minor impacts could occur if manatees come into contact with construction activities. Manatees are a mobile marine species and project activities would not impede transitory routes. If individuals enter construction areas, construction would be halted and could result in short-term, minor impacts.
Gulf sturgeon *(Acipenser oxyrhynchus desotoi)* (Designated Critical Habitat)	The project is in designated critical habitat. To the extent practicable, project construction would be limited to the window between May and October, after sturgeon have migrated to their riverine habitat. If work continues beyond the May to October window, continued adherence to the Sea turtle and Smalltooth Sawfish Construction Conditions (NMFS, 2006) will minimize the potential for impacting Gulf Sturgeon . No direct or indirect impacts from construction are expected in the riverine ecosystems. If individuals enter construction areas, short-term, minor impacts could be the result. PCEs for Gulf Sturgeon will not be adversely modified by the proposed project.

West Indian Manatee

Although impacts to West Indian manatee are not expected, short-term, minor impacts could occur if an individual comes into contact with construction activities. If manatee(s) are found to be present in the immediate project area during restoration activities, construction would be halted until the species moves away from the project area. Standard Manatee Conditions (A-D) for In-Water Work (USFWS,

2011) which are applicable to the Hancock County Marsh Living Shoreline project will be followed and include:

All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees, which are protected under the Marine Mammal Protection Act and the Endangered Species Act.

All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

All on-site project personnel are responsible for observing water related activities for the presence of manatees. All in water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50 feet radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.

If necessary, temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use. Temporary signs, if necessary, can be modified from the standard template to reflect local conditions.

Sea Turtles

The green sea turtle, hawksbill sea turtle, Kemp's Ridley sea turtle, leatherback sea turtle, and loggerhead sea turtle do not have more than a transient occurrence, if any, within the project area. The sea turtles do not nest in the area although, depending on the species, individuals have been rarely to sporadically observed in coastal Mississippi waters. The sea turtle species are highly mobile. The project components would be constructed very close to the shoreline and are therefore not expected to impede sea turtle migratory routes. In summary, impacts to these species, if any, would be short term and minor (Table 10-7). If any sea turtles are found to be present in the immediate project area during restoration activities, construction would be halted until species moves away from project area. Precautionary measures would include construction personnel education, proper use and selection of siltation barriers, use of "no wake/idle" speeds in proper locations, adherence to protection guidelines when a sea turtle is within 100 yards of activities, and reporting of turtle injuries.

Gulf Sturgeon and Designated Critical Habitat

The project area is in Gulf sturgeon critical habitat. The comparatively narrow project footprint would preserve sufficient area for the movement of Gulf sturgeon. The project sponsors intend to manage construction activities to avoid seasonal migration pathways in and out of the adjacent Pearl River mouth. To minimize potential for impacts to this species, all construction would take place in the May-to-October time frame when the sturgeons have migrated to riverine habitats. The benthic habitat that is present in the project area is not the preferred Gulf sturgeon foraging habitat. Gulf sturgeons prefer well-oxygenated, clear water with sandy substrates for feeding, whereas the project area mainly consists of soft, silty substrates and turbid waters. Also, sturgeons typically forage in waters 6 ft. or

deeper—not in the shallow 1- to 6-ft. depths of the proposed project elements. Implementation of the project is expected to benefit the species by enhancing water quality through oyster productivity. Any adverse impacts to Gulf sturgeons or their critical habitat would be short term and minor. There would be no long-term impacts to Gulf sturgeons or their critical habitat. Prior to breakwater construction, the contractor will be made aware of the potential presence of sturgeon. If any are observed during construction, work will cease until the sturgeon have moved away from the construction area. The project is not likely to adversely affect individual Gulf sturgeon. In the unlikely event that Gulf sturgeon occur in the construction area, there could be limited temporary and minor adverse effects to individual sturgeon due to increased noise from construction activities. Because of the shallow construction area and the timing of construction, species occurrence during construction is not anticipated.

Findings: ESA Section 7 consultations were completed with USFWS on January 24, 2014 (McClain 2014) and with NMFS (Crabtree 2014) on April 11, 2014 with pending amendments on specific conservation measures and BMPs. The USFWS concurred that the project is not likely to adversely affect West Indian Manatee and no effects are expected to other listed, proposed, or candidate species considered in the consultation. Because no adverse effects to manatee under ESA are expected, the Trustees determined that no take of manatee under MMPA will occur.

NMFS concurred that the project, as proposed, is not likely to adversely affect any threatened endangered species or critical habitats, including the Gulf sturgeon. Upon completion of that coordination, Mississippi intends to implement conservation measures that are required by the USFWS and NMFS. Those measures include:

- Awareness of potential turtle presence. If any sea turtles are found to be present in the immediate project area during restoration activities, construction will be halted until species moves away from project area.
- Awareness of manatee presence. If manatee(s) are found to be present in the immediate project area during restoration activities, construction will be halted until species moves away from project area. For in-water work in Mississippi where manatees could be present, the Trustee will follow conditions a, b, c, and d of the Standard Manatee Conditions for In-water Work (USFWS, 2011). The Trustee would report any collisions to the U.S. Fish and Wildlife Service or State trust resource agency. Temporary signs, if necessary, would be modified from the standard template to reflect local conditions.
- Measures to protect Gulf Sturgeon. Project restoration features will be built close to the shoreline in shallow water (1-4 feet) and will not impede any migratory paths. To the extent practicable, project components will be constructed in the months of May through October to avoid inter-riverine migration movements. Project construction activities will be subject to a stop work order if the species is observed in the project footprint. Work will continue once the species leaves the area.
- If construction activities continue beyond the May to October window, there would be continued adherence to the Sea Turtle and Smalltooth Sawfish Construction Conditions, dated March 23, 2006 (NMFS, 2006).
- The project will follow Measures for Reducing Entrapment Risk to Protected Species, revised May 22, 2012 (NMFS, 2006).

Migratory Birds

Affected Resources

Migratory bird guilds that could have presence in the Hancock County Marsh Living Shoreline project area include wading birds, seabirds, waterfowl, raptors, rails and coots, landbirds, and doves and pigeons (see Table 10-8).

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 U.S.C. 668-668c) (BGEPA) prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. BGEPA provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." Golden eagles are not present along the Gulf Coast.

Table 10-8. Migratory birds anticipated in the Hancock County Marsh Living Shoreline project area.

SPECIES	BEHAVIOR	SPECIES/HABITAT IMPACTS
Wading birds (herons, egrets, ibises)	Foraging, feeding, resting, roosting, nesting	Wading birds primarily forage and feed at the water's edge. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily nest and roost in trees or shrubs (e.g., pines, *Baccharis*), which occur outside the project area.
Shorebirds (plovers, oystercatchers, stilts, sandpipers)	Foraging, feeding, resting, roosting, nesting	Shorebirds forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. The project would be constructed in areas where shorelines are substantially eroded. In the project area, there is limited natural beach and mudflat where shorebirds would nest.
Seabirds (terns, gulls, skimmers, double-crested cormorant, American white pelican, brown pelican)	Foraging, feeding, resting, roosting, nesting	Seabirds forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. Nesting habitat does not exist in the project area; therefore, it is not anticipated to impact nesting.
Waterfowl (ducks, loons, and grebes)	Foraging, feeding, resting, roosting, nesting	Waterfowl forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily roost and nest in low vegetation, which is not directly inside the project area; therefore, it is not anticipated to impact nesting.
Raptors (osprey, hawks, eagles, owls)	Foraging, feeding, resting, roosting, nesting	Raptors forage, feed, and rest in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. Most raptors are aerial foragers and soar long distances in search of food. Locations where these birds roost and nest are not within the project area.

SPECIES	BEHAVIOR	SPECIES/HABITAT IMPACTS
Rails and coots	Foraging, feeding, resting, roosting, nesting	Rails and coots forage, feed, rest, or roost in the project area. As such, they may be impacted locally and temporarily by the project. However, they are most likely to favor marshy areas. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting if disturbed by the project. These birds primarily roost and nest in marshes, which are not directly within the project area; therefore, it is not anticipated to impact nesting.

Environmental Consequences

Migratory Bird Treaty Act

The Trustee has reviewed the project site and determined that migratory bird nesting is not known and is possible. The MBTA requires the protection of all migratory bird species and protection of ecosystems of special importance to migratory birds against detrimental alteration, pollution, and other environmental degradation. Coordination under MBTA with the USFWS was completed on January 24, 2014. Pre-construction nesting surveys for migratory birds and raptors would be conducted and if evidence of nesting is found, coordination with the USFWS would be initiated to develop and implement appropriate conservation measures. Due to the implementation of best management practices no "take" is anticipated.

Bald and Golden Eagle Protection Act

There are no golden eagles in the project area. No bald or golden eagles are known to nest within 660 ft. of the project area. Thus, no impacts to golden or bald eagles are anticipated. Coordination under BGEPA by the USFWS was completed on January 24, 2014. Because no nests are nearby, no "take" is anticipated.

Findings: Adverse impacts, if any, to birds as a result of construction are expected to be short term and minor. These impacts, if any, could include noise and vibration of construction equipment. The general behavior of the birds is to mediate their behavior to avoid these areas. In addition, over the long term the creation of the breakwaters could result in increased food availability in and around the structures, created marsh, and oyster beds. Created wetlands would not be replanted but would be allowed to re-vegetate naturally. The open sediment would provide a short-term benefit for shorebird utilization.

10.3.6.10 Essential Fish Habitat

Affected Resources

The 1996 Magnuson-Stevens Fishery and Conservation Act requires cooperation among NOAA Fisheries, anglers, and federal and state agencies to protect, conserve, and enhance Essential Fish Habitat (EFH). EFH is defined as those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. The designation and conservation of EFH seek to minimize adverse effects on habitat caused by fishing and non-fishing activities. NOAA's Estuarine Living Marine Resources Program developed a database on the distribution, relative abundance, and life history characteristics of ecologically and economically important fishes and invertebrates in the nation's estuaries. NOAA has designated EFH for more than 30 estuaries in the northern Gulf of Mexico for a number of species of finfish and shellfish.

EFH consists of the following waters and substrate areas in the Gulf of Mexico (GMFMC 2004 and 2005,) and the project area:

Red Drum (*Sciaenops ocellatus*) Fishery Management Plan (FMP): All estuaries; Vermilion Bay, Louisiana, to the eastern edge of Mobile Bay, Alabama, out to depths of 150 ft.; Crystal River, Florida, to Naples, Florida, between depths of 30 and 60 ft.; and Cape Sable, Florida, to the boundary between the areas covered by the Gulf of Mexico Fishery Management Council (GMFMC) and the South Atlantic Fishery Management Council (SAFMC) between depths of 30 and 60 ft.

In the project area, the red drum fishery is very common. The estuarine zone is used by this species in all life stages. Habitat use is highest for nearshore hard bottoms, nearshore sand/shell, estuarine SAV, and estuarine soft bottoms (GMFMC 2005). Larvae, juveniles, and young adults spend the majority of their time in estuarine habitats and prey on a large array of species including blue crab eggs and numerous juvenile fish (Table 10-9).

Reef Fish and Coastal Migratory Pelagics FMPs: All estuaries; the U.S./Mexico border to the boundary between the areas covered by the GMFMC and the SAFMC from estuarine waters out to depths of 600 ft.

In the project area, the reef fish fishery includes numerous species that utilize the estuarine zone in certain life stages. Most are transitory species that use inshore environments part of the year. Only mutton (*Lutjanus analis*) and gray snapper (*Lutjanus griseus*) use the estuarine zone as adults for feeding. Reef species have the potential to use this zone as early or late juveniles for growth and feeding habitat. Of the three coastal migratory pelagic species listed for the project area, only the Spanish mackerel (*Scomberomorus maculatus*) uses the estuarine zone during the early and late juvenile and adult life stages (Table 10-9).

Shrimp FMP: All estuaries; the U.S./Mexico border to Fort Walton Beach, Florida, from estuarine waters out to depths of 600 ft.; Grand Isle, Louisiana, to Pensacola Bay, Florida, between depths of 600 and 2,000 ft.; Pensacola Bay, Florida, to the boundary between the areas covered by the GMFMC and the SAFMC out to depths of 200 ft., with the exception of waters extending from Crystal River, Florida, to Naples, Florida, between depths of 60 and 150 ft. and in Florida Bay between depths of 30 and 60 ft. (Table 10-9).

Table 10-9. Essential fish habitat considerations for Hancock County Marsh Living Shoreline Project.

GOM FMP GROUP	SPECIES	HABITAT TYPE	EGGS	LARVAE	POST LARVAE	EARLY JUVENILES	LATE JUVENILES	ADULTS	SPAWNING ADULTS
Red Drum Fishery	Red Drum (*Scianops ocellatus*)	SAV, soft bottom, sand/shell, emergent marsh		growth; feeding	growth; feeding	growth; feeding	growth; feeding	Feeding	feeding
Reef Fish Fishery	Mutton Snapper *(Lutjanus analis)*	SAV				growth; feeding	growth; feeding	Feeding	
	Cubera Snapper *(Lutjanues cyanopterus)*	SAV, emergent marsh				Growth	growth		
	Gray Snapper *(Lutjanus griseus)*	SAV, soft bottom, sand/shell,			growth; feeding	growth; feeding	growth; feeding	Feeding	

GOM FMP GROUP	SPECIES	HABITAT TYPE	EGGS	LARVAE	POST LARVAE	EARLY JUVENILES	LATE JUVENILES	ADULTS	SPAWNING ADULTS
		emergent marsh							
	Lane Snapper *(Lutjanus synagris)*	SAV, soft bottom, sand/shell			growth	growth; feeding	growth; feeding		
	Yellowtail Snapper *(Occurs chrysurus)*	SAV, soft bottom				growth; feeding			
	Goliath Grouper *(Epinephelus itajara)*	SAV, hard bottom				growth; feeding	growth; feeding		
	Red Grouper *(Epinephelus morio)*	SAV, hard bottom				growth; feeding	growth; feeding		
	Black Grouper *(Mycteroperca bonaci)*	SAV				growth; feeding			
Coastal Pelagic Fishery	Spanish Mackerel *(Scomberomorus maculatus)*	pelagic				growth; feeding	growth; feeding	growth; feeding	
Shrimp Fishery	Brown Shrimp *(Farfantepenaeus aztecus)*	SAV, soft bottom, sand/shell, emergent marsh, oyster reef			growth; feeding	growth; feeding	growth; feeding		
	White Shrimp *(Litopenaeus setiferus)*	emergent marsh, soft bottom			growth; feeding	growth; feeding	growth; feeding		
Highly Migratory Species	Scalloped Hammerhead Shark (*Sphyma lewini*), Bonnethead Shark (*Sphyma tiburo*), Blacktip Shark (*Carcharhinus limbatus*), Bull Shark (*Carcharhinus leucas*), Spinner Shark (*Carcharhinus brevipinna*), and Atlantic Sharpnose Shark (*Rhizoprionodon terraenovaee*)	SAV, emergent marsh, soft bottom, sand/shell,				growth; feeding	growth; feeding	growth; feeding	

Shrimp fishery species that use the estuarine zone near the project area include two penaeid types: brown and white shrimp (*Farfantepenaeus aztecus* and *Litopenaeus setiferus*). Post-larvae, early juvenile, and late-juvenile shrimp of both species use estuarine habitat for survival. Emergent marsh and marsh edge are particularly important microhabitats for these species, and they would use the tidal

cycle to enter low emergent marsh adjacent to the shoreline (GMFMC 2004). Additionally, brown shrimp are common in oyster reef and SAV habitats.

Highly Migratory Species FMP: EFH for highly migratory species consists of Gulf of Mexico waters and substrates extending from the U.S./Mexico border to the boundary between the areas covered by the Gulf of Mexico Fishery Management Council and the South Atlantic Fishery Management Council from estuarine waters out to depths of 100 fathoms.

These areas are connected by currents and water patterns that influence the occurrence of highly migratory species (HMS) at particular times of the year. Due to habitat-specific requirements of each species, EFH for each HMS potentially occurring in the vicinity of the Hancock County Marsh Living Shoreline is described below (EFH information from NMFS 2009). The HMS species include scalloped hammerhead shark (*Sphyma lewini*), bonnethead shark (*Sphyma tiburo*), blacktip shark (*Carcharhinus limbatus*), bull shark (*Carcharhinus leucas*), spinner shark (*Carcharhinus brevipinna*), and Atlantic sharpnose shark (*Rhizoprionodon terraenovaee*).

Environmental Consequences

Project impacts and benefits to fisheries are discussed below.

Red Drum

Red drum could be impacted initially by construction activities when living shoreline material, oyster cultch, and dredged sediment for marsh creation are deposited in the benthic zone. There would likely be impacts to benthic invertebrate populations, small ichthyofauna (the indigenous fish of a region), and adult fish. The adverse impacts are expected to be minor and short term in duration, with a transition to intermediate and long-term benefit to the species as a result of habitat creation, preservation, and increased biological productivity.

Reef Fish and Coastal Migratory Pelagics

Impacts to reef fishes are expected to be minor due to low occurrences of most of the species. Abundance levels for these types, including grouper and snapper fishes, are much higher in the southern and eastern Gulf of Mexico. Juveniles of these species would typically use SAV beds in estuarine environments for food and cover (GMFMC 2004). Given the lack of SAV in the project area, it is unlikely that a substantial presence of juvenile reef species exists in the area. Potential adverse impacts would include short-term, minor displacement of feeding adults and possible infliction to larval fish during the construction process. The proposed marsh creation and oyster shell deployment would benefit gray and lane snapper as they prefer shell/sand bottom and emergent marsh for habitat use in the estuarine zone.

For the migratory pelagic species, habitat use for all life stages is primarily water column, so any adverse impacts from restoration activities would be minor, temporary displacement, and short-term decreased water quality from sediment disturbance. Adults typically only use these shallow areas in the pursuit of baitfish and typically prefer higher-salinity waters (GMFMC 2004). These adverse impacts are expected to transition to intermediate and long-term benefits to the species as a result of habitat creation, preservation, and increased biological productivity.

Shrimp

Potential impacts to shrimp species include migratory disruption and benthic habitat alteration. These adverse impacts are short term and minor in nature. Construction activities would include modifying mud bottom habitat and mixing of sediment in the water column. Post-larvae brown shrimp emigrate to estuaries from February through April on high tides at night and typically leave as sub-adults during full and new moons during different parts of the year. White shrimp have similar patterns, but arrive as post-larvae from May through September both at night and day and in the upper two meters of the water column (GMFMC 2004). Construction and monitoring activities would take precaution to avoid peak migration periods and times of day. Restoration would benefit these species from short to long term. The breakwater would retard marsh edge erosion substantially, preserving this vital microhabitat for juvenile shrimp. Moreover, marsh creation and oyster reef deployment would produce additional habitat that the species could utilize for cover and feeding.

Highly Migratory Species (e.g., sharks)

A majority of the habitat use by all life stages of highly migratory pelagic species (e.g., sharks) is within the water column habitat. However, estuarine habitats are one of many possible habitats used by sharks in early and late juvenile and adult life stages. Estuarine habitat use is likely transitory and temporary during foraging activities. Adverse impacts to highly migratory species EFH would be short term, minor, and localized to the areas of installed breakwaters.

Findings: The NOAA Fisheries has identified EFH habitats for the Gulf of Mexico in its Fishery Management Plan Amendments. The habitat in the project area includes the Mississippi Sound and Gulf of Mexico waters and consists primarily of soft bottom and sandy substrate consistent with sediment along the northern Gulf of Mexico. Based on the phased approach for the implementation of the dredging and disposal activities and the time it would take to complete each phase and the size of the proposed placement areas in relation to the total available acreage of similar habitat within the Gulf of Mexico, it has been determined that the proposed action would not result in long-term adverse effects to EFH.

Essential Fish Habitat (EFH) consultation (Fay 2014) with NFMS' Habitat Conservation Division (HCD) was completed on March 26, 2014. The consultation letter concurred with the EFH assessment that the project may result in minor, adverse short-term impacts to EFH; however, the project is anticipated to result in long-term benefits to EFH. The HCD has no EFH conservation recommendations to provide pursuant to Section 305(b)(2) of the Magnuson-Stevens Act at this time. Further consultation is not necessary unless future modifications are proposed and such actions may result in adverse impacts to EFH. In the EFH Assessment the Trustees stated that the following BMPs would be adhered to:

- Work barges would be moored for overnight and weekends/holidays in areas where previous impacts have occurred (flotation channels, deployment areas).
- Spoil from flotation channels will be placed on the seaward side of the channel to facilitate current-driven backfilling of channels.
- Pilings would be driven instead of jetting to reduce the disturbance of bottom sediments and bottom dwelling organisms.

- Where practicable, shell obtained from commercial vendors that did not or will not impact the aquatic environments will be utilized for reef construction.
- Monitoring will be conducted before, during, and after project implementation to ensure compliance with project design and completion. If immediate post-construction monitoring reveals that unavoidable impacts to EFH have occurred, appropriate coordination with regional EFH personnel will take place to determine appropriate response measures, possibly including mitigation. If additional adaptive management of the breakwater structure is necessary after monitoring evens, all minimization measures discussed above will be followed.
- Any temporary access channels will be filled in naturally following construction to re-establish baseline elevations. Monitoring will assess whether unexpected impacts to EFH have occurred.

10.3.6.11 Human Uses and Socioeconomics

Socioeconomics and Environmental Justice

Affected Resources

Socioeconomic resources combine the social resources and economic resources of the area. The social resources evaluation includes consideration such as potential changes in neighborhoods or community cohesion; affordable housing; changes in travel patterns and accessibility; impacts on community facilities; impacts on traffic safety/public safety; and impacts on any special groups such as elderly, handicapped, minority, and transit-dependent persons. The data in this section was compiled using the Census and American Factfinder websites (U.S. Census Bureau 2011 and 2012).

The project area is located in the southwestern corner of Mississippi, near the communities of Ansley, LaFrance, and Lakeshore, in Hancock County. Ansley and LaFrance are located approximately 1.5 miles north of the project area. Lakeshore is located about two miles to the northeast of the project area.

Based on the U.S. Census 2010 data, there were 42,255 people and 17,166 households in the county. The racial makeup of the county was 88.5 percent White, 7.8 percent Black or African American, 0.5 percent Native American, 1.0 percent Asian, 0.2 percent from other races, and 2.0 percent from two or more races. Hispanic or Latino, of any race, comprised 3.4 percent of the population. Out of the 17,166 households, 27.5 percent had children under the age of 18 living with them, 53.6 percent were married couples living together, 12.2 percent had a female householder with no husband present, and 28.1 percent were non-families. Of the households, 24.5 percent were made up of individuals, and 8.7 percent had someone living alone who was 65 years of age or older. The average household size was 2.50, and the average family size was 2.93. The median age was 41.0 years. The median income for a household in the county was $42,591, and the median income for a family was $52,469. The per capita income for the county was $22,596. About 15.2 percent of families and 18.8 percent of the population were below the poverty line, including 27.6 percent of those under age 18 and 9.2 percent of those aged 65 or older. The labor force in Hancock County totaled approximately 19,813 in 2010.

Industries providing employment in Hancock County were:

- Agriculture, forestry, fishing and hunting, and mining (1.0 percent)
- Construction (13.4 percent)
- Manufacturing (8.1 percent)

- Wholesale trade (2.0 percent)
- Retail trade (9.9 percent)
- Transportation and warehousing and utilities (6.7 percent)
- Information (0.2 percent)
- Finance and insurance, real estate and rental/leasing (6.6 percent)
- Professional, scientific, management, administrative, and waste management services (9.1 percent)
- Educational services, health care, and social assistance (17.2 percent)
- Arts, entertainment, recreation, accommodation, and food services (13.7 percent)
- Other services (4.4 percent)
- Public administration (7.7 percent)

More specifically, the majority of the project is located in Census Tracts 302 and 304. Based on the U.S. Census 2010 data, there were 7,382 people and 3,086 households in these tracts. The racial makeup of these tracts was 76.0 percent White, 20.0 percent Black or African American, <0.1 percent Native American, 0.6 percent Asian, 0.8 percent from other races, and 2.4 percent from two or more races. Hispanic or Latino, of any race, comprised 5.0 percent of the population. Out of the 3,086 households, 23 percent had children under the age of 18 living with them, 44 percent were married couples living together, 15 percent had a female householder with no husband present, and 36 percent were non-families. Of the households, 30 percent were made up of individuals, and 10 percent had someone living alone who was 65 years of age or older. The average household size was 2.43, and the average family size was 2.96. The median age was 42.75 years. The median income for a household in the tracts was $34,582, and the median income for a family was $55,589. The per capita income for the county was $20,406. About 8.5 percent of families and 9.0 percent of the population were below the poverty line, including 14.2 percent of those under age 18 and 13.7 percent of those aged 65 or older. The combined labor force for Census Tracts 302 and 304 was 3,678 in 2010.

Industries providing employment in Census Tracts 302 and 304 were:

- Agriculture, forestry, fishing and hunting, and mining (0.7 percent)
- Construction (15.0 percent)
- Manufacturing (10.4 percent)
- Wholesale trade (1.7 percent)
- Retail trade (10.8 percent)
- Transportation and warehousing and utilities (8.3 percent)
- Information (0.7 percent)
- Finance and insurance, real estate and rental/leasing (5.7 percent)
- Professional, scientific, management, administrative, and waste management services (7.6 percent)
- Educational services, health care, and social assistance (16.9 percent)
- Arts, entertainment, recreation, accommodation, and food services (9.8 percent)
- Other services (3.4 percent)
- Public administration (9.0 percent)

A comparison of race and poverty from Tracts 302 and 304 to Hancock County is shown on Table 10-10.

The nearest communities to the Proposed Action location are Ansley (to the north of Heron Bay) and Lakeshore (to the north of the eastern terminus of the Proposed Action location). These are small communities centered around fishing and recreation. Aerial photography from 2012 was used to count the number of residential structures; Ansley had approximately 19 structures, and Lakeshore had approximately 15 structures. Lakeshore is also the home of the Silver Slipper Casino. A small, unnamed community is located near the LaFrance Marina. This community contained 29 structures as viewed from 2012 aerial imagery. Clermont Harbor, Waveland, and Bay St. Louis are located further to the northeast.

Table 10-10. Comparison of race and poverty of Census Tracts 302 and 304 to Hancock County.

	TRACTS 302 AND 304	HANCOCK COUNTY		TRACTS 302 AND 304	HANCOCK COUNTY
Median household income	$34,582	$42,591	White	76.0%	88.5%
Per capita income	$20,406	$22,596	Black or African American	20.0%	7.8%
Families below poverty line	8.5%	15.2%	Native American	<0.1%	0.5%
Individuals below poverty line	9.0%	18.8%	Other races	0.6%	1.0%
Under 18 below poverty line	14.2%	27.6%	Two or more races	0.8%	0.2%
Over 65 below poverty line	13.7%	9.2%	Hispanic or Latino, of any race	2.4%	3.4%

The closest medical facility near the project area is Fresenius Medical Care at Hancock Medical Center, located at 149 Drinkwater Boulevard in Bay St Louis, approximately 6.5 miles from the eastern edge of the Proposed Action. The closest police department is the Waveland Police Department, located at 335 Coleman Avenue in Waveland, approximately 4.0 miles from the eastern edge of the Proposed Action. The closest fire station is located in Clermont but has a Bay St. Louis address. It is located at 5272 Clermont Boulevard, Bay St Louis, and is approximately 1.3 miles from the eastern edge of the Proposed Action.

Environmental Consequences

There are no anticipated adverse social, economic, health, or environmental impacts to local communities due to this project. During construction, work crews are expected to stay overnight in the cities of Bay St. Louis or Waveland. The nearby communities of Lafrance Marina, Ansley, and Lakeshore would benefit from shoreline protection during storms surges, the creation of new marsh, and from the construction of new oyster reefs. In addition, there could be minor short-term benefits from this project due to temporary employment for local residents and businesses for the construction of the project.

Environmental Justice

The project is primarily in water work located two to three miles from residents, depending on the construction activity. There would be no disproportionate impacts on minority, low-income, or underserved populations.

10.3.6.12 Cultural Resources

Affected Resources

Cultural resources include historic properties listed in, or eligible for listing in the National Register of Historic Places (36 C.F.R. §60[a-d]). The National Historic Preservation Act of 1966, as amended (16 U.S.C. §470[f]), defines an historic property as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register [of Historic Places]." The definition of historic properties also includes significant traditional religious and cultural properties important to Indian tribes. Historic properties include built resources (bridges, buildings, piers, etc.), archaeological sites, and Traditional Cultural Properties, which are significant for their association with practices or beliefs of a living community that are both fundamental to that community's history and a piece of the community's cultural identity. Although often associated with Native American traditions, such properties also may be important for their significance to ethnic groups or communities. Historic properties also include submerged resources.

This project is currently being reviewed under Section 106 of the NHPA to identify any historic properties located within the project area and to evaluate whether the project would affect any historic properties. The Trustee conducted a feasibility review of the project area including a literature review, limited magnetometer surveys, and limited field reconnaissance (R. Christopher Goodwin & Associates, 2014). Previously recorded archaeological sites, shipwrecks, ruins, and obstructions were reviewed. The review of the previously recorded archaeological sites using MDAH records revealed that seven archaeological sites are located within 1.0 mile of the project. Five of the sites are known shell middens; one site is of prehistoric significance, and one site has both historic significance and is a shell midden (Boudreaux III 2009) within one mile of the project area. Within one mile of the project area there are eight charted shipwrecks, one submerged ruin, and five obstructions (NOAA 2012; NOAA 2013). The magnetometer survey revealed submerged anomalies but there were none that are considered significant historic resources.

Environmental Consequences

The National Historic Preservation Act of 1966 (NHPA) charges the federal government with considering the potential effects of its actions on the nation's cultural and historic resources. A complete review of this project under Section 106 of the NHPA is ongoing and would be completed prior to any project activities that would restrict consideration of measures to avoid, minimize or mitigate any adverse effects on historic properties located within the project area. This project would be implemented in accordance with all applicable laws and regulations concerning the protection of cultural and historic resources. A study plan would be developed which could include marine magnetometer surveys, side scan sonar surveys, and field studies to document resources and develop avoidance procedures for the project.

10.3.6.13 Infrastructure

Affected Resources

Infrastructure in the project area consists of two parallel pipelines (Tennessee Gas Pipeline) owned by El Paso Energy Corporation. The pipelines measure 30 inches (western pipeline) and 36 inches (eastern pipeline) in diameter. The pipelines extend underneath a canal ("pipeline canal") from the community of LaFrance to the Mississippi Sound. No other utilities (e.g., pipelines, electricity, telecommunication cables) are known to transect the project area at this time. However, inquiries would be made with resource agencies and other organizations to obtain information on any additional infrastructure.

Environmental Consequences

Either adequate survey information for the pipeline would be obtained prior to construction, or the alignment of the pipeline would be surveyed. The Pearl River-to-Heron Bay breakwater would have a sufficiently wide gap in the structure to avoid covering the pipeline and to allow maintenance vessels to navigate and operate over and around the pipeline if needed. The gap would be wide enough to allow for unimpeded navigation by vessels in and out of the pipeline canal. In addition, proper safety precautions and protocols would be developed, and a safety zone around the pipeline alignments would be set up to keep all construction equipment clear of the pipelines. No adverse impacts are anticipated.

Similar procedures would be utilized if other infrastructure is identified in the project area during inquiries prior to construction.

10.3.6.14 Land and Marine Management

Affected Resources

In the project area, there are residential neighborhoods to the north in the communities of Ansley, Lakeshore, and LaFrance approximately two to three miles from the project area, depending on the construction activity location. In the immediate vicinity of the project area, the surrounding land use is predominantly undeveloped marshland. The Hancock County Marsh Preserve is designated as a Mississippi Coastal Preserves Program. Lands within this Coastal Preserve are either privately, locally, state or federally owned. Much of the property is considered tidal wetlands and is already owned by the state (MDMR 2013). Governing the nature of land use development of the Hancock County Marsh is the 1972 Coastal Zone Management Act (CZMA), which provides for management of the nation's coastal resources and balances economic development with environmental conservation. The overall program objectives of CZMA remain balanced to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone." The water bottoms are considered state-owned and part of the Public Trust Tidelands.

Environmental Consequences

Implementation of the project would not disrupt existing land uses or wetlands. Impacts to shoreline areas would be beneficial and long term, as the marsh would be protected from erosion.

10.3.6.15 Aesthetics and Visual Resources

Affected Resources

The affected environment consists of the project footprint of Heron Bay, the marsh shoreline from the mouth of the Pearl River to four miles around St. Joseph's Point, and current open water areas seaward of the shoreline as well as areas visible from the footprint. The landscape in the vicinity of the proposed

project area is characterized by a mosaic of marsh wetlands with patches of mature coastal forest, which have the effect of providing visual barriers around existing communities. There are no designated protected viewsheds or historic resources in the vicinity of the project site. Unobstructed views of open water exist generally only from the shoreline. Visual receptors include boaters in the Mississippi Sound; however, the boat traffic density is likely comparatively low due to the distance from urban communities and the shallowness of the water.

Environmental Consequences

During construction, there would be short-term, minor adverse aesthetic and visual impacts for recreational boaters and fishermen due to the use of construction equipment in and around the project area. In addition, the disrupted/disturbed state of the marsh creation site(s) would be a short-term, moderate, adverse aesthetic and visual resource impact. However, the marsh area is anticipated to increase in size and vegetation availability and diversity and become a more robust and thriving marsh habitat once construction is completed. Therefore, there would be a long-term beneficial impact to visual and aesthetic resources once the marsh area reaches maturity.

After construction is completed, the breakwater and/or the intertidal oyster reefs may be exposed at MLW. The outer surface of these reefs consists of natural material such as bagged shells or artificial material such as riprap. Both these materials are present in the natural environment and were once regionally present. The deployed materials would blend well with the surrounding substrate, which would not adversely affect aesthetic and visual resources.

In addition, navigation signs in the project area would alert boaters to the presence of the breakwater (including gaps in the breakwater) and oyster reefs. Because this is an area already used by recreational and commercial boaters, the addition of navigation signs would be consistent with other navigational signage/aids already present in the project vicinity. There would be no long-term impact from sign placement.

10.3.6.16 Tourism and Recreational Use

Affected Resources

The affected resources include the waters and estuaries along the Hancock County marsh shoreline. These resources are used by the public primarily for recreational boating and fishing. Other uses could include bird watching, orienteering, and camping. The community of LaFrance includes a fishing camp and boat launch.

Environmental Consequences

During construction of the breakwater and oyster cultch deployment, there would be short-term, minor adverse impacts to public access and use of open water areas for boat traffic; access would be restricted due to safety concerns. The project should enhance existing recreational use benefits such as boating, fishing, and birdwatching.

Following construction, public access and recreation within the breakwater and subtidal reef areas would have short-term, minor, adverse impacts. Permanent navigation markers or signage would be installed to assure safe navigation for marine traffic. The signs would be pile driven into place and would display the alert, “Danger Breakwater,” in reflective letters on a 3-ft.-by-3-ft. sign face. The signs would

include a marine signal on top. The bottom of the sign would be at an elevation of 6 ft. The signs would have a visibility range of 1 mile.

10.3.6.17 Public Health and Safety and Shoreline Protection

Affected Resources

Approximately 6.2 acres of the Hancock County marsh shoreline are being lost per year due to shoreline erosion (see below). No hazardous materials currently exist at the project area and there is no potential for human exposure to natural or man-made hazards.

Environmental Consequences

The proposed breakwater structures and marsh creation would have long-term benefits by helping to protect the Hancock County marsh complex from wave erosion.

All hazardous materials handled during construction activities (fuel, lubricants, etc.) would be contained and appropriate barriers would be placed to protect the adjacent coastal resources. Best management practices in accordance with Occupational Safety and Health Administration (OSHA) and state and local requirements would be incorporated into construction activities onsite to ensure the proper handling, storage, transport, and disposal of all hazardous materials. Personal protective equipment would be required for all construction personnel, and authorized access zones would be established at the perimeter of the project site. As a result, adverse impacts to public health and safety would not be expected.

10.3.7 Summary and Next Steps

The proposed Hancock County Marsh Living Shoreline project would include shoreline and marsh protection, marsh creation, and restoration resulting in increased benthic secondary productivity. It would use breakwater material to prevent shoreline erosion, create 46 acres of salt marsh habitat, and place 46 acres of oyster cultch in areas that have historically supported oyster habitat. The project is consistent with Alternative 2 (Contribute to Restoring Habitats and Living Coastal and Marine Resources) and Alternative 4 (Preferred Alternative).

NEPA analysis of the environmental consequences suggests that there would be long-term moderate impacts to geology and substrates, and there would be minor to moderate short term adverse impacts to other resource categories. The project would provide long-term benefits by creating approximately 46 acres of salt marsh, 46 acres of oyster habitat, and approximately 5.9 miles (19.9 acres) of reef. The Trustees have completed coordination and reviews under the Endangered Species Act, the Migratory Bird Treaty Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Marine Mammal Protection Act, and the Bald and Golden Eagle Protection Act. Consistency reviews of the proposed Phase III early restoration projects in Mississippi were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed. The Trustees have initiated consultation under the Historic Preservation Act and other federal statutes. The Trustees have considered public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Trustees' determination on selection of this project will be included in the Record of Decision.

Throughout the design process, every practical attempt would be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The following conservation measures and BMPs (sorted by resource type) would be implemented to minimize impacts to resources:

- Green House Gas Emissions
    - Shut down idling construction equipment, if feasible.
    - Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
    - Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
    - Encourage the use of alternative fuels or power sources for generators at construction sites, such as propane or solar power, or use electrical power where practicable.
- Marine Mammals
    - If manatee(s) are found to be present in the immediate project area during restoration activities, construction would be halted until the species moves away from the project area.
- Protected Species
    - Awareness of potential turtle presence. If any sea turtles are found to be present in the immediate project area during restoration activities, construction will be halted until species moves away from project area.
    - Awareness of manatee presence. If manatee(s) are found to be present in the immediate project area during restoration activities, construction will be halted until species moves away from project area. For in-water work in Mississippi where manatees could be present, the Trustee will follow conditions a, b, c, and d of the Standard Manatee Conditions for In-water Work (USFWS, 2011). The Trustee would report any collisions to the U.S. Fish and Wildlife Service or State trust resource agency. Temporary signs, if necessary, would be modified from the standard template to reflect local conditions.
    - Measures to protect Gulf Sturgeon. Project restoration features will be built close to the shoreline in shallow water (1-4 feet) and will not impede any migratory paths. Project components will be constructed in the months of May through October to the extent practicable, to avoid inter-riverine migration movements. Project construction activities will be subject to a stop work order if the species is observed in the project footprint. Work will continue once the species leaves the area.
    - If construction activities continued beyond the May to October window, there would be continued adherence to special conditions specified in the Sea Turtle and Smalltooth Sawfish Construction Conditions, dated March 23, 2006 (NMFS, 2006).
    - The project will follow Measures for Reducing Entrapment Risk to Protected Species, revised May 22, 2012 (NMFS, 2006).
- Migratory Birds
    - Pre-construction nesting surveys for migratory birds and raptors would be conducted and if evidence of nesting is found, coordination with the USFWS would be initiated to develop and implement appropriate conservation measures.
- Essential Fish Habitat
    - Work barges would be moored for overnight and weekends/holidays in areas where previous impacts have occurred (flotation channels, deployment areas).
    - Spoil from flotation channels will be placed on the seaward side of the channel to facilitate current-driven backfilling of channels.

- Pilings would be driven instead of jetting to reduce the disturbance of bottom sediments and bottom dwelling organisms.
- Where practicable, shell obtained from commercial vendors that did not or will not impact the aquatic environments will be utilized for reef construction.
- Monitoring will be conducted before, during, and after project implementation to ensure compliance with project design and completion. If immediate post-construction monitoring reveals that unavoidable impacts to EFH have occurred, appropriate coordination with regional EFH personnel will take place to determine appropriate response measures, possibly including mitigation. If additional adaptive management of the breakwater structure is necessary after monitoring evens, all minimization measures discussed above will be followed.
- Any temporary access channels will be filled in naturally following construction to re-establish baseline elevations. Monitoring will assess whether unexpected impacts to EFH have occurred.

- Invasive Species
  - All equipment to be used during the project, including personal gear, will be inspected and cleaned such that there is no observable presence of mud, seeds, vegetation, insects and other species.
  - Oyster cultch and vegetation will be treated or inspected to remove "non-target" species.
- General Construction BMPs
  - Spoil from temporary flotation channels would be placed on the seaward side of the channel to facilitate current-driven backfilling of channels.
  - Placement of all signage pilings would be achieved by "driving" in lieu of "jetting" to reduce the disturbance of bottom sediments and bottom-dwelling organisms.

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10.4 Restoration Initiatives at the INFINITY Science Center: Project Description

10.4.1 Project Summary

The proposed project, Restoration Initiatives at the INFINITY Science Center, would provide the public enhanced and increased access to coastal natural resources injured by the Spill and response actions. The goal is to restore lost recreational opportunities through the provision of increased access to coastal estuarine habitats, wildlife viewing areas and educational features. The project would enhance and expand a state-of-the-art interactive science, education, interpretive, and research center for use by visitors seeking to experience and learn about the coastal natural resources of the Gulf of Mexico. The project also would serve as a launching point for a comprehensive scenic byway trail system that can take visitors to beaches and tidal coastal estuarine environments. The INFINITY Science Center is located in Hancock County, Mississippi, and is adjacent to the Hancock County Marsh Preserve and coastal estuarine habitats. The INFINITY Science Center is a partnership between public and private entities such as NASA, the State of Mississippi, and private funders. The estimated cost for the Restoration Initiatives at INFINITY Science Center Early Restoration project is $10,400,000.

10.4.2 Background and Project Description

The INFINITY Science Center is located southwest of the intersection of Highway 607 and Interstate 10 in southern Hancock County, Mississippi, and is adjacent to coastal estuarine habitats including the Hancock County Marsh Preserve. The project site is bordered by the Pearl River to the west and is adjacent to the "Logtown Scenic Byway to Space" trail to the south to facilitate beach access through the scenic byways in Hancock County, Mississippi. The majority of the total available gallery space in the INFINITY Science Center would be reserved for exhibits about the Gulf of Mexico and its coastal ecosystem. Exhibits would cover a number of topics including marsh ecosystems, oceanography, gulf species, hurricanes, and restoration monitoring. These exhibits would be designed to allow visitors (using computers, simulations, and graphics) to experience how scientists model and study the Gulf's ecosystem. The exhibits would highlight the importance of science and scientific research, natural processes, and environmental stewardship, as well as wise economic utilization of these resources.

The Heritage Trail-Possum Walk would bring visitors through multiple coastal habitats that occur throughout the immediate area including marsh, bayhead swamp, cypress swamp, and pine flatwoods. The proposed project would enhance access to a coastal trail system that connects with sandy beach habitats. The Heritage Trail-Possum Walk would include a public Outdoor Education Center to inform visitors of the ecologically sensitive nature of coastal habitats injured by the Spill and response action (Figure 10-5 and Figure 10-6). The project also includes development of a native landscape/nursery area.

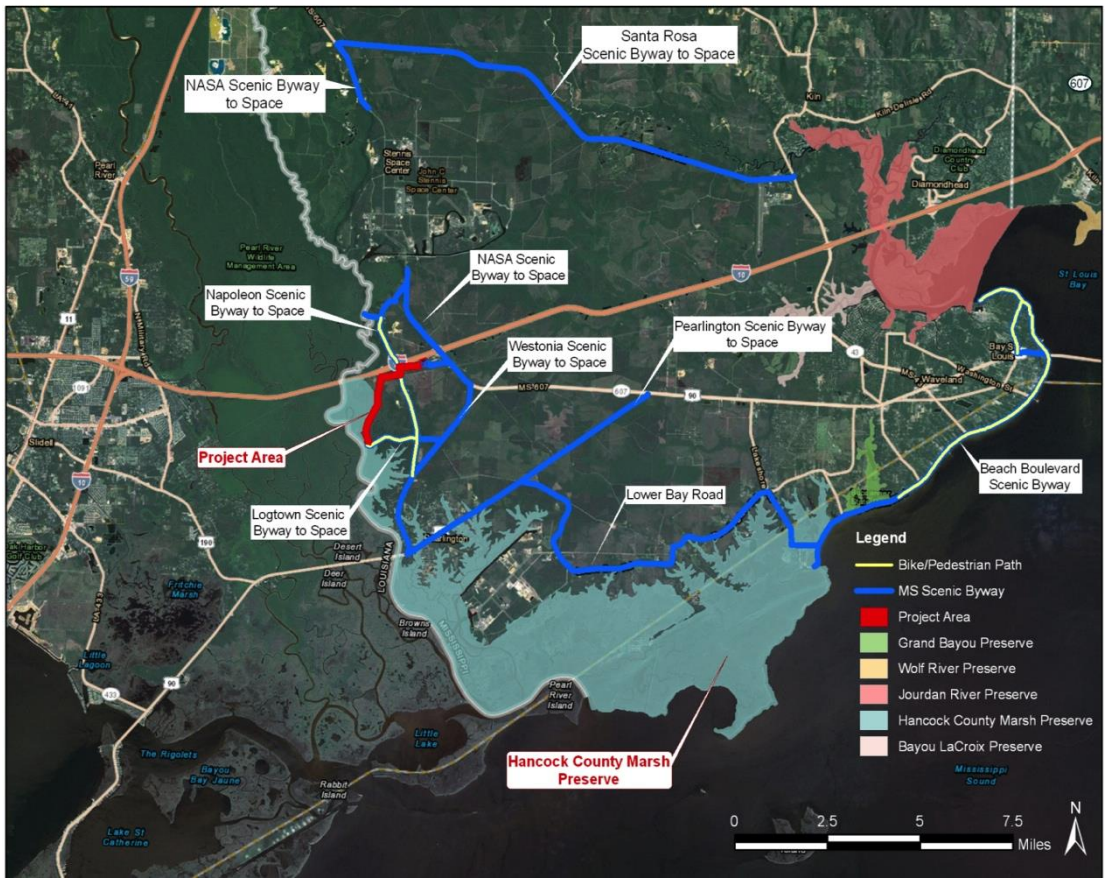

Figure 10-5. The Proposed Restoration Initiatives at INFINITY Science Center would include improvements to the Heritage Trail-Possum Walk, an extension of the scenic byway system that provides access to the Hancock County Marsh Preserve, coastal beaches, and estuarine marshes.

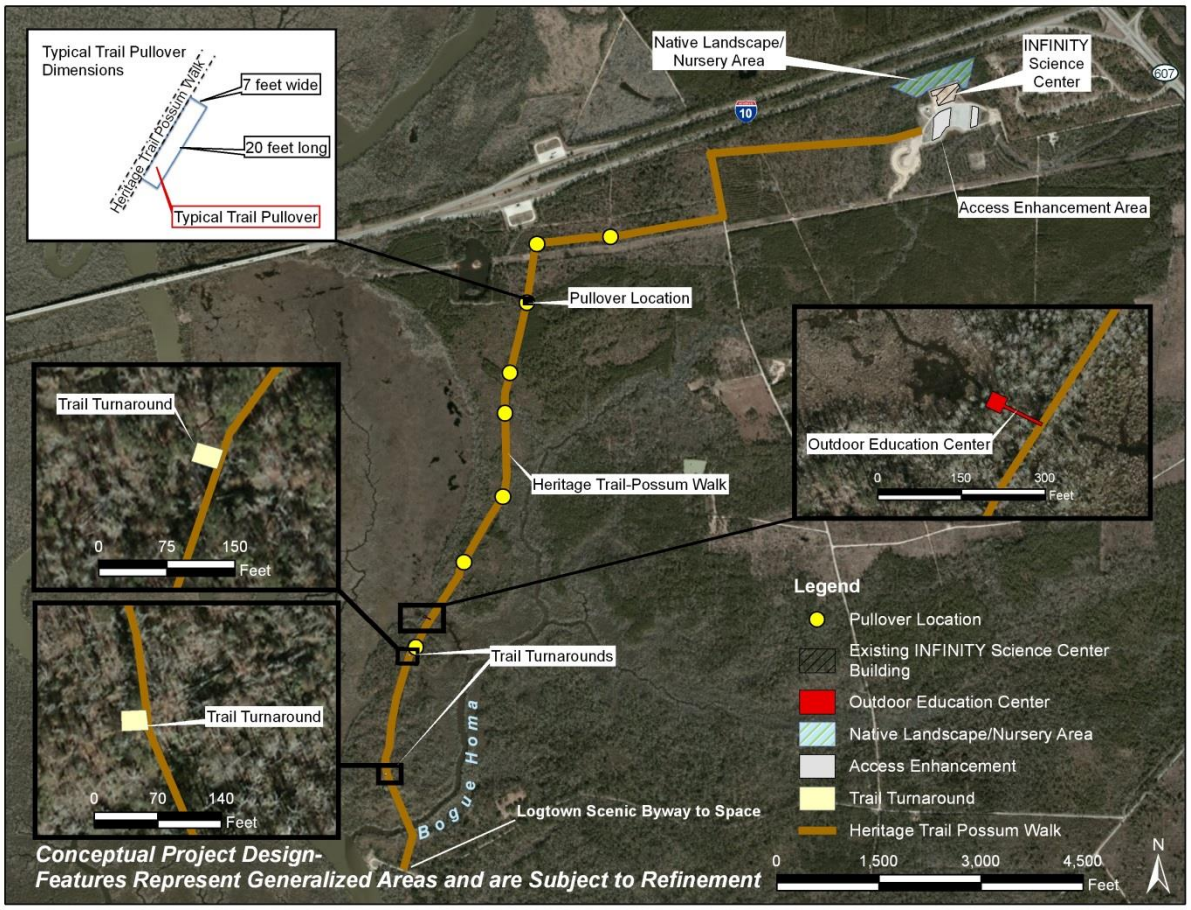

Figure 10-6. Location of proposed project, Restoration Initiatives at INFINITY Science Center.

10.4.3 Evaluation Criteria

As a result of the Spill, the public's access to and enjoyment of natural resources along the Mississippi Gulf Coast were denied or severely restricted. This project meets the evaluation criteria established for OPA and the Framework Agreement. The project would enhance recreational and educational opportunities and would promote the public's appreciation and awareness of the Gulf of Mexico's natural resources injured by the Spill. (Section 7.1; Table 7.1). Accordingly, the project is intended to replace or provide recreational opportunities comparable to the types of opportunities lost as a result of the Spill (see C.F.R. § 990.54(a) (2) and Sections 6a-6c of the Early Restoration Framework Agreement). The project is technically feasible and utilizes proven techniques with established methods and documented results and can be implemented with minimal delay. Cost estimates are based on similar past projects, and the project can be conducted at a reasonable cost. For these reasons, the project has a high likelihood of success and is feasible and cost-effective; see C.F.R. § 990.54(a) (1) and a(3) and Section 6e of the Framework Agreement. A thorough environmental review, including review under applicable environmental statutes and regulations, as described in section 10.5, indicates that adverse effects from the project would largely be minor, localized, and often of short duration. In addition, the best management practices and measures to avoid or minimize adverse effects described in 10.5 would be implemented. As a result, collateral injury would be avoided and minimized during project

implementation (construction and installation and operations and maintenance) (15 C.F.R. § 990.54(a)(4)). In addition, this project is consistent with long-term restoration goals (see Section 6(d) of the Framework Agreement). This project would not negatively affect public health and safety (see Section 3.3.6 Public Health and Safety). This project was submitted as a restoration project on the NOAA website (http://www.gulfspillrestoration.noaa.gov).

10.4.4 Performance Criteria, Monitoring and Maintenance

The project's restoration objectives are to enhance and increase recreational opportunities as well as the public's appreciation and awareness of the Gulf of Mexico's natural resources. Successful completion of the project would enhance public use and enjoyment of these resources. This project includes monitoring efforts to ensure project designs are correctly implemented during construction to meet the stated restoration objectives. Further, the project would be monitored for visitor counts and facility usage at the INFINITY Science Center and its resources. Monitoring would include calculating the number of visitors to the INFINITY Science Center indoor facility/exhibits and the number of visitors using the Heritage Trail-Possum Walk and proposed Outdoor Education Center. Visitation and public use of the facilities and associated amenities would be monitored for five years following completion of construction. The INFINITY Science Center would be responsible for maintaining the Science Center facilities, features, and exhibits.

10.4.5 Offsets

NRD Offsets are $15,600,000, expressed in present-value 2013 dollars, based on a benefit-to-cost ratio of 1.5, to be applied against the monetized value of lost recreational use provided by natural resources injured in Mississippi, which would be determined by the Trustees' assessment of lost recreational use for the Spill. Please see Chapter 7 of this document (Section 7.2.2) for a description of the methodology used to develop monetized Offsets.[5]

10.4.6 Cost

The total estimated cost to implement this project is $10,400,000. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, exhibit development, monitoring, and potential contingencies.

[5] For the purposes of applying the NRD Offsets to the calculation of injury after the Trustees' assessment of lost recreational use for the Spill, the Trustees and BP agree as follows:

- The Trustees agree to restate the NRD Offsets in the present value year used in the Trustees' assessment of lost recreational use for the Spill.
- The discount rate and method used to restate the present value of the NRD Offsets will be the same as that used to express the present value of the damages.

10.5 Restoration Initiatives at the INFINITY Science Center: Environmental Review

10.5.1 Introduction and Background

INFINITY Science Center (INFINITY) is a state-of-the-art, interactive science, research, education, and interpretive center located in Hancock County and adjacent to the Hancock County Marsh Preserve. Restoration Initiatives at the INFINITY Science Center is intended to restore lost recreational opportunities through the provision of enhanced and increased access to coastal estuarine habitats, wildlife viewing areas, and educational features lost as a result of the Spill. The Heritage Trail-Possum Walk would bring visitors through multiple coastal habitats that occur throughout the immediate area including marsh, bayhead swamp, cypress swamp, and pine flatwoods. The proposed project would enhance access to a coastal trail system that connects with sandy beach habitats.

The project description is based on the current design concept for the purpose of assessing the construction impact on the environment. Final engineering and project design could result in revisions to the project. The following description is intended to be a conservative review of the project components in order to evaluate a maximum environmental impact in the NEPA review and in environmental permitting. Project refinement(s) are anticipated as part of the design process. To the extent possible, revisions would be restricted to the current project footprint. The proposed project includes the following elements:

- *Exhibits:* The project funding would also be used to develop educational components within the available gallery space in INFINITY. Exhibits would educate the public and build public appreciation relating to Gulf resources, the Spill's NRDA, restoration actions, and restoration monitoring activities for Deepwater Horizon restoration projects. Exhibits will cover a number of topics including marsh ecosystems, oceanography, gulf species, hurricanes, and restoration monitoring. These exhibits would be designed to allow visitors (using computers, simulations and graphics) to experience how scientists model and study the Gulf's ecosystem.
- *Native Landscape/Nursery Area:* The Native Landscape Nursery Area is located between I-10 and the front of the INFINITY Science Center. The area would have three major elements: education, restoration and a cultural component. The creation of an open water/emergent wetland area would be a nursery of native wetland vegetation for both hands-on outdoor education and potential use plant materials in future restoration activities. The Native Landscape Nursery Area contributes recreational uses including but not limited to access to coastal wetland habitats, educational opportunities about wetland restoration, cultural preservation of historic features (rails, historic corridor), bird watching, wildlife observation and others.
- *Boardwalk and Outdoor Education Center:* The Outdoor Education Center would provide an outdoor classroom on the edge of the coastal Hancock County Marsh Preserve. The facility makes possible educational opportunities and awareness of the Gulf's ecosystems and natural resources in a hands-on, outdoor classroom adjacent to the Hancock County Marsh Preserve. Other uses include bird and wildlife observation and scenic viewing of natural resources. Construction of public Outdoor Education Center along the Heritage Trail-Possum Walk is intended to educate visitors of the ecologically sensitive coastal habitats injured by the Spill and response actions.

- *Heritage Trail-Possum Walk:* Enhancements would include paving of the existing Heritage Trail-Possum Walk to provide vehicular access to the Outdoor Education Center. The Heritage Trail-Possum Walk is a segment of a planned coast-wide Heritage Trail system. Uses would include access to coastal wetlands at the Outdoor Education Center, access via in the Heritage Trail-Possum Walk to coastal and estuarine habitats, bird/wildlife observation and other uses including running, hiking and biking. The project includes the construction of two areas along the Heritage Trail-Possum Walk for use as turnarounds to transport visitors on learning tours organized by INFINITY. Vehicular access would consist of golf carts used to transport visitors to the Outdoor Education Center via the paved Heritage Trail-Possum Walk.
- *Access Enhancement:* Access enhancements will include improvements to parking at the INFINITY Science Center to better accommodate large group educational visits (school buses) and ease of access to the INFINITY Science Center.

10.5.2 Project Location

The proposed project is located in the state of Mississippi, in Hancock County, southwest of the intersection of Highway 607 and Interstate 10 (latitude 30.311571N, longitude 89.604742W; Figure 10-7). The project site is bordered by the Pearl River to the west and would connect to the "Logtown Scenic Byway to Space" trail to the south to facilitate beach access through byways in Hancock County and adjacent to the Hancock County Marsh Preserve.

As described in the *John C. Stennis Space Center Environmental Resources Document* (NASA 2012), the Stennis Space Center (SSC) buffer zone includes all land within six miles of the smaller Stennis Space Center Fee Zone (Figure 10-7). The Restoration Initiatives fall within the SSC buffer zone. Using a perpetual restrictive easement, the buffer zone was originally developed to provide a cushion for safety and acoustic reasons between the rocket testing activities within the Fee Zone and surrounding human habitation. Although ownership of land within the buffer zone is a mix of federal government, private individuals, and corporations, the perpetual restrictive easement prohibits any "maintenance or construction of dwellings and other buildings suitable for human habitation" (NASA 2012).

The northern extent of the Mississippi Department of Marine Resources (MDMR) Hancock County Marsh Coastal Preserve is located within the project area; it spans land from the Pearl River east to the Bogue Homa Creek to Hancock County marsh in the Mississippi Sound. The project area in relation to the Stennis Buffer Zone and the Hancock County Marsh Coastal Preserve is shown in Figure 10-7.

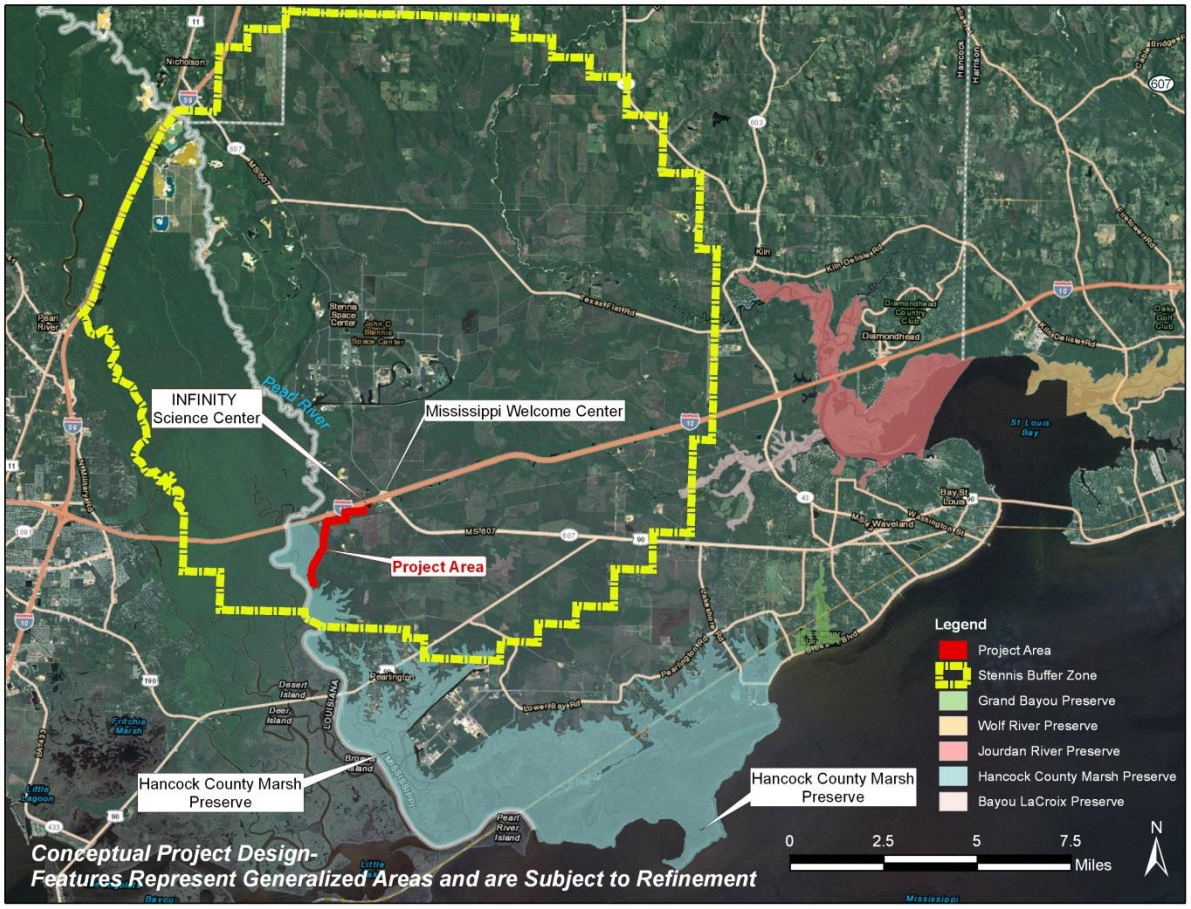

Figure 10-7. Site vicinity map for Restoration Initiatives at INFINITY Science Center. Stennis Buffer Zone and the Hancock County Marsh Coastal Preserve.

10.5.3 Construction and Installation

Project elements, their approximate size, habitat, location, and associated construction activities are summarized in Table 10-11 and are described in more detail below. Construction methods and activities are included in order to assess the impact on the environment. Actual construction methods and activities would be determined after final design and would likely be comparable to activities described below. It is expected that actual construction methods would be similar to those presented in this section.

10.5.3.1 Native Landscape/Nursery Area

Land would be graded to create a native landscape/nursery area between Interstate 10 and INFINITY. The area of approximately 6.5 acres would be cleared and grubbed using a track-mounted light dozer, Bobcat, and front-end loader or similar equipment; pond areas would be dewatered; walkways would be graded; fill material would be added to the edge of the site; and the site would be landscaped with native vegetation and other amenities. The remaining wetland would be preserved for educational purposes. This element of the project has been previously authorized by USACE.

Table 10-11. Project element summary for Restoration Initiatives at INFINITY Science Center.

PROJECT ELEMENT	SIZE (APPROX.)	HABITAT/LOCATION	CONSTRUCTION ACTIVITIES
Museum Exhibits	N/A	Within existing INFINITY Science Center	Installation of exhibits; various topics earth and ocean science, monitoring
Native Landscape/Nursery Area	6.5 acres	Wetland/uplands; dummy line railroad between Interstate 10 and INFINITY	Clearing of stumps; pond excavation; preserve some wetland and dummy line railroad; trail construction through area
INFINITY Science Center Access Enhancement/Parking Area	4.5 acres	Existing stone parking lot/INFINITY Science Center	Paving: 1-inch new stone cap; 2 inch of base; 1 inch wearing course
Heritage Trail-Possum Walk	2.9 miles, 2.6 acres	Existing trail roadbed through forested upland/wetland habitat	Asphalt paving of existing stone based trail; Clearing/grading to create two 25-ft. x 30-ft. turnarounds; trail pullovers
Boardwalk and Outdoor Education Center	75 linear ft. of boardwalk, 5 ft. wide; 40-ft. x 40-ft. platform; Total acreage 0.05	Cypress swamp abutting Pearl River marsh	Conventional post and beam pier; pressure-treated materials; 70 helical piers at 10 to 12 inches

10.5.3.2 Access Enhancement

Access enhancement would include paving the existing parking area. The total area is approximately 4.5 acres. Stormwater from the parking area currently drains to a retention basin to the southwest. Stormwater treatment would not be altered. Activities would include surveying the area to be paved, compacting and proof-rolling the sub-base, placing asphalt consisting of 2 inches of base and a 1-inch wearing course, and striping the parking and handicap zones.

10.5.3.3 Heritage Trail-Possum Walk

The existing Heritage Trail-Possum Walk is approximately three miles long. The first 2.9 miles consist of a coarsely graded sandy/stone base material suitable for foot traffic, bicycles, wheel chairs and four-wheeled noncombustible vehicles. The last 0.1-mile of the trail consists of a wooden boardwalk across marsh connected to a wooden bridge that spans the Bogue Homa River – neither of which are rated for four-wheeled vehicular traffic. The first section of the Heritage Trail-Possum Walk would be paved with asphalt. At 2.9 miles in length and 7 ft. wide, this section of trail has an area of 2.6 acres. The trail is bordered on each side by continuous creosote railroad cross ties pinned to the ground with rebar that would act as side forms for the asphalt to be placed against. It is expected that the established trail would require only limited grading and compacting. Stormwater would run off from the trail and percolate into the ground or collect in nearby drainages. The trail is naturally vegetated on both sides.

In addition to the trail paving discussed above, “trail pullovers” would also be constructed to allow for two-way traffic. The two-way traffic would consist of four-wheeled vehicles used to transport visitors and school children to the Outdoor Education Center. These pullovers are a safety measure to facilitate transporting the public in the event of an accident or health-related incident in the remote reaches of the trail. The trail pullovers would be placed in previously cleared upland areas to minimize disturbance to vegetation and wetlands. The trail pullovers would be constructed within the trail’s existing corridor, attached to the trail, and would be approximately 20 ft. long by 7 ft. wide.

Trail Turnarounds

Turnarounds are necessary to accommodate four-wheeled vehicles on the 7-ft.-wide trail. Two turnarounds would be constructed in previously cleared upland areas. Each turnaround would have an area of approximately 0.01 acre (25 ft. by 30 ft.). Activities would include grading, placing a stone base, and paving with asphalt.

10.5.3.4 Boardwalk and Outdoor Education Center

A boardwalk and an Outdoor Education Center would be installed in a cypress swamp. The boardwalk on pilings would be approximately 70 ft. long and 5 ft. wide and would be constructed of a conventional helical pier installation serving as its foundation, followed by pressure-treated framing, and capping with a recycled composite decking lumber and associated handrails. The helical pier foundation system is used almost exclusively in environmentally sensitive areas for the following reasons:

- No soil excavation
- Minimal impact on vegetation
- Can be installed in limited access areas
- System is economical in sensitive soils and difficult terrain
- Galvanized steel anchors are engineered to transfer projected loads to bearing capable strata below weak soils

Modern, compact hydraulic-driven equipment such as a Bobcat on “floats” would be used to install the piers without excessive vibration or other intrusive noises.

To avoid shading the marsh, an Outdoor Education Center (40 ft. by 40 ft. by 2 stories) would be constructed at the end of the boardwalk where the cypress swamp interfaces with the marsh. The construction approach for the base platform would be similar to the approach used for the boardwalk. The remaining two-story structure on top of the platform would consist of conventional post-and-beam construction comprised of pressure-treated framing lumber, recycled composite decking, and galvanized hardware.

All construction materials would be delivered to the site using small vehicles to accommodate the narrow width of Heritage Trail-Possum Walk and to inflict minimal intrusion on the environment.

10.5.4 Best Management Practices

Throughout the design process, every practical attempt would be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The BMPs and conservation measures that will be utilized to minimize impacts to resources are listed in Section 10.5.7, Summary and Next Steps.

10.5.5 Operations and Maintenance

10.5.5.1 Native Landscape/Nursery Area

Visitors would access this area through INFINITY Science Center, and the area would be open to the public during the INFINITY Science Center's hours. General landscape maintenance would include suppression of unwanted vegetation and invasive species using a combination of mechanical and chemical means, watering during the first growing season, periodic watering when needed during times of drought, and regular management to establish native plants in the area. Maintenance and security would be provided by INFINITY staff or subcontractors.

10.5.5.2 Access Enhancement

The parking area would be open from sunrise to sunset. The pavement would be routinely checked for cracking, sinking, and disrepair. Upon detection of any pavement deformities, appropriate action would be taken to ensure the safety of visitors. Maintenance and security would be provided by INFINITY staff or subcontractors.

10.5.5.3 Heritage Trail-Possum Walk

The trail would be open from sunrise to sunset. The trail would be accessed directly by way of the INFINITY parking lot. The pavement would be routinely checked for cracking, sinking, and disrepair, and any problems would be repaired. Maintenance and security of the trail would be provided by INFINITY staff or subcontractors.

Outdoor Education Center and Boardwalk

The trail would be open from sunrise to sunset. The boardwalk and Outdoor Education Center would be routinely monitored for general wear and tear that might make the features unsafe or unsightly. Upon detection of any deformities, appropriate action would be taken to ensure the safety of visitors. Maintenance and security would be provided by INFINITY staff or subcontractors.

10.5.6 Affected Environment and Environmental Consequences

Under the NEPA, federal agencies must consider environmental effects of their actions that include, among others, impacts on social, cultural, and economic resources, as well as natural resources. The following sections describe the affected resources and environmental consequences of the project.

10.5.6.1 No Action

Both OPA and NEPA require consideration of the No Action alternative. For this Final Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue the Restoration Initiatives at INFINITY Science Center as part of Phase III Early Restoration.

Under the No Action alternative, the existing conditions described for the project site in the affected resources subsection would prevail. Restoration benefits associated with this project would not be achieved at this time.

10.5.6.2 Physical Environment

Geology and substrates, hydrology, water quality, air quality, greenhouse gas emissions, and noise will be discussed in this section

Affected Resources

Geology

The project area is located within the Gulf Coastal Plain physiographic region. Landforms are generally comprised of Holocene sediments. These sediments are composed of sand, silt, and clay with comparatively high organic matter content (Schmid 2013).

Seismic activity in the project area is low. Since the late 1800s, about ten earthquakes large enough to be detected have occurred in the Gulf of Mexico. These earthquakes were mostly small-magnitude events (magnitudes 3 – 4 on the Richter scale).

Substrates

Data from the Mississippi State Geological Survey (MSGS) indicates that surface soils generally consist of Holocene-age quaternary coastal deposits of loam, sand, gravel, and clay. The United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey indicates that the soils are mainly silt loams and fine sandy loams that are associated with tidal flats, coastal plains, terraces, stream terraces, and ridges. These soils include drainage classes of very poorly drained (tidal flat), poorly drained (terrace), somewhat poorly drained (coastal plain), moderately well drained (stream terrace and coastal plain), and well drained (ridges).

The Web Soil Survey identifies nine soil-mapping units within the footprint of the proposed project. These soil map units located within the project footprint area are: Beauregard silt loam; Escambia loam, 0 to 2 percent slopes; Guyton silt loam; Handsboro association; Harleston fine sandy loam, 0 to 2 percent slopes; Poarch fine sandy loam, 0 to 2 percent slopes; Poarch fine sandy loam, 2 to 5 percent slopes; Saucier fine sandy loam, 0 to 2 percent slopes; and Saucier fine sandy loam, 2 to 5 percent slopes (NRCS 2013a). Of these soils, the Guyton silt loam and Handsboro association soil are listed as hydric and minor inclusions of the Beauregard silt loam; Escambia loam, 0 to 2 percent slopes; Harleston fine sandy loam, 0 to 2 percent slopes; Poarch fine sandy loam, 0 to 2 percent slopes; and Saucier fine sandy loam, 0 to 2 percent slopes are listed as hydric (NRCS 2013b). Soils and their limitations are listed in Table 10-12.

Environmental Consequences

Native Landscape/Nursery Area

Construction would require the dewatering and grading of the 6.5-acre area along with the placement of fill material. Clearing and grubbing would use a track-mounted dozer to mitigate soil compaction; however, the soils would be disturbed. Vegetation would be planted to stabilize the soil. Any necessary fill material would be clean and would likely originate from the area. There would be impacts to the soil in this area; however, over time the soil should become more similar to existing wetland soils. Adverse soil impacts would be short term, minor and localized to the area of soil disturbance and placement of fill.

Table 10-12. Soils characteristics—Restoration Initiatives at the INFINITY Science Center.

SOIL TYPE	TEXTURE	PERMEABILITY	LIMITATIONS
Beauregard silt loam	Silt Loam (upper) Silty Clay Loam (lower)	Moderate (upper) Slow (lower)	Severe limitations for urban use due to wetness
Escambia loam, 0 to 2 percent slopes	Loam (upper) Clay Loam (lower)	Moderate (upper) Slow (lower)	Moderate limitations for urban use; severe limitations for septic tank fields
Guyton silt loam	Silt Loam (upper) Silty Clay Loam (lower)	Slow (upper) Slow (lower)	Severe limitations for urban use due to wetness
Handsboro association	Organic Material (upper) Organic Material and Loam	Moderate (upper) Moderately Slow (lower)	Severe limitations for urban use due to wetness
Harleston fine sandy loam, 0 to 2 percent slopes	Fine Sandy Loam (upper) Sandy Clay Loam (lower)	Moderate (upper) Moderately Slow (lower)	Moderate limitations for urban use due to wetness
Poarch fine sandy loam, 0 to 2 percent slopes	Fine Sandy Loam (upper)	Moderate (upper) Moderately Slow (lower)	Moderate limitations for urban use due to wetness
Poarch fine sandy loam, 2 to 5 percent slopes	Fine Sandy Loam (upper)	Moderate (upper) Moderately Slow (lower)	Moderate limitations for urban use due to wetness
Saucier fine sandy loam, 0 to 2 percent slopes	Sandy Loam (upper) Sandy Clay Loam (lower)	Moderate (upper) Slow (lower)	Moderate limitations for urban use due to wetness
Saucier fine sandy loam, 2 to 5 percent slopes	Sandy Loam (upper) Sandy Clay Loam (lower)	Moderate (upper) Slow (lower)	Moderate limitations for urban use due to wetness

Access Enhancement

Approximately 4.5 acres of existing stone parking lot would be covered with asphalt. There would be long-term, minor, adverse impacts on soils by completely covering the gravel surface with asphalt.

Heritage Trail-Possum Walk

During construction activities, the soil in the area of the pullovers and turnarounds would be compacted and covered with stone and asphalt. The existing stone on the Heritage Trail-Possum Walk and the soil on the pullovers and turnarounds would be covered with asphalt. There would be long-term, minor adverse impacts on approximately 2.6 acres of soils by completely covering the soil surface with asphalt.

Boardwalk and Outdoor Education Center

Heavy equipment would not be required off the trail for the construction. There would likely be some short-term adverse impacts to soils and sediment due to the construction of the education center and boardwalk and minor compaction by foot traffic and placement of supplies. Piers would be installed with a helical pier foundation system, which would avoid soil excavation and reduce the impact to vegetation.

Findings

During construction activities there would be short-term, minor and localized impacts to the area of soil disturbance and placement of fill. Installation of new pavements would cause long-term, minor, adverse impacts to approximately 7.1 acres of soils.

10.5.6.3 Hydrology and Water Quality

Affected Resources

Hydrology

The proposed project area is located within the Pearl River Watershed Basin and the Lower Pearl Sub-basin. This basin is characterized as estuarine, is bounded by salt marsh, and is tidally influenced. The waters are classified as "fish and wildlife use" streams by the MDEQ (MDEQ 2007) and are considered to be of fair to good water quality. Waters in this classification are intended for fishing and for the propagation of fish, aquatic life, and wildlife (NASA 2006).

The Lower Pearl River Watershed has a drainage area of approximately 8,760 square miles (PRBDD 2013) and includes portions of Washington, Hancock, Lamar, Marion, and Pearl River counties in Mississippi. Major tributaries within the Lower Pearl River Watershed include Yockanookany River, Lobutcha Creek, Strong River, and Bogue Chitto River.

The proposed project area is situated on mostly bottomlands east of the Pearl River and Bogue Homa (a tributary to the Pearl River). The Logtown, Mississippi, U.S. Geological Survey (USGS) quadrangle map shows that the site elevation ranges from approximately 5 ft. above mean sea level (msl) nearer to the Pearl River to 20 ft. above msl near INFINITY. Drainage from the project area is to the Bogue Homa tributary to the Pearl River. The Pearl River drains into the Gulf of Mexico approximately 15 river miles to the southeast of the project area.

Several aquifers can be traced through Hancock County, Mississippi. The area is underlain by fresh water-bearing, southward-tipping sands of the Miocene and Pliocene ages. Within these fresh water-bearing sands, one unconfined aquifer is found near the surface with ten or more confined aquifers at a greater depth. The fresh water-bearing zone is 600 to 900 meters (2,000 to 3,000 ft.) thick. Individual aquifers range from 30 to 140 meters (100 to 450 ft.) in thickness, with most measurements closer to 30 meters. The aquifers have plentiful, almost untapped supplies of freshwater (NASA 2006).

Water Quality

Mississippi's water quality standards specify the appropriate levels for which various water quality parameters or indicators support a water body's designated use(s). The Bogue Homa is the nearest named tributary and is not included on the 303(d) List of Impaired Water Bodies (MDEQ 2012). The project area has nearby streams designated for "fish and wildlife use" (MDEQ 2007) in the Pearl River Basin. Waters in the fish and wildlife classification are intended for fishing and for propagation of fish, aquatic life, and wildlife.

Floodplains

The project is located in Federal Emergency Management Agency (FEMA) designated Flood Zones according to the Flood Insurance Rate Maps (FIRMs) for Hancock County (FEMA 2013). The project is located in FIRM panel numbers 28045C0303D and 28045C0315D (both with an effective date of October 16, 2009). Specifically, the project area is located in Zones X and AE with base flood elevations ranging from 14 to 15 ft. Zone X indicates areas of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. Zone AE indicates areas that are subject to inundation by the 1-percent-annual-chance flood event. Mandatory flood insurance purchase requirements and floodplain management standards apply.

Wetlands

The main types of wetlands located throughout the project area are palustrine emergent, scrub shrub, and forested wetlands. A majority of the wetlands occur in the Pearl River floodplain, which is part of the Hancock County Marsh Preserve.

Palustrine Emergent Wetlands

The majority of the palustrine emergent wetlands near or within the project area are located in the Pearl River floodplain, which is adjacent to the Heritage Trail-Possum Walk (Figure 10-8). Dominant species of this type of wetland generally include cattails (*Typha* spp.) and rushes (*Juncus* spp.). These areas are seasonally or permanently flooded by shallow water resulting from precipitation, low elevation, and a high water table. Trail users would have exposure to a view of the expansive marsh from the Outdoor Education Center.

Palustrine Forested/Scrub Shrub Wetlands

Palustrine forested/scrub shrub wetlands occur primarily in the floodplains of the Pearl River and the Bogue Houma and tributaries. Dominant species include bald cypress (*Taxodium distichum*), pond cypress, and water tupelo (*Nyssa aquatic*). Black willow (*Salix nigra*), palmetto (*Sabal minor*), buttonbush (*Cephalanthus occidentalis*), poison ivy (*Toxicodendron radicans*), honeysuckle (*Lonicera japonica*), and grapes (*Vitis* sp.) are dominant species in the understory. The areas are seasonally or permanently flooded by shallow water. Specific types of palustrine forested/scrub shrub wetlands that could be located in the project area include cypress swamp, bayhead swamps, and bottomland pine flatwoods.

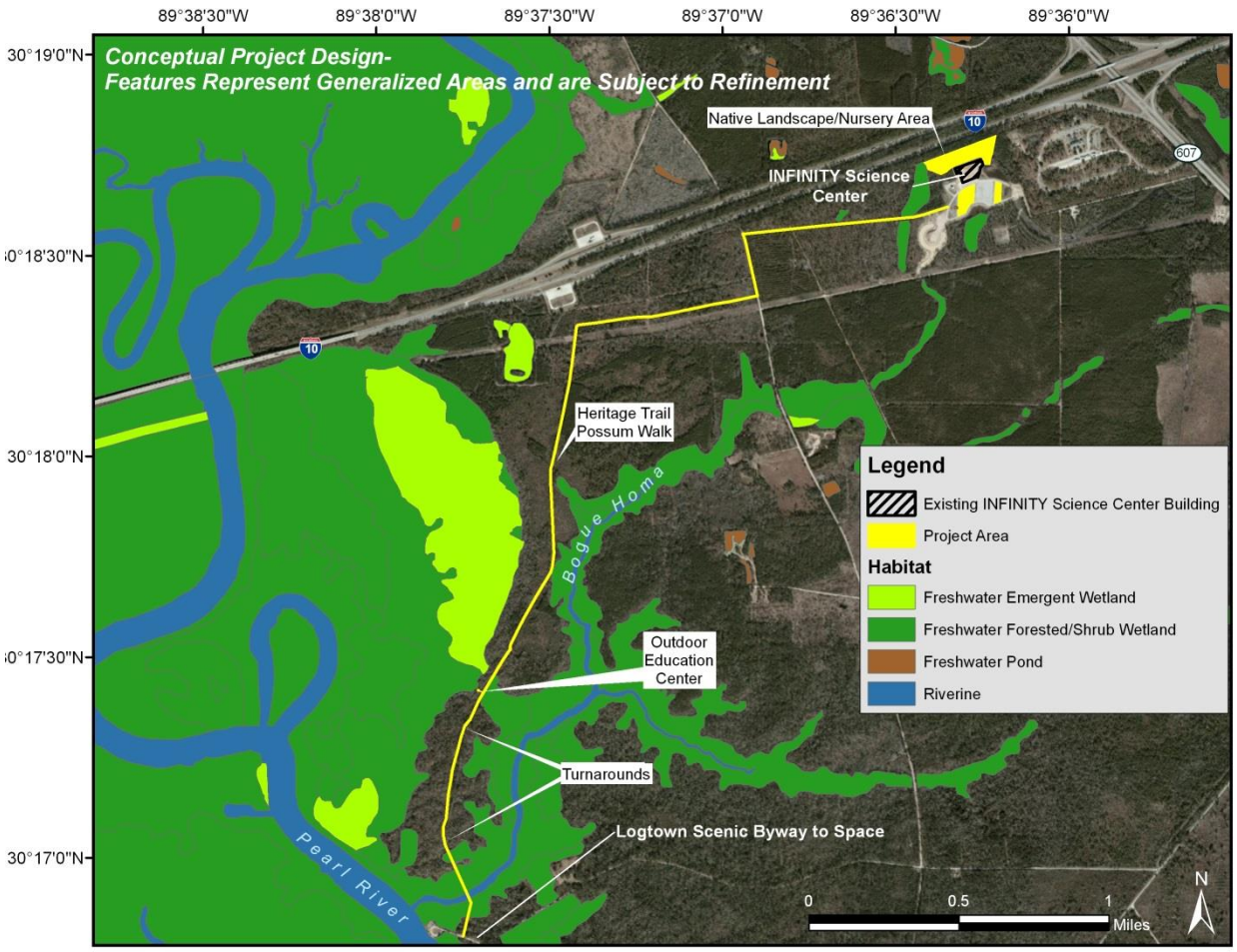

Figure 10-8. Wetlands–Restoration Initiatives at the INFINITY Science Center.

- Cypress swamps are dominated by bald cypress and water tupelo. Cypress swamps are heavily influenced by fire or times of drought. After a fire or drought, which regresses other vegetation, cypress trees reestablish very quickly. A cypress swamp can be inundated with shallow water for an extended period of time.
- Bayhead swamps are located adjacent to creeks and in drainages or depressions in flatwoods. These swamps can be seasonally or semi-permanently flooded. The dominant species include sweet bay magnolia (*Magnolia virginiana*), swamp blackgum (*Nyssa sylvatica*), laurel oak (*Quercus laurifolia*), red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), and bald cypress.
- Pine flatwoods are dominated by loblolly pine (*Pinus taeda*), southern red oak (*Quercus rubra*), and post oak (*Quercus stellata*). They are generally open park-like areas. Low areas within pine flatwoods could contain enough hydrology to be considered a wetland.

Trail users would have a view of the forested wetlands/scrub shrub wetlands on the Pearl River and could traverse the Bogue Houma floodplain on the existing Heritage Trail-Possum Walk boardwalk.

Near INFINITY, there are approximately 3.5 acres of emergent and scrub shrub wetlands between INFINITY and Interstate 10 where the native landscape/nursery area would be constructed. These wetlands were forested at one point and included vegetation typical of a pine flatwood. They have since

been altered as a permitted activity during the construction of INFINITY to increase the viewshed of the facility. The vegetation now consists of cattails, bulrushes, and other vegetation typical of palustrine emergent and scrub shrub wetland in the area. The hydrology for these wetlands is primarily surface water runoff from surrounding topography into the low elevation of the wetlands. The hydrology is also influenced by containment due to road and dummy line railroad embankments. These embankments impound water in an area and prevent the water from spreading out evenly across the landscape.

The Heritage Trail-Possum Walk was recently constructed and consists of crushed limestone placed between railroad timbers. The existing trail extends approximately 3.1 miles from the west side of the INFINITY Science Center to the south near bayhead swamp, cypress swamp, pine flatwoods, and other wetlands as well as forested upland and previously disturbed wetlands. The trail turnaround has been designed to avoid wetlands and would be placed on uplands. However, the boardwalk and Outdoor Education Center are planned in an area that would include cypress swamp.

Environmental Consequences

Hydrology

Grading in the area of the native landscape/nursery area would include small impoundments in the existing wetland area. The site modifications would result in detention of localized runoff in small open water impoundments within the native landscape/nursery area. There would be minor, long-term, adverse impacts to hydrology in the native landscape/nursery area.

The INFINITY Science Center access enhancement would create 4.5 acres of impervious asphalt. Paving would increase the rate of runoff, which is currently routed to an existing 3-acre stormwater basin (Figure 10-8) where it would infiltrate into the ground. The paving of the trail would also result in a slight increase in the rate of runoff by creating approximately 2.6 acres of asphalt-paved trail. This runoff would drain directly to the impervious areas adjacent to the trail. The increased runoff rate would be managed in the vicinity of parking area improvements and throughout the 2.9-mile trail distance and would be a minor modification to current hydrologic patterns. There would be a minor, long-term impact to hydrology in the project area.

Water Quality

Suspended sediment in stormwater runoff would occur as a result of grading in the native landscape/nursery area at least until the area is colonized by vegetation. This would result in a short-term, minor, adverse impact.

The turnaround areas would require grading of approximately 0.02 acre. Sediment transport in stormwater would be a minor, short-term impact, at least until this area is vegetated.

Installation of the boardwalk and Outdoor Education Center would result in short-term, minor turbidity in the cypress swamp. The proposed methodology for installation of the boardwalk would include a helical pier system. This would minimize water quality impacts and would not require traditional or vibratory pile driving. Additionally, BMPs would be implemented to minimize short-term sediment transport and to prevent sedimentation and pollution in wetlands. Best management practices include, but are not limited to, the use of sediment trapping techniques (such as silt fences and barriers), refueling and maintenance of equipment in uplands, and the use of non-creosote materials.

A total of 7.0 acres of grading would result in minor, short-term adverse impacts to water quality. A Construction General Permit would be required as disturbance would exceed 5.0 acre. During operations, stormwater runoff from the paved parking area would drain into the stormwater basin where it would infiltrate into the groundwater. Similarly, runoff from the trail would drain by overland sheet flow. Some runoff would percolate into the soils/pervious areas and some would collect in nearby drainage channels. Impacts from typical contaminants in the roadway runoff would be long term, minor, and adverse.

Other potential water quality impacts could be fluids (oil, gas, lubricant) from construction equipment and vehicles that could leak into the groundwater. A stormwater pollution prevention plan (SWPPP) would be prepared and erosion, sedimentation, and stormwater runoff would be managed in accordance with MDEQ stormwater requirements.

Floodplains

A portion of the Heritage Trail-Possum Walk, trail turnaround, boardwalk, and Outdoor Education Center are located in the 100-year floodplain. Paving of the trail would increase the amount of impervious surface in the area, potentially increasing the rate of stormwater runoff draining to the nearby drainage channels. The project would not appreciably increase flooding in the area.

Wetlands

The following table displays the project elements and the potential USACE authorization required for impacts to wetlands (Table 10-13).

Native Landscape/Nursery Area

This facility would likely impact palustrine emergent wetlands that are dominated by cattails and bulrushes. The project footprint is 6.5 acres. The estimated acreage that would be impacted would be 3.5 acres. These impacts were permitted by the Vicksburg District under General Permit #CELMK-OD-FE 14-GPD-53. Compensatory mitigation would be completed in accordance with 14 C.F.R. 1216.205. The impacts would be long term, minor, and adverse.

Heritage Trail-Possum Walk

Paving of the trail could result in impacts to palustrine emergent, scrub shrub, or forested wetlands. Construction activities could disturb the vegetation adjacent to the trail due to movement of construction equipment; however, the paving would be done over already-constructed trail, so impacts to wetlands would be anticipated but would be avoided to the extent possible. Minimal impacts to bayhead swamp, cypress swamp, and pine flatwoods are possible. Any impacts to wetlands as a result of this project element could require authorization from the USACE. In order to comply with a Section 404 of the Clean Water Act, all of the general conditions for the permit must be met. The conditions include, but are not limited to, guidance and BMPs concerning disrupting aquatic life movement, work within the 100-year floodplain, and sediment and erosion controls.

Table 10-13. Project element wetland considerations—Restoration Initiatives at INFINITY Science Center.

PROJECT FEATURE	HABITAT	PROJECT FOOTPRINT	ESTIMATED WETLAND ACREAGE	USACE AUTHORIZATION
Native Landscape/Nursery Area	Palustrine Emergent Wetlands	6.5 acres	3.5 acres	Authorized by General Permit 53
Heritage Trail-Possum Walk/Trail Turnarounds	Upland/Wetlands	2.9 miles; 2.48 acres	Less than 0.49 acre total and per crossing	Authorization for potential wetland crossings
Boardwalk and Outdoor Education Center	Cypress Swamp	0.05 acre	0.05 acre	for pile placement to support boardwalk and Outdoor Education Center in a wetland setting

Trail Turnaround

Trail pullovers would be placed in uplands as to avoid wetlands. This would be confirmed prior to construction by the acquisition of an approved jurisdictional determination from the USACE.

Boardwalk and Outdoor Education Center

Impacted wetlands would include impacts to palustrine forested wetlands, namely the cypress swamp in the Pearl River floodplain. The project footprint is 0.05 acre. The construction would shade vegetation under the pier and boardwalks, but the shading would be minimized by appropriate material that would allow light penetration to the marsh. In addition, the facility would be located at the interface of the cypress swamp and marsh in the Hancock County Marsh Preserve. There would be some disturbance to vegetation in the immediate area of each feature due to movement of construction equipment. There would be no fragmentation of vegetative communities; therefore, short-term construction impacts and long-term filling impacts would be minor where wetlands are present.

Prior to all construction activities, coordination with USACE would be conducted to determine the extent of the wetlands and potential impacts and to secure authorization for proposed wetland fill and in-water activities. Hancock County is within the Mississippi Coastal Zone. Impacts to wetlands within this zone also require a Mississippi Coastal Wetland Protection Act Permit and coordination with the MDMR. Under the Coastal Zone Management Act of 1972, selected restoration projects must be consistent to the maximum extent practicable with the federally-approved coastal management programs for the states in which the projects are to be conducted. On December 12, 2013, the Federal Trustees submitted a consistency determination to the MDMR for this project for appropriate state reviews coincident with public review of the Phase III DERP/ER. On February 4, 2014, the MDMR responded and concurred with the federal determination for the project for purposes of finalizing this early restoration plan (Miller 2014).

Minor, long-term, adverse impacts to hydrology would be expected. Water quality impacts would be minor and short term. During operation, long-term, minor, adverse water quality impacts would occur as a result of typical roadway runoff. There would be no increase in flooding as a result of projects. There would be minor, short-term and long-term impacts to palustrine emergent, scrub shrub, and forested wetlands, although impacts would be mitigated through appropriate measures. Coordination

with USACE and MDMR would be conducted to determine the wetland impacts and to secure proper authorizations. The general and regional conditions of all USACE and MDMR permits would be adhered to.

10.5.6.4 Air Quality and Greenhouse Gas Emissions

Affected Resources

The U.S. Environmental Protection Agency (EPA) defines ambient air in 40 C.F.R. Part 50 as "that portion of the atmosphere, external to buildings, to which the general public has access." In compliance with the 1970 Clean Air Act (CAA) and the 1977 and 1990 Clean Air Act Amendments (CAAA), the EPA has promulgated National Ambient Air Quality Standards (NAAQS). Under the CAA, the EPA establishes primary and secondary air quality standards. Primary air quality standards protect the public health, including the health of "sensitive populations, such as people with asthma, children, and older adults". Secondary air quality standards protect public welfare by promoting ecosystems health, and by preventing decreased visibility, and damage to crops and buildings. The EPA has set NAAQS for the following six criteria pollutants: ozone, particulate matter (PM 2.5 and 10), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and lead.

Air Quality

Mississippi has adopted these federal standards (Table 10-14). According to MDEQ, Hancock County and the entire state of Mississippi are classified as in attainment, meaning criteria air pollutants do not exceed the NAAQS.

Greenhouse Gas Emissions

Greenhouse Gases (GHGs) are chemical compounds found in the earth's atmosphere that absorb and trap infrared radiation as heat. Global atmospheric GHG concentrations are a product of continuous emission (release) and removal (storage) of GHGs over time. In the natural environment, this release and storage is largely cyclical. For instance, through the process of photosynthesis, plants capture atmospheric carbon as they grow and store it in the form of sugars. Human activities such as deforestation, soil disturbance, and burning of fossil fuels disrupt the natural cycle by increasing the GHG emission rate over the storage rate, which results in a net increase of GHGs in the atmosphere. The principal GHGs emitted into the atmosphere through human activities are CO_2, methane, nitrous oxide, and fluorinated gases, such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (EPA 2012). CO_2 is the major GHG emitted, and the burning of fossil fuels accounts for 81 percent of all U.S. GHG emissions (EPA 2012).

Table 10-14. State and federal ambient standards for criteria air pollutants.

POLLUTANT	AVERAGING PERIOD	STATE AND FEDERAL PRIMARY STANDARD
Ozone	8-hour	0.075 ppm
	1-hour (daily max.)	0.12 ppm
PM2.5	Annual (arithmetic mean)	15.0 µg/m^3
	24-hour	35 µg/m^3
PM10	Annual (arithmetic mean)	NA
	24-hour	150 µg/m^3
Carbon Monoxide	8-hour	9 ppm
	1-hour	35 ppm
Nitrogen Dioxide	Annual (arithmetic mean)	0.053 ppm
	1-hour	0.100 ppm
Sulfur Dioxide	Annual (arithmetic mean)	0.03 ppm
	24-hour	0.14 ppm
	1-hour (per annum)	NA
	1-hour (per 7 days)	NA
	5-minute	NA
Lead	Rolling 3-month average	0.15 µg/m^3
	Quarterly average	1.5 µg/m^3
Total Suspended Particulates	Annual (geometric mean)	NA
	24-hour	NA

Environmental Consequences

Air Quality

Project implementation would require the use of heavy equipment, which could temporarily lead to air quality impacts from equipment exhaust. The construction of the proposed project would also cause short-term fugitive dust, although dust would be controlled with water spray to the extent feasible.

The production of asphalt during the paving of the parking lot and Heritage Trail-Possum Walk would release small quantities of various volatile organic compounds (VOC) such as hazardous air pollutants (HAP) and aerosols into the atmosphere. No air quality permits are required for this type of project and violations of state air quality standards are not expected.

Greenhouse Gas Emissions

The use of gasoline- and diesel-powered construction vehicles and equipment, including cars, trucks, trackhoes, paving machines, gators, generators, concrete trucks and other equipment would contribute to an increase in GHG emissions. Table 10-15 details the construction equipment needed to complete the project, the total hours used for each type of equipment, and the emissions resulting from the use of equipment.

Based on the assumptions detailed in Table 10-15, the project would generate approximately 653.22 metric tons of GHGs over the duration of all phases. The following mitigation measures have been identified to reduce or eliminate GHG emissions from the project.

- Shut down idling construction equipment, if feasible.
- Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.

- Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
- Encourage the use of alternative fuels or power sources for generators at construction sites, such as propane or solar power, or use electrical power where practicable.

Considering projected GHG emissions and the incorporation of mitigation measures, the project would have short-term minor impacts but no long-term impacts on GHGs.

Table 10-15. Greenhouse gas impacts—Restoration Initiatives at INFINITY Science Center.

EQUIPMENT DESCRIPTION	TOTAL HOURS USED	CO_2 FACTOR MT*/100HRS	CO_2 (MT)	CH_4 FACTOR MT/100HRS	CH_4 (MT)	NO_2 FACTOR-MT/100HRS	NO_2 (MT)	TOTAL CO_2 (MT)
Bobcat / Loader (T-300 Series)	1704	2.65	45.16	0.90	15.34	10.60	180.62	241.12
Dump Trucks (tandem)	2119.6	1.70	36.03	0.50	10.60	7.20	152.61	199.24
Concrete Trucks (redi mix)	64	1.70	1.09	0.50	0.32	7.20	4.61	6.02
Pick-Up Truck	904	1.10	9.94	0.35	3.16	4.40	39.78	52.88
Trackhoe (300 series)	78	2.55	1.99	0.85	0.66	10.20	7.96	10.61
Concrete Pump Truck	4	2.55	0.10	0.85	0.03	10.20	0.41	0.54
Moto Grader (H-6 Series)	12	2.25	0.27	0.65	0.08	9	1.08	1.43
Paving Machine	236.8	2	4.74	0.50	1.18	8	18.94	24.86
Smooth Drum Roller	187.2	2	3.74	0.50	0.94	8	14.98	19.66
Multi Tire Roller	20.8	2	0.42	0.50	0.10	8	1.66	2.18
"Gator" 4 wheelers	960	1.35	12.96	0.40	3.84	5.75	55.20	72.00
Georgia Buggies	56	1.35	0.76	0.40	0.22	5.75	3.22	4.20
Generators (small trailer mount)	480	0.85	4.08	0.25	1.20	2.75	13.20	18.48
Total	**6826.4**							**653.22**
*MT = metric tons								

10.5.6.5 Noise

Affected Resources

The Noise Control Act of 1972 (42 U.S.C. 4901 to 4918) was enacted to establish noise control standards and to regulate noise emissions from commercial products such as transportation and construction equipment. The standard measurement unit of noise is the decibel (dB), which represents the acoustical energy present. Noise levels are measured in A-weighted decibels (dBA), a logarithmic scale which approaches the sensitivity of the human ear across the frequency spectrum. A 3-dB increase is equivalent to doubling the sound pressure level, but is barely perceptible to the human ear. Table 10-16 presents some familiar sounds and their decibel levels.

Current noise at the proposed native landscape/nursery and parking lot access improvement sites consists mostly of traffic noise from Interstate 10. Other noise is typical of an interstate rest area. Noise

at the proposed Heritage Trail-Possum Walk paving, trail turnarounds, boardwalk, and Outdoor Education Center is consistent with natural upland and wetland habitat. Receptors to noise consist of visitors to INFINITY and wildlife. There are no residential buildings or other types of human developments in the project area.

Table 10-16. Familiar sounds and their decibel levels (dB).

SOUND	DECIBEL LEVEL (DB)
Whisper	30
Normal Conversation	50 – 65
Vacuum Cleaner at 10 ft.	70
Midtown Manhattan Traffic Noise	70 – 85
Lawnmower	85 – 90
Train	100
Nearby Jet Takeoff	130

Environmental Consequences

Instances of increased noise are expected during construction due to the use of construction equipment. Adverse construction noise impacts would be short term, and minor.

Noise from operations at the INFINITY Science Center, including parking, would be consistent with current noise levels. Additional noise impacts after construction would result from increased use of the Heritage Trail-Possum Walk, boardwalk, and Outdoor Education Center including vehicular (mostly golf cart) traffic on the trails. The noise would be generated during daytime hours and is not expected to alter the activities of fauna that utilize the area. Additional noise would be caused by maintenance activities. Appropriate BMPs would be employed to prevent, mitigate, and control potential impacts from noise.

There would be only short-term, minor adverse noise impacts during construction. Long-term, minor, noise impacts to wildlife from additional visitors along the Heritage Trail-Possum Walk and at the Outdoor Education Center would be minor as well.

10.5.6.6 Biological Environment

Living Coastal and Marine Resources

Flora

Affected Resources

The vegetative communities of the native landscaping/nursery area include typical vegetation found in palustrine emergent wetland habitat and maintained landscape in Hancock County. The vegetation includes a mix of cattails and bulrushes in the wetland habitat. The adjacent vicinity of these project areas is generally maintained by mowing and other standard landscaping practices. The vegetation directly surrounding the parking lot area consists of mowed lawn.

The vegetative communities of the Heritage Trail-Possum Walk improvements, trail turnaround, boardwalk, and Outdoor Education Center are typical for the region and include upland habitat and

freshwater emergent, forested and scrub shrub wetlands. These project elements are located in areas characterized by pine and mixed bottomland hardwood species. The dominant species found in bottomland hardwood communities are oaks, black gum, swamp tupelo, and pond cypress. The understory includes ash species, black willow, red maple, poison ivy, honeysuckle, and grapes. Very few grass or forbs (herbs other than grass) species occur in these communities (NASA 2006).

Environmental Consequences

There would be limited adverse impacts to vegetation as a result of the native landscaping/nursery area, parking lot paving, or Heritage Trail-Possum Walk improvements since the clearing for the majority of these areas has already been completed.

The trail turnaround, boardwalk, and Outdoor Education Center would require some clearing and grubbing of existing vegetation. The areas of bottomland vegetation affected from clearing and grubbing would be approximately 0.02 acre for the trail turnaround, 0.01 acre for the boardwalk, and 0.4 acre for the Outdoor Education Center. Best management practices would be implemented, as appropriate, and would include, but would not be limited to, removing the minimum amount of vegetation necessary, using well-maintained tools to prevent damage when pruning adjacent or overhanging vegetation and reducing soil compaction that would prevent regrowth of vegetation by minimizing the amount of heavy equipment.

Adverse impacts to vegetation from clearing and grubbing would be long term and minor for the trail turnaround, boardwalk, and Outdoor Education Center project elements. Impacts to wetlands were addressed in Section 3.1.2.

Invasive Species

Affected Resources

The potential introduction of terrestrial and aquatic non-native invasive species of plants, animals, and microbes is a concern for any proposed project. Non-native invasive species could alter existing terrestrial or aquatic ecosystems, may cause economic damages and losses, and are frequently the second most common reason for protecting species under the Endangered Species Act. The species that are or may become introduced, established, and invasive are difficult to identify. The analysis focuses on pathway control or actions/mechanisms that may be taken or implemented to prevent the spread of invasive species on site or introduction of species to the site.

Surveys have not been conducted to determine if invasive species are present. The project area, throughout its history, has been modified by fill, recreational use, and other manmade disturbances. Invasive species, to some degree, may be present.

Environmental Consequences

BMPs to prevent the spread of invasive species through common pathways will be implemented thereby minimizing the potential for short and long-term adverse impacts from the proposed project. The implementation of these BMPs meets the spirit and intent of EO 13112. This project involves the construction of an Outdoor Education Center, trail paving, parking lot paving, and grading in a native landscape/nursery area. A variety of terrestrial construction equipment would be used. Each of these actions and pieces of equipment serve as a potential pathway to introduce or spread invasive species.

To ensure these pathways are "broken" and do not spread or introduce species the following BMPs will be implemented: all equipment to be used during the project, including personal gear, will be inspected and cleaned such that there is no observable presence of mud, seeds, vegetation, insects, and other species. Native vegetation will be used for planting. Prior to bringing vegetation to the project site, vegetation will be inspected and "non-target[6]" species would be removed. Due to the implementation of BMPs, the Trustees expect risk from invasive species introduction and spread to be short term and minor.

Fauna

Affected Resources

The project area consists of habitat suitable for deer, turkey, and quail in the woodlands and various songbirds in the open areas such as grasslands, forest edges, and mowed lawns. The area is partially located adjacent to Interstate 10, which fragments existing habitats and creates noise and hazards to wildlife.

The *John C. Stennis Space Center Environmental Resources Document* (NASA 2012) was used to extrapolate fauna that could be present on the project site. The NASA 2012 report includes an area approximately three miles to the north of the project.

North of the project area, a total of 25 amphibian species utilize poorly drained lowlands with a vegetative cover of pine and mixed hardwood and could be found within the project area. Typical amphibians include frogs, toads, salamanders, and sirens. A total of 33 terrestrial and aquatic reptiles were documented in the NASA 2012 report. These included 14 species of snakes, six of lizards, and the alligator. A total of 25 mammals were documented in the NASA 2012 report. Thirty-five species of mammals including one bat were documented. Mammal species that are likely to occur at SSC, but were not documented in the NASA 2012 report, include shrews, bats, flying squirrels, mice, voles, rats, foxes, weasels, and minks. Habitat is limited in the area of project activities which includes a relatively disturbed area between Interstate 10 and the INFINITY Science Center, a parking lot, the Heritage Trail-Possum Walk (which is a cleared corridor through bottomland hardwoods), and a small area of impact in a cypress swamp.

Environmental Consequences

The project elements at INFINITY would disturb upland and bottomland areas utilized by an estimated 214 species including mammals, birds, reptiles, and amphibians.

The native landscape/nursery area would disturb palustrine emergent wetlands and mowed areas and the aquatic species that utilize those areas, but would be replaced by similar habitat; thus, the adverse impacts would be short term and minor.

The access improvements/paving of the parking lot area would result in short-term, minor, adverse impacts due to construction equipment noise potentially disturbing local fauna.

Most of the proposed trail paving would take place over the existing trail. However, a small amount of habitat on either side of the existing trail could potentially be disturbed. The construction of the trail

[6] A non-target species is any species that is present on the species of choice but is not desirable and should be removed.

turnaround, boardwalk, and Outdoor Education Center would be a minor disturbance to cypress/tupelo swamp and minor grading within forested upland. No tree removal is anticipated. This may cause temporary displacement of common wildlife such as deer, turkey, and quail into adjacent wooded areas.

There would be short-term, minor, adverse impacts to all species of fauna as a result of habitat intrusion and disturbance during construction of all project elements. The species are expected to avoid construction activities and return once construction activities cease. Long-term impacts to wildlife habitat from the additional presence of visitors along the Heritage Trail-Possum Walk and at the Outdoor Education Center would be considered minor.

Protected Species

Affected Resources

The U.S. Fish and Wildlife Service (USFWS) lists species as threatened or endangered when they meet criteria detailed under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. §1531 et seq.). Additionally, Mississippi Wildlife Fisheries and Parks (MWFP) identify and list protected species. Section 7(a)(2) of the ESA requires that each federal agency ensure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of those species. MBTA compliance and BGEPA compliance are discussed in this section.

Federally protected species that are known to occur or could occur in Hancock County are discussed in this section and are detailed in Table 10-17. However, only Louisiana quillwort, Louisiana black bear, black pine snake, and gopher tortoise have the potential to occur in the project area.

Table 10-17. Threatened, endangered, and candidate species in Hancock County, Mississippi.

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS	STATE STATUS	HABITAT
Birds				
Piping Plover	*Charadrius melodus*	Threatened	Endangered	Beaches and mudflats in southeastern coastal areas
Red Knot	*Calidris canutus rufa*	Proposed	--	Marine intertidal habitats including inlets, estuaries, and bays feeding in mud and sand flats on beaches and barrier islands
Ferns and Allies				
Louisiana Quillwort	*Isoetes louisianensis*	Endangered	--	Aquatic or wet habitats, mostly shallow streams in bottomland habitats (MDWFP 2001; HCBS 2012)
Mollusks				
Inflated Heelsplitter	*Potamilus inflatus*	Threatened	Endangered	Riverine, Lower Pearl River, Noxubee, and Tombigbee watersheds in areas with moderate to swift currents, riffle/shoals areas with stable bottoms of sandy gravel or firm mud, gravel, and cobble
Fishes				
Gulf Sturgeon	*Acipenser oxyrinchus desotoi*	Threatened	Endangered	Migrates from large freshwater coastal rivers to brackish and marine coastal bays and estuaries
Pearl Darter	*Percina aurora*	Candidate	Endangered	Rapids or riffles over gravel or bedrock substrata in slow to moderate currents (MDFWP 2001)
Mammals				
West Indian Manatee	*Trichechus manatus*	Endangered	Endangered	Fresh and salt water in large coastal rivers, bays, bayous and estuaries
Louisiana Black Bear	*Ursus americanus luteolus*	Threatened	Endangered	Bottomland hardwood forest; dispersal corridors
Reptiles				
Hawksbill Sea Turtle	*Eretmochelys imbricate*	Endangered	Endangered	Coral reefs, open ocean, bays, estuaries
Leatherback Sea Turtle	*Dermochelys coriacea*	Endangered	Endangered	Open ocean, coastal waters
Kemp's Ridley Sea Turtle	*Lepidochelys kempii*	Endangered	Endangered	Nearshore and inshore coastal waters, often in salt marshes; neritic zones with muddy or sandy substrate (NOAA Fisheries 2013)
Green Sea Turtle	*Chelonia mydas*	Threatened	Endangered	Shallow coastal waters with SAV and algae, nests on open beaches
Loggerhead Sea Turtle	*Caretta caretta*	Threatened	Endangered	Open ocean; also inshore areas, bays, salt marshes, ship channels and mouths of large rivers
Ringed Map Turtle	*Graptemys oculifera*	Threatened	Endangered	Riverine, river stretches with moderate currents, abundant basking sites, and sand bars for nesting (MDWFP 2001; USFWS 2010)
Gopher Tortoise	*Gopherus Polyphemus*	Threatened	Endangered	Open canopy longleaf pine/scrub oak habitats with well-drained sandy soils and ground cover (USFWS 2010; HCBS 2012)
Black Pine Snake	Pituophis melanoleucus lodingi	Candidate	Endangered	Open canopy longleaf pine/hardwood habitats with well-drained sandy soils and ground cover (MDWFP 2001; USFWS 2010)

Ferns and Allies

Louisiana Quillwort (*Isoetes louisianensis*): The Louisiana quillwort has been observed in 10 counties in 174 streams within 17 watersheds (USFWS 2012) throughout the state of Mississippi with the largest colony found in the DeSoto National Forest (USFWS 2012). This species is found in all three coastal Mississippi counties including Hancock County (MDWFP 2001; HCBS 2012; USFWS 2012) although none have been found near the proposed project area (MDWFP 2001). In coastal Mississippi, Louisiana quillwort habitat includes perennial streams and banks in bottomland hardwood habitats likely with bald cypress and possibly the presence of stream macrophytes such as *Sparganium* spp. and *Orontium* spp. (USFWS 2012). Earlier sources indicate that suitable habitat for this species consists of sand or gravel bars located in intermittent streams and associated riparian areas (MDWFP 2001; HCBS 2012). Louisiana quillwort is sensitive to changes in hydrology, sedimentation, and alterations to the surrounding overstory (USFWS 2010).

In 2012, a visual survey was performed within 50 ft. of the existing Heritage Trail-Possum Walk (HCBS 2012). This survey found no occurrence of the Louisiana quillwort. Suitable habitat was found for the species in areas adjacent to the survey area, although the location and details of this habitat were not reported (HCBS 2012). The footprint for construction of the Outdoor Education Center, turnarounds and paving of the existing Heritage Trail-Possum Walk does not include the Bogue Homa, which is the closest stream. The proposed locations for the trail and Outdoor Education Center are located in an area that contains cypress swamp and some standing water. Additionally, as reported in the General Permit 53 (CELMK-OD-FE14-GPD; September 25, 2012), 2010 and 2012 surveys within the footprint of the native landscaping/nursery did not report any Louisiana quillwort.

Mammals

Louisiana Black Bear (*Ursus americana luteolus*): The Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) estimates the Mississippi population of Louisiana black bear to be around 50 animals. Most of the bears observed in Mississippi are believed to be males that have traveled from other states; only one was reported sighted in Hancock County from 1996 – 2006 (Young 2006). This sighting was in northern Hancock County in the Pearl River drainage system. Large contiguous bottomland forest habitat is preferred by the species and does exist adjacent to the proposed project elements. However, the bears typically prefer larger tracts of bottomland forest with no human disturbance and having good cover (Young 2006). The proposed project areas do not have hardwood forest that is preferred by Louisiana black bear. Surveys in the area north of the existing INFINITY building and around the existing Heritage Trail-Possum Walk resulted in no observations of Louisiana black bears (HCBS 2012). There is no known breeding population of bears in this area, and any presence would likely be transitory animals following the river corridor for foraging and cover.

Reptiles

Black Pine Snake (*Pituophis melanoleucus lodingi*): Although the black pine snake range includes several Mississippi counties, there are no recent published reports of the species in Hancock County (MDWFP 2001; HCBS 2012). Studies have determined that black pine snake populations have decreased from historic levels; in Mississippi the species is most common in the DeSoto National Forest, to the north of the proposed project area (MDWFP 2001). Suitable habitat includes open canopy longleaf pine forest with herbaceous ground cover and well-drained sandy soils and, less so, hardwood forests

(USFWS 2010). Much of the habitat in the proposed project area is not suitable because of dense canopy cover or due to existing disturbance (HCBS 2012).

Gopher Tortoise (*Gopherus polyphemus*): The gopher tortoise uses similar habitat to the black pine snake. In 2012, a survey was performed for this species throughout all uplands within 20 ft. of the existing Heritage Trail-Possum Walk (HCBS 2012). This survey found no occurrence of the gopher tortoise or burrows. The habitat in the survey area was deemed unsuitable for gopher tortoises due to the dominance of dense tree and shrub cover and a minimal herbaceous layer.

Environmental Consequences

The Louisiana quillwort, Louisiana black bear, black pine snake, and gopher tortoise have the potential to occur in the project area and are discussed below.

Louisiana Quillwort (*Isoetes louisianensis*): Recent surveys found no occurrences of the Louisiana quillwort and no streams are found within the construction footprint; therefore, it is unlikely that implementation of the project would impact this species.

Louisiana Black Bear (*Ursus americana luteolus*): There would be no expected impacts to Louisiana black bear because the proposed construction activities would occur in project areas that do not have the large contiguous hardwood forest preferred by Louisiana black bear. The project is not expected to impact any migratory movement or foraging of the species.

Black Pine Snake (*Pituophis melanoleucus lodingi*): There would be no expected impacts to black pine snake because of lack of suitable habitat within the project area.

Gopher Tortoise (*Gopherus polyphemus*): Because of the lack of suitable habitat within the proposed project area for the gopher tortoise, no impacts are expected during project construction.

Findings: ESA Section 7 consultations (McClain 2014) were completed with USFWS on January 24, 2014.The USFWS concurred that the project, as proposed, may affect, but is not likely to adversely affect the Louisiana black bear (*Ursus americanus pallas)* and no effects would occur to other listed, proposed, or candidate species considered. The Trustees intend to implement measures that are required by the USFWS and NMFS and would consider additional practices that may emerge from additional regulatory consultations. These measures resulting from the consultations include:

- Measures to protect Gulf Sturgeon. No in-water work will occur in Gulf Sturgeon critical habitat in the Pearl River. All available construction best management practices will be used to prevent and control any runoff to ensure none reaches the Pearl River.
- Measures to protect Louisiana black bear. All workers will be informed of the potential for Louisiana black bear presence. If this species uses the project area it will likely be transitory in nature and likely will occur to the west of the proposed project area within the river corridor. If any bears are found to be present in the immediate project area during project activities, construction will be halted until the species move away from the project area. Construction best management practices (i.e. minimize noise and habitat disturbance) will be used to avoid or minimize any impacts during construction.

Migratory Birds

Affected Resources

A total of 142 bird species were documented in the vicinity of the INFINITY projects (NASA 2012). The waters and surrounding wetlands of the project area are part of the Mississippi Flyway, which would bring numerous species of migratory birds including waterfowl and shorebirds through the area. The upland areas as well as the wetlands scattered throughout the project area such as estuarine marsh, emergent/scrub shrub, shoreline emergent, and shallow open waters could support various species of migrating birds for refuge, feeding, or wintering. Migratory bird guilds that could have presence in the INFINITY project area include wading birds, waterfowl, raptors, rails and coots, landbirds, and doves and pigeons (see Table 10-18).

Table 10-18. Migratory bird guilds anticipated in the Restoration Initiatives at INFINITY Science Center project area.

SPECIES	BEHAVIOR	SPECIES/HABITAT IMPACTS
Wading birds (herons, egrets, ibises)	Foraging, feeding, resting, roosting	Wading birds primarily forage and feed at the water's edge. The project would not disturb any open water area. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting if they are affected by construction activities. These birds primarily roost in trees or shrubs (e.g. pines, *Baccharis*). The construction of the boardwalk and Outdoor Education Center would occur in cypress tupelo swamp. Trees would be avoided to the extent possible during construction.
Waterfowl (ducks, loons, and grebes)	Foraging, feeding, resting, roosting,	Waterfowl may forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily roost and nest in low vegetation.
Raptors (osprey, hawks, owls)	Foraging, feeding, resting, roosting	Raptors forage, feed, and rest in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. Most raptors are aerial foragers and soar long distances in search of food. Locations where these birds roost and nest could be in the project area.
Rails and Coots	Foraging, feeding, resting, roosting,	Rails and coots forage, feed, rest, or roost in the project area. As such, they may be impacted locally and temporarily by the project. However, they are most likely to favor marshy areas. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting if disturbed by the project. These birds primarily roost and nest in marshes, which are in and near the project area.
Landbirds (white-eyed vireo, great crested flycatcher, indigo bunting)	Breeding, foraging, feeding, roosting	Various species of migratory birds in Mississippi use upland and freshwater wetland habitats including disturbed and human influenced areas. Breeding locations for these species could include open areas, open deciduous woodlands, shrub thickets, and forest edges especially near freshwater wetlands and waterbodies. The project area includes open disturbed areas with trees, grasses, shrubs, and other low vegetation as well as freshwater wetland depressions. Project activities would impact these types of habitat.
Doves and Pigeons	Foraging, feeding, roosting, resting	These species may use the upland habitat where trees and shrubs are available. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting.

Bald and Golden Eagle Protection Act

BGEPA of 1940 (16 U.S.C. 668-668c) prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. BGEPA provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." Golden eagles are not present along the Gulf Coast.

Environmental Consequences

The Trustee has reviewed the project site and determined that migratory bird nesting is not known and is possible. The MBTA requires the protection of all migratory bird species and protection of ecosystems of special importance to migratory birds against detrimental alteration, pollution, and other environmental degradation. Coordination under MBTA with the USFWS was completed on January 24, 2014. Due to the implementation of BMPs, no “take” is anticipated. Measures to avoid take are described below and no take under the ESA, MBTA or BGEPA is anticipated.

Pre-construction nesting surveys would be conducted and, if evidence of nesting is found, coordination with the USFWS would be initiated to develop and implement appropriate conservation measures.

Bald and Golden Eagle Protection Act

There are no golden eagles in the project area. No bald or golden eagles are known to nest within 660 ft. of the project area. Thus, no impacts to golden or bald eagles are anticipated. Coordination under BGEPA by the USFWS was completed on January 24, 2014. Due to the lack of nest near the project area, no “take” is anticipated.

10.5.6.7 Human Uses and Socioeconomics

Socioeconomics and Environmental Justice

Affected Resources

Socioeconomic resources combine the social resources and economic resources of the area. The social resources evaluation includes consideration such as potential changes in neighborhoods or community cohesion; affordable housing; changes in travel patterns and accessibility; impacts on community facilities; impacts on traffic safety/public safety; and impacts on any special groups such as elderly, handicapped, minority, and transit-dependent persons. The data in this section was compiled using the Census and American Factfinder websites (U.S. Census Bureau 2011 and 2012).

The population of Hancock County in year 2010 was 43,322 (Table 10-19). The project area is contained within Census Tract 304 in Hancock County with a population of 2,313.

Table 10-19. Populations of Mississippi, Hancock County, and Census Tract 304.

TOPIC	MISSISSIPPI		HANCOCK COUNTY		CENSUS TRACT 304	
2010 Total Population	**2,967,297**		**43,322**		**2,313**	
White alone	1,767,875	59.1%	38,564	88.4%	1,876	81.1%
Black or African American alone	1,094,596	37.0%	3,047	7.1%	348	15.0%
Native (American Indian, Alaska Native, Native Hawaiian. and Other Pacific Islander alone)	14,354	0.5%	177	0.5%	10	0.4%
Asian alone	25,807	0.9%	467	1.0%	12	0.5%
Some Other Race alone	22,642	1.3%	238	0.8%	14	0.6%
Two or More Races	31,426	1.1%	829	2.1%	53	2.3%

Table 10-20 lists employment information for Hancock County and County Census Tract 304. The top five industries in Hancock County in terms of employment are educational services, health care and social assistance (15.1 percent); construction (15.0 percent); arts, entertainment, and recreation, and accommodation and food services (13.3 percent); finance and insurance, and real estate and rental and leasing (9.4 percent); and professional, scientific, and management, and administrative and waste management services (9.0 percent). The percentage of unemployed is approximately 7.6 percent of the Hancock County citizens in the civilian labor force. The median household income is $42,591 and the per capita income is $22,596. The nearest medical facility in Hancock County is the Hancock Medical Center, located approximately 15.5 miles southwest of INFINITY. Bayside Fire Department is the closest fire department to INFINITY, and is located approximately 10 miles to the east.

Table 10-20. Selected economic characteristics of Hancock County and Census Tract 304.

	HANCOCK COUNTY	CENSUS TRACT 304, HANCOCK COUNTY
Civilian employed population 16 years and over	**17,265**	**692**
Agriculture, forestry, fishing and hunting, and mining	85 (0.5%)	0 (0%)
Construction	2,588 (15.0%)	121 (17.5%)
Manufacturing	1,238 (7.2%)	83 (12.0%)
Wholesale trade	314 (1.8%)	11 (1.6%)
Retail trade	1,400 (8.1%)	128 (18.5%)
Transportation and warehousing, and utilities	1,118 (6.5%)	43 (6.2%)
Information	63 (0.4%)	0 (0.0%)
Finance and insurance, and real estate and rental and leasing	1,619 (9.4%)	29 (4.2%)
Professional, scientific, and management, and administrative and waste management services	1,556 (9.0%)	3 (0.4%)
Educational services, and health care and social assistance	2,603 (15.1%)	155 (22.4%)
Arts, entertainment, and recreation, and accommodation and food services	2,295 (13.3%)	69 (10%)
Other services, except public administration	1,128 (6.5%)	28 (4.0%)
Public administration	1,258 (7.3%)	22 (3.2%)
% unemployed, civilian labor force	7.6%	11.2%
Median household income (dollars)	$42,591	$38,517
Per capita income (dollars)	$22,596	$18,445
Percentage of all people whose income in the past 12 months is below the poverty line	18.8%	9.7%

Environmental Consequences

There would be no anticipated adverse social, economic, health, or environmental impacts to local communities due to this project. The nearby communities would benefit by additional recreational and educational activities at INFINITY. In addition, there could be short-term and long-term benefits from this project due to temporary employment for local residents and businesses for the construction of the project. Long term, the expected increase in visitors to INFINITY would have benefits to some businesses such as lodging and restaurants in the greater vicinity of the project area.

Environmental Justice

The project is located adjacent to Highway 607 and Interstate 10 and is not adjacent to residential development. The project would not have disproportionately adverse impacts on minority or low-income populations.

10.5.6.8 Cultural Resources

Affected Resources

Cultural resources include historic properties listed in, or eligible for, listing in the National Register of Historic Places (36 C.F.R. §60[a-d]). The NHPA of 1966, as amended (16 U.S.C. §470[f]), defines an historic property as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register [of Historic Places]." This includes significant properties of traditional religious and/or cultural importance to Indian tribes. Historic properties include built resources (bridges, buildings, piers, etc.), archaeological sites, and Traditional Cultural Properties, which are significant for their association with practices or beliefs of a living community that are both fundamental to that community's history and a piece of the community's cultural identity. Although often associated with Native American traditions, such properties also may be important for their significance to ethnic groups or communities.

This project is currently being reviewed under Section 106 of the NHPA to identify any historic properties located within the project area and to evaluate whether the project would affect any historic properties. A Phase I cultural resource survey has been completed for the project site (R. Christopher Goodwin and Associates, 2014). A review of previously conducted cultural resource surveys and previously recorded archaeological sites was completed using the Mississippi Department of Archives and History (MDAH) data. There are four sites within one mile of the proposed project including a ceramic scatter, a shell midden, lithic scatter, and the Logtown linear corridor, which is currently the site of the Heritage Trail-Possum Walk. There were no historic resources identified in the Phase I cultural resource survey, that are eligible for listing on the National Register of Historic Places. The Phase I recommended no further study of the project area (R. Christopher Goodwin & Associates, 2014).

Environmental Consequences

The Logtown linear corridor has recently been evaluated and has been determined ineligible for listing on the National Register of Historic Places. A newly constructed 7-ft.-wide trail is centered in the corridor. Early restoration funds would be used to pave the trail, install turnarounds and pullovers, and to construct an Outdoor Education Center in the Logtown linear corridor. The National Historic Preservation Act of 1966 (NHPA) charges the federal government with considering the potential effects of its actions on the nation's cultural and historic resources. A complete review of this project under Section 106 of the NHPA is ongoing and would be completed prior to any project activities that would

restrict consideration of measures to avoid, minimize or mitigate any adverse effects on historic properties located within the project area. This project would be implemented in accordance with all applicable laws and regulations concerning the protection of cultural and historic resources.

10.5.6.9 Infrastructure

Affected Resources

The proposed project area is partially developed. Existing infrastructure includes roads, parks, trails, and INFINITY. Interstate 10 and Highway 607 serve the Mississippi Welcome Center area, located approximately 0.1 mile to the east of INFINITY. Highway 607 connects with U.S. Highway 90 approximately 6 miles southeast of the proposed site (NASA 2006).

Environmental Consequences

Underground utilities would be located prior to any construction activities. The project would not alter average traffic patterns. There would be no impacts to infrastructure anticipated for this project.

10.5.6.10 Land and Marine Management

Affected Resources

Surrounding land uses include mostly rural, undeveloped areas within the Stennis Space Center (SSC) buffer zone. The Mississippi Welcome Center area and INFINITY, as well as Interstate 10 and Highway 607, are the main developments and land uses of the immediate area. Pearlington is the closest residential neighborhood, located approximately 2.5 miles to the south of the project area. The perpetual restrictive easement of the SSC buffer zone prohibits any “maintenance or construction of dwellings and other buildings suitable for human habitation” (NASA 2012). Land uses within the buffer zone include wildlife management and nature preserve areas, mining (sand, gravel, clay), forestry and livestock operations, and recreation.

The northern extent of the Hancock County Marsh Preserve is located within the project area; it spans land from the Pearl River east to the Bogue Homa Creek and beyond (Figure 10-2). The Heritage Trail-Possum Walk intersects this preserve on the eastern side. It is designated as a Mississippi Coastal Preserve by the MDMR Gulf Ecological Management Site program. Lands within this Coastal Preserve are either privately, locally, state or federally owned. Much of the property is considered tidal wetlands and is already owned by the state (MDMR 2013). The 1972 Coastal Zone Management Act (CZMA), which provides for management of the nation's coastal resources and balances economic development with environmental conservation, governs the nature of land use development of the Hancock County Marsh. The overall program objectives of CZMA remain balanced to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone.” The MDMR typically issues coastal zone consistency as part of the Mississippi Wetland Protection Act permit process.

Environmental Consequences

Implementation of the project would not disrupt existing land use within the SSC buffer zone. The only restriction within this zone is human habitation and none is proposed for the project. Recreation is one of the existing land uses within the buffer zone and the INFINITY project area and implementation would enhance the recreational land use of the area. Implementation of the project would also not disrupt the land use of the Hancock County Marsh Preserve. The uses of land within Coastal Preserves are meant to both conserve coastal habitats as well as provide compatible human uses. The improvements to the

Heritage Trail-Possum Walk would enhance access to recreation within, and appreciation of, coastal wetlands and uplands. Therefore, there would be long-term beneficial impacts on land use within the Hancock County Marsh Preserve due to project implementation.

Construction of the Heritage Trail-Possum Walk, trail turnaround, boardwalk, and Outdoor Education Center would have long-term beneficial impacts, and is consistent with land management plans in the project area. Pursuant to the Coastal Zone Management Act of 1972, federal activities must be consistent to the maximum extent practicable with the federally approved coastal management programs for states where the activities would affect a coastal use or resource. Federal Trustees are submitting consistency determinations for state review coincident with public review of this document.

10.5.6.11 Aesthetics and Visual Resources

Affected Resources

The landscape in the vicinity of INFINITY consists of maintained landscape around the perimeter of the INFINITY Science Center. Between Interstate 10 and the INFINITY Science Center, the landscape is emergent wetland vegetation and remnant dummy line rail beds. The areas adjacent to the Heritage Trail-Possum Walk consist of upland pine forests, bottomland hardwoods, and freshwater wetlands. The trail system provides visitors with access to nature viewing in these areas. There are no designated protected viewsheds or historic resources in the vicinity of either of the project element areas.

Part of the viewshed of the southern portion of the proposed paving of the Heritage Trail-Possum Walk includes connection to the state of Mississippi designated scenic byway, the Logtown Scenic Byway to Space. This byway showcases scenic and historic resources such as the former Logtown settlement, the historic Logtown cemetery, and natural coastal and riverine habitats and environments. Project improvements would connect the lower Heritage Trail-Possum Walk south of the Bogue Houma to the Logtown Scenic Byway to Space.

Environmental Consequences

During construction, the presence of construction equipment in the project area would adversely affect the viewshed at the project element areas.

After construction is complete, the native landscape/nursery area would provide visitors another area for nature viewing. The paved Heritage Trail-Possum Walk would provide visitors easier access to nature viewing areas and would allow for a connection between the INFINITY Science Center facility and the existing Logtown Scenic Byway to Space. The boardwalk and Outdoor Education Center would expand upon current nature viewing areas.

The improvements to the Heritage Trail-Possum Walk would minimally change the viewshed of the trail from the Logtown Scenic Byway to Space. The surface of the trail would change from a more natural dirt trail to an asphalt-covered trail. However, the context of the trail and the landscape surrounding the trail would not change. The intrinsic scenic, natural, recreational, historical, and cultural qualities of the scenic byway, as well as user enjoyment and promotion of recreational and tourist opportunities of the scenic byway, would not be adversely affected, and in fact, would be enhanced through project implementation.

There would be short-term, minor, adverse aesthetic and visual impacts for visitors during construction of the project elements, but there would be long-term benefits by the creation of new nature viewing areas and increased accessibility.

10.5.6.12 Tourism and Recreational Use

Currently, INFINITY is a tourist attraction and houses a space gallery, an immersive theatre, educational exhibits, and rocket science activities at the nearby space center. New exhibits would be installed with Early Restoration funding. NASA (2012) predicts that the project would create a positive economic and educational impact on the Mississippi Gulf Coast (NASA 2012).

Environmental Consequences

During construction of the native landscape/nursery area, INFINITY Science Center access improvements, Heritage Trail-Possum Walk access improvements, trail turnaround, boardwalk, and Outdoor Education Center, some visitors' experience may be affected slightly by construction equipment and disturbed vegetation (noise and visual adverse consequences). In the long term, the project would have a beneficial impact as a result of the more extensive visitor experience (due to the new facility exhibits and increased access) than what is presently available.

Project impacts from increased visitor use could include littering and noise from individuals and school classes utilizing the Heritage Trail-Possum Walk, the Outdoor Education Center, and the Native Landscape Nursery Area. The impacts will be sporadic, minor and short-term in nature. INFINITY Science Center will be responsible for monitoring litter accumulation, litter removal and maintenance Heritage Trail Possum Walk, the Outdoor Education Center, and the Native Landscape Nursery Area.

Findings: Construction and increased visitor use activities would cause short-term, minor impacts. However, the project would have long-term benefits to tourism and recreational use.

10.5.6.13 Public Health and Safety

Affected Resources

INFINITY currently generates solid waste from facility operations and maintenance. The solid waste generated would consist of household-type wastes.

INFINITY adheres to Occupational Safety and Health Administration (OSHA) standards for protection of employees onsite. INFINITY also adheres to the SSC Safety and Health Procedures and Guidelines, which details specific emergency procedures for responding to natural and human-generated emergencies.

Environmental Consequences

Increases in solid waste as a result of expected growth would be addressed by appropriate waste collection and maintenance activities. NASA is committed to pollution prevention, including recycling and reuse activities, to achieve waste minimization goals. Recycling collection areas would be established for paper, cardboard, aluminum cans and plastic bottles, as appropriate.

There are no anticipated adverse impacts to public health and safety due to construction or operation of the project. The increased access to the Heritage Trail-Possum Walk would provide visitors an area for exercise.

No impacts to public health are anticipated.

10.5.7 Summary and Next Steps

The project is intended to restore lost recreational use by providing increased access to coastal estuarine habitats, wildlife viewing areas, and educational features. The project would enhance and expand a state-of-the-art interactive science, education, interpretive, and research center for use by visitors seeking to experience and learn about the coastal natural resources of the Gulf of Mexico. The project also would serve as a launching point for a comprehensive scenic byway trail system that can take visitors to beaches and tidal coastal estuarine environments.

NEPA analysis of the environmental consequences suggests that while there may be minor adverse impacts to some resource categories, there would be no long-term moderate to major adverse impacts as a result of the project. The project would provide long-term benefits by providing enhanced access to coastal resources and educational opportunities via the Heritage Trail-Possum Walk/Outdoor Education Center and state-of-the-art exhibits at the INFINITY Science Center. The Trustees have completed coordination and reviews under the Endangered Species Act, the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act. The Trustees have completed consultation under the Coastal Zone Management Act for the purposes of this Phase III early restoration planning process. Coordination has been initiated for Historic Preservation Act. The Trustees have considered public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Trustees' determination on selection of this project will be included in the Record of Decision.

Throughout the design process, every practical attempt would be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The following BMPs and conservation measures (sorted by resource type) would be utilized to minimize impacts to resources:

- Geology and Substrates
    - During the construction of the native landscape/nursery area, vegetation would be planted to stabilize the soil. Any necessary fill material would be clean and would likely originate from the area.
    - A helical pier foundation system would be utilized to construct the boardwalk and Outdoor Education Center, which would avoid soil excavation and reduce the impact to vegetation.
- Hydrology and Water Quality
    - A helical pier foundation system would be utilized to construct the boardwalk and Outdoor Education Center. This would minimize water quality impacts and would not require traditional or vibratory pile driving.
    - Shading as a result of the construction of the boardwalk and Outdoor Education Center would be minimized by appropriate material that would allow light penetration to the marsh.
    - During the design process, wetlands would be avoided in the final siting of pullovers and turnarounds, and opportunities would be identified to treat stormwater runoff in pervious areas to the extent practical.
- Green House Gas Emissions
    - Shut down idling construction equipment, if feasible.
    - Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.

- Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
- Encourage the use of alternative fuels or power sources for generators at construction sites, such as propane or solar power, or use electrical power where practicable.

- Flora
  - Remove the minimum amount of vegetation necessary, use well-maintained tools to prevent damage when pruning adjacent or overhanging vegetation, and reduce soil compaction that would prevent regrowth of vegetation by minimizing the amount of heavy equipment.
- Protected Species
  - Measures to protect Gulf Sturgeon. No in-water work will occur in Gulf Sturgeon critical habitat in the Pearl River. All available construction best management practices will be used to prevent and control any runoff to ensure none reaches the Pearl River.
  - Measures to protect Louisiana black bear. All workers will be informed of the potential for Louisiana black bear presence. If this species uses the project area it will likely be transitory in nature and likely will occur to the west of the proposed project area within the river corridor. If any bears are found to be present in the immediate project area during project activities, construction will be halted until the species move away from the project area. Construction best management practices (i.e. minimize noise and habitat disturbance) will be used to avoid or minimize any impacts during construction.
- Migratory Birds
  - Pre-construction nesting surveys would be conducted and, if evidence of nesting is found, coordination with the USFWS would be initiated to develop and implement appropriate conservation measures.
- Public Health and Safety
  - Recycling collection areas would be established for paper, cardboard, aluminum cans and plastic bottles, as appropriate.
- Invasive Species
  - All equipment to be used during the project, including personal gear, will be inspected and cleaned such that there is no observable presence of mud, seeds, vegetation, insects (especially ants and snails), and other species.
  - Native vegetation will be used for planting. Prior to bringing to vegetation to the island, it will be inspected and "non-target[7]" species will be removed.

[7] A non-target species is any species that is present on the species of choice but is not desirable and should be removed.

- General Construction BMPs
    - Construction in Mississippi is required to follow the "Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas" and the "Field Manual for Erosion and Sediment Control on Construction Sites in Mississippi" (MDEQ 2005).
    - All construction activities would occur in daytime hours.

10.5.8 References

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10.6 Popp's Ferry Causeway Park: Project Description

10.6.1 Project Summary

The proposed Popp's Ferry Causeway Park Project would improve a portion of a site in Back Bay, in Harrison County, Mississippi, that is owned by the City of Biloxi by expanding a park environment where visitors could experience the coastal estuarine ecosystem. The intent is to restore lost recreational use. The project would provide for construction of an interpretive center, nature trails, boardwalks, and other recreational enhancements and would enhance visitor access to the adjacent coastal estuarine environment while updating and constructing amenities, which would allow visitors to fish, crab, and observe nature. The estimated cost for this project is $4,757,000.

10.6.2 Background and Project Description

The mostly unimproved 10-acre Popp's Ferry Causeway property is a parcel of land and marsh located just to the west of the Popp's Ferry Bridge. It is owned by the City of Biloxi, Mississippi. It is surrounded by water on all sides, including the Biloxi River to the north, Big Lake to the west, and the Back Bay to the south and east (Figure 10-9). The property was purchased by the City of Biloxi in the year 2000. Improvements were started in 2001, but these were destroyed by Hurricane Katrina in 2005. Construction commenced again in 2011, and the following work has been completed and is not included in this proposed Early Restoration project: boardwalk system (north of the boat launch), some shoreline stabilization, a marsh boardwalk and shelters in the northern portion of the area, some utility work, construction of an entry sign, construction of one fishing pier, some roadway lighting, and roadway repairs on the east side of the causeway.

The Early Restoration project currently being proposed would upgrade the existing site and amenities by creating the Popp's Ferry Causeway Park, an interactive location where the public would continue to fish, crab, and walk through a system of boardwalks and nature trails that allow viewing of the waterfront and marshes. One of the project goals is to build upon what the public perceives as the "best fishing spot without a boat in Biloxi, Mississippi." The proposed conceptual plan includes components that would enhance visitor access to coastal estuarine habitats such as roadway repair and lighting, construction of a concession and bait stand where the public can also rent kayaks, construction of new fishing piers, and continuation of an 8-ft.-wide concrete walkway/wooden boardwalk on the west side of the site with benches and lighting. Riprap water edge treatment would replace existing treatments (intermittent riprap consisting of limestone, construction debris, and other materials) west of the concrete walkway/wooden boardwalk for additional shoreline stabilization. In addition, picnic areas, nature trails, visitor parking and construction of a new Interpretive Center with outdoor exhibits would take place in upland areas, and a marsh overlook pier and boardwalk would be included (Figure 10-10).

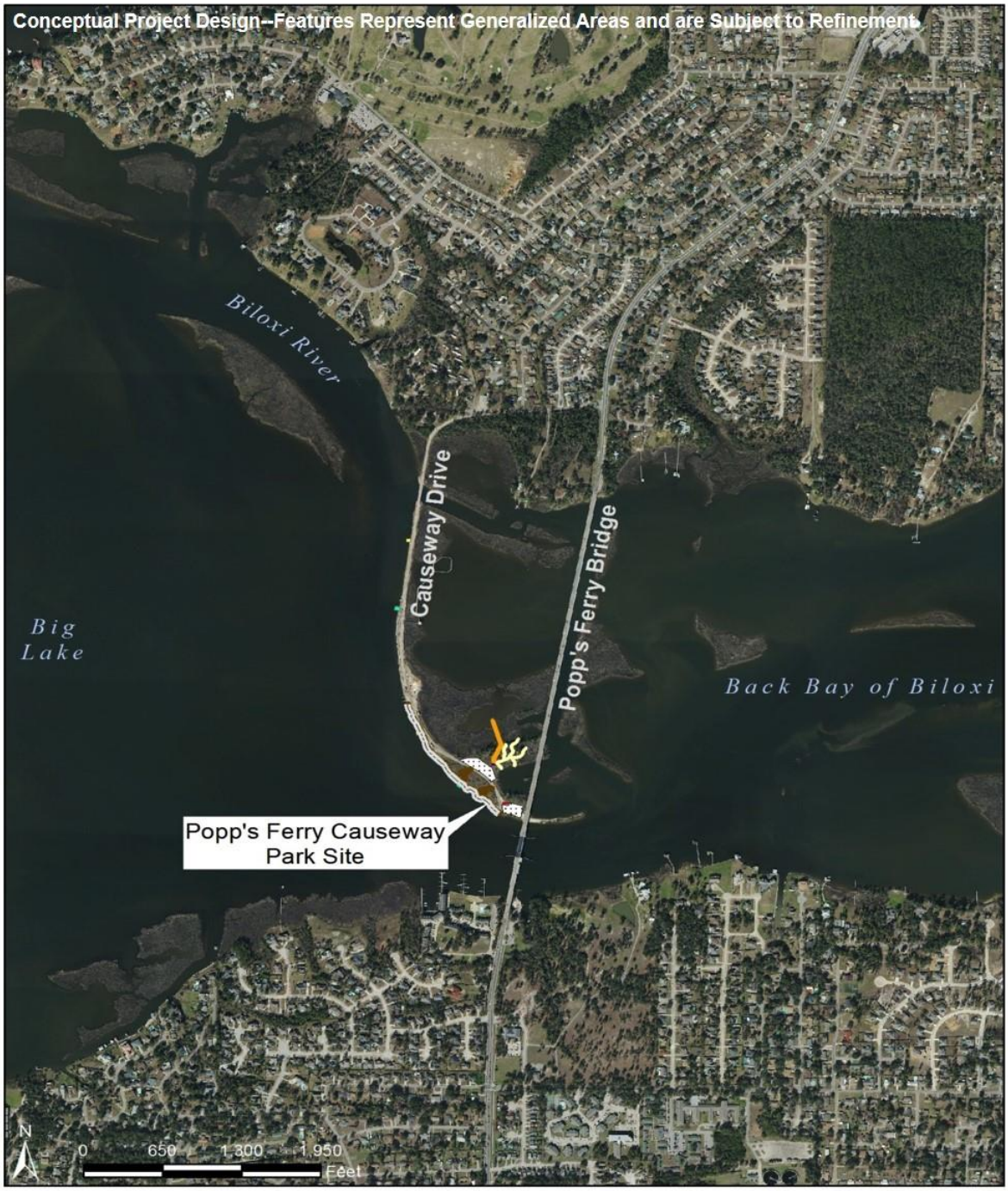

Figure 10-9. Proposed Popp's Ferry Causeway Park area.

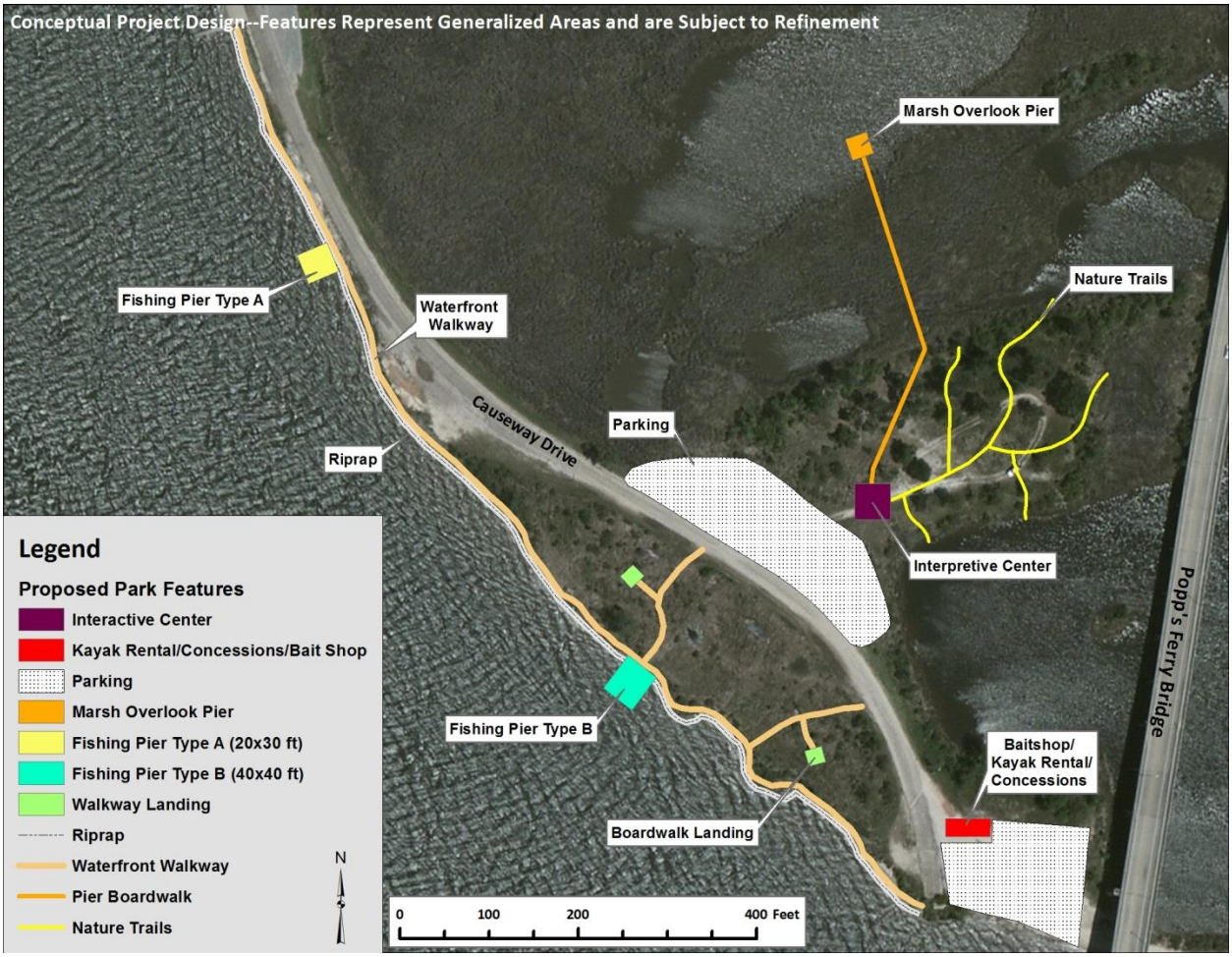

Figure 10-10. Proposed Popp's Ferry Causeway Park conceptual plan.

10.6.3 Evaluation Criteria

This project meets the evaluation criteria established for the Oil Pollution Act (OPA) and the Framework Agreement. As a result of the Spill, the public's access to and enjoyment of the natural resources along the Mississippi Gulf Coast was denied or severely restricted. The project would enhance the public's use and/or enjoyment of natural resources by constructing and/or expanding an educational interpretive center, nature trails, piers, and other recreational enhancements that would enhance visitor access to the adjacent coastal estuarine environment and provide opportunities for visitors to fish, crab, and observe nature (Section 7.1; Table 7.1). Accordingly, the project is intended to replace or provide recreational opportunities comparable to the types of opportunities lost as a result of the Spill (see C.F.R. § 990.54(a) (2) and Sections 6a-6c of the Early Restoration Framework Agreement). The project is technically feasible, utilizes proven techniques with established methods and documented results, and can be implemented with minimal delay. Similar projects have been successfully implemented in the area. Further, cost estimates are based on similar past projects, and the project can be conducted at a reasonable cost. For these reasons, the project is considered feasible, cost effective, and has a high likelihood of success. (See C.F.R. § 990.54(a) (1) and (3) and Section 6(e) of the Early Restoration Framework Agreement.) A thorough environmental review, including review under applicable

environmental statutes and regulations, is described in section 10.7, indicates that adverse effects from the project would largely be minor, localized, and often of short duration. In addition, the best management practices and measures to avoid or minimize adverse effects described in 10.7 would be implemented. As a result, collateral injury would be avoided and minimized during project implementation (construction and installation and operations and maintenance) (15 C.F.R. § 990.54(a)(4)). The project is consistent with the anticipated long-term restoration needs and was included as a priority in City of Biloxi Comprehensive Plan (adopted December 2009). The project would not have adverse impacts to public health and safety (see Section 3.3.6 Public Health and Safety). Popp's Ferry Causeway Park was submitted as a restoration project on the NOAA website (http://www.gulfspillrestoration.noaa.gov).

10.6.4 Performance Criteria, Monitoring and Maintenance

Successful completion of the project would meet the project's restoration objective to enhance recreational opportunities as well as provide access for enhanced appreciation and awareness of the surrounding natural resources impacted by the Spill. The Trustees would incorporate monitoring efforts to ensure project designs are correctly implemented. Additionally, the Trustees would monitor public use of the project and associated features for recreational activities and access to the natural resources. Monitoring would include visitor counts to reflect the number of visitors to the project during monitoring a five year period upon completion of construction. The monitoring period would conclude five years after the completion of construction. The City of Biloxi would be responsible for maintenance of the Popp's facilities, features, and exhibits.

10.6.5 Offsets

NRD Offsets are $7,135,500 expressed in present-value 2013 dollars, based on a benefit-to-cost ratio of 1.5, to be applied against the monetized value of lost recreational use provided by natural resources injured in Mississippi, which would be determined by the Trustees' assessment of lost recreational use by the Spill. Please see Chapter 7 of this document (Section 7.2.2) for a description of the methodology used to develop monetized Offsets.[8]

10.6.6 Cost

The total estimated cost to implement this project is $4,757,000. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, monitoring, and potential contingencies.

[8] For the purposes of applying the NRD Offsets to the calculation of injury after the Trustees' assessment of lost recreational use for the Spill, the Trustees and BP agree as follows:

- The Trustees agree to restate the NRD Offsets in the present value year used in the Trustees' assessment of lost recreational use for the Spill.
- The discount rate and method used to restate the present value of the NRD Offsets will be the same as that used to express the present value of the damages.

10.7 Popp's Ferry Causeway Park: Environmental Review

10.7.1 Introduction and Background

The proposed project would enhance the interactive nature of the existing Popp's Ferry Causeway Park (Figure 10-11) by constructing new amenities and updating existing features. These enhancements would replace lost recreational opportunities by providing improved access to the adjacent coastal estuarine habitats. Local residents have used the mostly undeveloped Popp's Ferry Causeway for fishing, shrimping, boating, walking, jogging, biking, and other shoreline activities for many years. The City of Biloxi purchased the property in 2000 and the Popp's Ferry Causeway Park Master Plan was developed. Partially constructed in the early 2000s, the property and infrastructure sustained damage from Hurricane Katrina in 2005. The proposed project enhances coastal recreational access and opportunities. Improvements such as boardwalks, nature trails, an Interpretive Center, fishing piers, and other amenities intend to provide access to shoreline habitats and replacement opportunities for coastal-based recreation that was lost during the Spill and response activities.

For the purpose of assessing the construction impact on the environment, the project description is based on the current design concept. Final engineering and project design could result in revisions to the project. The following description is intended to be a conservative review of the project components in order to evaluate a maximum environmental impact in the NEPA review and in environmental permitting. Project refinement(s) are anticipated as part of the design process. To the extent possible, revisions would be restricted to the current project footprint.

10.7.1.1 Concrete Walkway and Wooden Boardwalk

Along the western edge of the park, south of the boat launch, the project proposes the construction of an 8-ft.-wide concrete walkway and wooden boardwalk that would extend approximately 1,313 linear ft. along the shoreline (Figure 10-11). Benches, low-impact lighting, and shoreline viewing landings would be installed to make this shoreline walkway more enjoyable.

10.7.1.2 Shoreline Stabilization (Riprap)

The placement of approximately 1,366 linear ft. of riprap water edge treatment would extend along the western boundary of the park for shoreline stabilization. Riprap placement would begin immediately south of the boat launch.

10.7.1.3 Fishing Piers

Up to four fishing piers are proposed for construction on the western shoreline of the project area. Two Type A piers would have an area of 20 ft. by 30 ft. and two Type B piers would have an area of 40 ft. by 40 ft. Currently, there are limited locations for fishing within the park and new piers would greatly increase fishing opportunities, especially for visitors who do not have access to a boat.

10.7.1.4 Interpretive Center

An Interpretive Center would be constructed just to the east of a new parking area to provide new amenities for further enjoyment of the shoreline. This facility would be constructed in an open-air style and would provide exhibits on the park and its natural resources, as well as restrooms. This building would be surrounded by appropriate landscaping and connect to other parts of the park through a network of nature trails.

Figure 10-11. Popp's Ferry Causeway Park and vicinity.

10.7.1.5 Causeway Drive Improvements/Parking Areas

Causeway Drive currently connects the mainland to the future location of Popp's Ferry Causeway Park and runs the length of the property. Improvement of this two-lane road south of the boat launch would enable easier access to the enhanced park and its amenities. At the southern end of the project area is a larger upland area where most of the new park amenities are to be constructed. A new parking area is proposed for land adjacent to the east side of the road in this upland area. Additionally, a hard-packed gravel and soil area is to be paved at the very southern end of the park. The addition of these parking areas would allow for increased public visitation of the park.

10.7.1.6 Nature Trails/Picnic Areas

Interconnecting nature trails with several picnic areas are proposed throughout the site. The trails would connect several major amenities within the park area, including the Interpretive Center and parking areas, to the outer reaches of the property. These trails are meant to increase public access to and enjoyment of nature in general and, specifically, the surrounding coastal environment.

10.7.1.7 Marsh Overlook Pier and Boardwalk

A 6-ft.-wide wooden boardwalk (approximately 390 linear ft.) is proposed to extend from the Interpretive Center to the northeast through the estuarine emergent marsh and would end with a marsh overlook pier located on the open water. This would allow the public to have access to the wetland habitats for viewing opportunities of the associated wildlife and scenery.

10.7.1.8 Bait Shop/Concession Stand/Kayak Rental

A facility housing a bait shop, concessions, and kayak rentals is proposed for the southeastern most portion of the project area. This would be located next to the proposed new parking lot.

10.7.1.9 Landscaping

This proposed project would landscape the degraded and disturbed portions of the park property with native vegetation for a more enjoyable experience. Landscaping would be placed around the Interpretive Center and bait shop/concession stand/kayak rental facility, along Causeway Drive and other appropriate locations.

10.7.1.10 Utilities

To support the installation of restrooms and the bait shop/concession stand/kayak rental facility, the project would be connected to existing sewer, water, and electric utility infrastructure on Cambridge Drive, located in the residential neighborhood to the north (Figure 10-11).

10.7.2 Project Location

The proposed Popp's Ferry Causeway Park project would improve approximately 10 acres in Back Bay in the City of Biloxi, Mississippi. The parcel is owned by the City of Biloxi, Harrison County, Mississippi, just to the west of the Popp's Ferry Bridge (Figure 10-11). The project site is located in Section 22, Township 7 South, Range 10 West. The project site is surrounded by the waters of the Biloxi River to the north, Big Lake to the west, and the Back Bay of Biloxi to the south and east. This location provides access to the Gulf of Mexico. However, because the project site is not located directly on Mississippi Sound, it is less vulnerable to damage from hurricanes than sites located directly on Mississippi Sound. In addition to the Popp's Ferry Bridge, other nearby developments include residential neighborhoods approximately 3,250 ft. north and 750 ft. south of the project. An existing road, Causeway Drive, runs from the residential

area to the north along the western boundary of the causeway to the southeastern shoreline. The latitude/longitude of the center of the project area is 30.4177833333333°N, 88.9766833333333°W.

10.7.3 Construction and Installation

Construction methods and activities are included in order to assess the impact on the environment. Actual construction methods and activities would be determined after final design and would likely be comparable to activities described below. It is expected that actual construction methods would be similar to those presented in this section.

The construction and installation of proposed project elements would require the use of small dozers, loaders, excavators, forklifts, backhoes, haul trucks, and track-mounted Bobcats. If heavy equipment is necessary for any construction or installation work in sensitive areas, wetland mats and low ground pressure equipment would be used in order to minimize damage. Access for all water-side construction would be from a working barge which would include a crane, vibratory hammer, clamshell bucket, and other equipment.

Staging for construction would be confined to the site, and the contractor could be directed to stage equipment in areas that have been previously disturbed and that do not contain wetlands. This project would likely involve some amount of redistribution of fill already present within the project area.

10.7.3.1 Concrete Walkway and Wooden Boardwalk

Before construction and installation of the concrete walkway and lighted wooden boardwalk, site preparation activities would include demolition of old pilings, concrete slabs, broken asphalt, and concrete steps along the shoreline and the subsequent grading and compaction of the concrete walkway/boardwalk area only. The designs for the shoreline path include two distinct elements: one constructed of concrete and others constructed of wooden materials. Therefore, the final installation would require the placement of concrete (approximately 500 linear ft.; approximately 4,000 square ft.) and the installation of a wooden piling super structure to be complemented with conventional support framing and composite decking (approximately 813 linear ft.; approximately 4,878 square ft.) along the upland edge of the shoreline. Using the same approach, lighted, wooden connector boardwalks (approximately 355 linear ft.; approximately 2,130 square ft.) featuring landings would connect the main shoreline to more landward areas. Pile installation would be accomplished through the use of a vibratory hammer head attached to a track-mounted excavator (trackhoe). Wood piles 12 inches in diameter would be used in this project. The boardwalk portions of this feature would require approximately 100 pilings, which would take approximately six days to install. The planking would consist of fully recycled composite decking material. Low-impact lighting would be installed along the waterfront shoreline path.

10.7.3.2 Shoreline Stabilization (Riprap)

Replacing and establishing approximately 1,366 linear ft. of clean concrete/conglomerate riprap at the water's edge along the western and southern project boundaries would stabilize the shoreline and protect the walkway. The shoreline to the north of the project has recently been completed using the same treatment. Both a land-based and waterside access via a float barge would be necessary to deploy the riprap from the open water channel west of the shoreline.

10.7.3.3 Fishing Piers

With the shoreline cleared of existing concrete debris, the construction of four fishing piers would extend out from the concrete walkway or wooden boardwalk and would require the driving of 12-inch-diameter wood pilings in open water using the previously mentioned vibratory hammer technique. Using the pilings as a foundation, conventional support framing and decking would be employed to construct all piers to the applicable specifications. The two Type A piers would be 20 ft. by 30 ft. and would have a total area of 600 square ft. each. The two Type B piers would be 40 ft. by 40 ft. and would have a total area of 1,600 square ft. each. Each Type A pier would contain 12 to 15 pilings and would require approximately one day to install. The Type B fishing piers would require 25 to 30 pilings and would require approximately two days to install.

10.7.3.4 Interpretive Center and Bait Shop/Concession Stand/Kayak Rental

Site preparation for the approximately 1,600-square-ft. Interpretive Center and the approximately 1,000-square-ft. bait shop/concession stand/kayak rental includes the clearing and grubbing of vegetation within the designated upland areas, using the same approach as described above. The Interpretive Center would be constructed on shallow foundations. The bait shop/concession stand/kayak rental facility would be constructed on pilings.

10.7.3.5 Causeway Drive Improvements/Parking Areas

Improvements to the existing asphalt road and construction of additional parking areas would require minimal clearing and grubbing milling and reuse of existing asphalt, as well as re-grading and compacting the natural substrate. The placement of asphalt road and parking areas as well as associated grading work would use equipment such as conventional moto-graders, smooth drum rollers or other compaction equipment, and paving machines. These features would be boarded by concrete curbs in addition to the installation of drainage features and standard 16-inch lighting and low-impact lighting where necessary. Approximately 1.0 acre of upland would be paved for parking lots. Approximately 1,296 linear ft. of existing roadway would be improved.

10.7.3.6 Nature Trails/Picnic Areas

Following any necessary clearing and grubbing work, approximately 3,860 square ft. of nature trails and picnic areas would be installed throughout the project area using natural pervious materials such as mulch. No hardened materials or impervious surfaces such as concrete would be used for these trails.

10.7.3.7 Marsh Overlook Pier and Boardwalk

The construction of the marsh overlook pier (approximately 625 square ft.) and boardwalk (approximately 390 linear ft.) would require the driving of 12-inch pilings using a vibratory hammer mounted to a trackhoe. All piles used in this project would be wood piles 12 inches in diameter. The construction of this feature would require approximately 125 wood pilings, which would take eight days to install. The pier and boardwalk foundation would be graded plank and the decking would be composite decking material.

10.7.3.8 Landscaping

Landscaping work is intended for areas surrounding the trails and picnic areas as well as around the constructed facilities, parking areas, and roadway. Preparation for landscaping activities would involve the removal of unusable soils, vegetation, trees, stumps, and debris followed by the placement of clean materials such as topsoil, sand, gravel and/or mulch on the proposed surfaces. After clearing and

grubbing, trees and shrubs would be planted and seed would be spread along the roadway and around areas disturbed during construction. All landscaping work would use native species to the extent possible.

10.7.3.9 Utilities

The inclusion of restrooms in the Interpretive Center would require the construction of a new pump station and installation of a sanitary sewer main and new force main. Electrical and water, in addition to sewer and force main utilities, would be installed in trenches of approximately 3 ft. along Causeway Road to a maximum depth of approximately 6 ft. These utilities would run approximately 4,749 linear ft. from both the Interpretive Center and the bait shop/concession stand/kayak rental and tie into existing utilities located within the residential neighborhood to the north (Figure 10-11).

Construction in Mississippi is required to follow the "Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas" and the "Field Manual for Erosion and Sediment Control on Construction Sites in Mississippi" (MDEQ 2005). The construction of the proposed project would follow these guidelines as well as any other BMPs in order to prevent, control, and mitigate for any adverse impacts.

10.7.4 Best Management Practices

Throughout the design process, every practical attempt would be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The BMPs and conservation measures that would be utilized to minimize impacts to resources are listed in Section 10.7.7, Summary and Next Steps.

10.7.5 Operations and Maintenance

The constructed Popp's Ferry Causeway Park would be operated by the City of Biloxi Parks and Recreation Department. The City would likely lease the operation of the bait shop/concession stand/kayak rental facility to an independent entity. This lessee would determine the specifics of the kayak rental/concession stand/bait rental operation, including operation hours and products available. The overall park property would remain open and accessible 24 hours a day. The maintenance of the Popp's Ferry Causeway Park and associated features would be controlled by the City of Biloxi. It is anticipated that maintenance activities would include activities such as replacement of light bulbs for street lighting, trash removal, mowing in grassed areas, and possible noxious/invasive plant removal.

10.7.6 Affected Environment and Environmental Consequences

Under the National Environmental Policy Act, federal agencies must consider environmental effects of their actions that include, among others, impacts on social, cultural, and economic resources, as well as natural resources. The following sections describe the affected resources and environmental consequences of the project.

10.7.6.1 No Action

Both OPA and NEPA require consideration of the No Action alternative. For this Final Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue the Popp's Ferry Causeway Park as part of Phase III Early Restoration.

Under the No Action alternative, the existing conditions described in the affected resources subsection would prevail. Restoration benefits associated with this project would not be achieved at this time.

10.7.6.2 Physical Environment

Geology and substrates, hydrology, water quality, air quality, greenhouse gas emissions, and noise are discussed in this section.

Geology and Substrates

Affected Resources

Data from the Mississippi State Geological Survey generally indicates that surface soils in the project area consist of Holocene-age coastal deposits of loam, sand, gravel, and clay. The United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey identifies three soil mapping units within the footprint of the proposed project. These soil map units and their approximate percent of the project footprint area are: Handsboro association (93.1 percent); Eustis loamy sand, 0 to 5 percent slopes (0.8 percent); and Eustis and Poarch soils, 8 to 17 percent slopes (0.3 percent) (NRCS 2013a). Of these soils, the Handsboro association soil is listed as hydric, and two inclusions of the Eustis and Poarch soils—8 to 17 percent slopes—are listed as hydric (NRCS 2013b). A hydric soil is defined as one that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Most of the project features are proposed for the southern portion of the footprint, which consists of Handsboro association soil. These soils are very poorly drained, moderately permeable, deep soils typically found in regularly flooded salt marshes and tidal flats with 0 to 1 percent slopes (NRCS 2013c). The Eustis loamy sand, 0 to 5 percent slopes, and Eustis and Poarch soils, 8 to 17 percent slopes, are present along a small portion of the northern residential roadway area designated for utility connection work. USDA NRCS reports that the Eustis loamy sand, 0 to 5 percent slopes, mapping unit is somewhat excessively drained and found on upland sites (NRCS 2013c). Eustis and Poarch soils, 8 to 17 percent slopes, are somewhat excessively drained to well drained and found on slopes (NRCS 2013c). Site visits indicate that there are hydric soils within the project area, and this is confirmed by information presented in the City of Biloxi Comprehensive Plan.

Site visits to the southern project area determined that much of the soil has been disturbed and compacted due to decades of human activity and use. It is assumed that dredged material from the channel and/or the construction of the Popp's Ferry Bridge was deposited at various locations throughout the site over a period of time. The upland areas with higher elevations, such as those in the northeastern portion of the lower park area, are likely locations of dredged material.

Environmental Consequences

The overall project footprint encompasses approximately 10 acres. Each project feature would disturb smaller localized areas within this footprint. Localized clearing and grubbing and other site preparation activities could impact soils to a maximum depth of 4 ft. below ground surface while utility installation could impact to a depth of 6 ft. below ground surface. Dewatering is anticipated in certain areas; water would be discharged to a vegetated pervious area for infiltration. Project features and corresponding approximate disturbance areas are listed in Table 10-21.

Table 10-21. Approximate disturbance areas within the Popp's Ferry Causeway Park.

PROJECT FEATURE	APPROXIMATE DISTURBANCE AREA (ACRES)
Connector and Boardwalks	0.25
Shoreline Stabilization	0.09
Fishing Piers	0.10
Interpretive Center	0.04
Bait Shop/Concession Stand/Kayak Rental	0.02
Marsh Overlook and Pier	0.23
Nature Trails and Picnic Area	0.03
Road Improvements	0.50
Parking	1.00
Landscaping	4.20
Utility Work	0.30

Paving: Areas within the footprint of the concrete shoreline walkway (0.09 acre) and parking areas (1.00 acre) would be compacted and covered with impervious material. Of the total parking, only 0.38 acre consists of new parking acreage; the remaining 0.60 acre would be hard-packed dirt and gravel. There would be long-term moderate impacts to substrates from these features within the relatively small footprint.

Upland Pile Driving: The bait shop/concession stand/kayak rental facility would be constructed on pilings that would be installed using a vibratory hammer. The two facilities would cover over a total of 0.06 acre of soil. There would be long-term minor adverse impacts to geology and soil due to the soil coverage and the pile installation within the relatively small footprint. The Interpretive Center would be constructed on shallow-spread footing foundations and would not require pile installations.

In-Water Pile Installations: The four fishing piers and marsh overlook pier and boardwalk would also impact sediment on the bay floor through pile installation using a vibratory hammer. This would result in short-term, minor adverse impacts to geology and substrate in localized areas. The installation of in-water piles would disturb the substrate and compact it within the immediate footprint of the pile. In-water pile installation would also result in short-term minor impacts when sediment is displaced. However, these sediments would settle on the bay floor in the immediate vicinity of the pile shortly after the pile is installed to its ultimate depth. Long-term, minor adverse impacts to geology and soil would result within the relatively small footprint of the individual piles.

Trails and Picnic Areas: The nature trail/picnic areas and landscaping area project elements would include the use of native materials and would not include fill or creation of any impervious areas. Therefore, only short-term minor impacts to soils would occur during clearing and grubbing preparation for native planting. Clearing, grading, and actual construction work requires the use of heavy equipment and machinery, which would result in soil disturbance and compaction. As the ground is cleared and disturbed in preparation for construction, the exposed soil is subject to possible wind or water erosion. Contractors would be instructed to avoid the clearing of trees and minimize disturbance and compaction in wetlands where permitted activities would occur. A Construction General Permit would be required because the land disturbance exceeds 5.0 acres. Construction BMPs including those described in "Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas" and the "Field Manual for Erosion and Sediment Control on Construction Sites in Mississippi"

would be used to prevent, control, and mitigate any soil, sediment, and substrate impacts including soil erosion due to wind and water. If necessary, riprap placement by float barge would prevent further soil disturbance and compaction during that portion of the project. Due to preparation work such as clearing and equipment usage required for all project features, all features would result in short-term, minor adverse impacts on soils and substrates within their specific localized immediate construction zones. Work in wetlands, waters of the U.S., and navigable waters would require a Mississippi Coastal Wetland Protection Act Permit as well as U.S. Army Corps of Engineers Section 404 and Section 10 Permits. This is discussed in detail in Section 10.6.5.2 *Hydrology and Water Quality*.

Findings: Adverse impacts from construction on geology and substrates would be short term and long term. Displacement and compaction of existing soils to hard surface for upland piles and parking lot areas would result in long-term minor adverse impacts. For most construction elements, the adverse impacts would be localized to small project area footprints and would be mainly within previously disturbed areas. For shoreline stabilization, boardwalks, marsh overlooks, and piers, disturbance would be minimized to the maximum extent possible.

10.7.6.3 Hydrology and Water Quality

Affected Resources

Hydrology

The project area is located within the Biloxi Bay watershed and includes estuarine wetlands and estuarine deep water habitats surrounding Popp's Ferry Causeway Park. The surrounding waterbodies are the Biloxi River, Big Lake, and the Back Bay of Biloxi. The open water habitats of the Biloxi River navigation channel to the west and south have deeper water, whereas Back Bay of Biloxi waters to the north and east are shallower. NOAA bathymetry charts show that water depths are approximately 14 to 23 ft. adjacent to the western and southern boundaries and approximately 1 to 2 ft. on the northern and eastern sides. The project site is approximately 12.5 navigable miles from the Mississippi Sound and is tidally influenced.

Wetlands

There are five types of wetlands and other waters of the U.S. in the project area: estuarine marsh, open water, emergent/scrub shrub wetlands, shoreline emergent wetlands, and forested/emergent wetlands (Table 10-22; Figure 10-12). Wetlands and other waters, their classifications, and characteristics are described below.

Table 10-22. Wetlands and waters of the U.S. in the Popp's Ferry Causeway Park.*

WETLAND TYPE	TOTAL IN PROJECT AREA	WETLAND IMPACTS	FACILITY
Estuarine Marsh (NWI)	0.18 acre	0.03 acre	Marsh Boardwalk
Open Water	0.02 acre	0.02 acre	Marsh Overlook Pier and Boardwalk
Emergent/Scrub Shrub	1.62 acres	0.25 acre	Shoreline Walkway and Landings
Shoreline Emergent Disturbed/ Existing Riprap	1,500 linear ft.	1,366 linear ft.	Shoreline Stabilization (riprap)
Forested/Emergent	0.04 acres	0	NA
*See Figure 10-12 for locations of National Wetlands Inventory (NWI) features and delineated wetlands.			

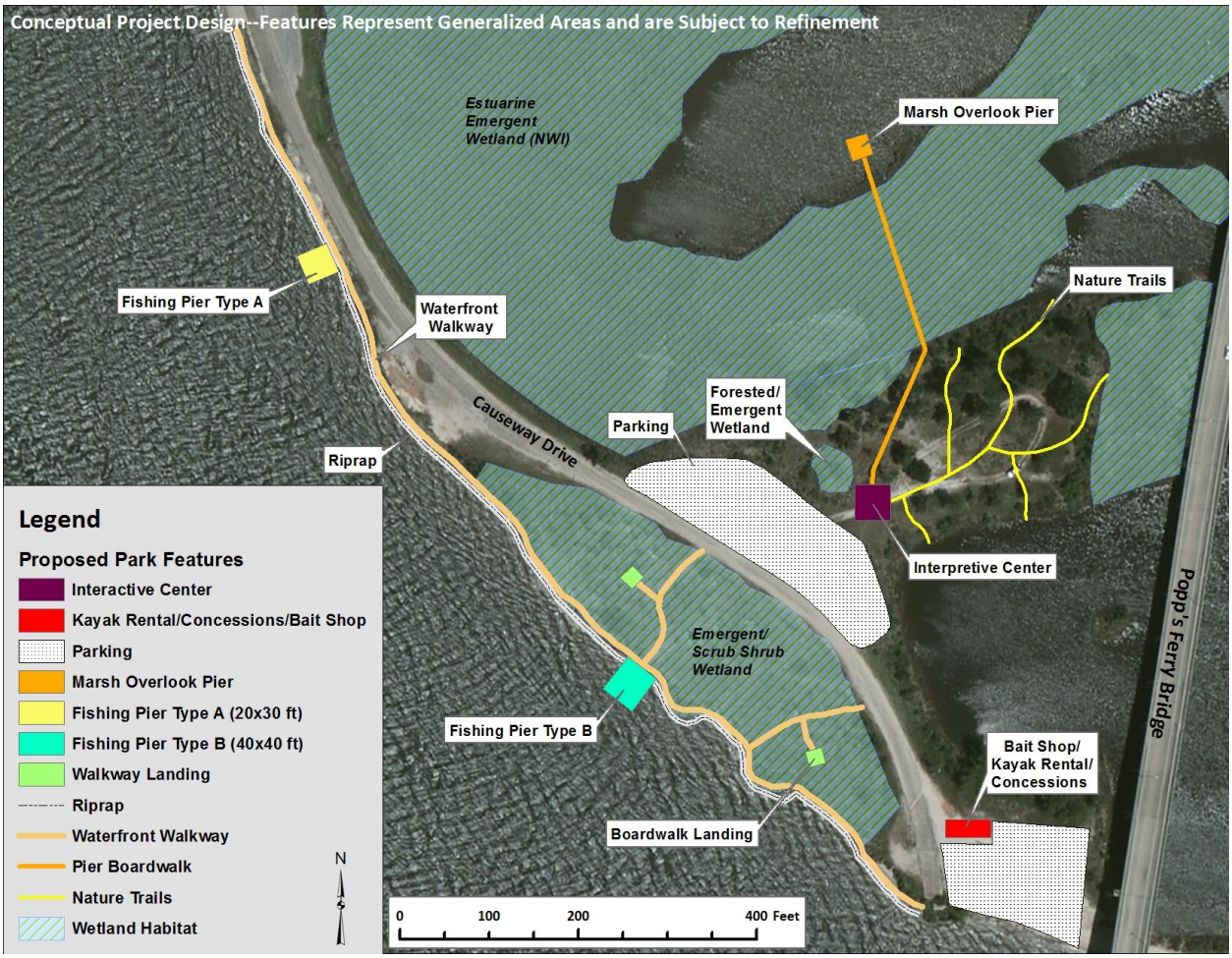

Figure 10-12. Map of wetlands and upland areas.

Estuarine Marsh (NWI/Delineated)

Estuarine marsh is extensive in the Popp's Ferry Causeway Park project vicinity (Figure 10-12). The marsh is an intertidal emergent wetland with dominant vegetation including black needlerush (*Juncus roemerianus*), salt meadow cordgrass (*Spartina patens*), saltgrass (*Distichlis spicata*), saltmarsh morning-glory (*Ipomoea sagittata*), and Jesuit's bark (*Iva frutescens*). The National Wetlands Inventory (NWI) map indicates 0.18 acre of estuarine marsh within the project area. However, only 0.15 acre was delineated within the project area. The delineated wetland is an extension of the salt marsh habitat directly downslope and is characterized by thick cover of salt meadow cordgrass (*Spartina patens)*.

Open Water

The open water area in the Popp's Ferry Causeway Park is a small (0.02 acre) intertidal lagoon surrounded by intertidal estuarine marsh. A boardwalk and marsh overlook is planned in the area (Figure 10-12).

Emergent/Scrub Shrub (Delineated)

The emergent/scrub shrub wetland is a 1.62-acre area in the southwestern portion of the project area. Hydrology in the emergent/scrub shrub wetland is perched with exposure to intertidal hydrology in high-water events. The wetland is moderately to heavily disturbed and is marked with man-made depressions and a sediment berm that flanks a shoreline emergent-disturbed habitat. Vegetation within the emergent/scrub shrub wetland is brackish marsh (seaward) and tidal fresh marsh (landward) with more salt-tolerant species occurring in a gradient toward the shoreline. Drifted wrack lines are common on the seaward side approximately 10 ft. inshore. Dominant brackish species include needlerush, salt meadow cordgrass, saltgrass, saltmarsh morning-glory, and Jesuit's bark. Common freshwater marsh plants in the area include various sedges (*Cyperus* spp.), bushy bluestem (*Andropogon glomeratus*), beakrush (*Rhynchospora* spp.), spikerush (*Eleocharis* spp.), saw-grass (*Cladium jamaicense*), and broadleaf cattail (*Typha latifolia*). Additionally, there are numerous locations in the area that retain standing water and areas that contain algal mats on the sediment surface (Figure 10-12).

Shoreline Emergent (Disturbed/Existing Riprap)

Discontinuous shoreline emergent wetlands are found in the southwestern area of the site bordering the navigation channel and are intermingled with riprap for approximately 1,500 ft. along the existing shoreline from the Popp's Ferry Causeway Bridge northwest to an existing pier (Figure 10-12). The disturbed wetland community is intertidal and vegetation is interspersed with riprap in this disturbed area and is similar to the adjacent emergent/scrub shrub wetland.

Palustrine Emergent and Forested Wetland (Delineated)

Upland to the site, the palustrine emergent/forested wetland area (0.04 acre) appears to be a man-made depression or pit that has retained water and wetland vegetation around a somewhat concentric circle around the ponded area (Figure 10-12). It is completely surrounded by upland habitat. Black willow (*Salix nigra*) trees are found growing on the periphery of the pond. Plant species in the area include saw-grass (*Cladium jamaicense*) and soft rush (*Juncus effusus*).

Floodplains

The southern portion of the project site is classified as flood hazard Zone AE while the northern portion is mainly Zone VE with a small portion classified as Zone X (FEMA 2009). Zone AE indicates that the area is within the 100-year (1-percent-annual chance) floodplain and there is a high risk of flooding; the project area has base flood elevations of 15 to 16 ft. within this zone. Zone VE indicates that the area is within a coastal flood zone with hazards from high velocity wave action. It is within the 100-year (1-percent-annual chance) floodplain and there is a high risk of flooding; the project area has a base flood elevation of 18 ft. within this zone. Zone X indicates that the area is outside the 500-year (0.2-percent-annual chance) floodplain and the risk of flooding is minimal.

Water Quality

In the late 1990s, impairment from pathogens led to the development of a total maximum daily load (TMDL) for the waters around the project area. A fecal coliform TMDL for the Back Bay of Biloxi and Biloxi Bay was approved in 2002, and the waterbodies were removed from the 303(d) list of impaired waterbodies. Currently, the waters surrounding the project area are not impaired. An advisory regarding fish consumption is in place for king mackerel due to mercury for the Gulf of Mexico, which includes the waters surrounding the Popp's Ferry Causeway Park (MDEQ 2012b).

Environmental Consequences

Hydrology

In-water construction includes placement of four fishing piers, shoreline stabilization, and a boardwalk/marsh overlook pier. The construction would not appreciably affect tidal hydrology in the project area. Upland construction of the Interpretive Center, parking lots, boardwalks, trails, bait shop/concession stand/kayak rental facility, and picnic areas would not add appreciably to stormwater runoff in the area. To the extent possible, pervious, vegetated treatment areas would be incorporated into the final design to facilitate stormwater storage and treatment throughout the site. Construction of the Popp's Ferry Causeway Park facilities would not have an adverse impact to site hydrology.

Wetlands

Wetland impacts are summarized in Table 10-22 above. Although the proposed boardwalk would not disturb the delineated estuarine marsh, it would traverse the downslope estuarine marsh area for access to the marsh overlook pier. Construction of the marsh overlook pier/boardwalk could have a minor long-term impact on 0.02 acre of open water and 0.03 acre of estuarine marsh (Table 10-22). Construction of the shoreline walkway and landings could result in a 0.25-acre impact to emergent/scrub shrub wetland. The construction would result in shading of vegetation of 0.25 acre under the pier and boardwalks. There would be some disturbance to vegetation in the immediate area of each feature due to movement of construction equipment. Constructing the boardwalk to allow sunlight to penetrate would reduce these shading effects and allow vegetation to regrow.

Although construction of the marsh overlook pier/boardwalk would affect 0.03 acre of emergent marsh habitat through shading, this represents only a small portion of the total emergent marsh habitat located in the surrounding area, which would continue to support local and regional vegetative communities. Similarly, the shoreline walkway and landings would affect 0.25 acre of emergent/scrub shrub wetland; however, this represents a small portion of the total 1.62-acre area of this habitat located on the project site. The palustrine emergent and forested wetland is in the area of the proposed Interpretive Center but would be avoided during construction. Overall, there would be short-term minor impacts to wetland habitats during construction. There would be long-term impacts to wetlands filled as a result of the proposed project, but because of the small footprint of project features and the overall availability of the wetland habitats onsite, these impacts would also be minor.

The shoreline would be stabilized with riprap; the treatment would be similar to stabilization work to the north of the existing pier. The shoreline stabilization (riprap) area would result in a long-term moderate impact to 1,366 linear ft. of vegetated shoreline. The existing shoreline is a mosaic of discontinuous wetland vegetation and riprap including concrete debris. Some segments of the shoreline are experiencing substantial erosion. Stabilization in this partially degraded and eroding system is required for the shoreline as well as for the shoreline walkway.

A Mississippi Coastal Wetland Protection Act Permit and a U.S. Army Corps of Engineers Clean Water Act Section 404/10 permit would be needed for all work in wetlands and other jurisdictional waters. Under the Coastal Zone Management Act of 1972, selected restoration projects must be consistent to the maximum extent practicable with the federally-approved coastal management programs for the states in which the projects are to be conducted. On December 12, 2013the Federal Trustees submitted a consistency determination to the MDMR for this project for appropriate state reviews coincident with

public review of the Draft Phase III ERP/PEIS. On February 4, 2014, the MDMR responded and concurred with the federal determination for the project for purposes of finalizing this early restoration plan (Miller 2014).

The proposed discharge of dredged or fill material into waters of the United States, including wetlands, or work affecting navigable waters associated with this project is currently being coordinated with the U.S. Army Corps of Engineers (USACE) pursuant to the Clean Water Act Section 404 and Rivers and Harbors Act (CWA/RHA). On March 3, 2014, an application requesting Mississippi Coastal Wetland Protection permit authorization was submitted to Mississippi Department of Marine Resource (MDMR). Shortly after receiving the application, MDMR notified the USACE of the application and began the USACE permitting process (SAM-2014-00275-TMZ). Coordination with the MDMR and USACE is ongoing, and final authorization pursuant to Coastal Zone Management Act of 1972 and the CWA/RHA will be completed prior to project implementation.

The current site design has been developed to avoid and minimize impacts on wetlands. Contractors would be instructed to minimize disturbance during construction in wetlands. In addition, the Trustee would adhere to the conditions of the Mississippi Coastal Wetland Protection Act and Clean Water Act permits.

Floodplains

Construction of the Interpretive Center and bait shop/concession stand/kayak rental facility would be above base flood elevations that are designated for the area. Although there would be construction in the floodplain, the construction or operation of the proposed project would not increase flood risk or change floodplain values. The installation of utility connection to tie into the mainland utilities would have no impact on flooding.

Water Quality

Sediment from construction and contaminants (e.g., gas, oil, lubricants) from construction equipment could degrade surrounding waterbodies and/or groundwater. Dewatering may be required for subsurface work such as utility installation. Water would be discharged to a vegetated pervious area for infiltration. Appropriate BMPs would be used to prevent, control, and mitigate potential impacts. Following construction, the paving of parking lots and the concrete shoreline walkway could affect local water resources in two ways. First, as the ground is converted to an impervious surface, it would allow a greater quantity of water to enter the local waterbodies during precipitation events. A less-pervious surface would mean less infiltration and water quality treatment. Second, the stormwater runoff from these impervious surfaces could contain contaminants swept from the parking lot (e.g., car fluids, gas, and oil) or trash and debris that could pollute the surrounding waterbodies. To the extent possible, pervious, vegetated treatment areas would be incorporated into the final design to facilitate stormwater storage and treatment throughout the site. There would be short-term and long-term minor and localized impacts on surface water and groundwater hydrology and water quality.

The “Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas” (MDEQ 2012a) document describes several categories of erosion and sediment control BMPs. These include surface stabilization, runoff conveyance, inlet protection, sediment control, and stream protection BMPs and site preparation techniques. The exact BMPs used during construction activities would not be identified until construction contractor(s) are selected. Additionally, stormwater BMPs,

which attempt to limit or treat contaminants and the quantity of water running off into waterbodies, can be either structural or non-structural and use infiltration, filtration, or retention/detention as well as planning or site design. A Construction General Permit for stormwater would be necessary as the site is greater than 5.0 acres.

10.7.6.4 Air Quality and Greenhouse Gas Emissions

Affected Resources

The U.S. Environmental Protection Agency (EPA) defines ambient air in 40 C.F.R. Part 50 as "that portion of the atmosphere, external to buildings, to which the general public has access." In compliance with the 1970 Clean Air Act (CAA) and the 1977 and 1990 Clean Air Act Amendments (CAAA), the EPA has promulgated National Ambient Air Quality Standards (NAAQS). Under the CAA, the EPA establishes primary and secondary air quality standards. Primary air quality standards protect the public health, including the health of "sensitive populations, such as people with asthma, children, and older adults." Secondary air quality standards protect public welfare by promoting ecosystems health, and by preventing decreased visibility, and damage to crops and buildings. The EPA has set NAAQS for the following six criteria pollutants: ozone, particulate matter (PM 2.5 and 10), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and lead.

Air Quality

Mississippi has adopted the federal standards (Table 10-23). According to the MDEQ, the entire state of Mississippi (including Harrison County) is classified as in attainment, meaning criteria air pollutants do not exceed the NAAQS. Air quality conditions in the project area are good as there are no existing pollutant sources.

Table 10-23. State and federal ambient standards for criteria air pollutants.

POLLUTANT	AVERAGING PERIOD	STATE AND FEDERAL PRIMARY STANDARD
Ozone	8-hour	0.075 ppm
	1-hour (daily max.)	0.12 ppm
PM2.5	Annual (arithmetic mean)	15.0 µg/m3
	24-hour	35 µg/m3
PM10	Annual (arithmetic mean)	NA
	24-hour	150 µg/m3
Carbon Monoxide	8-hour	9 ppm
	1-hour	35 ppm
Nitrogen Dioxide	Annual (arithmetic mean)	0.053 ppm
	1-hour	0.100 ppm
Sulfur Dioxide	Annual (arithmetic mean)	0.03 ppm
	24-hour	0.14 ppm
	1-hour (per annum)	NA
	1-hour (per 7 days)	NA
	5-minute	NA
Lead	Rolling 3-month average	0.15 µg/m3
	Quarterly average	1.5 µg/m3

POLLUTANT	AVERAGING PERIOD	STATE AND FEDERAL PRIMARY STANDARD
Total Suspended Particulates	Annual (geometric mean)	NA
	24-hour	NA

Greenhouse Gases

Greenhouse Gases (GHGs) are chemical compounds found in the earth's atmosphere that absorb and trap infrared radiation as heat. Global atmospheric GHG concentrations are a product of continuous emission (release) and removal (storage) of GHGs over time. In the natural environment, this release and storage is largely cyclical. For instance, through the process of photosynthesis, plants capture atmospheric carbon as they grow and store it in the form of sugars. Human activities such as deforestation, soil disturbance, and burning of fossil fuels disrupt the natural cycle by increasing the GHG emission rate over the storage rate, which results in a net increase of GHGs in the atmosphere. The principal GHGs emitted into the atmosphere through human activities are CO_2, methane, nitrous oxide, and fluorinated gases, such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, with CO_2 as the major GHG emitted.

Environmental Consequences

Air Quality

Project implementation would require the use of heavy equipment, which could temporarily lead to air quality impacts from equipment exhaust. In addition, fine particulate matter (fugitive dust) associated with road improvements, parking, shoreline stabilization, and construction of facilities and trails, may become airborne during the construction process. No air quality permits are required for this type of project, and violations of state air quality standards are not expected.

Air quality impacts during construction are expected to be localized, minor, and short term.

Greenhouse Gas Emissions

The use of gasoline and diesel-powered construction vehicles and equipment, including small trucks, dump trucks, concrete trucks, Bobcats, grading and paving machines, trackhoes, dozers, cranes and tugboats and other equipment would contribute to an increase in GHG emissions. Table 10-24 details the construction equipment needed to complete the project, the total hours used for each type of equipment, and the emissions resulting from the use of equipment.

Based on the assumptions detailed in Table 10-24, the project would generate approximately 357.76 metric tons of GHGs over the duration of all phases. The following mitigation measures have been identified to reduce or eliminate GHG emissions from the project.

- Shut down idling construction equipment, if feasible.
- Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
- Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
- Encourage the use of alternative fuels or power sources for generators at construction sites, such as propane or solar power, or use electrical power where practicable.

Findings: Air quality impacts during construction are expected to be localized, minor, and short term. Project construction would generate approximately 357.76 metric tons of carbon equivalents. The project would have short-term minor impacts but no long-term impacts on GHG emissions. Mitigation measures would minimize GHG emissions.

Table 10-24. Greenhouse gas impacts for the Popp's Ferry Causeway Park.

EQUIPMENT DESCRIPTION	TOTAL HOURS USED	CO_2 FACTOR-MT*/100HRS	CO_2 (MT)	CH_4 FACTOR-MT/ 100HRS	CH_4 (MT)	NO_2O FACTOR-MT/ 100HRS	NO_2O (MT)	TOTAL CO_2 (MT)
Dump Tucks / Flatbed Truck	481	1.70	8.18	0.50	2.41	7.20	34.63	45.21
Concrete Trucks	64	1.70	1.09	0.50	0.32	7.20	4.61	6.02
Line Truck	48	1.25	0.60	0.40	0.19	5.50	2.64	3.43
Pick-Up Trucks	2112	1.10	23.23	0.35	7.39	4.40	92.93	123.55
Bobcat (bare and w/auger mount)	248	2.65	6.57	0.9	2.23	10.60	26.29	35.09
Moto Grader	20	2.25	0.45	0.65	0.13	1.08	0.22	0.80
Milling Machine	8	2.55	0.20	0.85	0.07	10.2	0.82	1.09
Paving Machine	80	2	1.60	0.50	0.40	8	6.40	8.40
Rollers	100	2	2.00	0.50	0.50	8	8.00	10.50
Trackhoe (w/Bucket/Thumb or Vibratory Attachments)	428	2.55	10.91	0.85	3.64	10.2	43.66	58.21
Dozer	52	2.25	1.17	0.65	0.34	1.08	0.56	2.07
Forklift	208	2.25	4.68	0.65	1.35	1.08	2.25	8.28
Ditchwitch	86	0.75	0.65	0.35	0.30	4	3.44	4.39
Crane (bare and w/clamshell attachment)	148	2.55	3.77	0.85	1.26	10.20	15.10	20.13
Tug Boat (8 trips)	8	-----	5.20	-----	1.60	-----	20.80	27.60
Georgia Buggies	40	1.35	0.54	0.4	0.16	5.75	2.30	3.00
Total	**4131**							**357.76**

*MT = metric tons

10.7.6.5 Noise

Affected Resources

The Noise Control Act of 1972 (42 U.S.C. 4901 to 4918) was enacted to establish noise control standards and to regulate noise emissions from commercial products such as transportation and construction equipment. The standard measurement unit of noise is the decibel (dB), which represents the acoustical energy present. Noise levels are measured in A-weighted decibels (dBA), a logarithmic scale which approaches the sensitivity of the human ear across the frequency spectrum. A 3-dB increase is equivalent to doubling the sound pressure level, but is barely perceptible to the human ear. Table 10-25 presents some familiar sounds and their decibel levels.

Table 10-25. Familiar sounds and their decibel levels (dB).

SOUND	DECIBEL LEVEL (DB)
Whisper	30
Normal Conversation	50 – 65
Vacuum Cleaner at 10 ft.	70
Midtown Manhattan Traffic Noise	70 – 85
Lawnmower	85 – 90
Train	100
Nearby Jet Takeoff	130

Project Area Noise Levels and Receptors

Existing ambient noise is consistent with noise from developed areas as well as natural wetland and marine environments. Popp's Ferry Bridge parallels the eastern side of the park and this traffic noise is noticeable on the eastern portion of the project area, especially the noise associated with vehicles crossing the drawbridge section of the bridge. The southern portion of the project area is located between 0 and 650 ft. away from the centerline of the Popp's Ferry Bridge. A traffic noise investigation was prepared for the Environmental Assessment for Alternative "E" for improvements to Popp's Ferry Road and Bridge between Riverview Drive to Pass Road in Biloxi, Harrison County, Mississippi (MDOT 2010). Sound levels of 59 – 64 L_{eq} dBA were recorded at non-causeway sites that were 55 – 145 ft. from the centerline along Popp's Ferry Road. The portion of the project area north of the existing boat launch has similar noises, although this area is farther away from the Popp's Ferry Bridge centerline. There is also likely some noise from sporadic boat traffic using the Biloxi River channel on the western side of the park and barge traffic using the navigation channel south of the Popp's Ferry Causeway Park. Ambient noise includes low-flying C-131 transports from Keesler Air Force Base. Natural noise includes sounds emitted by resident wildlife and wave action on windy days. The closest residence is located 750 ft. to the south of the project area.

Marine Mammals

The Marine Mammal Protection Act requires evaluation of activities that could injure or cause behavioral change in marine mammals. Noise impacts to fish are also considered here. Within water, noise levels decrease with increasing distance from the pile installation source. This noise attenuation is typically cylindrical in shallower water and spherical in deeper water. Vibratory pile installation produces less sound (approximately 10 – 20 dB) than impact pile installation; however, the increased time and therefore overall sound produced with vibratory hammers could be greater (Caltrans 2009). Use of wood piles also produces less noise than other pile materials as does smaller pile diameters (Caltrans 2009). Injury impact thresholds occur closest to the source, whereas behavior impact threshold levels occur at a further distance from the source.

Environmental Consequences

Human/Terrestrial Wildlife Receptors

During construction, the use of general construction equipment would have short-term, minor adverse noise impacts. The noise impacts would take place only during construction periods and would not close the entire project area to visitors. During the installation of the wood piles with a vibratory hammer, terrestrial wildlife and humans (visitors and residents) may be disturbed due to noise. However, the duration needed for pile driving is short; in addition to using a vibratory hammer to minimize noise,

every effort would be made to minimize the time required for pile installation. Impacts associated with vibratory hammer pile driving would be short term and moderate.

Marine Mammals
Several project features require piling and the use of vibratory hammer installation equipment. In-water piling installation would be necessary for constructing the four fishing piers, marsh overlook pier, and the associated marsh boardwalk. Pile installation could also be necessary for upland construction of the bait shop/concession stand/kayak rental facility. Potential impacts on marine and coastal aquatic life from insertion of pilings would be due to the noise created from the vibration generated by the equipment. During use of this equipment, a vibratory motion would propagate through the pile and radiate a pulse into the water, ground substrate, and air. The planned installation of the pilings would be brief in duration.

The Trustees coordinated with NOAA to ensure that there would be no takes or harassments of marine mammals as a result of project construction. The Trustee intends to take a number of precautionary measures to ensure that there is no disturbance to marine mammals in the project area, and in particular, to manatees and cetaceans (dolphins). All construction personnel involved in in-water work that generates noise would be responsible for observing water-related activities for the presence of marine mammals, in particular, dolphins and manatees. The Trustee, or designee, shall advise all construction personnel regarding the civil and criminal penalties for harming, harassing, or killing West Indian manatees, which are protected under the Endangered Species Act of 1973. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times and in all water depths where the draft of the vessel provides less than a 4-ft. clearance from the bottom. Construction contractors would preferentially follow deep-water routes (e.g., marked channels) whenever possible. If marine mammals are seen, all work (pile driving) would cease until the animal has left the project area. The Trustee, or designee, would have monitors onsite during pile installation to ensure that these conditions are met.

Findings: There would be short-term, minor adverse noise impacts to residents and visitors as a result of excavators and other construction equipment during the period of construction for the park features, with short-term, moderate adverse impacts during the very short period of pile installation. The Trustee will consult with NOAA and NMFS to determine noise impacts for the project and minimization measures.

10.7.6.6 Biological Environment

Living Coastal and Marine Resources

Affected Resources
The living coastal and marine resources in the project area include those associated with estuarine and marine wetlands, shallow coastal water habitats, and disturbed uplands.

Flora
Dominant vegetation in the brackish habitats includes black needlerush, salt meadow cordgrass, saltgrass, saltmarsh morning-glory, and Jesuit's bark. Tidally influenced freshwater marsh species include black willow (*Salix nigra*), saw-grass, yellow-eye grass (*Xyris* spp.), bushy bluestem, broadleaf cattail, as well as sedges and rushes. The upland habitats contain slash pine (*Pinus elliottii*) stands and

live oak (*Quercus virginiana*) trees. Estuarine brackish marsh flanks the project area to the east and is composed primarily of black needlerush assemblages. A survey for sub-aquatic vegetation (SAVs) was completed for the marsh overlook pier and boardwalk area. There is no SAV in the project area.

Fauna

The faunal species found in the area include those associated with natural estuarine marsh pocket beaches, and disturbed upland habitats. These include various species of mammals, birds, fish, reptiles, infauna, epifauna, and other aquatic invertebrates. The Mississippi diamondback terrapin (*Malaclemys terrapin pileata*) utilizes pocket beaches adjacent to marsh for nesting habitat.

The mixing of fresh water from rivers with saline water from the Mississippi Sound allows for a range of fish species in the waters surrounding the Popp's Ferry Causeway Park including redfish (*Sciaenops ocellatus*), blue catfish (*Ictalurus furcatus*), flounder (*Paralichthys lethostigma*), speckled trout (*Cynoscion nebulosus*), white trout (*Cynoscion arenarius*), southern kingfish (*Menticirrhus americanus*), sheepshead (*Archosargus probatocephalus*), and black drum (*Pogonias cromis*), as well as crab and shrimp species. The estuarine emergent wetland habitat supports an array of neonate and juvenile fish and aquatic invertebrates. Other fish and marine mammals such as Atlantic bottlenose dolphins (*Tursiops truncates*) could also occur in the area.

Environmental Consequences

Flora

Construction of the concrete walkway, new parking area, Interpretive Center, bait shop/concession stand/kayak rental facility, nature trail, and picnic areas would involve minimal clearing and grubbing in the construction footprint. However, the land within these footprints, in its current state, is partially disturbed. Following construction, cleared areas outside the footprint would be replanted and reseeded with trees, shrubs, and other suitable vegetation. There is adequate habitat within the project area and vicinity to ensure continued viability of native species. The alteration of vegetation to recreational structures would result in long-term, minor adverse impacts. Clearing and grubbing would result in short-term, minor adverse impacts until vegetation is reestablished.

Construction of the wooden shoreline boardwalk, marsh overlook pier, and associated marsh boardwalk would impact floral resources by shading vegetation under the pier and boardwalks. Several boardwalks connecting the shoreline boardwalk to landings would be constructed through this wetland, totaling 355 linear ft. In addition, there could be some disturbance to vegetation in the immediate area of each feature due to movement of construction equipment. Construction of the boardwalk to allow penetration by sunlight would reduce these shading effects and allow vegetation to regrow. Installation of the pier and boardwalks would not appreciably diminish the availability of emergent marsh habitat in the project area that supports local and regional vegetative communities. There would be no fragmentation of vegetative communities and, therefore, short-term and long-term impacts would be localized and minor.

Fauna

Construction of the wooden boardwalks, marsh overlook pier, and boardwalk would result in short-term minor localized adverse impacts. Increased human presence after the project improvements are complete is anticipated; however, because these areas currently experience human presence, on

balance, adverse impacts to wildlife are expected to be minor or nonexistent. Construction of the wooden boardwalks, marsh overlook pier, and boardwalk would reduce availability of habitat underneath the structures for certain wildlife species; however, the project footprint represents only a small portion of the available habitat in the area for local wildlife. The Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) provided consultation on the Mississippi diamondback terrapin and requests minimizing riprap usage for shoreline stabilization at locations where pocket beaches might be present (Frey 2014). The Trustee would identify and also avoid pocket beaches to the maximum extent practicable in the design of the project.

Therefore long-term adverse impacts to wildlife would be minor. There would be long-term minor adverse impacts on fauna resulting from occasional disturbance to feeding or resting in localized areas.

The construction of the four fishing piers and marsh overlook pier would have short-term impacts for the aquatic organisms and benthic habitat during piling installation. The area of impact to both surface and benthic habitat is minor relative to the amount of each of these habitats available in the local and adjacent area. The Trustee coordinated with NOAA NMFS to determine impacts to cetaceans and to identify avoidance measures.

Marine Mammals

Affected Resources

Marine mammals found within the Gulf of Mexico include 21 species of cetaceans (whales and dolphins) and the West Indian manatee. The Marine Mammal Protection Act (MMPA) prohibits the "taking" of marine mammals incidental to a specified activity, unless such taking is appropriately authorized.

Dolphin Species

The bottlenose dolphin, *Tursiops truncatus*, and the Atlantic spotted dolphin, *Stenella frontalis*, are the two most common marine mammals found in the Gulf of Mexico. Both species feed primarily on fish, squid and crustaceans. While *S. frontalis* spends the majority of its life offshore, *T. truncatus* often travel into coastal bays and inlets for feeding and reproduction.

West Indian Manatee

The West Indian manatee (*Trichechus manatus latirostris*) is listed as endangered under the ESA. The species is endangered due to its small population size (less than 2,500 mature individuals with possible population decline), the possibility of at least a 50 percent future reduction in population size, and near- and long-term threats from human-related activities (FWS 2010; FWC 2007). Between October and April, manatees concentrate in areas of warmer water. During summer months, the species may migrate as far west as the Louisiana and Texas coast on the Gulf of Mexico. Manatees inhabit both salt and fresh water of sufficient depth (about 5 feet to usually less than 18 feet). Manatees will consume any aquatic vegetation available to them including sometimes grazing on the shoreline vegetation.

Marine Mammal Environmental Consequences

Noise and other activity associated with proposed construction may temporarily disturb certain dolphin species and manatee in the vicinity of the project area through temporary impacts on prey abundance, water quality (turbidity), and underwater noise, and may temporarily increase the potential for boat

collisions with certain species in the project area. However, the mobility of these species reduces the risk of injury due to construction activity. Based on the mobility of these species, the short duration of construction activities, and the proposed construction methodology, effects on dolphin species are not anticipated.

Extreme care should be taken during construction not to disturb or injure manatees. If manatee(s) are found to be present in the immediate project area during restoration activities, construction would be halted until the species moves away from the project area.

The procedures contained within the MMPA coordination and ESA consultation for West Indian manatee[9] constitute appropriate and responsible steps to promote compliance with MMPA prohibitions on take by requiring the proposed activities to achieve a standard of No Effect or May Affect, Not Likely to Adversely Affect for manatees (McClain 2014). As such, the Trustees do not anticipate any take, incidental or otherwise, under the MMPA for West Indian manatee due to implementation the proposed project.

As a result of coordination with NFMS Office of Protected Resources, the Trustees will implement the below listed measures to minimize the potential for incidental take of marine mammals:

- Establishment of Shut-Down Zone: The calculated radius for the 120 dB rms/Level B harassment zone (i.e., distance from driven pile to area where harassment would no longer be expected to occur) is 1,585 m. The area defined by this radius in all relevant directions from the pile driving activity will comprise the shut-down zone. Shut-down of pile driving activity would occur immediately upon observation of any marine mammal within or approaching this zone.
- Visual Monitoring and Shut-down of Pile Driving Activities: The shut-down zone will include all areas where underwater sound pressure levels are anticipated to equal or exceed the 120 dB threshold, as described under "Establishment of Shut-Down Zone." Qualified observers will monitor these zones and advise project personnel when delay or shut-down of pile driving activities is required. The shut-down zone will be monitored for the presence of marine mammals before, during, and after any pile installation activity, beginning 15 minutes prior to initiating the start of pile installation and continuing for 15 minutes following the completion of pile installation. If marine mammals are present within the shut-down zone prior to pile installation, the start of pile installation will be delayed until the animals voluntarily leave the shut-down zone and have been visually confirmed beyond the zone, or until 15 minutes have elapsed without redetection. Shutdown of pile driving activities will occur if any marine mammal enters or approaches the established zone, and will not resume until the animal has voluntarily moved beyond the relevant shut-down zone radius, either through visual confirmation or by waiting until 15 minutes has elapsed without redetection.
- Qualified biologists will be present on site at all times during pile driving activities. The action area will be monitored by at least three observers during vibratory pile driving. One will be based on land; two will be on vessels traveling along and within the radius while visually scanning the area.

[9] Implementing of the Service's most recent version of the Standard Manatee Conditions for In-water Work.

- Monitoring of the shut-down zone will be conducted using binoculars, spotting scopes and visual observations. Each monitor will have a radio for contact with other monitors or work crews. A GPS unit, range finder, or other suitable methodology will be used for determining the observation location and distance to marine mammals, vessels, and construction equipment.
- No pile driving will occur in low-light conditions, or when visibility is impaired such that the shut-down zone cannot be effectively monitored. Pile driving will only be conducted between one-hour post-sunrise through one hour prior to sunset. If waters exceed small craft advisories or conditions otherwise restrict biologists' ability to make observations or become unsafe for the observation boat to operate, pile installation will cease until conditions allow for monitoring to resume.

Protected Species

The U.S. Fish and Wildlife Service (USFWS) lists species as threatened or endangered when they meet criteria detailed under the ESA) of 1973, as amended (16 U.S.C. §1531 et seq.). Additionally, the Mississippi Wildlife Fisheries and Parks (MWFP) and NOAA National Marine Fisheries Service (NMFS) identify and list protected species. Section 7(a)(2) of the ESA requires that each federal agency ensures that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of those species. Migratory Bird Treaty Act compliance and Bald and Golden Eagle Protection Act compliance are discussed in this section.

Federally listed species that are known to occur or could occur in Harrison County are listed in Table 10-26. However, only the West Indian manatee, five sea turtle species and Alabama red-belly turtle are likely to occur or could pass through the project area.

Table 10-26. Popp's Ferry Causeway Park—threatened and endangered species in Harrison County, Mississippi.

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS	STATE STATUS	HABITAT
Amphibians				
Dusky Gopher Frog	*Rana sevosa*	Endangered	Endangered	Sandy uplands and temporary pools
Birds				
Red-cockaded Woodpecker	*Picoides borealis*	Endangered	Endangered	Mature, open southern pine forests
Piping Plover	*Charadrius melodus*	Threatened	Endangered	Beaches and mudflats in southeastern coastal areas
Red Knot	*Calidris canutus rufa*	Proposed	--	Marine intertidal habitats including inlets, estuaries, and bays feeding in mud and sand flats on beaches and barrier islands
Ferns and Allies				
Louisiana Quillwort	*Isoetes louisianensis*	Endangered	--	Aquatic or wet habitats, mostly shallow streams in bottomland habitats (MDWFP 2001)
Fishes				
Gulf Sturgeon	*Acipenser oxyrinchus desotoi*	Threatened	Endangered	Migrates from large freshwater coastal rivers to brackish and marine coastal bays and estuaries
Mammals				
West Indian Manatee	*Trichechus manatus*	Endangered	Endangered	Fresh and salt water in large coastal rivers, bays, bayous and estuaries
Louisiana Black Bear	*Ursus americanus luteolus*	Threatened	Endangered	Bottomland hardwood forest; dispersal corridors
Reptiles				
Hawksbill Sea Turtle	*Eretmochelys imbricate*	Endangered	Endangered	Coral reefs, open ocean, bays, estuaries
Leatherback Sea Turtle	*Dermochelys coriacea*	Endangered	Endangered	Open ocean, coastal waters
Kemp's Ridley Sea Turtle	*Lepidochelys kempii*	Endangered	Endangered	Nearshore and inshore coastal waters, often in salt marshes; neritic zones with muddy or sandy substrate (NOAA Fisheries 2013b)
Green Sea Turtle	*Chelonia mydas*	Threatened	Endangered	Shallow coastal waters with SAV and algae, nests on open beaches
Loggerhead Sea Turtle[1]	*Caretta caretta*	Threatened	Endangered	Open ocean; also inshore areas, bays, salt marshes, ship channels and mouths of large rivers
Alabama Red-belly Turtle	*Pseudemys alabamensis*	Endangered	Endangered	Fresh and brackish habitats, river banks, submerged and emergent aquatic vegetation; upland habitat for nesting (MDWFP 2001; USFWS 2010)
Black Pine Snake	*Pituophis melanoleucus lodingi*	Candidate	Endangered	Open canopy longleaf pine/hardwood habitats with well-drained sandy soils and ground cover (MDWFP 2001; USFWS 2010)
Gopher Tortoise	*Gopherus Polyphemus*	Threatened	Endangered	Open canopy longleaf pine/scrub oak habitats with well-drained sandy soils and ground cover (USFWS 2010)

[1] Listed by NOAA National Marine Fisheries Service

Mammals

West Indian Manatee (*Trichechus manatus*): This species uses both fresh and saltwater habitats such as coastal rivers, bays, bayous, and estuaries. The manatee is an occasional visitor to Mississippi's coasts, although migration into the area is poorly understood. After wintering in Florida, and perhaps Mexico, manatees migrate northward during spring, including to Mississippi and Alabama waters, although these migrations are not well understood (Fertl et al. 2005). Manatees frequently seek out freshwater sources such as rivers and river mouths and have been known to be found near estuaries (Fertl et al. 2005). Seagrasses are the typical manatee forage material; however, they can also consume other aquatic vegetation, algae, and terrestrial vegetation (Fertl et al. 2005). There have been sightings of West Indian manatees in the project area (Fertl et al. 2005); however, given the lack of their main food source at the site, any manatee occurrence, if any, is expected to be transitory.

Reptiles

Hawksbill Sea Turtle (*Eretmochelys imbricata*): Although this species uses various habitats such as the open ocean, bays, and estuaries throughout different life stages, it is mainly associated with coral reefs. This species nests in Florida from April to November (NOAA Fisheries 2013a). It likely does not nest in Mississippi and observations are rare in the state (MDWFP 2001; NOAA Fisheries 2013a). The main dietary items of this species are sponges and other invertebrates (NOAA Fisheries 2013a).

Leatherback Sea Turtle (*Dermochelys coriacea*): This species mainly inhabits the offshore open ocean; however, it does use nearshore coastal waters during nesting or feeding. Nesting for this species occurs in Florida from April through November. Their main forage item is jellyfish. This species migrates long distances from nesting to feeding areas. While not common, there have been sporadic observations of leatherback turtles in Mississippi waters (MDWFP 2001).

Kemp's Ridley Sea Turtle (*Lepidochelys kempii*): Typical habitat for this species includes nearshore and inshore coastal waters and often salt marshes and neritic zones with muddy or sandy substrate (NOAA Fisheries 2013b). This species has been observed in nearshore waters of the Mississippi Sound during migration and foraging and has been accidentally caught by shore-based fishermen (MDWFP 2001; Shaver and Rubio 2008). Females typically nest from May through July (NOAA Fisheries 2013b). Males potentially use Gulf of Mexico habitats all year and females presumably use the Mississippi Sound and barrier island habitats for foraging when not nesting (NOAA Fisheries 2013b). Kemp's Ridley sea turtles do not nest in Mississippi (MDWFP 2001).

Green Sea Turtle (*Chelonia mydas*): This species typically prefers shallow coastal waters with SAV and algae for foraging and nests on open beaches (NOAA Fisheries 2012). Nesting typically does not occur on mainland beaches and there is likely no Mississippi nesting at all (MDWFP 2001; NOAA Fisheries 2012). This species migrates long distances in the open ocean from nesting to feeding areas. Observations of this species in Mississippi are rare (MDWFP 2001).

Loggerhead Sea Turtle (*Caretta caretta*): Loggerhead habitat for foraging and migration includes open ocean, inshore areas, bays, salt marshes, ship channels, and mouths of large rivers. This sea turtle feeds on mollusks, fish, crustaceans, and other marine organisms. This species typically nests at night from late April through September (NOAA Fisheries 2013c). Although loggerheads occasionally use barrier islands for nesting, mainland nesting is rare (MDWFP 2001). Preferences for nesting beaches include

high high-energy coarse-grained beaches adjacent to the ocean that are narrow and steeply sloped (NOAA Fisheries 2013c). This species has been observed in nearshore waters of the Mississippi Sound during migration and foraging and has been accidentally caught by shore-based fishermen (MDWFP 2001).

Alabama Red-Belly Turtle (*Pseudemys alabamensis*): The habitat of the Alabama red-belly turtle includes fresh and brackish habitats, river banks, submerged and emergent aquatic vegetation, and upland habitat for nesting (MDWFP 2001; USFWS 2010). Within the project area, individuals of this species are known to be present in the Tchoutacabouffa River, the Biloxi River, and the Back Bay of Biloxi (MDWFP 2001; USFWS 2010); however, this species is mainly a freshwater species associated with river and stream channels and associated wetlands. Nesting occurs from mid-May to mid-July (MDWFP 2001).

Environmental Consequences

Protected Species

The West Indian manatee and Alabama red-belly turtle have potential to occur or pass through the project area. Sea turtles are also addressed in the environmental consequences discussion, but they are not known to occur in or near the project area.

West Indian Manatee

West Indian manatee observations in Mississippi have mainly been associated with barrier islands and offshore areas; however, there are infrequent documented sightings from within the Back Bay of Biloxi (Fertl et al. 2005). There are no known wintering habitats or refuge within the Back Bay of Biloxi, nor any populations that use the area. Manatees forage on SAV; however, no SAV is found within the project area. Although impacts to West Indian manatee are not expected, short-term, minor impacts could occur if an individual comes into contact with construction activities. The Trustee, or designee, shall advise all construction personnel regarding the civil and criminal penalties for harming, harassing, or killing West Indian manatees, which are protected under the Endangered Species Act of 1973. If manatee(s) are found to be present in the immediate project area during restoration activities, construction would be halted until the species moves away from project area.

Alabama Red-Belly Turtle

Alabama red-belly turtle habitat includes fresh and brackish waters, river banks and uplands, and submerged and emergent aquatic vegetation. Although suitable habitat for this species could be present in the project area, no observations have been recorded. The lack of SAV for foraging, as well as the presence of riprap, would make this species unlikely to be present in the project area. It is unlikely that there would be impacts to the Alabama red-belly turtle due to lack of habitat in the project area.

Sea Turtles

No specific occurrences of sea turtles are known for the project footprint; however, the five federally listed sea turtles (green, hawksbill, Kemp's Ridley, leatherback, and loggerhead) have been sighted in the Mississippi Sound. Both Kemp's Ridley and loggerhead sea turtles are known to be present in nearshore waters of the Mississippi Sound and have been accidentally captured by shore-based fisherman (MDWFP 2001). The open beach habitat preferred by sea turtles for nesting is not present within the project area. Therefore, these species are unlikely to be within the project area. If any sea

turtles are found to be present in the immediate project area during restoration activities, construction would be halted until the species moves away from project area. Precautionary measures would be utilized to prevent and minimize impacts to sea turtles. Precautionary measures would include construction personnel education, proper use and selection of siltation barriers, use of "no wake/idle" speeds in proper locations, adhering to protection guidelines when a sea turtle is within 100 yards of activities, and reporting turtle injuries.

Findings: ESA Section 7 consultations were completed with USFWS (McClain 2014) and NMFS (Crabtree 2014). The USFWS and NMFS each concurred that the project, as proposed, is not likely to adversely affect West Indian Manatee, Gulf Sturgeon, Kemp' s ridley, loggerhead, green sea turtles, (leatherback and hawksbill would be unaffected) or Gulf sturgeon so long as the following measures are taken:

- Conditions A-D of the Standard Manatee Conditions for In-water Work (USFWS 2011)
- Sea turtle and Smalltooth Sawfish Construction Guidelines (NMFS 2006) shall be followed when operating vessels or doing in-water work construction.
- Mississippi Department of Environmental Quality' s 3- volume manual Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas (MDES 2012) and the Field Manual for Erosion and Sediment Control on Construction Sites in Mississippi (MDEQ 2005) will be utilized.

No effects would occur to other listed, proposed, or candidate species considered during consultation (McClain 2014; Crabtree 2014).

Migratory Birds

Migratory bird guilds that could have presence in the Popp's Ferry project area include wading birds, seabirds, waterfowl, raptors, rails and coots, landbirds, and doves and pigeons (see Table 10-27).

Table 10-27. Migratory birds in the Popp's Ferry Causeway Park area.

SPECIES	BEHAVIOR	SPECIES/HABITAT IMPACTS
Wading birds (herons, egrets, ibises)	Foraging, feeding, resting, roosting	Wading birds primarily forage and feed at the water's edge. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily roost in trees or shrubs (e.g., pines, *Baccharis*), but project components would not impact these habitats.
Seabirds (terns, gulls, double-crested cormorant, brown pelican)	Foraging, feeding, resting, roosting,	Seabirds forage and rest in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. Nesting habitat does not exist in the project area; therefore, it is not anticipated to impact nesting.
Waterfowl (ducks, loons, and grebes)	Foraging, feeding, resting, roosting,	Waterfowl may forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily roost and nest in low vegetation, which is not near the project area; therefore it is not anticipated to impact nesting.

SPECIES	BEHAVIOR	SPECIES/HABITAT IMPACTS
Raptors (osprey, hawks, owls)	Foraging, feeding, resting, roosting	Raptors forage, feed, and rest in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. Most raptors are aerial foragers and soar long distances in search of food. Locations where these birds roost and nest are not within the project area.
Rails and Coots	Foraging, feeding, resting, roosting,	Rails and coots forage, feed, rest, or roost in the project area. As such, they may be impacted locally and temporarily by the project. However, they are most likely to favor marshy areas. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting if disturbed by the project. These birds primarily roost and nest in marshes, which are not directly within the project area; therefore, it is not anticipated to impact nesting.
Landbirds (white-eyed vireo, great crested flycatcher, indigo bunting)	Breeding, foraging, feeding, roosting	Various species of migratory birds in Mississippi use upland and freshwater wetland habitats including disturbed and human influenced areas. Breeding locations for these species could include open areas, open deciduous woodlands, shrub thickets, and forest edges especially near freshwater wetlands and waterbodies. The project area includes open disturbed areas with trees, grasses, shrubs, and other low vegetation as well as freshwater wetland depressions. No project features directly impact these habitats.
Doves and Pigeons	Foraging, feeding, roosting, resting	These species may use the upland habitat where trees and shrubs are available. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) of 1940 (BGEPA), prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. BGEPA provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." Golden eagles are not present along the Gulf Coast.

Environmental Consequences

Migratory Bird Treaty Act

The Trustee has reviewed the project site and determined that migratory bird nesting is not known, but is possible. The MBTA requires the protection of all migratory bird species and protection of ecosystems of special importance to migratory birds against detrimental alteration, pollution, and other environmental degradation. Coordination under MBTA with the USFWS was completed on January 24, 2014. Based on the implementation of BMPs, no “take” is anticipated. If activities require tree removal pre-construction surveys will be completed. If evidence of nesting is found, coordination with the USFWS would be initiated to develop and implement appropriate conservation measures.

Bald and Golden Eagle Protection Act

There are no golden eagles in the project area. No bald or golden eagles are known to nest within 660 ft. of the project area. Thus, no impacts to golden or bald eagles are anticipated. Coordination under BGEPA by the USFWS was completed on January 24, 2014. Since no nesting occurs, no “take” is anticipated.

Essential Fish Habitat

Essential fish habitat (EFH) consists of all waters and aquatic substrates and habitats that provide habitat for fish spawning, reproduction, feeding, and/or growth. The proposed project is located within an area designated as EFH for four Fishery Management Plans (FMP) governed by the Gulf of Mexico Fisheries Management Council (GMFMC). These fishery groups are Red Drum, Reef Fish, Coastal Migratory Pelagics, and Shrimp. Based on species habitat characteristics, depth preferences, and commonality of occurrence for all life stages as reported in the final environmental impact statement for the Generic Essential Fish Habitat Amendment of March 2004 (GMFMC 2004), nine of forty species could feasibly be present within the project area (Table 10-28). The waters and associated substrates of the following areas contain EFH for the listed fishery groups.

Red Drum FMP: All estuaries; Vermilion Bay, Louisiana, to the eastern edge of Mobile Bay, Alabama, out to depths of 150 ft.; Crystal River, Florida, to Naples, Florida, between depths of 30 and 60 ft.; and Cape Sable, Florida, to the boundary between the areas covered by the GMFMC and the South Atlantic Fishery Management Council (SAFMC), also between depths of 30 and 60 ft.

The red drum fishery is very common in the northern Gulf and the estuarine zone is used by this species in all life stages. Habitats with the highest use include nearshore hard bottoms, nearshore sand/shell, estuarine SAV, and estuarine soft bottoms (GMFMC 2004). Larvae, juveniles, and young adults spend the majority of their time in estuarine habitats and prey on a large array of species including blue crab eggs and juvenile fish (Table 10-28).

Reef Fish FMP: All estuaries; the U.S./Mexico border to the boundary between the areas covered by the GMFMC and the SAFMC from estuarine waters out to depths of 600 ft.

The reef fish fishery includes numerous species that use the estuarine zone during particular life stages. Most of these species are transitory and, therefore, just use the inshore environments during part of the year. Mutton and gray snapper use the estuarine zone for feeding as adults only; however, all reef species listed in Table 10-28 have the potential to use this zone as early or late juveniles for growth and feeding habitat. Most of the reef fish species in the area have low occurrences. Abundance levels for these types, including the grouper and snapper fishes, are much higher in the southern and eastern Gulf of Mexico. Juveniles of these species would typically use SAV beds in estuarine environments for food and cover (GMFMC 2004); Table 10-28.

Coastal Migratory Pelagic FMP: All estuaries; the U.S./Mexico border to the boundary between the areas covered by the GMFMC and the SAFMC from estuarine waters out to depths of 600 ft. Of the three coastal migratory pelagic species listed in the management unit, only the Spanish mackerel uses the estuarine zone during any life stage. Habitat use for all life stages is primarily the water column; however, the Spanish mackerel uses the estuarine zone during the early and late juvenile and adult life stages. Adults typically only use these shallow areas in the pursuit of baitfish and typically prefer higher-salinity waters (GMFMC 2004); Table 10-28.

Table 10-28. Essential fish habitat considerations for Popp's Ferry Causeway Park.

GULF OF MEXICO FMP GROUP	SPECIES	HABITAT TYPE	EGGS	LARVAE	POST LARVAE	EARLY JUVENILES	LATE JUVENILES	ADULTS	SPAWNING ADULTS
Red Drum Fishery	Red Drum *(Scianops ocellatus)*	SAV, soft bottom, sand/shell, emergent marsh		Growth; feeding	Growth; feeding	Growth; feeding	Growth; feeding	Feeding	Feeding
Reef Fish Fishery	Mutton Snapper *(Lutjanus analis)*	SAV, emergent marsh				Growth; feeding	Growth; feeding	Feeding	
	Cubera Snapper *(Lutjanus cyanopterus)*	SAV, emergent marsh				Growth	Growth		
	Gray Snapper *(Lutjanus griseus)*	SAV, soft bottom, sand/shell, emergent marsh			Growth; feeding	Growth; feeding	Growth; feeding	Feeding	
	Lane Snapper *(Lutjanus synagris)*	SAV, soft bottom, sand/shell			Growth	Growth; feeding	Growth; feeding		
	Yellowtail Snapper *(Ocyurus chrysurus)*	SAV, soft bottom				Growth; feeding			
Coastal Pelagic Fishery	Spanish Mackerel *(Scomberomorus maculatus)*	Pelagic				Growth; feeding	Growth; feeding	Growth; feeding	
Shrimp Fishery	Brown Shrimp *(Farfantepenaeus aztecus)*	SAV, soft bottom, sand/shell, emergent marsh, oyster reef			Growth; feeding	Growth; feeding	Growth; feeding		
	White Shrimp *(Litopenaeus setiferus)*	Emergent marsh, soft bottom			Growth; feeding	Growth; feeding	Growth; feeding		
Source: GMFMC 2004									

Shrimp FMP: All estuaries; the U.S./Mexico border to Fort Walton Beach, Florida, from estuarine waters out to depths of 600 ft.; Grand Isle, Louisiana, to Pensacola Bay, Florida, between depths of 100 and 2,000 ft.; Pensacola Bay, Florida, to the boundary between the areas covered by the GMFMC and the SAFMC out to depths of 200 ft., with the exception of waters extending from Crystal River, Florida, to Naples, Florida, between depths of 60 and 150 ft. and in Florida Bay between depths of 30 and 60 ft.

Shrimp fishery species that use the estuarine zone of the management unit include two penaeid types: brown and white shrimp. Post larvae, early juvenile, and late juvenile shrimp of both species use

estuarine habitat for survival. Emergent marsh and marsh edge are particularly important microhabitats for these species and they would use the tidal cycle to enter low emergent marsh adjacent to the shoreline (GMFMC 2004); Table 10-28.

Environmental Consequences

Red Drum FMP

Juvenile red drum could be impacted by marsh overlook pier and boardwalk construction activities during high tides when the young fish would use the emergent marsh habitat for feeding and cover. In addition, there would likely be short-term displacement of benthic invertebrate populations and small ichthyofauna and temporary displacement of adult fish on the shoreline boardwalk at the water's edge on the western project boundary. Adverse impacts to red drum EFH would be short term, minor and localized to the areas of pier pilings.

Reef Fish FMP

Most reef fish use estuarine habitat during some of their life stages; however, this use is transitory and not year-round, especially if used as foraging adults. Most juvenile reef fish use estuarine habitats within SAV beds (GMFMC 2004). Due to the lack of SAV in the project area, it is unlikely that there is a major presence of juvenile reef species in the area. Furthermore, reef fish numbers in the northern Gulf of Mexico are fairly low. The estuarine habitat in the area consists mainly of emergent marsh and soft sediments. Potential impacts during construction of the marsh overlook pier and boardwalk include disruption to larval fish movement during high-tide events and harm to benthic invertebrates, which are prey for many juvenile species. Therefore, only short-term, minor adverse impacts would be expected in the localized area of pier pilings.

Coastal Migratory Pelagic FMP

A majority of the habitat use by all life stages of coastal migratory pelagic species is within the water column habitat. However, estuarine habitats are one of many possible habitats used by Spanish mackerel in early and late juvenile and adult life stages. Estuarine habitat use is likely transitory and temporary during foraging activities. Adverse impacts to coastal migratory pelagic EFH would be short term, minor and localized to the areas of pier pilings.

Shrimp FMP

During boardwalk construction, potential impacts to shrimp species include possible disruption during high-tide events as individuals come in with the tide. During in-water pile driving, there could be possible disruption to species in the form of benthic habitat alteration. Soft-bottom habitat could be modified during construction activities and water quality decreased from surface water runoff. Impacts would be short term with localized disturbances only in areas of construction. Disturbed substrate would settle quickly. Therefore, only short-term, minor adverse impacts would be expected in the localized area of pier construction.

Findings: Adverse impacts to EFH would be short term, minor and localized to the areas of pier pilings. As per requirements in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act, the Mississippi Trustee has notified NOAA Marine Fisheries of action that may adversely affect EFH, and has further provided an EFH assessment to NOAA Marine Fisheries. Essential Fish Habitat (EFH) consultation was completed with NMFS's Southeast Regional Office's Habitat Conservation Division (SERO HCD); (Fay, 2014). NMFS concurred with the EFH assessment that the project may result in

minimal and temporary impacts to EFH, and no EFH conservation recommendations were provided pursuant to Section 305(b)(2) of the Magnuson-Stevens Act at this time. Further consultation is not necessary unless future modifications are proposed and such actions may result in adverse impacts to EFH. Under the notification the Trustee stated that the following BMPs would be adhered to:

- Anchoring and mooring will be restricted to impacted areas. Work barges would be moored for overnight and weekends/holidays in areas where previous impacts have occurred (deployment areas).
- Vibratory hammers are considered a minimization measure to decrease injury and behavior modification to fish and cetaceans. The project will use this method to install pilings for piers.
- Monitoring will be conducted before, during, and after project implementation to ensure compliance with project design.
- Structures will be designed to minimize shading impact to tidal and non-tidal wetland grasses.
- Appropriate BMPs will be employed to minimize impacts associated with the parking areas and during construction.

10.7.6.7 Invasive Species

Affected Resources

The potential introduction of terrestrial and aquatic non-native invasive species of plants, animals, and microbes is a concern for any proposed project. Non-native invasive species could alter existing terrestrial or aquatic ecosystems, may cause economic damages and losses, and are frequently the second most common reason for protecting species under the Endangered Species Act. The species that are or may become introduced, established, and invasive are difficult to identify. The analysis focuses on pathway control or actions/mechanisms that may be taken or implemented to prevent the spread of invasive species on site or introduction of species to the site.

The following plant species are listed as invasive in Mississippi: alligator weed (*Alternanthera philoxeroides*), cogongrass (*Imperata cylindrical*), common salvinia (*Salvinia minima*), Eurasian watermilfoil (*Myriophyllum spicatum*), giant salvinia (*Salvinia molesta*), kudzu (*Pueraria lobata*), Chinese tallow tree (*Sapium sebiferum*), torpedo grass (*Panicum repens*), and water hyacinth (*Eichornia* spp.) (MDMR 2013). Much of the uplands within the project area are disturbed habitats where several invasive species are found. These include cogongrass and Chinese tallow. Invasive aquatic fauna reported in the area include Asian tiger shrimp (*Penaeus monodon*), and Nile tilapia (*Oreochromis niloticus*).

Environmental Consequences

BMPs to prevent the spread of invasive species through common pathways will be implemented thereby minimizing the potential for short and long-term adverse impacts from the proposed project. This project involves the construction of boardwalks, an interpretive center, a bait shop/kayak rental facility, shoreline stabilization, and trails. A variety of construction equipment (both in-water and on land) will be used. Each of these actions and pieces of equipment serve as a potential pathway to introduce or spread invasive species. To ensure these pathways are “broken” and do not spread or introduce species the following BMPs will be implemented: all equipment to be used during the project, including personal gear, will be inspected and cleaned such that there is no observable presence of mud, seeds,

vegetation, insects, and other species. During operation and management of the facilities, native vegetation will be used for planting. Prior to bringing vegetation to the site, the vegetation will be inspected and "non-target[10]" species will be removed. The implementation of these BMPs meets the spirit and intent of EO 13112. Due to the implementation of BMPs, the Trustees expect risk from invasive species introduction and spread to be short term and minor.

10.7.6.8 Human Uses and Socioeconomics

Socioeconomics and Environmental Justice

Affected Resources

Socioeconomic resources combine the social resources and economic resources of the area. The social resources evaluation includes consideration such as potential changes in neighborhoods or community cohesion; affordable housing; changes in travel patterns and accessibility; impacts on community facilities; impacts on traffic safety/public safety; and impacts on any special groups such as elderly, handicapped, minority, and transit-dependent persons. The data in this section was compiled using the Census and American Factfinder websites (U.S. Census Bureau 2011 and 2012).

The project is located in the northern part of the City of Biloxi (Census Tract 33.04) in southern Harrison County, Mississippi. In 2010, Harrison County had a population of 187,105 with a mostly white (70 percent) and black or African American (22 percent) racial composition (Table 10-29). The City of Biloxi had a population of 44,054 with a similar racial composition, although the Asian population was higher (4.4 percent) percentage-wise than Harrison County (2.8%). Harrison County Census Tract 33.04 had a population of 4,233, also with a similar racial composition.

The 2007 Economic Census collected data on various industries including those operating in Harrison County and the City of Biloxi (U.S. Census Bureau 2011b). The following list reports industries within Harrison County and the employer value of sales, shipments, receipts, revenue, or business done in thousands of dollars. (Note: In the lists below, N means "not available or not comparable" and D means "withheld to avoid disclosing data for individual companies; data area included in higher level totals.")

- Manufacturing (D)
- Wholesale trade (839,746)
- Retail trade (2,903,219)
- Information (D)
- Real estate and rental and leasing (175,579)
- Professional, scientific, and technical services (D)
- Administrative and support and waste management and remediation services (199,219)
- Educational services (D)
- Health care and social assistance (1,498,878)
- Arts, entertainment, and recreation (D)
- Accommodation and food services (1,619,113)
- Other services except public administration (181,349)

[10] A non-target species is any species that is present on the species of choice but is not desirable and should be removed.

Table 10-29. Demographics of the project area in 2010 (U.S. Census Bureau 2011a).

	HARRISON COUNTY	CITY OF BILOXI	CENSUS TRACT 33.04, HARRISON COUNTY
Total Population	187,105	44,054	4,233
Race			
White alone	130,366 (70%)	30,129 (68%)	3,320 (78%)
Black or African American alone	41,393 (22%)	8,632 (20%)	550 (13%)
American Indian or Alaska Native alone	863 (0.5%)	221 (0.5%)	22 (0.5%)
Asian alone	5,322 (2.8%)	1,951 (4.4%)	171 (4.0%)
Native Hawaiian and Other Pacific Islander alone	263 (0.1%)	108 (0.2%)	5 (0.1%)
Some Other Race alone	3,911 (2.1%)	1,662 (3.8%)	61 (1.4%)
Two or More Races	4,987 (2.7%)	1,351 (3.1%)	104 (2.4%)
Hispanic or Latino	9,937 (5.3%)	3,847 (8.7%)	161 (3.8%)
Not Hispanic or Latino	177,168 (94.7%)	40,207 (91.3%)	4,072 (96.2%)

The following list reports industries within the City of Biloxi and the employer value of sales, shipments, receipts, revenue, or business done in thousands of dollars.

- Wholesale trade (160,552)
- Retail trade (573,389)
- Information (N)
- Real estate and rental and leasing (58,502)
- Professional, scientific, and technical services (D)
- Administrative and support and waste management and remediation services (30,136)
- Educational services (D)
- Health care and social assistance (799,482)
- Arts, entertainment, and recreation (D)
- Accommodation and food services (1,247,079)
- Other services except public administration (34,961)

Table 10-30 lists employment information for Harrison County, the City of Biloxi, and Harrison County Census Tract 33.04. The top five industries in Harrison County in terms of employment are educational services, and health care and social assistance (18.5 percent); arts, entertainment, and recreation, and accommodation and food services (17 percent); retail trade (12 percent); construction (9.7 percent); and public administration (7.9 percent). The percentage of civilian labor force unemployed in Harrison County is 5.7 percent. The median household income is $38,645 and the per capita income is $21,001. Data for the City of Biloxi and Census Tract 33.04 are generally similar, although the household income in Census Tract 33.04 is considerably higher ($38,315) and unemployment is lower (3.6 percent).

Biloxi police and fire departments and emergency medical services have access to the Popp's Ferry Causeway Park along Causeway Drive. The nearest medical facility, Cedar Lake Medical Park and Surgery Center, is located approximately 3.8 miles northeast of the proposed park. Biloxi Fire Department District 6 serves the proposed project location and the Biloxi Police Department has a location on Popp's Ferry Road. Local law enforcement currently patrols the park. Parks and recreation areas other than the

proposed project include Camp Wilkes on the Back Bay to the east, the Biloxi Sports Complex to the northeast, and the Popp's Ferry Recreational Area and Sunkist Country Club to the north.

Table 10-30. Selected economic characteristics of the project area.

	HARRISON COUNTY	CITY OF BILOXI	CENSUS TRACT 33.04, HARRISON COUNTY
Industry (civilian employed population 16 years and over)	**83,694**	**20,233**	**2,437**
Agriculture, forestry, fishing and hunting, and mining	737 (0.9%)	372 (1.8%)	27 (1.1%)
Construction	8,093 (9.7%)	1,600 (7.9%)	69 (2.8%)
Manufacturing	5,867 (7.0%)	1,171 (5.8%)	12 (0.5%)
Wholesale trade	2,277 (2.7%)	552 (2.7%)	90 (3.7%)
Retail trade	10,345 (12%)	2,602 (13%)	109 (4.5%)
Transportation and warehousing, and utilities	3,488 (4.2%)	610 (3.0%)	22 (0.9%)
Information	1,366 (1.6%)	521 (2.6%)	0 (0.0%)
Finance and insurance, and real estate and rental and leasing	6,023 (7.2%)	969 (4.8%)	235 (9.6%)
Professional, scientific, and management, and administrative and waste management services	5,709 (6.8%)	1,356 (6.7%)	351 (14%)
Educational services, and health care and social assistance	15,458 (19%)	3,148 (16%)	479 (20%)
Arts, entertainment, and recreation, and accommodation and food services	13,845 (17%)	4,435 (22%)	591 (24%)
Other services, except public administration	3,875 (4.6%)	980 (4.8%)	121 (5.0%)
Public administration	6,611 (7.9%)	1,917 (9.5%)	331 (14%)
% unemployed, civilian labor force	5.7%	4.4%	3.6%
Median household income (dollars)	38,645	41,655	66,117
Per capita income (dollars)	21,001	24,488	38,315
Percentage of all People whose income in the past 12 months is below the poverty line	20.3%	19.6%	4.7%

Environmental Consequences

Socioeconomic

The project would provide work for construction-related industries for the construction timeframe. The operation of the bait shop/concession stand/kayak rental facility would create four to five jobs. Additionally, the improved access, environmental education, and creation of recreational facilities, especially the provision of fishing locations for those without boats, would benefit the local community. Short-term and long-term benefits would result from construction jobs and jobs at the Popp's Ferry Causeway Park.

Environmental Justice

The project would provide additional recreational opportunities in the Popp's Ferry Causeway Park and vicinity and is located in Back Bay away from residential developments. There would be no disproportionate impacts to minority or low-income populations.

10.7.6.9 Cultural Resources

Affected Resources

The National Historic Preservation Act of 1966 (NHPA) charges the federal government with considering the potential effects of its actions on the nation's cultural and historic resources. Much of the southern portion of the project area, while undeveloped, has been disturbed at some point in the past. Dating back to the late 1800s, the southern end of the project site was used as a ferry landing transporting people, livestock, and vehicles across Big Lake to Biloxi. A Phase I cultural and archeological inventory was completed for the project area (R. Christopher Goodwin and Associates, 2014). Investigation of previously recorded site locations on file with the Mississippi Department of Archives and History (MDAH) and based on the results of field surveys, there are no identified archaeological, prehistoric or historic sites, or historic standing structures that are listed on the NRHP, or designated National Historic Landmarks within the project area. No further study is the recommendation of the Phase I report.

This project is currently being reviewed under Section 106 of the NHPA to identify any historic properties located within the project area and to evaluate whether the project would affect any historic properties.

Environmental Consequences

A complete review of this project under Section 106 of the NHPA is ongoing and would be completed prior to any project activities that would restrict consideration of measures to avoid, minimize or mitigate any adverse effects on historic properties located within the project area. This project would be implemented in accordance with all applicable laws and regulations concerning the protection of cultural and historic resources.

10.7.6.10 Infrastructure

Affected Resources

Within the project area, there is only one roadway, the two-lane Causeway Drive. This roadway connects the mainland neighborhood to Popp's Ferry Causeway Park by crossing Burnt Bridge and terminates at the southern point of the park. The main arterial road adjacent to the project area is Popp's Ferry Road/Bridge, which connects North Biloxi to the Biloxi peninsula. The City of Biloxi Comprehensive Plan reports that the 2007 average daily traffic on the section of Popp's Ferry Road that runs along Causeway Park is 22,000 vehicles with a year 2030 projection of 24,900 vehicles. No traffic estimates exist for Causeway Drive, although traffic volume is low. A multi-use (i.e., biking and walking) path has been suggested for Popp's Ferry Road and a proposed shared route connecting the Biloxi Sports Complex to the neighborhood north of the Popp's Ferry Causeway Park (City of Biloxi 2009). Currently, there is no public transportation serving the project area; however, bus service has been proposed for Popp's Ferry Road (City of Biloxi 2009).

Electric utility lines run most of the length of the project site and feed existing lighting facilities along Causeway Drive. There is a sewer force main within the project area, although there are no sewer or solid waste utilities for use at the site. No water supply is present and no oil or natural gas wells are present.

Environmental Consequences

Enhancement of the project area would result in increased parking and access to the fishing, picnicking, and educational facilities. Increased capacity could result in an increased volume of visitors, thereby increasing vehicular and boat traffic associated with the site. Along with improvements to the surface of Causeway Drive, additional lighting would be installed for the road and parking areas. Wastewater and water utilities connections would be installed to provide restroom facilities and potable water. Existing utilities may need to be shut down for very brief periods while utilities are connected, but no adverse impacts would be expected.

There would be no impacts to infrastructure as a result of the project. The installation of new wastewater and water utilities in the area would be a long-term benefit resulting from the project.

10.7.6.11 Land and Marine Management

Affected Resources

According to the City of Biloxi zoning map, the current zoning for the project area is neighborhood business (NB) and RS-10 Single-Family Residential, Low Density (RS-10) (City of Biloxi 2010). NB is a non-residential district zoned to provide small-scale and low-intensity goods and services (e.g., recreational facilities, small restaurants, convenience stores, libraries, schools) for adjacent neighborhoods that do not increase traffic (City of Biloxi 2013). RS-10 intended to provide for residential housing needs but it is also zoned to provide open space and recreational needs and complimentary public land uses (City of Biloxi 2013). The City of Biloxi Comprehensive Plan predicts that the future land use for the entire Popp's Ferry Causeway Park area would be parks, recreation, and environmental open space.

The main portion of the project area is designated as parks and recreation land use by the City of Biloxi Comprehensive Plan (City of Biloxi 2009). The project area north of the boat launch facility, including the estuarine marsh adjacent to Causeway Drive, is classified as undeveloped, vacant land, or vacant building. Institutional or government land use is also present and adjacent to the project area in the northeast. Surrounding Causeway Drive at the northern point of the project area is single-family residential land use. The waters of Big Lake/Biloxi River along the western boundary of the Popp's Ferry Causeway Park are part of the Biloxi River Marshes Preserve within the Mississippi Coastal Preserves system. These waters are also part of the Biloxi River navigation channel and support regular barge traffic.

Environmental Consequences

The proposed project elements are consistent with current and future zoning and land use plans for the area. The majority of the project area is designated as park, recreational land, and open land. The construction and operation of the Popp's Ferry Causeway Park project would improve the park and recreational features of the area and highlight ecological features. Pursuant to the CZMA of 1972, federal activities must be consistent to the maximum extent practicable with the federally approved coastal management programs for states where the activities would affect a coastal use or resource. Federal Trustees are submitting consistency determinations for state review coincident with public review of this document. The project is consistent with current land use plans and would provide a long-term benefit to land and marine management in the area.

10.7.6.12 Aesthetics and Visual Resources

Affected Resources

Aesthetics and visual resources of the project area consist of viewsheds of natural and developed environments. The natural areas include the estuarine wetlands and disturbed upland habitats of the causeway as well as the open water areas visible from the project footprint including the waters of Biloxi River, Big Lake, and the Back Bay of Biloxi. Although the southern portion of the park is mainly undeveloped, it has experienced a large degree of human disturbance. A two-lane unimproved roadway runs the length of the western causeway from north to south. In addition, there is a non-vegetated dirt and gravel open area at the very southern end of the site adjacent to the road. North and east of the road, a rutted dirt track makes a loop through an upland area. Sparsely interspersed through this area are trees, shrubs, and grasses. Most of the trees on the site are located north of the upland area and separate the disturbed uplands from the emergent marsh further to the north. Both project site visitors as well as commuters on the Popp's Ferry Bridge are able to see these visual resources. Man-made visual resources consisting of urban development features that are visible from the project footprint include the Popp's Ferry Bridge to the east and small portions of residential land both north and south of the causeway. When viewing outward from the southern part of the site, park visitors can see these urban visual resources. The bridge is very close to the southern project area; depending on the viewer's location in this area, the bridge is anywhere from 0 to 650 ft. away. In the southernmost section of Popp's Ferry Causeway Park, the outward viewshed consists mostly of open water with residential land at least 750 ft. to the south.

The northern portion of the project area encompasses the proposed utility connection work that runs north along Causeway Drive, across to the mainland ending at the residential street, Cambridge Drive. The viewshed here consists of an improved two-lane roadway, a concrete walkway along the western side, a parking lot for cars and boat trailers, a fishing pier, and a marsh boardwalk. A residential area is visible at the far northern end. In addition to the artificial resources described above, most of the outward viewshed consists of open water areas and emergent estuarine marsh.

Environmental Consequences

During construction, there would be temporary aesthetic and visual resource impacts due to the presence and use of construction equipment as well as the disrupted and disturbed state of the site before the completion of each project feature. Currently, the site is used for fishing, boating, and walking. The presence of the construction equipment and disturbed site would be apparent and could detract from the nature viewing experience of some visitors. Additionally, large equipment and areas of disturbed ground might be visible to people passing through adjacent areas such as Popp's Ferry Bridge or the surrounding waters and residential neighborhoods. Therefore, construction activities would result in short-term, minor adverse impacts to aesthetic and visual resources.

Following construction, there would be long-term beneficial aesthetic and visual resource impacts due to the presence of the various project features. The shoreline stabilization would use rock riprap. The benefits from this stabilization would outweigh potential adverse impacts to aesthetics and visual resources. Other installed features (Interpretive Center, bait shop/concession stand/kayak rental facility, fishing piers, walkways, marsh overlook pier, etc.) would change the visual character of the disturbed site to a park environment. In addition to providing opportunities and visitor enjoyment, these facilities would be considered beneficial to aesthetics and visual resources.

Short-term minor adverse impacts to visual resources would occur during construction. Long-term beneficial impacts to aesthetics and visual resources would result from park implementation.

10.7.6.13 Tourism and Recreational Use

Affected Resources

The proposed project site currently includes infrastructure for public access and recreation. Access to the site is provided by a two-lane roadway entering the park at Burnt Bridge. The northern portion of this road was recently repaved and lighting was installed. The southern portion is paved but needs repair and improved lighting. Adjacent to the terminus of the improved road is a parking lot for at least ten cars and ten boat trailers. At the southernmost portion of the project area is a gravel and dirt area currently available for parking. A lighted concrete promenade with benches runs along the western side of the causeway and terminates at a boat launch facility, which would provide access to shoreline opportunities and the surrounding waters. A wooden fishing pier provides additional access to coastal habitats and recreational pursuits. An extensive walkway over marsh and estuarine waters allows access to wetland vistas. The public can access the Popp's Ferry Causeway Park and its existing facilities 24 hours a day.

No visitation numbers are available for the Popp's Ferry Causeway Park. However, anecdotal evidence shows that it is a popular spot for outdoor activities by local residents. Visitors use the fishing piers, Burnt Bridge, and shoreline locations for fishing, crabbing, and shrimping. The boat launch provides boaters accessibility to the waters surrounding the park. Walking, running, and nature viewing are possible throughout the park including on the lighted concrete walkway, the marsh boardwalk, and other areas in the southern portion.

Environmental Consequences

Due to safety concerns, access to certain areas may be restricted during construction of each project feature. These restrictions would be limited to the vicinity of construction of specific project features and during the construction period only. Other parts of the park could still be accessed during construction.

After construction is complete, the project would increase the recreational opportunities on the park lands and in the surrounding waters. In addition, completion of the project would allow for easier access to the park and its existing and new recreational features. Almost all areas of the park would be open to recreational pursuits through the nature trails and picnic areas, marsh overlook pier, concrete shoreline walkway, and improvements to the southern part of Causeway Drive. The addition of the bait shop/concession stand/kayak rental facility would allow visitors to use kayaks to explore the nearby shallow water estuarine areas adjacent to the park; previously, these areas were not easily accessible for recreation. The additional fishing piers would allow for more visitors to fish and crab in local waters, especially for those without boat access.

Construction activities would result in short-term minor adverse impacts to public access and recreation. Following construction, there would be long-term beneficial impacts to public access and recreation within the park and adjacent areas.

10.7.6.14 Public Health and Safety

Affected Resources

Riprap water edge treatment protects the western side of the project area. The northern portion of riprap has been enhanced, but the southern area of riprap is older and needs replacement.

Environmental Consequences

There are no anticipated impacts to public health and safety due to construction or operation of the project. The improvement to, and addition of, riprap water edge treatment would result in long-term beneficial impacts to shoreline protection for the localized western boundary of the Popp's Ferry Causeway Park.

10.7.7 Summary and Next Steps

The project is intended to restore lost recreational opportunities through the enhancement of increased access to coastal estuarine habitats and wildlife viewing areas. The project would enhance the public's use and/or enjoyment of natural resources by constructing and/or expanding an educational interpretive center, nature trails, piers, and other recreational enhancements that would enhance visitor access to the adjacent coastal estuarine environment and provide opportunities for visitors to fish, crab, and observe nature. The project is consistent with Alternative 3 (Contribute to Providing and Enhancing Recreational Opportunities) and Alternative 4 (Preferred Alternative).

NEPA analysis of the environmental consequences suggests that while there may be minor adverse impacts to some resource categories, there would be no long-term major adverse impacts as a result of the project. The project would provide long-term benefits by providing enhanced access to coastal resources and educational opportunities in the park, fishing piers, boardwalks, a marsh overlook, and interpretive center. The Trustees have completed coordination and reviews under the Endangered Species Act, the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act and the Marine Mammal Protection Act. Consistency reviews of the proposed Phase III early restoration projects in Mississippi were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed. The Trustees have initiated consultations under the Historic Preservation Act and other federal statutes. The Trustees will consider public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Trustees' determination on selection of this project will be included in the Record of Decision.

Throughout the design process, every practical attempt would be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The following BMPs and conservation measures that (sorted by resource type) would be utilized to minimize impacts to resources:

- Geology and Substrates
    - Construction in Mississippi is required to follow the "Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas"(MDEQ 2012a) and the "Field Manual for Erosion and Sediment Control on Construction Sites in Mississippi" (MDEQ 2005).
- Hydrology and Water Quality
    - To the extent possible, pervious, vegetated treatment areas would be incorporated into the final design to facilitate stormwater storage and treatment throughout the site.

- The marsh boardwalk would be constructed to allow sunlight to penetrate through, reducing shading effects and allow vegetation to regrow.
- Construction in Mississippi is required to follow the “Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas”(MDEQ 2012a) and the “Field Manual for Erosion and Sediment Control on Construction Sites in Mississippi” (MDEQ 2005).
- Contractors would be instructed to avoid the clearing of trees and minimize disturbance and compaction in wetlands.

- Green House Gas Emissions
  - Shut down idling construction equipment, if feasible.
  - Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
  - Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
  - Encourage the use of alternative fuels or power sources for generators at construction sites, such as propane or solar power, or use electrical power where practicable.
- Noise
  - Piling driving will be completed with a vibratory hammer, which would minimize noise impacts.
  - Every effort would be made to minimize the time required for pile installation.
  - All vessels associated with the construction project shall operate at “no wake/idle” speeds at all times and in all water depths where the draft of the vessel provides less than a 4-ft. clearance from the bottom.
  - Construction contractors would preferentially follow deep-water routes (e.g., marked channels) whenever possible.
  - If marine mammals are seen, all work (pile driving) would cease until the animal has left the project area.
  - The Trustee, or designee, would have monitors onsite during pile installation to ensure that these conditions are met.
- Flora and Fauna
  - Construction of the boardwalk to allow penetration by sunlight would reduce shading effects and allow vegetation to regrow.
  - The Trustee would identify and also avoid pocket beaches to the maximum extent practicable in the design of the project.
- Marine Mammals
  - Establishment of Shut-Down Zone: The calculated radius for the 120 dB rms/Level B harassment zone (i.e., distance from driven pile to area where harassment would no longer be expected to occur) is 1,585 m. The area defined by this radius in all relevant directions from the pile driving activity will comprise the shut-down zone. Shut-down of pile driving activity would occur immediately upon observation of any marine mammal within or approaching this zone.
  - Visual Monitoring and Shut-down of Pile Driving Activities: The shut-down zone will include all areas where underwater sound pressure levels are anticipated to equal or exceed the 120 dB threshold, as described under "Establishment of Shut-Down Zone."

Qualified observers will monitor these zones and advise project personnel when delay or shut-down of pile driving activities is required. The shut-down zone will be monitored for the presence of marine mammals before, during, and after any pile installation activity, beginning 15 minutes prior to initiating the start of pile installation and continuing for 15 minutes following the completion of pile installation. If marine mammals are present within the shut-down zone prior to pile installation, the start of pile installation will be delayed until the animals voluntarily leave the shut-down zone and have been visually confirmed beyond the zone, or until 15 minutes have elapsed without redetection. Shutdown of pile driving activities will occur if any marine mammal enters or approaches the established zone, and will not resume until the animal has voluntarily moved beyond the relevant shut-down zone radius, either through visual confirmation or by waiting until 15 minutes has elapsed without redetection.

- Qualified biologists will be present on site at all times during pile driving activities. The action area will be monitored by at least three observers during vibratory pile driving. One will be based on land; two will be on vessels traveling along and within the radius while visually scanning the area.
- Monitoring of the shut-down zone will be conducted using binoculars, spotting scopes and visual observations. Each monitor will have a radio for contact with other monitors or work crews. A GPS unit, range finder, or other suitable methodology will be used for determining the observation location and distance to marine mammals, vessels, and construction equipment.
- No pile driving will occur in low-light conditions, or when visibility is impaired such that the shut-down zone cannot be effectively monitored. Pile driving will only be conducted between one-hour post-sunrise through one hour prior to sunset. If waters exceed small craft advisories or conditions otherwise restrict biologists' ability to make observations or become unsafe for the observation boat to operate, pile installation will cease until conditions allow for monitoring to resume.

- Protected Species
  - If possible, complete the in-water work when manatees are not expected to be present, i.e., when water temperatures are below 68F. If timing restrictions are not feasible, then conditions A-D of the Standard Manatee Conditions for In-water Work, 2011, shall be followed when operating vessels or doing in-water work construction.
  - If protected species enter the construction area, construction would be halted until the individual(s) leave the project area.
- Migratory Birds
  - If activities require tree removal pre-construction surveys will be completed. If evidence of nesting is found, coordination with the USFWS would be initiated to develop and implement appropriate conservation measures.
- Essential Fish Habitat
  - Anchoring and mooring will be restricted to impacted areas. Work barges would be moored for overnight and weekends/holidays in areas where previous impacts have occurred (deployment areas).

- Vibratory hammers are considered a minimization measure to decrease injury and behavior modification to fish and cetaceans. The project will use this method to install pilings for piers.
- Monitoring will be conducted before, during, and after project implementation to ensure compliance with project design.
- Structures will be designed to minimize shading impact to tidal and non-tidal wetland grasses.
- Appropriate BMPs will be employed to minimize impacts associated with the parking areas and during construction.

- Invasive Species
  - All non-native species removed during clearing and grubbing would be properly handled to prevent spreading into other areas on the project site. Proper handling could include bagging, mulching, or burning removed vegetation to prevent regrowth.
- Tourism and Recreational Use
  - Access to certain areas may be restricted during construction of each project feature.

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10.8 Pascagoula Beachfront Promenade: Project Description

10.8.1 Project Summary

The proposed Pascagoula Beachfront Promenade project is intended to restore lost recreational opportunities resulting from the Spill and related response actions. This project would enhance recreational shoreline access via the construction of a lighted concrete beachfront pedestrian pathway adjacent to a sand beach in Pascagoula, Mississippi. Project funds would be used to help complete a two-mile, 10-ft.-wide lighted concrete pathway complete with amenities. This Early Restoration project proposal would fund a portion (8,200 ft.) of the 10-ft. wide promenade, a portion of which has already been constructed. The estimated cost for this project is $3,800,000.

10.8.2 Background and Project Description

The Pascagoula Beachfront Promenade project is located immediately south of and parallel to Beach Boulevard in Pascagoula, Mississippi, in Jackson County, and would extend approximately 8,200 ft. from Point Park on the western end to the eastern edge of the drainage channel east of Oliver Street (Figure 10-13). It is immediately adjacent to a sand beach on the Mississippi Sound, which was oiled during the Spill. In addition to the promenade, amenities may be constructed as funding allows (e.g., fire pits, playgrounds, volleyball courts, public art, parking, and shower stations). The promenade would be constructed from the southern edge of the curb on Beach Boulevard and extend over the sand beach, which was recently funded through a U.S. Army Corps of Engineers' $12 million seawall protection ("beach creation") project (Figure 10-14). Figure 10-15, Figure 10-16, and Figure 10-17 show the master plan for the entire project, including Early Restoration -funded project elements and elements of the project funded by other sources.

Figure 10-13. The Pascagoula Beachfront Promenade project segments.

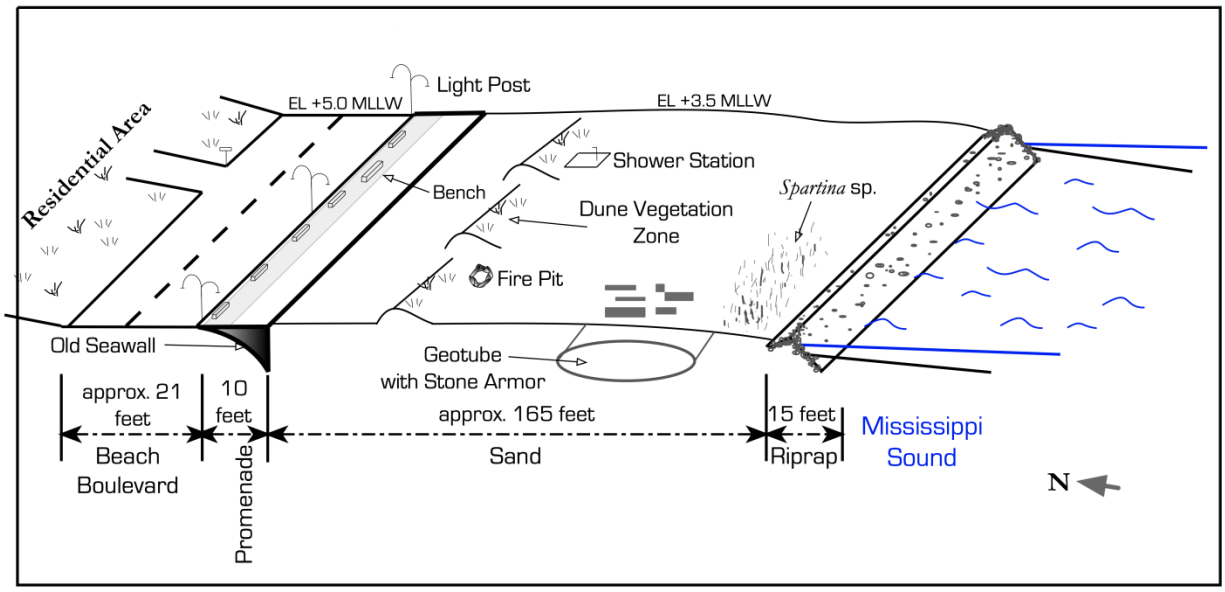

Figure 10-14. Conceptual Diagram—Pascagoula Beachfront Promenade project.

Figure 10-15. Pascagoula Beachfront Promenade Master Plan proposed western beachfront (the western end of the proposed promenade is flagged by the red arrow).

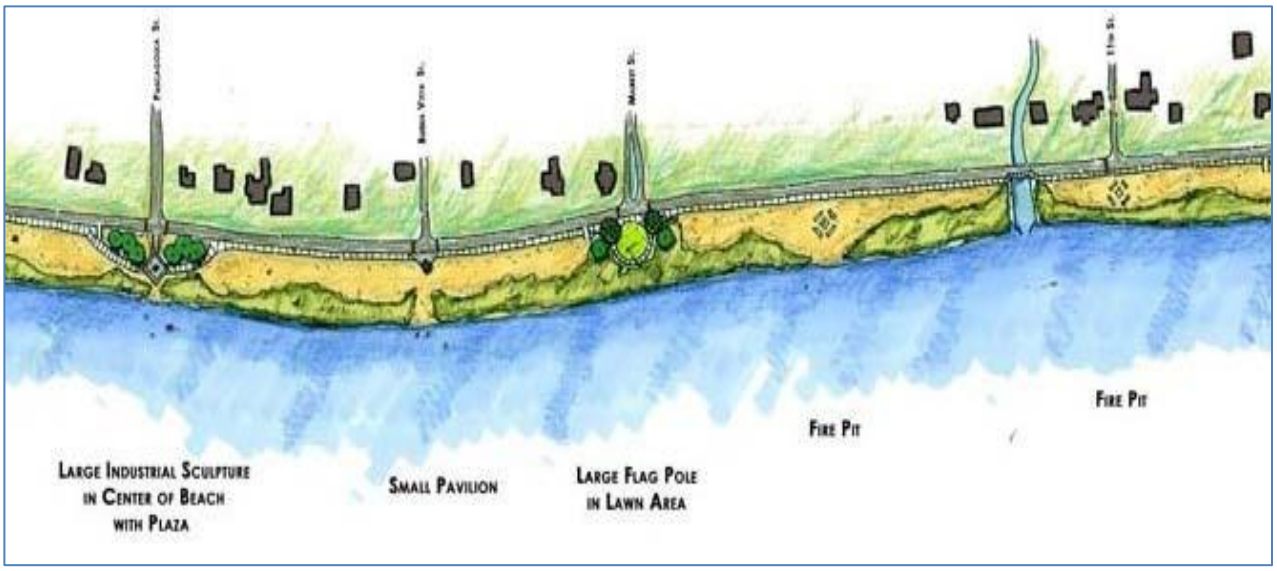

Figure 10-16. Pascagoula Beachfront Promenade Master Plan.

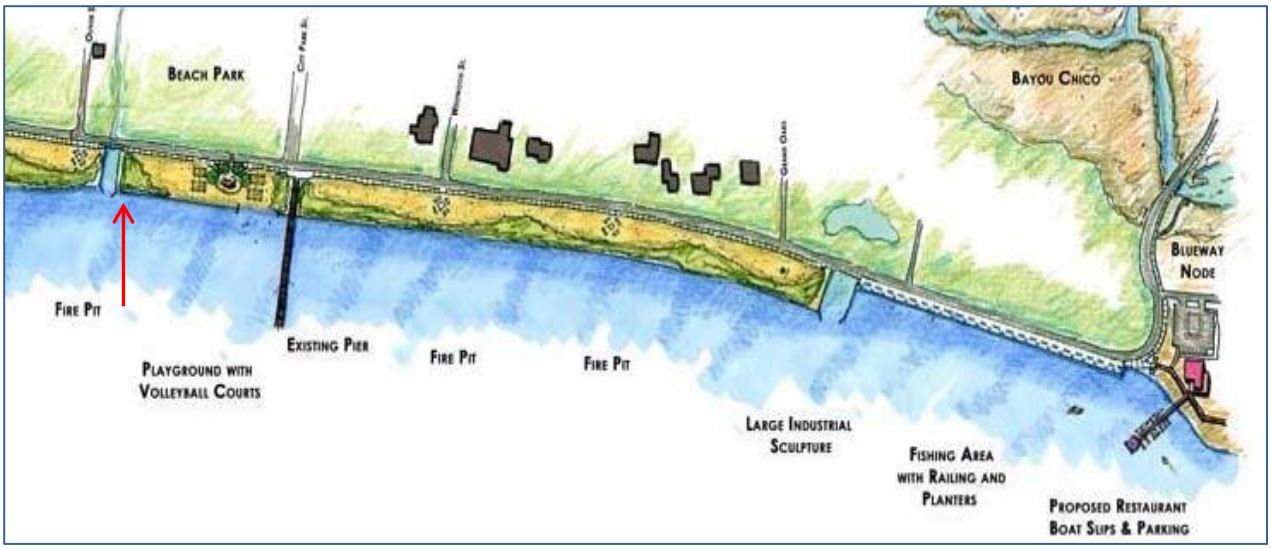

Figure 10-17. Pascagoula Beachfront Promenade Master Plan.

10.8.3 Evaluation Criteria

This project meets the evaluation criteria established in the Oil Pollution Act (OPA) and the Framework Agreement. As a result of the Spill, the public's access to and enjoyment of the natural resources along the Mississippi Gulf Coast were denied or severely restricted. Completion of the project would enhance the public's use and/or enjoyment of natural resources, specifically, shoreline adjacent to the Mississippi Sound (Section 7.1; Table 7.1). The project is intended to replace or provide recreational opportunities comparable to the types of opportunities lost as a result of the Spill. The nexus to resources injured by the Spill is clear (see C.F.R. § 990.54(a) (2) and Sections 6a-6c of the Early Restoration Framework Agreement). Since the project is technically feasible, utilizes proven techniques with established methods and documented results, and would be appropriately monitored and managed, it can be implemented with minimal delay. Similar projects have been successfully implemented in the region. For these reasons, the project has a high likelihood of success (see C.F.R. § 990.54(a)(1) and (3) and Section 6e of the Early Restoration Framework Agreement). A thorough environmental review, including review under applicable environmental statutes and regulations, as described in section 10.9, indicates that adverse effects from the project would largely be minor, localized, and often of short duration. In addition, the best management practices and measures to avoid or minimize adverse effects described in 10.9 would be implemented. As a result, collateral injury would be avoided and minimized during project implementation (construction and installation and operations and maintenance) (15 C.F.R. § 990.54(a)(4)). Cost estimates are based on similar past projects, and the project can be conducted at a reasonable cost (see C.F.R. § 990.54(a)(1)). This project was included in the *Mississippi Coastal Improvements Program (MsCIP): Hancock, Harrison, and Jackson Counties, MS – Interim Report* and is consistent with existing and long-term local restoration needs and initiatives (see Section 6(d) of the Early Restoration Framework Agreement). Further, this project would not adversely affect public health and safety (see Section 3.3.6 Public Health and Safety).

10.8.4 Performance Criteria, Monitoring and Maintenance

Successful completion of the project would meet the restoration objective to enhance public use and enjoyment of the natural resources injured by the Spill. This project includes monitoring efforts to ensure project designs are correctly implemented during construction. Trustees would conduct additional monitoring for public use of the Pascagoula Beachfront Promenade and the adjacent beach area through visitor counts on the promenade and associated amenities for a five [year period upon completion of construction. The City of Pascagoula would be responsible for maintenance of the project facilities, features, and exhibits.

10.8.5 Offsets

NRD Offsets are $5,700,000 expressed in present-value 2013 dollars, based on a benefit-to-cost ratio of 1.5, to be applied against the monetized value of lost recreational use provided by natural resources injured in Mississippi, which would be determined by the Trustees' assessment of lost recreational use for the Spill. Please see Chapter 7 of this document (Section 7.2.2) for a description of the methodology used to develop monetized Offsets.[11]

10.8.6 Cost

The total estimated cost to implement this project is $3,800,000. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, monitoring, and potential contingencies.

[11] For the purposes of applying the NRD Offsets to the calculation of injury after the Trustees' assessment of lost recreational use for the Spill, the Trustees and BP agree as follows:

- The Trustees agree to restate the NRD Offsets in the present value year used in the Trustees' assessment of lost recreational use for the Spill.
- The discount rate and method used to restate the present value of the NRD Offsets will be the same as that used to express the present value of the damages.

10.9 Pascagoula Beachfront Promenade: Environmental Review

10.9.1 Introduction and Background

The proposed Pascagoula Beachfront Promenade project is intended to restore lost recreational opportunities resulting from the Spill and related response action, which severely restricted human activity for an extended period of time, including access to Pascagoula's beachfront recreation by local residents and regional visitors. Specifically, the project would enhance recreational shoreline access via the construction of a lighted concrete beachfront pedestrian pathway adjacent to a sand beach in Pascagoula, Mississippi. Early restoration funds would be used to help complete a portion of a two-mile, 10-ft.-wide lighted concrete pathway complete with amenities.

Previous NEPA/Early Restoration Funding: In 2011, the City of Pascagoula prepared an Environmental Assessment (EA) for the Department of Housing and Urban Development (HUD) for the Beachfront Promenade Project (HUD 2011) for a portion of the Pascagoula Beachfront Promenade project. The DOI regulations for implementing the National Environmental Policy Act (NEPA) provide that the Department of the Interior (DOI) may adopt an EA prepared by another agency (see 43 C.F.R. 46.320). See Section 7.8 for information on DOI NEPA adoption regulations and requirements. For the Proposed Action, DOI adopted the HUD EA entitled *"Environmental Assessment and Finding of No Significant Impact for HUD-funded Proposals, Pascagoula Beach Promenade Project"*; available at http://www.restore.ms.

The DOI regulations also provide that, when a proposed action differs from the proposed action contained in the adopted EA, DOI may augment the adopted EA to make it consistent with the proposed action (see 43 C.F.R. 46.320). This supplemental NEPA analysis augments the HUD EA. In addition to the environmental analysis regarding the construction of 10,500 linear ft. of concrete pedestrian pathway parallel to Beach Boulevard contained in the adopted HUD EA, this supplemental analysis considers any additional environmental impacts that would result from the elements of the Phase III Proposed Action that are not described and analyzed in the adopted HUD EA. These elements include an additional 500 ft. of concrete pathway at the upper reaches of the existing pathway on Pascagoula Beach and visitor amenities such a beach shower, a playground, benches and sculptures in the amenity area along 8,200 linear ft. of boardwalk (Figure 10-13).

The project description is based on the current design concept for the purpose of assessing the construction impact on the environment. Final engineering and project design could result in revisions to the project. The following description is intended to be a conservative review of the project components in order to evaluate a maximum environmental impact in the NEPA review and in environmental permitting. Project refinement(s) are anticipated as part of the design process. To the extent possible, revisions would be restricted to the current project footprint. For the purposes of this discussion, the project is divided into three segments (see Table 10-31).

Eastern Segment: A 2,800-linear-ft. segment from the eastern project terminus to Oliver Street; the segment is completed and was authorized by the HUD EA.

Middle Segment: A 7,700-linear-ft. segment from Oliver Street to the eastern terminus of Point Park (including amenities) that would be constructed using Early Restoration funds and was authorized by the 2011 HUD EA.

Western Segment: A 500-linear-ft. segment in the vicinity of Point Park that would be funded by Early Restoration and was not reviewed under the HUD EA.

Project Area: An 8,200-linear-ft. segment from Oliver Street to Point Park that is the Early Restoration project; funds would also be used to construct amenities and water tie ins.

The Early Restoration NEPA review adopts the 2011 HUD EA and focuses on a NEPA analysis of the western segment of the project that has not been reviewed. Funding would be used for the entire 8,200-linear-ft. project area, which includes the middle and western segments (Table 10-31).

Table 10-31. Early restoration and compliance for the Pascagoula Beach Promenade.

PROJECT AREA	LENGTH	NEPA REVIEW/PERMITTING	EARLY RESTORATION FUNDING
Eastern Portion	2,800 ft.	HUD EA/MCWPA permit	No
Middle Portion	7,700 ft.	HUD EA/MCWPA permit	Yes
Western Portion	500 ft.	No NEPA review/not authorized under MCWPA	Yes

MCWPA=Mississippi Coastal Wetland Protection Act Permit

The HUD EA covers the 10,500 linear ft. of the promenade (eastern and middle segments). The HUD EA does not cover the western 500 ft. of the promenade, utility tie-ins beneath Beach Boulevard at Buena Vista Street and Bernard Street, or amenities to be placed on the beach south of the Promenade pathway. The HUD EA's "Finding of No Significant Impact" (FONSI) indicates that the project would not result in significant negative impacts to the natural and human environment.

10.9.2 Project Location

The proposed project is located in the city of Pascagoula within the state of Mississippi, in Sections 6, 8 and 10; Township 8 South; Range 6 West, in Jackson County. The promenade would be located adjacent to the south of Beach Boulevard along the shore of the Mississippi Sound, bounded by Point Park to the west (Figure 10-17 and Figure 10-18).

The Pascagoula Promenade provides enhanced access via a promenade, which is positioned over the historic seawall along the shore (Figure 10-18). Project amenities may include, but are not limited to, lighting, shower stations, fire pits, pavilions and/or other items to be determined at final design. Amenities would be placed alongside the beachfront promenade as well as on the beach, which was recently restored by the U.S. Army Corps of Engineers as part of the $12 million Mississippi Coastal Improvements Program (MsCIP) Pascagoula Beach Boulevard Restoration Project (USACE 2009).

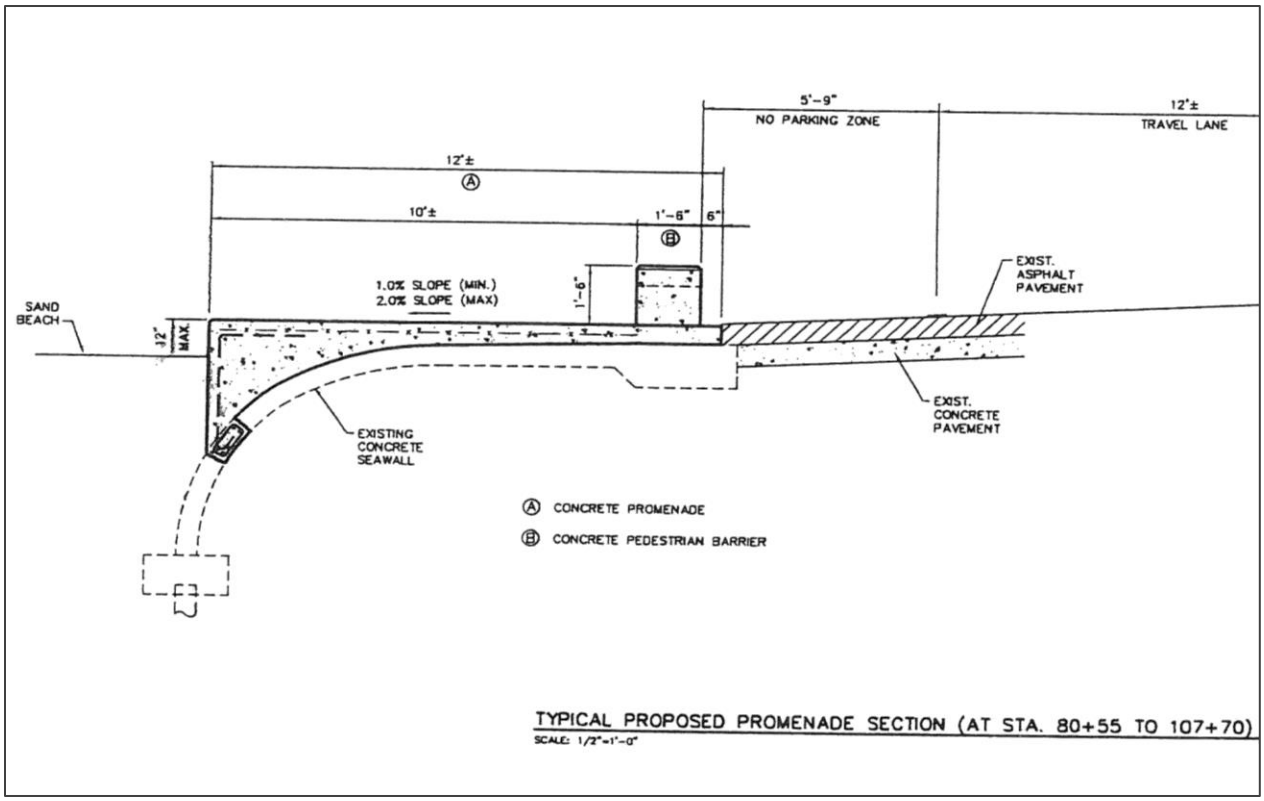

Figure 10-18. Cross-section of the proposed Pascagoula Beachfront Promenade.

The USACE's Pascagoula Beach Boulevard Restoration Project consisted of repair of the old seawall; replacement and extension of existing drainage structures; fill and placement of 7,700 ft. of geotubes; excavation of approximately 290,000 cubic yards of sand from the upper river portions of the Pascagoula federal navigation channel; placement of sand along 7,700 ft. of the Pascagoula waterfront in the Mississippi Sound; and beach toe protection consisting of the placement of Class 2 riprap at elevation -1 Mean Lower Low Water (MLLW) along the length of the project. The project also includes establishment of vegetation behind the riprap *(Spartina patens).* While the engineered purpose of this project is for storm protection of the seawall and Beach Boulevard, most residents refer to the area as the Pascagoula Beach ("beach"); Figure 10-18 and Figure 10-19.

Figure 10-19. Location of Pascagoula's beachfront and proposed project features.

10.9.3 Construction and Installation

Construction methods and activities are included in order to assess the impact on the environment. Actual construction methods and activities would be determined after final design and would likely be comparable to activities described below. It is expected that actual construction methods would be similar to those presented in this section.

Beachfront Promenade Structure and Amenities

The promenade would consist of concrete placed on top of an existing seawall, which is a feature currently covered in most places by sand (Figure 10-18). Two 60-ft.-long prefabricated pedestrian bridges would be installed to cross two existing drainage culverts (Figure 10-18). Tie-ins to existing water lines would be constructed along the north edge of Beach Boulevard at Bernard Street and Buena Vista Street. The promenade would contain concrete pedestrian barriers to provide a boundary between the concrete promenade and Beach Boulevard and would also serve as benches. The promenade would also include decorative light poles and fixtures.

Shower stations would be constructed at locations along the promenade in addition to other potential amenities positioned along the northern boundary of the beach (see Amenity Area in Figure 10-19). Construction activities would consist of removal of all existing low-mast lighting, the existing concrete

pedestrian 18-inch-by-18-inch barrier located on the southern edge of Beach Boulevard, excavation of sand to expose the existing seawall, the installation of required reinforcing steel and placement of concrete for the promenade structure walkway. New decorative light poles with associated fixtures and associated conduit would be installed, as well as pedestrian barriers/benches, bollards, and concrete pavers. Construction staging areas would include Point Park to the west, Beach Park to the east, the beach south of the construction site, and/or nearby leased private properties. Point Park is a disturbed area adjacent to an existing industrial shipyard, while Beach Park is a municipal park and recreation area with a public parking lot. Typical construction equipment consisting of small track-mounted mini-excavators, larger track-mounted full-sized excavators, rubber-tired backhoes, and track-mounted dozers would access the project area via Beach Boulevard and the sand beach.

After construction, parking for beach visitors would be available in Beach Park, Point Park, or along city streets in the neighborhoods adjacent to the north of Beach Boulevard.

Water Tie-ins

A directional bore perpendicular to Beach Boulevard would be made at both Bernard and Buena Vista Streets to install 6-inch High Density Poly Ethlylene (HDPE) water piping under the street to the south side of the new promenade walkway structure. Taps would be made to the existing city water main on the north side of Beach Boulevard, and the lines on the south side would be extended down the walkway for supply to the new shower locations.

Equipment to be used would include a small JD 410 backhoe or similar piece of equipment for miscellaneous grubbing and light excavation (locating and excavating for water taps), a directional boring machine similar to a Ditch Witch JT-30 that is track-mounted, and medium-sized over-the-road trucks for material handling and equipment delivery.

10.9.4 Best Management Practices

Throughout the design process, every practical attempt was made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The BMPs and conservation measures that would be utilized to minimize impacts to resources are listed in Section 10.9.7, Summary and Next Steps.

10.9.5 Operations and Maintenance

The facility would be operated and maintained by the City of Pascagoula. Activities would include security, trash pickup and disposal, maintenance and repair of amenities, and repairs of structural elements.

The performance of the facility would be monitored over a period of five years to determine the number of visitors to the beachfront. Visitor counts could be completed using permanently installed automatic counters, visual counts during site visits, or some other appropriate means.

10.9.6 Affected Environment and Environmental Consequences

Under NEPA, federal agencies must consider environmental effects of their actions that include, among others, impacts on social, cultural, and economic resources, as well as natural resources. The following sections describe the affected resources and environmental consequences of the project.

This proposed Early Restoration project would consist of an 8,200- ft. extension of a 10-ft.-wide concrete promenade from Oliver Street to Point Park. Amenities would be constructed south of the promenade, and water tie-ins would be constructed at Bernard Street and Buena Vista Street.

For the purposes of this Early Restoration project, the Trustee has adopted the HUD EA and focused the environmental analysis on only those features that are not included in the HUD EA:

- 500 linear ft. of promenade walkway on the western end of the project area
- Amenities
- Water tie-ins

Environmental impacts for the Early Restoration components are consistent with impacts discussed in the HUD EA. It is anticipated that the project impacts would be similar to the findings of the HUD EA. For those portions of the project that were previously reviewed by the HUD EA, the project would not result in a significant negative impact on the quality of the natural and human environment.

10.9.6.1 No Action

Both OPA and NEPA require consideration of the No Action alternative. For this Final Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue the Pascagoula Beachfront Promenade as part of Phase III Early Restoration.

Under No Action, the existing conditions described for the project site in the affected resources subsection would prevail. Restoration benefits associated with this project would not be achieved at this time.

10.9.6.2 Physical Environment

Geology and substrates, hydrology, water quality, air quality, greenhouse gas emissions, and noise are discussed in this section.

Geology and Substrates

Affected Resources

The proposed location of the promenade and amenities is part of an MsCIP Pascagoula Beach Boulevard Restoration Project recently completed by the USACE. The soils are composed of dredged material (sand) that was beneficially used from the Pascagoula Channel navigation dredging. The locations for the water tie-in connections consist of shallow sandy soils (maximum of 4 ft. below grade), heavily compacted beneath Beach Boulevard and at the right-of-way adjacent to the north of Beach Boulevard at Buena Vista and Bernard streets.

Environmental Consequences

There would be short-term minor impacts to geology, soils, and sediments during construction activities. There would also be short-term minor impacts during construction at the staging areas (Point Park, Beach Park, the sand beach, and other cleared lots), but these impacts are minor because these areas consist of paved, disturbed, or compacted exposed soil.

There would be short-term minor adverse impacts to geology and substrates during construction.

10.9.6.3 Hydrology and Water Quality

Affected Resources

Hydrology

The project area is crossed by two channels that extend from the Mississippi Sound into southern sections of the City of Pascagoula (Figure 10-19). These two channels receive stormwater runoff from the adjacent communities.

Stormwater runoff from residential lots along Beach Boulevard flows overland onto Beach Boulevard (which is sloped southward) and then onto the sand beach, where it infiltrates naturally. There are only a few stormwater catch basins along Beach Boulevard; stormwater drains from there to the Mississippi Sound.

Tides

The riprap along the seaward edge of the beach was built to elevation +2 ft. MLLW. Most of the beach was filled to elevation +3.5 ft. MLLW. The spring tidal elevation is approximately +2 ft. MLLW.

Wetlands

There are no jurisdictional wetlands in the project area as defined by the U.S. Army Corps of Engineers.

Floodplains

The beach promenade pathway is located in the 100-year floodplain and also in Zone VE as reported in Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Map Numbers 28059C0431G and 28059C0433G, effective March 16, 2009 (FEMA 2013). The Zone VE designation denotes areas of the Coastal Flood Zone with velocity hazard (wave action) with an established base flood elevation. Although the promenade project is located within the 100-year floodplain, it is functionally isolated from the traditional floodplain areas north of Beach Boulevard. The newly constructed sand beach where the beach promenade would be constructed is located on the Mississippi Sound. The Mississippi Sound has a surface water area of over 500,000 acres. It is tidally influenced and affected more by tides and storm surge than by floodwaters from riverine and watershed runoff.

Water Quality

The water resources in the area consist of two drainage channels that flow into the Mississippi Sound by crossing the created beach. The Mississippi Sound is located to the south of the project area; the Pascagoula River is located to the west. According to the State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters (WPC-2), published by the Mississippi Department of Environmental Quality on June 28, 2012, the Mississippi Sound water body classification is “recreation,” and the Pascagoula River is used as a public water supply source.

Environmental Consequences

Hydrology

Placement of a concrete promenade would have long-term minor adverse impacts to hydrology and surface flows as water moves differently across impervious surfaces than it does across pervious areas. Overall, the total area of the promenade extension, 0.11 acre, would not alter surface water flows

considering the available area on the adjacent beach that remains pervious. There would be no impact to hydrology in the project area as a result of the proposed project.

Tides

There would be no tidal influence on the promenade or amenities. Construction of the project would not have an effect on tides or tidal hydrology in the area.

Wetlands

Although the proposed project is not located within a USACE jurisdictional wetland (USFWS 2013), it is located within a 'coastal wetland.' Coastal wetlands are defined under the Coastal Wetlands Protection Act as "all publicly-owned lands subject to the ebb and flow of the tide; which are below the watermark of ordinary high tide; all publicly-owned accretions above the watermark of ordinary high tide and all publicly-owned submerged water-bottoms below the watermark of ordinary high tide and includes the flora and fauna on the wetlands and in the wetlands." Because coastal wetlands are publicly owned lands below the historical water mark of ordinary high tide and some sand beach areas in coastal Mississippi are man-made, it is common in Mississippi for coastal wetland areas to not actually contain wetland vegetation and, instead, consist of dredged sand. A Mississippi Coastal Wetland Protection Act permit for construction of the Beachfront Promenade was issued by the Mississippi Department of Marine Resources (Permit No. DMR-110063 on October 19, 2010); the permit covers the entire length of the proposed promenade except for the western 500 ft. The permit issued by MDMR for the Beachfront Promenade on October 19, 2010 (Permit No. DMR-110063) would need to be modified by MDMR to include the western 500 ft., install amenities, and extend the time period permit, which expires on October 19, 2015. Pursuant to the Coastal Zone Management Act of 1972, federal activities must be consistent to the maximum extent practicable with the federally approved coastal management programs for states where the activities would affect a coastal use or resource. On December 12, 2013, the Federal Trustees submitted a consistency determination to the MDMR for this project for appropriate state reviews coincident with public review of the Phase III DERP/ER. On February 4, 2014, The MDMR responded and concurred with the federal determination for the project for purposes of finalizing this early Phase III restoration plan. Permits for state-designated coastal wetlands would be obtained for the Pascagoula Beachfront Promenade (Miller 2014). The Trustee will coordinate with the USACE to verify that there is no requirement for a Section 404/10 permit.

Floodplains

Because of the physical and hydrological characteristics of this portion of the Mississippi Sound, direct and indirect effects to floodplain areas outside the specific limits of this project are not expected. Flooding of the project area would continue to occur during storm surges associated with tropical storm events and hurricanes. Although the project would be located in the floodplain, most of the components would be constructed essentially at grade, which would not aggravate current hazards to other floodplains and would not disrupt floodplain values.

Water Quality

During construction, there would be short-term minor impacts from increased turbidity in the drainage channels resulting from stormwater runoff from the construction zone. Also, construction fluids (oil, gas, lubricant) from construction equipment and vehicles could potentially leak into these channels. Appropriate BMPs would be implemented to avoid and minimize these impacts. In addition, any

sediment that may enter the two channels would likely settle out quickly in the Mississippi Sound, since sand is the dominant grain size within the construction zone. A stormwater pollution prevention plan (SWPPP) would be prepared and erosion, sedimentation, and stormwater runoff would be managed in accordance with Mississippi Department of Environmental Quality (MDEQ) stormwater requirements.

An increase of impervious surface would increase the area over which stormwater flows, releasing pollutants and other substances known to affect water quality. However, the small promenade extension (0.11 acre) combined with the coarse-grained soil would allow for infiltration of the stormwater runoff; long-term impacts are considered minor to negligible.

10.9.6.4 Air Quality and Greenhouse Gas Emissions

Affected Resources

Air Quality

Project construction would include use of gasoline- and diesel-powered construction vehicles and equipment (backhoes, excavators, a directional boring machine, a paving machine, and trucks). Impacts from emissions by this equipment would be minor and short term, limited to the duration of the construction period. In addition, the ground would be disturbed to a maximum depth of approximately 4 ft., which could introduce dust and particulates into the air. Considering that the predominant grain size is sand, the amount of fugitive dust would be expected to be small, and thus impacts would be very minor and short term.

After project completion, traffic volume in the area is anticipated to increase slightly as a result of additional visitors to the beach. However, given the current very low traffic density, air quality and greenhouse gas emissions (GHGs) impacts would be negligible.

Greenhouse Gas Emissions

The use of gasoline- and diesel-powered construction vehicles and equipment including trucks, backhoes, and dumptrucks, would contribute to an increase in GHG emissions. Table 10-32 details the construction equipment needed to complete the project, the total hours used for each type of equipment, and the emissions resulting from the use of equipment.

Based on the assumptions detailed in Table 10-32, the project would generate approximately 405.99 metric tons of GHGs over the duration of all phases. The following mitigation measures have been identified to reduce or eliminate GHG emissions from the project.

- Shut down idling construction equipment, if feasible.
- Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
- Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
- Encourage the use of alternative fuels or power sources for generators at construction sites, such as propane or solar power, or use electrical power where practicable.

Based on the above, and with the incorporation of mitigation measures, the project would have short-term minor impacts but no long-term impacts on GHGs.

Table 10-32. Greenhouse gas impacts—Pascagoula Beachfront Promenade.

EQUIPMENT DESCRIPTION	TOTAL HOURS USED	CO_2 FACTOR-MT*/ 100HRS	CO_2 (MT)	CH_4 FACTOR-MT/ 100HRS	CH_4 (MT)	NO_2 FACTOR-MT/ 100HRS	NO_2O (MT)	TOTAL CO_2 (MT)
Pick-Up Truck	1408	1.1	15.49	0.35	4.93	4.40	61.95	82.37
Trackhoe (300 series)	190	2.55	4.85	0.85	1.62	10.20	19.38	25.84
Backhoe (rubber tire)	232	1.78	4.13	0.58	1.35	7.60	17.63	23.11
Dumptrucks	205	1.70	3.49	0.50	1.03	7.20	14.76	19.27
Concrete Trucks	2039	1.70	34.66	0.50	10.20	7.20	146.81	191.67
Boom Truck	12	1.25	0.15	0.43	0.05	5.75	0.69	0.89
Line Truck / Auger Truck	82	1.25	1.03	0.40	0.33	5.50	4.51	5.86
Bobcat (T-300 Series)	163	2.65	4.32	0.90	1.47	10.6	17.28	23.06
Walk Behind Concrete Saw	65	0.50	0.33	0.20	0.13	2.20	1.43	1.89
Directional Boring Machine	190	1.25	2.38	0.43	0.82	5.75	10.93	14.12
Ditch Witch	155	0.75	1.16	0.35	0.54	3.44	5.33	7.04
Crane	80	2.55	2.04	0.85	0.68	10.2	8.16	10.88
Total	**4821**							**405.99**

*MT = metric tons

Findings: Adverse impacts to air quality and GHGs would be short term and minor.

10.9.6.5 Noise

Affected Resources

The area to the north of Beach Boulevard is largely residential, and ambient noise levels are low. Industrial shipyards are located at the eastern and western ends of Beach Boulevard.

Environmental Consequences

The use of construction equipment (backhoe, excavators, a directional boring machine, and trucks) would have short-term minor noise impacts for the residents immediately to the north of Beach Boulevard. Noisy construction activities would not be conducted before 6:30 a.m. or after 7:00 p.m., Monday through Saturday, in compliance with the City of Pascagoula noise ordinance. The project would require approximately 360 days to complete; however, at least 50 percent of the construction activities associated with this project would be considered quiet construction.

During operation, traffic would likely increase slightly by users of the promenade. Impacts would be minor as the promenade is meant to encourage pedestrian-type activities.

Construction of the project would result in minor short-term adverse noise impacts to local residents.

10.9.6.6 Biological Environment

Living Coastal and Marine Resources

Affected Resources

Flora

The flora of the sand beach within the project area is limited to saltmeadow cordgrass (*Spartina patens*), which was planted by the USACE as an erosion-control measure on the southern half of the beach, approximately 150 ft. from Beach Boulevard. Other small patches of beach or upland grasses are also likely present. The existing vegetation covers a very small amount of surface area of the beach.

Invasive Species

The potential introduction of terrestrial and aquatic non-native invasive species of plants, animals, and microbes is a concern for any proposed project. Non-native invasive species could alter existing terrestrial or aquatic ecosystems, may cause economic damages and losses, and are frequently the second most common reason for protecting species under the Endangered Species Act. The species that are or may become introduced, established, and invasive are difficult to identify. The analysis focuses on pathway control or actions/mechanisms that may be taken or implemented to prevent the spread of invasive species on site or introduction of species to the site.

Fauna

The faunal species found in the project area include those associated with sand beach habitat and that developed uplands on the coast of the Mississippi Sound. However, the species richness of the area is likely limited due to the prevalence of human disturbance and the lack of habitat diversity. Birds likely use the sand beach and vegetation for refuge and resting and the adjacent open water for foraging. Birds could include herons, terns, gulls, and egrets as well as other shore and wading birds. Mammals have a transitory use and could use the sparse vegetation for shelter or foraging. These include rodents, squirrels, and other opportunistic feeders such as raccoons and opossums.

Environmental Consequences

Flora and Fauna

The zone of saltmeadow cordgrass *(Spartina patens)* planted by the USACE along the beach is located to the south of Beach Boulevard, and would not be impacted by the project. Short-term minor impacts to the scattered vegetation would occur if project construction covered these areas. However, the area proposed for the promenade extension is only 0.11 acre and represents a very small portion of the total beach area. This, combined with the sparse nature of existing vegetation, would not result in long-term impacts to flora. Additionally, short-term adverse impacts to wildlife species would not be anticipated because of the marginal quality of preferred or suitable habitat and the wildlife's ability to move away and avoid the area during construction. Long-term impacts to vegetation and protected species would not occur because the existing use of the area is similar to what is proposed, and impacts that would occur from a higher number of beach visitors would not result in a substantive difference.

Invasive Species

Environmental Consequences

BMPs to prevent the spread of invasive species through common pathways will be implemented thereby minimizing the potential for short and long-term adverse impacts from the proposed project. This project involves the construction of a beachfront promenade and amenity area. A variety of construction equipment will be used. Each of these actions and pieces of equipment serve as a potential pathway to introduce or spread invasive species. To ensure these pathways are "broken" and do not spread or introduce species the following BMPs will be implemented: all equipment to be used during the project, including personal gear, will be inspected and cleaned such that there is no observable presence of mud, seeds, vegetation, insects, and other species. The implementation of these BMPs meets the spirit and intent of EO 13112. Due to the implementation of BMPs, the Trustees expect risk from invasive species introduction and spread to be short term and minor.

Affected Resources

Protected Species

The U.S. Fish and Wildlife Service (USFWS) lists species as threatened or endangered when they meet criteria detailed under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. §1531 et seq.). Additionally, Mississippi Wildlife Fisheries and Parks (MWFP) and NOAA National Marine Fisheries Service (NMFS) identify and list protected species. Section 7(a)(2) of the ESA requires that each federal agency ensure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of those species. Migratory Bird compliance and Bald and Golden Eagle Protection Act compliance are discussed in this section.

Federally protected species that are known to occur or could occur in Jackson County are listed in Table 10-33. However, only the piping plover and five sea turtle species are likely to occur in or near the project area or could pass through the project area. There is no designated critical habitat for any species in or around the project area.

Environmental Consequences

Protected Species

Potential impacts to threatened or endangered species and their critical habitat are presented in Table 10-33 and discussed below. The piping plover (*Charadrius melodus*), red knot (*Calidris cancutus* rufa), and five sea turtle species are likely to occur near the project area and are discussed below.

Sea Turtles

There would be no impacts to sea turtles from the project, as the project area is located entirely on the restored beach or other previously disturbed or developed areas, and sea turtles cannot access the beach due to the riprap berm near the shoreline. The project would also have no effect on the migration and foraging of these species in adjacent waters. No short-term or long-term indirect impacts to the species would be expected.

Table 10-33. Pascagoula Beachfront Promenade—threatened and endangered species in Jackson County, Mississippi.

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS	STATE STATUS	HABITAT
Reptiles				
Green Sea Turtle	*Chelonia mydas*	Threatened	Endangered	Shallow coastal waters with SAV and algae, nests on open beaches
Hawksbill Sea Turtle	*Eretmochelys imbricata*	Endangered	Endangered	Coral reefs, open ocean, bays, estuaries
Kemp's Ridley Sea Turtle	*Lepidochelys kempii*	Endangered	Endangered	Nearshore and inshore coastal waters, often in salt marshes; neritic zones with muddy or sandy substrate (NOAA Fisheries 2013)
Leatherback Sea Turtle	*Dermochelys coriacea*	Endangered	Endangered	Open ocean, coastal waters
Loggerhead Sea Turtle	*Caretta caretta*	Threatened	Endangered	Open ocean; also inshore areas, bays, salt marshes, ship channels, and mouths of large rivers
Birds				
Piping Plover	*Charadrius melodus*	Endangered	Endangered	Beaches and mudflats in southeastern coastal areas
Red Knot	*Calidris canutus rufa*	Proposed	--	Marine intertidal habitats including inlets, estuaries, and bays feeding in mud and sand flats on beaches and barrier islands

Piping Plover and Red Knot

Mainland beaches in Mississippi are used as wintering habitat for piping plovers, but nesting does not occur. The project area does not include any critical habitat for piping plovers and contains elements (i.e., hardened toe, vegetation, and development) that make the area less desirable as wintering habitat for this species. During construction, there may be short-term minor localized noise that could affect transient winter use of the area by piping plover and red knot. There would be no long-term impacts to this species as a result of project construction.

Red Knot (*Calidris canutus rufa*): In coastal Mississippi, the red knot is mainly a migratory species that uses coastal beaches and marine intertidal areas as stopover feeding locations or staging areas on the way to and from their wintering grounds in South America and breeding areas in the Arctic. Foraging on ocean beaches, mud and sand flats, and salt marshes occurs from March to April during the northward spring migration and September and October during the southward autumn migration (Niles et al. 2007; USFWS 2013). Red knots have been observed wintering on the Gulf Coast and are observed from October to March (USFWS 2013). The nonbreeding diet of this species includes marine invertebrates such as snails, crustaceans, and small mollusks including the coquina clam *(Donax variabilis),* which is common on Gulf coast beaches, and the dwarf surf clam *(Mulinia lateralis)* (Niles et al. 2007; USFWS 2013). Roosting and resting habitat includes areas above the high tide line such as reefs and high sand flats (USFWS 2013).

Findings: Short-term adverse impacts to biological resources would be minor, if any. No long-term adverse impacts are expected. ESA Section 7 consultation was completed with USFWS on January 24, 2014 (McClain, 2013). The USFWS concurred that the project, as proposed, may affect, but is not likely to adversely affect piping plover (*Charadrius melodus*) or red knot (*Calidris cancutus rufa*) (if listed). No effects are anticipated to other species considered within the consultation. The Trustees intend to implement measures that are required by the USFWS and would consider any additional practices that may emerge from additional regulatory consultations. The measures from the consultations include:

- Awareness of turtle presence. If any turtles are found to be present in the immediate project area during project activities, construction will be halted until the species move away form the project area. In addition, impacts to lands or waters surrounding the project area will be prevented, controlled or mitigated by use of all available best management practices during construction.
- Awareness of piping plover/red knot presence. Pre-operational surveys will be completed if equipment has left ruts on the "beach" or if equipment is staged on the "beach." If any piping plovers or red knots are found to be present in the immediate project area during project activities, construction will be halted until the species move away from the project area or construction activities will resume at a safe distance from the species. During construction, attempts will be made to limit the use of heavy equipment on the "beach" area. To the degree possible, construction activities will be concentrated in months when piping plovers and red knots are in breeding areas. Pets are currently not allowed on the "beach" except on the far western end; these pets must be leashed. In addition, all available construction best management practices will be used to prevent control, or mitigate any impacts during construction especially from accidental leaks of fluids from equipment.

Migratory Birds

Affected Resources

Migratory bird guilds that could have presence in the Pascagoula Beachfront Promenade project area include wading birds, shorebirds, seabirds, raptors, rails and coots, landbirds, and doves and pigeons (see Table 10-34).

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) of 1940 (BGEPA), prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. BGEPA provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." Golden eagles are not present along the Gulf Coast.

Table 10-34. Migratory birds anticipated in the Pascagoula Beachfront Promenade project area.

SPECIES*	BEHAVIOR	SPECIES/HABITAT IMPACTS
Wading birds (herons, egrets, ibises, wood stork, American flamingo)	Foraging, feeding, resting, roosting, nesting	Wading birds primarily forage and feed at the water's edge. The project area does not include water's edge habitat; therefore, foraging and feeding would not be impacted. These birds primarily nest and roost in trees or shrubs (e.g. pines, *Bacchurus* and mangroves), which occur outside the project area.
Shorebirds (plovers, oystercatchers, stilts, sandpipers)	Foraging, feeding, resting, roosting, nesting	Shorebirds forage, feed, rest, and roost in beach environments. Foraging and feeding habitats include sand or mud flats exposed by tides. There are no tidally exposed sand flats in the project area and it is expected that they would be able to move to another nearby location to continue resting. Although the project area includes ocean "beach," these birds primarily nest and roost in dunes, which occur outside the project area. There is no dune habitat in the project area.
Seabirds (terns, gulls, skimmers, double-crested cormorant, American white pelican, brown pelican)	Foraging, feeding, resting, roosting, nesting	Seabirds forage, feed, rest, and roost in marine coasts including islands, marshes, river/lake banks, and sand or gravel beaches including ocean beaches. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. Although the project area includes ocean "beach," these birds primarily roost in dunes, which occur outside the project area.
Raptors (osprey, hawks, eagles, owls)	Foraging, feeding, resting, roosting, nesting	Raptors could forage, feed, and rest in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. Most raptors are aerial foragers and soar long distances in search of food. There are no roosting or nesting habitats within the project area.
Goatsuckers (nighthawks, whip-poor-will, Chuck-will's widow)	Foraging, feeding, resting, roosting, nesting	Goatsuckers do not forage, feed, rest, and roost in the project area. In addition, they are nocturnal/crepuscular and therefore not active during the project work period. They nest in thickets and woodlands, which are not included in the project area.
Waterfowl (geese, swans, ducks, loons, and grebes)	Foraging, feeding, resting, roosting, nesting	Waterfowl do not forage, feed, rest, and roost in the project area.
Doves and Pigeons	Foraging, feeding, resting, roosting	Doves and pigeons could forage, feed, rest, and roost in the project area. However, they are unlikely to utilize sandy habitat.
Rails and Coots	Foraging, feeding, resting, roosting, nesting	Rails and coots likely do not forage, feed, rest, and roost in the project area. For nesting, birds favor marshy areas for which are not within the project area.

Migratory Bird Treaty Act

The Trustee has reviewed the project site and determined that migratory bird nesting is not known or likely, but is possible. The MBTA requires the protection of all migratory bird species and protection of ecosystems of special importance to migratory birds against detrimental alteration, pollution, and other environmental degradation. Coordination under MBTA with the USFWS was completed on January 24, 2014. Due to the implementation of the following Best Management Practices, no "take" is anticipated.

Work will be completed in daylight hours. If evidence of nesting is found during construction, coordination with the USFWS would be initiated to develop and implement appropriate conservation measures.

Bald and Golden Eagle Protection Act

There are no golden eagles in the project area. No bald or golden eagles are known to nest within 660 ft. of the project area. Thus, no impacts to golden or bald eagles are anticipated. Coordination under BGEPA by the USFWS was completed on January 24, 2014. Because there is no nesting nearby, no "take" is anticipated.

10.9.6.7 Human Uses and Socioeconomics

Socioeconomics and Environmental Justice

Affected Resources

Socioeconomic resources combine the social resources and economic resources of the area. The social resources evaluation includes consideration such as potential changes in neighborhoods or community cohesion; affordable housing; changes in travel patterns and accessibility; impacts on community facilities; impacts on traffic safety/public safety; and impacts on any special groups such as elderly, handicapped, minority, and transit-dependent persons. The data in this section was compiled using the Census and American Factfinder websites (U.S. Census Bureau 2011 and 2012).

Based on the U.S. Census 2010 and the 2007 – 2011 American Community Survey data, there were 139,668 people and 52,205 households in Jackson County. The racial makeup of the county was 72.0 percent White, 22.0 percent Black or African American, <1 percent Native American, <1 percent Asian, 1.9 percent from other races, and 1.9 percent from two or more races. Hispanic or Latino, of any race, comprised 4.6 percent of the population. Out of the 52,205 households, 31.7 percent had children under the age of 18 living with them, 49.6 percent were married couples living together, 16.4 percent had a female householder with no husband present, and 28.2 percent were non-families. Of the non-family households, 23.1 percent were made up of individuals, and 8.0 percent had someone living alone who was 65 years of age or older. The average household size was 2.65, and the average family size was 3.11. The median age was 37.2 years. In 2010, median household income in Jackson County was $49,620. The per capita income for the county was $23,547. About 11.0 percent of families and 15.0 percent of the population were below the poverty line, including 21.2 percent of those under age 18 and 9.8 percent of those aged 65 or older. The labor force in Jackson County totaled approximately 67,904 in 2010.

Industries providing employment in Jackson County were:

- Agriculture, forestry, fishing and hunting, and mining (1.7 percent)
- Construction (7.2 percent)
- Manufacturing (17.9 percent)
- Wholesale trade (1.9 percent)
- Retail trade (11.3 percent)
- Transportation and warehousing and utilities (3.8 percent)
- Information (1.6 percent)
- Finance and insurance, real estate and rental/leasing (4.6 percent)
- Professional, scientific, management, administrative, and waste management services (6.7 percent)
- Educational services, health care, and social assistance (18.4 percent)
- Arts, entertainment, recreation, accommodation, and food services (15.3 percent)

- Other services (3.9 percent)
- Public administration (5.7 percent)

More specifically, the majority of the project is located in Census Tract 425. Based on the U.S. Census 2010 data and the 2007 – 2011 American Community Survey, there were 2,217 people and 816 households in these tracts. The racial makeup of the these tracts was 86.8 percent White, 11.8 percent Black or African American, <0.1 percent Native American <0.1 percent Asian, 0.8 percent from other races, and 0.6 percent from two or more races. Hispanic or Latino, of any race, comprised 2.7 percent of the population. Out of the 816 households, 28.3 percent had children under the age of 18 living with them, 40.4 percent were married couples living together, 15.9 percent had a female householder with no husband present, and 37.6 percent were non-families. Of the non-family households, 32.7 percent were made up of individuals, and 14.5 percent had someone living alone who was 65 years of age or older. The average household size was 2.39, and the average family size was 3.06. The median income for a household in the tracts was $40,300, and the median income for a family was $58,263. The per capita income for the county was $24,579. About 10.0 percent of families and 13.5 percent of the population were below the poverty line, including 18.9 percent of those under age 18 and 3.2 percent of those aged 65 or older. The combined labor force for Census Tract 425 was 945 in 2010.

Industries providing employment in Census Tract 425 were:

- Agriculture, forestry, fishing and hunting, and mining (2.9 percent)
- Construction (9.1 percent)
- Manufacturing (32.4 percent)
- Wholesale trade (0.8 percent)
- Retail trade (12.1 percent)
- Transportation and warehousing and utilities (5.8 percent)
- Information (0.6 percent)
- Finance and insurance, real estate and rental/leasing (2.4 percent)
- Professional, scientific, management, administrative, and waste management services (9.1 percent)
- Educational services, health care, and social assistance (12.7 percent)
- Arts, entertainment, recreation, accommodation, and food services (0.9 percent)
- Other services (5.3 percent)
- Public administration (5.8 percent)

A comparison of race and poverty from Tract 425 to Jackson County is shown on Table 10-35.

Environmental Consequences

There would be short-term beneficial socioeconomic impacts to the local community from this project. Construction of the project would provide benefits from employment and use of local businesses (restaurants, construction supplies, etc.). Following construction, the promenade and associated amenities would provide long-term benefits though improved recreational enjoyment of the Pascagoula shoreline for residents and visitors, which would have a long-term beneficial impact on existing businesses and services in the immediate area. Short-term and long-term beneficial socioeconomic impacts would be expected.

Table 10-35. Comparison of race and poverty of Census Tract 425 to Jackson County.

	TRACT 425	JACKSON COUNTY		TRACT 425	JACKSON COUNTY
Median household income	$40,300	$49,620	White	86.8%	72.0%
Per capita income	$24,579	$23,547	Black or African American	11.8%	22.0%
Families below poverty line	10.0%	11.0%	Native American	<0.1%	<1.0%
Individuals below poverty line	13.5%	15.0%	Other races (including Asian)	0.8%	3.1%
Under 18 below poverty line	18.9%	21.2%	Two or more races	0.6%	1.9%
Over 65 below poverty line	3.2%	9.8%	Hispanic or Latino, of any race	2.7%	4.6%

Environmental Justice

The project is adjacent to Beach Boulevard. There would be no disproportionate impact to low-income or minority populations as a result of constructing the project.

10.9.6.8 Cultural Resources

Affected Resources

This project is currently being reviewed under Section 106 of the NHPA to identify any historic properties located within the project area and to evaluate whether the project would affect any historic properties.

The project area is a sea wall protection area (man-made beach). A preliminary cultural resource investigation was completed for the project area which included a literature review and limited field reconnaissance (R. Christopher Goodwin & Associates, 2013). A review of the Mississippi Department of Archives and History's Historic Resources Inventory database located 43 properties listed on the National Register of Historic Places and five designated as National Historic Landmarks in and around the city of Pascagoula, Mississippi. Six properties listed on the National Register of Historic Places were destroyed by Hurricane Katrina and are no longer extant. No properties listed on the National Register of Historic Places or designated as National Historic Landmarks were identified within the proposed Pascagoula Beachfront Promenade project area. No further study is the recommendation of the preliminary cultural resource investigation (R. Christopher Goodwin & Associates, 2013).

Environmental Consequences

Nearly all of the project area consists of the recently created beach and is highly disturbed. Therefore, no cultural resources impacts would be expected. Cultural resources impacts are not anticipated at the Point Park staging area, other potential staging areas, or the areas of utility connections beneath and adjacent to Beach Boulevard as these are also highly disturbed areas. Nonetheless, the National Historic Preservation Act of 1966 (NHPA) charges the federal government with considering the potential effects of its actions on the nation's cultural and historic resources. A complete review of this project under Section 106 of the NHPA is ongoing and would be completed prior to any project activities that would restrict consideration of measures to avoid, minimize or mitigate any adverse effects on historic properties located within the project area. This project would be implemented in accordance with all applicable laws and regulations concerning the protection of cultural and historic resources.

10.9.6.9 Infrastructure

Affected Resources

The affected infrastructure consists of Beach Boulevard and existing parking areas at Point Park and Beach Park. According to the Traffic Count Database System provided by Gulf Coast Regional Planning Commission, the annual average daily traffic count in 2011 on Beach Boulevard in the proposed project area ranged from 1,800 to 1,900 cars (GRPC 2013).

Lighting is installed along the southern side of Beach Boulevard. Sanitary sewer and potable water services are provided by the City of Pascagoula and are located within the street rights-of-way. Garbage pick-up services are provided to the City of Pascagoula by Delta Sanitation Services.

Environmental Consequences

Portions of Beach Boulevard would be temporarily restricted during construction of the utility tie-ins. The project is intended to move existing pedestrians and bicyclists off the road shoulder and onto a safe walkway. Since the users are already there, no substantial increase in traffic would be expected. Any increased traffic from tourism would follow existing road routes and should be assimilated into existing local traffic. High tourist-based traffic is handled regularly in the area when large gatherings occur at the Beach Park, so the increase from the promenade would not have an impact on tourist-based traffic.

The project would result in minor short-term adverse impacts to traffic and infrastructure during construction; no long-term impacts would be expected.

10.9.6.10 Land and Marine Management

Affected Resources

The proposed project is located within an area zoned as Single-Family Residential 10 (SFR-10). SFR-10 District is established and intended to accommodate primarily single-family detached dwellings at low densities on lots greater than 10,000 square ft. in area. The District also accommodates accessory dwelling units and complementary nonresidential uses usually found in low-density urban residential neighborhoods. Some of these nonresidential uses are permitted uses (e.g., parks, community centers, elementary schools, places of worship), while others are special uses, allowed only after approval of a Special Use Permit (e.g., libraries, day cares, secondary schools, post offices, government offices, fire/emergency medical services/police stations, cemeteries).

The project is located within the Mississippi Coastal Zone as defined in the Mississippi Coastal Program (MCP) of 1980. The MCP, which is administered by the Mississippi Department of Marine Resources (MDMR), was developed by the MDMR in accordance with the Coastal Zone Management Act of 1972, and guides and regulates the use of coastal resources in the Mississippi Coastal Zone. The City of Pascagoula received a Coastal Zone Consistency letter for the original Beachfront Promenade project on October 26, 2010.

Environmental Consequences

The 500-ft. extension of the 8,200-ft.-long promenade would be constructed on approximately 1.9 acres out of 33 acres of the created sand beach. The land use of the area would remain unchanged by this project.

The staging areas at Point Park and Beach Park would be used during construction and would be temporarily altered. Point Park consists of compacted earth and is largely undeveloped land that is used occasionally by residents for temporary parking while they access the waterfront. The staging area at Beach Park consists of a paved parking lot. Use of these areas for staging may slightly limit parking in these areas temporarily, but this would be consistent with existing land uses.

Pursuant to the Coastal Zone Management Act of 1972, federal activities must be consistent to the maximum extent practicable with the federally approved coastal management programs for states where the activities would affect a coastal use or resource.

Finding: Construction of the Pascagoula Beachfront Promenade is consistent with current land and marine management plans and activities in the project area.

10.9.6.11 Aesthetics and Visual Resources

Affected Resources

The affected environment consists of a two-mile-long shoreline with residential buildings to the north, a two-lane road (Beach Boulevard) parallel to the shoreline, a created sand beach south of the proposed promenade area, and the Mississippi Sound. Receptors would consist primarily of local residents and beach visitors.

Environmental Consequences

During construction, there would be minor short-term adverse aesthetic and visual resource impacts due to the construction equipment, the disturbed state of the promenade and utility connection construction sites.

During operation, there would be long-term beneficial impacts to aesthetics and visual resources from the promenade. The completion of the promenade would provide a pleasant and attractive area for recreational pursuits and, therefore, would improve and enhance the visual resources along the Pascagoula beachfront, both for local residents and beach visitors.

There would be minor short-term adverse impacts to aesthetics and visual resources during construction and long-term beneficial impacts during operation.

10.9.6.12 Tourism and Recreational Use

The recently nourished beach is used by residents and visitors; access is open to the general public. Currently, pedestrians walk mainly on the shoulder of Beach Boulevard, which is unprotected from vehicular traffic.

Environmental Consequences

During construction of the promenade, there would be minor short-term adverse impacts to public access and use of the portions of the roadway shoulder currently used for walking; access would be restricted due to safety concerns. The beach would still largely be accessible except in the areas that are under construction.

Project impacts from increased visitor use could include littering and noise from individuals utilizing the proposed project components. The adverse impacts will be sporadic, minor and short-term in nature. Pascagoula Beach is a man-made seawall protection project (beach); any habitat is man-made. Litter

removal will minimize the impact to native species or natural habitats. The City of Pascagoula will be responsible for monitoring litter accumulation, litter removal and maintenance. Noise from visitors using the promenade or amenities would occur adjacent to Beach Boulevard with only very limited habitat in the vicinity of the project.

During operation, there would be long-term beneficial impacts on public access and recreation in the area. The purpose of the promenade is to increase the accessibility of the beachfront area for recreational opportunities and to improve safety conditions for pedestrians and cyclists. The promenade would be available for walking, running, and nature viewing. It would also allow for easier access to the beach and associated amenities.

There would be minor short-term adverse impacts to tourism and recreational use due to construction and visitor use, and long-term benefits to recreation overall.

10.9.6.13 Public Health and Safety

Affected Resources

The seawall was recently repaired and the beach was restored at the project site by USACE to minimize shoreline erosion along Beach Boulevard, which in turn protects the seawall, roadbed and residential areas along Beach Boulevard. Currently, pedestrians walking along the shoulder of the Beach Boulevard (which is at the same elevation as the road) is a public safety concern.

Environmental Consequences

During construction, there would be safety concerns in the construction zone. However, signs and barricades would be used to ensure safety to workers and to the public. Adverse impacts would, therefore, be expected to be minor and short term. Once completed, walking along Beach Boulevard would be safer as the promenade would be wider than the current shoulder, and pedestrians and cyclists would be protected by a concrete pedestrian barrier. Lighting conditions would also be improved.

There would be minor short-term adverse impacts to public health and safety during construction and long-term benefits to public health and safety.

10.9.7 Summary and Next Steps

The proposed Pascagoula Beachfront Promenade project is intended to restore lost recreational opportunities resulting from the Spill and related response actions. This project would enhance recreational shoreline access via the construction of a lighted concrete beachfront pedestrian pathway adjacent to a sand beach in Pascagoula, Mississippi. Project funds would be used to help complete a two-mile, 10-ft.-wide lighted concrete pathway complete with amenities. This Early Restoration project proposal would fund a portion (8,200 ft.) of the 10-ft. wide promenade, a portion of which has already been constructed. The project is consistent with Alternative 3 (Contribute to Providing and Enhancing Recreational Opportunities) and Alternative 4 (Preferred Alternative).

For the Proposed Action, DOI adopted the U.S. Department of Housing and Urban Development (HUD) EA entitled “Environmental Assessment and Finding of No Significant Impact for HUD-funded Proposals, Pascagoula Beach Promenade Project” (HUD 2011). The DOI regulations also provide that, when a proposed action differs from the proposed action contained in the adopted EA, DOI may augment the

adopted EA to make it consistent with the proposed action (see 43 C.F.R. 46.320). This supplemental NEPA analysis provided in this document augments the existing HUD EA. This supplemental analysis considers any additional environmental impacts that would result from the elements of the Phase III Proposed Action that are not described and analyzed in the adopted HUD EA. These elements include an additional 500 ft. of concrete pathway at the upper reaches of the existing pathway on Pascagoula Beach, and proposed visitor amenities that are proposed for the entire pathway in the amenity area along 8,200 linear ft. of boardwalk.

The environmental consequences (adopted EA and supplemental analysis) suggest that while there would be minor adverse impacts to some resource categories, there would be no long-term moderate to major adverse impacts as a result of the project. The project would provide long-term benefits by providing enhanced shoreline access via the promenade and associated amenities. The Trustees have completed coordination and reviews under the Endangered Species Act, the Migratory Bird Treaty Act, the Magnuson-Stevens Fishery Conservation and Management Act, and the Bald and Golden Eagle Protection Act. Consistency reviews of the proposed Phase III early restoration projects in Mississippi were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed. The Trustees have initiated consultation under the Historic Preservation Act and other federal statutes. The Trustees have considered public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Trustees' determination on selection of this project will be included in the Record of Decision.

Throughout the design process, every practical attempt was made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The following BMPs and conservation measures that (sorted by resource type) would be utilized to minimize impacts to resources:

- Hydrology and Water Quality
    - A stormwater pollution prevention plan (SWPPP) would be prepared and erosion, sedimentation, and stormwater runoff would be managed in accordance with Mississippi Department of Environmental Quality (MDEQ) stormwater requirements.
    - Construction in Mississippi is required to follow the “Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas” (MDEQ 2012) and the “Field Manual for Erosion and Sediment Control on Construction Sites in Mississippi” (MDEQ 2005).
- Green House Gas Emissions
    - Shut down idling construction equipment, if feasible.
    - Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
    - Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
    - Encourage the use of alternative fuels or power sources for generators at construction sites, such as propane or solar power, or use electrical power where practicable.
- Noise
    - Noisy construction activities would not be conducted before 6:30 a.m. or after 7:00 p.m., Monday through Saturday, in compliance with the City of Pascagoula noise ordinance.

- Protected Species
    - Awareness of turtle presence. If any turtles are found to be present in the immediate project area during project activities, construction will be halted until the species move away form the project area. In addition, impacts to lands or waters surrounding the project area will be prevented, controlled or mitigated by use of all available best management practices during construction.
    - Awareness of piping plover/red knot presence. Pre-operational surveys will be completed if equipment has left ruts on the "beach" or if equipment is staged on the "beach." If any piping plovers or red knots are found to be present in the immediate project area during project activities, construction will be halted until the species move away from the project area or construction activities will resume at a safe distance from the species. During construction, attempts will be made to limit the use of heavy equipment on the "beach" area. To the degree possible, construction activities will be concentrated in months when piping plovers and red knots are in breeding areas. Pets are currently not allowed on the "beach" except on the far western end; these pets must be leashed. In addition, all available construction best management practices will be used to prevent control, or mitigate any impacts during construction especially from accidental leaks of fluids from equipment.
- Migratory Birds
    - Work will be completed in daylight hours. If evidence of nesting is found during construction, coordination with the USFWS would be initiated to develop and implement appropriate conservation measures.
- Tourism and Recreation Use
    - The City of Pascagoula will be responsible for monitoring litter accumulation, litter removal and maintenance.
- Invasive Species
    - All equipment to be used during the project, including personal gear, will be inspected and cleaned such that there is no observable presence of mud, seeds, vegetation, insects , and other species.
    - Oyster cultch and vegetation will be treated or inspected to remove "non-target" species.
- Public Health and Safety
    - Public access would be restricted during active construction areas due to safety concerns.

10.9.8 References

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10.10 Cumulative Effects

10.10.1 Introduction

The CEQ regulations for implementing NEPA require the assessment of cumulative impacts in the decision-making process for federal projects. The regulations define cumulative impacts as the:

> *impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.*[12]

In the context of the Phase III Early Restoration Program, cumulative impacts assessment requires the Trustees to (1) define appropriate spatial and temporal boundaries for the analysis; (2) describe baseline environmental and/or socioeconomic conditions for affected resources within the spatial and temporal boundaries; (3) identify future government and private actions that can be reasonably expected to have a significant impact on the affected resources; and (4) characterize the cumulative impacts of the proposed project assuming implementation of the other current and reasonably foreseeable future actions.Given the broad geographic scope of the Phase III program, the requirement for cumulative impacts analysis poses unique challenges. Although Early Restoration encompasses projects located across hundreds of miles of Gulf of Mexico coastline, a cumulative analysis of all impacts across the Gulf is not practically feasible. Moreover, at that scale, local or regional detail would not be sufficient for analysis. Instead, the Trustees have developed a cumulative impacts approach built around discrete, state-by-state, spatially-based project groupings that focus the analysis on the most likely areas for cumulative resource impacts (e.g., watersheds, estuaries or counties). This is designed to supplement the programmatic cumulative impact analysis found in Chapter 6. Following the CEQ guidance for scoping cumulative analyses, the goal is not to capture every theoretically possible impact, but instead 'to count what counts.'[13] Defining spatial boundaries in this manner also facilitates the detailed analysis of baseline environmental and socioeconomic conditions.

Once the project spatial groups have been selected and baseline conditions characterized, the cumulative impacts process depends heavily on the availability of information and data about current and likely future actions. For the analysis of the Phase III program, the Trustees identified current and potentially significant future actions through consultations with local, state and federal environmental experts familiar with major environmental and development initiatives that have a potential to contribute substantially to cumulative impacts. In some cases, environmental analyses of reasonably foreseeable actions are available to inform the Trustees' analyses. But in the absence of such completed analyses, the Trustees generally had to rely on expert judgments, primarily qualitative, about the potential for impacts, using publicly available information about the likely design and location of these actions.

[12] 40.C.F.R.1508.7

[13] *ibid.*

For the Mississippi Phase III Early Restoration projects, the Trustees believe the cumulative impact analyses discussed here represent best estimates of how current environmental and socioeconomic conditions may be changed by the proposed actions when their impacts are layered on top of other current and reasonably foreseeable future actions. It is also clear, however, that these assessments remain subject to numerous uncertainties and data limitations. Nonetheless, because the proposed Mississippi Phase III Early Restoration projects are all designed to improve environmental quality directly or to increase public access and enjoyment of natural resources, the Trustees concluded that the projects are unlikely to increase adverse cumulative impacts over the longer term. The reasons for this conclusion are detailed in the remainder of this chapter.

10.10.2 Spatial and Temporal Boundaries for Mississippi Projects

10.10.2.1 Spatial Boundaries

The proposed Phase III Early Restoration projects located in Mississippi can be implemented independently of one another and are in separate and distinct locations, thus the potential for adverse cumulative impacts at a state-wide scale is minimal. The projects were therefore grouped geographically to analyze the potential for cumulative impacts at appropriate smaller regional scales (Figure 10-20).

In developing the following cumulative impact analysis, the cumulative actions discussed in Chapter 6 were considered (e.g. marine transportation, oil and gas, etc.). Past, present, and reasonably foreseeable future actions were identified as part of the cumulative analysis. This analysis considers the incremental contribution of proposed Phase III Early Restoration projects to potential cumulative impacts on resources discussed in Chapter 3. The analysis includes resources that are relevant to the concerns identified on the smaller regional scale.

Figure 10-20. Mississippi Cumulative Effect Project Groups.

For Mississippi, two regional or spatial groupings were developed. They are Group 1-Hancock County Marsh Living Shorelines/Restoration at the INFINITY Science Center; and Group 2-Popp's Ferry Causeway Park/Pascagoula Beachfront Promenade.

- Group 1: The Hancock County Marsh Living Shoreline/Restoration Initiatives at INFINITY Science Center are both located in Hancock County and both are adjacent to the Hancock County Marsh Preserve.
- Group 2: The Popp's Ferry Causeway Park/Pascagoula Beachfront Promenade are located along the Mississippi Coast and in urban environments. They are situated along the shorelines of Back Bay and the Mississippi Sound and in urban areas and will have similar adverse effects as well as benefits.

Regional groups were analyzed for, past, present, and reasonably foreseeable future actions which could result in cumulative impacts to the affected resource when combined with the impacts of the projects being considered (Figure 10-20). Cultural resource investigations and consultations would be completed for all the proposed projects that are selected for implementation. Although no cumulative impacts to cultural resources are anticipated, there is insufficient information at this time to make such determinations. If cultural resources would be impacted, mitigation identified during the consultation process would be implemented.

10.10.2.2 Temporal Boundaries

As detailed in Chapter 6 of the FERP/PEIS, the temporal boundary describes how far into the past and forward into the future actions should be considered in the impact analysis. The temporal boundaries may vary for each resource. Once the impacts of the proposed actions are no longer experienced by the affected resource, the cumulative impacts of the other past, present and reasonably foreseeable future actions need no longer be considered. For the most part, actions are qualified as those that are anticipated to persist beyond the construction phase for Phase III proposed projects and those that are ongoing for other actions considered in the cumulative analysis.

Identification of Other Actions Included in the Cumulative Impact Scenarios

For purposes of the cumulative impacts analyses in this Chapter, past actions are assumed to be represented in the existing conditions discussed in the Environmental Reviews for the Mississippi projects.

Present actions are those that are occurring now and result in ongoing impacts to the same resources that the proposed action will impact.

Reasonably foreseeable future actions are those actions that are likely to occur and affect the same resource as the proposed alternatives. The determination of what future actions should be considered requires a level of certainty that they will occur to ensure that the consideration of future actions is not overly speculative. This level of certainty could be met by a number of factors such as the completion of permit applications, the subject of approved proposals or planning documents, or other similar evidence. Determining how far into the future to consider actions is based on the impact of the alternatives being considered.

10.10.3 Group 1 Phase III -Hancock County Marsh Living Shoreline/Restoration Initiatives at INFINITY Science Center

Table 10-36 summarizes the impacts to resources associated with proposed Mississippi projects in the Hancock County region for the Hancock County Marsh Living Shoreline/ Restoration Initiatives at INFINITY Science Center projects, which are a habitat and living coastal and marine resource project and a recreational use project, respectively. The projects occur adjacent to the Hancock County Marsh Preserve in southern Hancock County near the mouth of the Pearl River in the Mississippi Sound. Restoration Initiatives at INFINITY Science Center is adjacent to the Pearl River and the upper Hancock County Marsh Preserve. Projects are evaluated together to determine if they have any cumulative effects that, when combined with other past, present, and reasonably foreseeable future actions in the Group 1 area, may result in cumulative effects to resources. Cultural resource investigations and consultations would be completed for all the proposed projects as environmental review continues. Although no cumulative impacts to cultural resources are anticipated, there is insufficient information at this time to make determinations. If cultural resources would be impacted, mitigation identified during the consultation process would be implemented.

Table 10-36. Summary of Impacts of Proposed Phase III Early Restoration Projects/Hancock County Marsh Living Shorelines and Restoration Initiatives at INFINITY Science Center.

Group 1	Geology and Substrates	Hydrology and Water Resources	Air Quality and GHGs	Noise	Living Coastal and Marine Resources	Protected Species	Habitats	Socioeconomics and Environmental Justice	Land and Marine Management	Aesthetics and Visual Resources	Tourism and Recreational Use	Infrastructure	Public Health and Safety and Shoreline Protection
Hancock County Marsh Living Shoreline	-/+	-/+	S	s	+	+	-/+	+	+	S	+	NE	+
Restoration Initiatives at INFINITY Science Center	-	-	S	-	NE	NE	S	+	+	+	+	+	NE
- Represents an adverse impact; + represents a beneficial impact; s represents a short-term adverse impact; NE represents no effect													

Existing Conditions

Existing environmental and socio-economic conditions in and around Group 1 Phase III Early Restoration projects are represented by the affected environment in the preceding environmental reviews. The existing conditions include the environmental impacts of past projects in the area and therefore are the assumed existing conditions for the cumulative analysis of impacts for ongoing, present and reasonably foreseeable future actions.

Summary of Impacts Group 1 Phase III Early Restoration Projects

All of the resource areas listed in Table 10-36 above would be affected by at least some of the Phase III Early Restoration projects included in Group 1. These effects would not be anticipated to extend beyond the construction period for the most part. Some resource areas would be affected long term, some beneficially and some adversely. However, none of the Phase III Early Restoration projects included in Group 1 would result in any long-term adverse effects that rise above a moderate status. In fact, for many of the resources, Phase III Early Restoration projects would result in long-term benefits. Overall, long-term benefits from Phase III Early Restoration projects proposed in the Group 1 region are expected to outweigh the short-term adverse impacts necessary for project implementation as well as long-term moderate adverse effects.

Identification of Past,Present and Reasonably Foreseeable Future Actions and Impacts

Past, present, and reasonably foreseeable activities in Group 1 projects in Hancock County include marine transportation projects, scientific research projects, tourism and recreation projects, and restoration and environmental stewardship activities with various types of adverse impacts as well as benefits. **Error! Reference source not found.** displays the past, present, and reasonably foreseeable future activities.

Error! Reference source not found. below identifies present and reasonably foreseeable future projects in each of the categories described in Chapter 6. For each of the actions, the table provides (1) a brief description of the action and (2) a listing of resource categories that are the most likely areas of concern for cumulative impacts when the action is considered in conjunction with implementation of Group 1 projects. In most cases, detailed environmental impact data are not available for these other actions. Consequently, the analyses generally reflect qualitative discussions about potential impacts based on best professional judgment. Also, as noted previously, the focus of the cumulative impacts analysis is on the resource areas that are deemed most likely to exhibit cumulative impacts; hence the analysis does not include in the listing those resources where impacts have been judged to be de minimis.

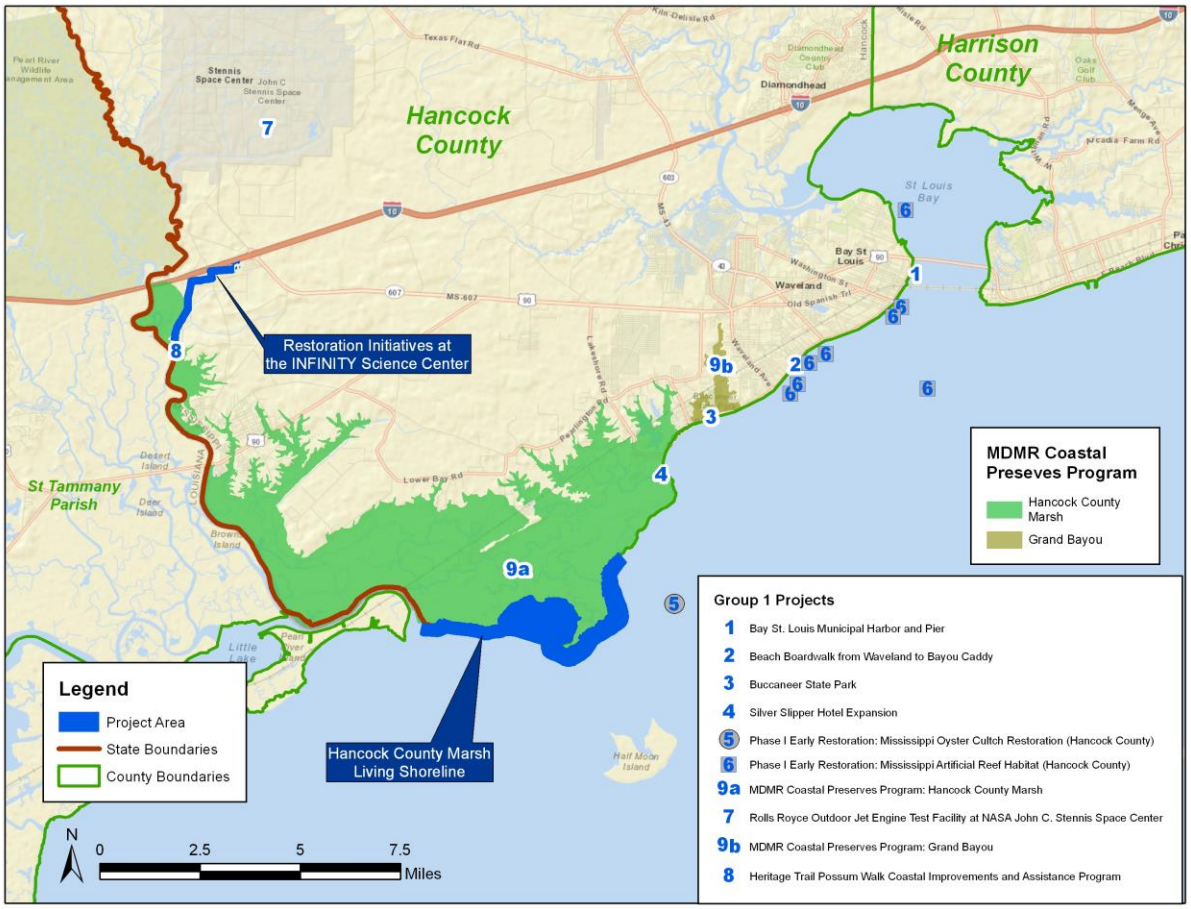

Figure 10-21. Group 1 Projects for Cumulative Effects Analysis.

Table 10-37. Description of past, present, and reasonably foreseeable future actions that have been considered as part of this analysis for Group 1 projects.

Category/Projects	Project Description	Key Resource Areas with Potential for Cumulative Impacts
Restoration Related to the Spill (Early Restoration Phases I & II, Restore Act, Gulf Environmental Benefit Fund, North American Wetlands Conservation Fund, National Academy of Sciences)		
Phase I Early Restoration: Mississippi Oyster Cultch Restoration (Hancock County)	This project restored and enhanced approximately 1,430 acres of oyster cultch areas that cover approximately 12,000 acres of the Mississippi Sound. The initial cultch placement was completed in May of 2013.	Short-term to long-term impacts to: • geology and substrates • hydrology and water resources • living coastal and marine resources Long-term benefits to: • geology and substrates, • living coastal and marine resources • habitats • socioeconomic benefits
Phase I Early Restoration: Mississippi Artificial Reef Habitat (Hancock County)	This project deployed cultch among 67 nearshore artificial reefs, each deployment was approximately 0.5 to 3 acres, in the marine waters of Mississippi. Within Group 1 there are 8 artificial reefs. The project was completed in June of 2013.	Short-term to long-term impacts to: • geology and substrates • living coastal and marine resources Long-term benefits to: • geology and substrates • hydrology and water resources • living coastal and marine resources • habitats • socioeconomic benefits
Mississippi Department of Marine Resources Beneficial Use of Dredge Material Program (Marsh Creation)	The project includes using dredge material to restore habitats such as marsh and wetland habitat.	Short-term to long-term impacts to: • geology and substrates, • hydrology and water resources • living coastal and marine resources • habitat Long term benefits to: • geology and substrates • living and coastal marine resources • habitats
Military Operations		
Rolls Royce Outdoor Jet Engine Test Facility at NASA John C. Stennis Space Center	The project is an expansion of an existing facility and includes the construction of a second outdoor jet engine test stand. The test stand was completed in October 2013.	Short-term to long-term impacts to: • noise • air quality and GHGs Long-term benefits: • socioeconomic benefits
Marine Transportation		
Bay St. Louis Municipal Harbor and Pier	Harbor and pier expansion. The Harbor is currently being constructed with 163 slips, including 12 ADA accessible slips, sizes ranging from 35' to 60'. Dredge material from the basin was used to expand the existing beach north of the pier from 150' to 250'.	Short to long-term impacts to: • geology and substrates • air quality and GHGs • hydrology and water resources • noise • living coastal and marine resources • air quality Long-term benefits to: • recreational use • infrastructure • socioeconomic benefits
Energy Activities (Offshore oil production, Offshore Natural Gas Facilities, State Oil and Gas Activities)		
No known projects.		
Marine Mineral Mining, Including Sand and Gravel Mining		
No known projects		
Coastal Development and Land Use		
Silver Slipper Hotel Expansion	This includes 142-room Hotel construction to be completed in December of 2014.	Short to long-term impacts to: • geology and substrates

Category/Projects	Project Description	Key Resource Areas with Potential for Cumulative Impacts
		• hydrology and water resources • noise • air quality and GHGs • habitats Long-term benefits: • tourism and recreational use • socioeconomic benefits
Mississippi Department of Marine Resources Coastal Preserves Program[14] a.Hancock County Marsh Preserve b. Grand Bayou	The project includes the general management, regulation, recreation, and restoration activities in MDMR areas	Short-term minor adverse impacts to: • habitats Long term benefits to: • habitats • protected species • living coastal and marine resources
Fisheries and Aquaculture		
No known projects		
Tourism and Recreation		
Beach Boardwalk from Waveland to Bayou Caddy	Boardwalk construction	Short to long-term impacts to: • geology and substrates • habitats Long-term benefits to: • recreational use • infrastructure • socioeconomic benefits
Buccaneer State Park	Hurricane Katrina destroyed all of Buccaneer State Park's structures, waterpark and support facilities. The park has been under varying stages of reconstruction since Hurricane Katrina. The final phase of reconstruction was completed in November of 2013.	Short to long-term impacts to: • geology and substrates • noise • habitats Long-term benefits to: • tourism and recreational use • socioeconomic benefits
Heritage Trail Possum Walk Coastal Improvements and Assistance Program	This project improves recreational improvements and trail improvements including a boardwalk and a kayak launch.	Short to long-term impacts to: • geology and substrates • habitats Long-term benefits to: • tourism and recreational use • infrastructure

10.10.3.1 Cumulative Impacts Analysis for Group 1 Projects

Looking across the array of current and reasonably foreseeable future projects, Table 10-38 identifies the following resource categories where there is a possibility that impacts of present and reasonably foreseeable future actions might overlap those of the Group 1 Phase III Early Restoration projects and therefore result in adverse cumulative impacts not identified through analysis of Group 1 Phase III Early Restoration projects alone. The following resource categories are identified for further cumulative impacts analysis:

[14] Present and foreseeable projects in this analysis refers to the on-going Mississippi Department of Marine Resources Coastal Preserves Program; does not include projects funded with National Fish and Wildlife Foundation funded from the Gulf Environmental Benefit Fund.

- Geology and substrates
- Hydrology and water resources
- Air quality
- Noise
- Living coastal and marine resources
- Habitat
- Socioeconomics and Environmental Justice
- Tourism and recreational use
- Infrastructure

Cumulative impacts for each of these categories are discussed below.

Geology and Substrates

Group 1 Phase III Early Restoration projects would have long term minor to moderate impacts to geology and substrates resulting from filling of soft sediments and hard bottom substrates for breakwaters, marsh creation, high profile reefs and , the construction of temporary flotation channels for the Hancock County Marsh Living Shoreline Project (Table 10-36). There would be minor impacts to geology and substrates for construction of trails, paving of parking areas, pile installation in wetlands for the construction of education facilities, and grading of the Native Landscape area. Long-term benefits to geology and substrates would include the conversion of hard bottom substrate to reefs, the conversion of soft sediments to a living shoreline (reef), and marsh creation.

Eight projects (Phase I Early Restoration: Mississippi Oyster Cultch Restoration, Phase I Early Restoration: Mississippi Artificial Reef Habitat, Mississippi Department of Marine Resources Beneficial Use of Dredge Material Program, Bay St. Louis Municipal Harbor and Pier, Silver Slipper Hotel Expansion, Beach Boardwalk from Waveland to Bayou Caddy, Buccaneer State Park, and Heritage Trail Possum Walk Coastal Improvements and Assistance Program;**Error! Reference source not found.**) are identified as potential contributors to cumulative impacts (adverse and beneficial) on geology and substrates when their impacts are combined with those of the Group 1 Phase III Early Restoration projects. Harbor, pier and boardwalk installations would include the conversion of soils and sediment to hard structure varies for each project. The projects would have a relatively small footprint for conversion of soil and substrate to hard structure. Restoration projects (Phase I Early Restoration: Mississippi Oyster Cultch Restoration, Phase I Early Restoration: Mississippi Artificial Reef Habitat) would enhance remnant hard bottom habitat and eventually would be colonized to produce reefs which provide an ecological benefit. Beneficial Use projects would have included minor impacts to sediments from dredging, but proper placement will provide marsh benefits.

When Group 1 Phase III Early Restoration projects are analyzed in combination with other past present, and reasonably forseeable future actions, short and long-term cumulative adverse impacts to geology and substrates would likely occur. Group 1 Phase III early restoration projects would not contribute substantially to cumulative adverse impacts. Group 1 Phase III Early Restoration projects, carried out in conjunction with other restoration efforts have the potential to result in some long-term beneficial cumulative impacts to geology and substrates.

Hydrology and Water Resources

Group 1 Phase III Early Restoration projects would result in short term minor construction related impacts to water quality for turbidity increases from cultch placement, breakwater construction, marsh creation, and grading and filling related to recreational use facilities(Table 10-36). There would be long-term beneficial impacts related to marsh and reef creation.

Six projects (Phase I Early Restoration: Mississippi Oyster Cultch Restoration, Phase I Early Restoration: Mississippi Artificial Reef Habitat, Mississippi Department of Marine Resources Beneficial Use of Dredge Material Program, Bay St. Louis Municipal Harbor and Pier, Silver Slipper Hotel Expansion and Buccaneer State Park;**Error! Reference source not found.**) are identified as potential contributors to cumulative impacts (adverse and beneficial). These restoration, marine transportation, coastal development, and tourism/recreation activities may contribute to long-term hydrologic or water quality impacts. Water quality impacts are primarily from turbidity as a result of deployment of cultch (Oyster cultch, artificial reefs), sediment placement (beneficial use), and soil and sediment disturbance (harbor and pier construction; casino construction). Other water quality impacts include pollutants from construction or those carried in runoff from marine transportation, coastal development, and tourism and recreation facility operations after construction. Oyster reefs and artificial reefs contribute long term water quality benefit from biological filtering. Long-term beneficial impacts are anticipated from marshes that are created by beneficial use of dredge materials.

When Group 1 Phase III Early Restoration projects are analyzed in combination with other past present, and reasonably forseeable future actions, short and long-term cumulative adverse impacts to hydrology and water resources (water quality) would likely occur. However, Group 1 Phase III Early Restoration projects would not contribute substantially to cumulative adverse impacts. Group 1 Phase III Early Restoration projects, carried out in conjunction with other restoration efforts have the potential to result in some long-term beneficial cumulative impacts to hydrology and water resources (water quality).

Air Quality and GHGs

Group 1 projects Phase III Early Restoration projects would result in short-term, minor construction related impacts for construction (equipment operation) of the Hancock County Marsh Living Shorelines project and Restoration Initiatives at the INFINITY Science Center(Table 10-36).

Three projects (Rolls Royce Outdoor Jet Engine Test Facility, Bay St. Louis Municipal Harbor and Pier and Silver Slipper Hotel Expansion; **Error! Reference source not found.**) are identified as potential contributors to cumulative impacts to air quality or GHG impacts. The impacts would occur mainly during construction with limited long term operational impacts. Construction and operations impacts of each project would be short to long-term in nature, would constitute a very small portion of the overall inventory of air emissions in the region, and would not be expected to violate state or federal standards. For operations, all facilities, would follow applicable federal and state regulations, and would not be expected to change the air quality attainment status of the region.

When Group 1 Phase III Early Restoration projects are analyzed in combination with other past present, and reasonably forseeable future actions, short-term cumulative adverse air quality impacts would likely occur. However, Group 1 Phase III Early Restoration projects would not contribute substantially to cumulative adverse air quality impacts.

Noise

Group 1 Phase III Early Restoration projects would have short-term construction-related noise impact. In addition, there would be sporadic short-term operational noise impact due to increase visitor use of remote trail section (Table 10-36).

Five projects (Rolls Royce Outdoor Jet Engine Test Facility at NASA John C. Stennis Space Center, Bay St. Louis Municipal Harbor and Pier, Silver Slipper Hotel Expansion, Beach Boardwalk from Waveland to Bayou Caddy, and Buccaneer State Park; **Error! Reference source not found.**) are identified as potential contributors to cumulative impacts including increases in noise levels. Project types include military operations, marine transportation, coastal development, and tourism/recreation. In most cases, the noise impacts would be of relatively short duration--ending upon completion of construction activities--and are projected to result in only minor adverse impacts. Noise levels for facility operations and use will be increased but not at an excessive level given surrounding land use.

When Group 1 Phase III Early Restoration projects are analyzed in combination with other past present, and reasonably forseeable future actions, short-term cumulative adverse noise impacts would likely occur. Group 1 Phase III Early Restoration projects would not contribute substantially to cumulative adverse noise impacts.

Living Coastal and Marine Resources

Group 1 Phase III Early Restoration projects would have short term adverse impacts to benthic fauna and long-term beneficial impacts to living coastal and marine resources resulting from the construction of the Hancock County Marsh Living Shorelines breakwater, oyster reef, and marsh creation (Table 10-36).

Four projects (Phase I Early Restoration: Mississippi Oyster Cultch Restoration, Phase I Early Restoration: Mississippi Artificial Reef Habitat, Mississippi Department of Marine Resources Beneficial Use of Dredge Material Program, Mississippi Coastal Preserves, Bay St. Louis Harbor and Municipal Pier; **Error! Reference source not found.**) are identified as potential contributors to cumulative impacts (adverse and beneficial) to living coastal and marine resources. Project types include restoration projects, marine transportation, and coastal land use (preservation). There would be minor short-term adverse impacts to benthic fauna resulting from cultch deployment (Oyster and artificial reefs), beneficial use of dredge materials, and hard structure installed for coastal development. Long-term benefits are anticipated from reef and marsh creation which will provide will provide habitat for smaller organisms mainly consisting of crustaceans and mollusks, such as juvenile shrimp, crab, oysters and mussels that live on the reef and in the sediment.

When Group 1 Phase III Early Restoration projects are analyzed in combination with other past present, and reasonably forseeable future actions, short-term cumulative adverse impacts to living coastal and marine resources would likely occur. Group 1 Phase III Early Restoration projects would not contribute substantially to cumulative adverse impacts to living coastal and marine resources. Group 1 Phase III Early Restoration projects, carried out in conjunction with other restoration efforts have the potential to result in some long-term beneficial cumulative impacts to living coastal and marine resources.

Habitats

Group 1 Phase III Early Restoration projects would have short term minor construction-related habitat impacts. Hancock County Marsh would have impacts to benthic soft and hard bottom habitats, but would create long-term benefits from the conversion of these habitats to oyster reefs, high profile reefs and marsh. Restoration Initiatives at INFINITY Science Center would have short term minor impacts to wetlands and forested habitats from grading and temporary construction activities for trail paving. There would be no habitat fragmentation as a result of either project (Table 10-36).

Six projects (Phase I Early Restoration: Mississippi Oyster Cultch Restoration, Phase I Early Restoration: Mississippi Artificial Reef Habitat, Mississippi Department of Marine Resources Beneficial Use of Dredge Material Program, Beach Boardwalk from Waveland to Bayou Caddy, Buccaneer State Park, and Heritage Trail Possum Walk Coastal Improvements and Assistance Program;**Error! Reference source not found.**) are identified as potential contributors to cumulative adverse and beneficial impacts to habitat. Project types include restoration projects, coastal development/land use, and tourism/recreational use projects. Adverse impacts are anticipated to be due to the removal of vegetation (coastal use projects, recreational trails), potential habitat fragmentation due to the installation of trails or boardwalks, filling of benthic habitat during construction (restoration and coastal use projects) and from management activities on preserves (ie prescribed burns, physical and chemical removal of nuisance species). The impacts will be short to long term but minor and will be mitigated through use of BMPs. Restoration projects (Phase I Early Restoration: Mississippi Oyster Cultch Restoration, Phase I Early Restoration: Mississippi Artificial Reef Habitat) resulted in the enhancement of and benefits to habitats including oyster reefs and nearshore hard bottom habitat. Benefits to marsh (beneficial use) and coastal wetland habitat (preservation and management) are anticipated from these projects.

When Group 1 Phase III Early Restoration projects are analyzed in combination with other past present, and reasonably forseeable future actions, short-term cumulative adverse impacts to habitat would likely occur. However, Group 1 Phase III Early Restoration projects would not contribute substantially to cumulative adverse impacts to habitats. Group 1 Phase III Early Restoration projects, carried out in conjunction with other restoration efforts have the potential to result in some long-term beneficial cumulative impacts to habitats.

Socioeconomic and Environmental Justice

Group 1 Phase III Early Restoration projects would have a short and long term beneficial socioeconomic impacts related to construction and on-going operations (Table 10-36). The Restoration Initiatives at INFINITY Science Center would collect revenue for Science Center visitor fees. Hancock County Marsh Living Shorelines could provide beneficial socioeconomic impacts due to spending related to increased fishing, birding and other activities in the project area.

Seven projects (Phase I Early Restoration: Mississippi Oyster Cultch Restoration, Phase I Early Restoration: Mississippi Artificial Reef Habitat, Rolls Royce Outdoor Jet Engine Test Facility, Bay St. Louis Municipal Harbor and Pier, Silver Slipper Hotel Expansion, Beach Boardwalk from Waveland to Bayou Caddy, and Buccaneer State Park;**Error! Reference source not found.**) are identified as potential contributors to cumulative impacts (beneficial) when their impacts are combined with those of the Group 1 projects. Restoration projects, military operations, coastal development, and

tourism/recreation projects would contribute to socioeconomic benefit from job creation and spending resulting from enhanced tourism and recreation activities in the area.

When Group 1 Phase III Early Restoration projects are analyzed in combination with other past present, and reasonably forseeable future actions, there would be no adverse socioeconomic impacts. Group 1 Phase III Early Restoration projects would not contribute substantially to cumulative adverse socioeconomic impacts. Group 1 Phase III Early Restoration projects, carried out in conjunction with other projects have the potential to result in some long-term beneficial cumulative socioeconomic impacts.

Tourism and Recreation

Group 1 Phase III Early Restoration projects would provide benefits to tourism and recreation. Restoration Initiatives at the INFINITY Science Center would provide recreational benefits from enhancements to the Science Center and trails in the area (Table 10-36). There could be short-term, minor impacts (e.g. noise, litter) due to increased visitor use.

Four projects (Silver Slipper Hotel Expansion, The Beach Boardwalk from Waveland to Bayou Caddy, Buccaneer State Park, and the Heritage Trail Possum Walk Coastal Improvements and Assistance Program;**Error! Reference source not found.**) are identified as potential contributors to cumulative impacts (primarily beneficial) to tourism and recreation. Visitation to these improved facilities is expected to provide long-term beneficial impacts to tourism are and recreation.

When Group 1 Phase III Early Restoration projects are analyzed in combination with other past present, and reasonably forseeable future actions, there are no short-term cumulative adverse impacts to tourism and recreation. Group 1 Phase III Early Restoration projects would not contribute substantially to cumulative adverse impacts to tourism and recreation. Group 1 Phase III Early Restoration projects, carried out in conjunction with other projects have the potential to result in some long-term beneficial cumulative impacts to tourism and recreation.

Infrastructure

Group 1 Phase III Early Restoration projects would provide infrastructure benefits. Restoration Initiatives at INFINITY Science Center would have beneficial impacts on infrastructure with creation of trails and parking (Table 10-36).

Three projects (Bay St. Louis Municipal Harbor and Pier, Beach Boardwalk from Waveland to Bayou Caddy, and Heritage Trail-Possum Walk Coastal Improvements and Assistance Program;**Error! Reference source not found.**) are identified as potential contributors to cumulative impacts (beneficial) when their impacts are combined with those of the Group 1 Phase III Early Restoration projects. These marine transportation and recreation projects would contribute to infrastructure including improvements to a municipal pier, and construction of trails and boardwalks. Infrastructure benefits resulting from these projects are anticipated to be long-term.

When Group 1 Phase III Early Restoration projects are analyzed in combination with other past present, and reasonably forseeable future actions, there would be no adverse impacts to infrastructure. Group 1 Phase III would not contribute substantially to cumulative adverse impacts to infrastructure. Group 1

Phase III Early Restoration projects, carried out in conjunction with other projects have the potential to result in some long-term beneficial cumulative impacts to infrastructure.

Summary of Cumulative Impacts

Based on the above analysis of present and reasonably foreseeable future actions and the anticipated resources to be impacted for these actions the Group 1 Phase III Early Restoration projects are not expected to have long-term cumulative impacts that differ substantially from those identified in the environmental review for the project. Group 1 Phase III Early Restoration projects, carried out in conjunction with other projects, have the potential to result in long term beneficial cumulative impacts to geology and substrates, living coastal and marine resources, habitats, socioeconomics, tourism, recreational use and infrastructure in the region.

10.10.4 Group 2: Harrison and Jackson Counties: Popp's Ferry Causeway Park/Pascagoula Beachfront Promenade

Error! Reference source not found. summarizes the impacts to resources associated with proposed Mississippi Early Restoration projects in the Harrison and Jackson counties region for the Popp's Ferry Causeway Park and the Pascagoula Beachfront Promenade, which are recreational use projects. The projects occur in Back Bay Biloxi and in Pascagoula adjacent to the Mississippi Sound. Phase III Early Restoration projects are evaluated together to determine if they have any cumulative effects that, when combined with other past, present, and reasonably foreseeable actions in the Group 2 area, may result in cumulative effects to resources. Cultural resource investigations and consultations would be completed for all the proposed projects as environmental review continues. Although no cumulative impacts to cultural resources are anticipated, there is insufficient information at this time to make determinations. If cultural resources would be impacted, mitigation identified during the consultation process would be implemented.

Existing Conditions

Existing environmental and socio-economic conditions in and around Group 2 Phase III Early Restoration projects are represented by the affected environment in the preceding environmental reviews. The existing conditions include the environmental impacts of past projects in the area and therefore are the assumed existing conditions for the cumulative analysis of impacts for present and reasonably foreseeable future actions.

Table 10-38. Summary of Impacts of Proposed Phase III Early Restoration Projects-Popp's Ferry Causeway Park and the Pascagoula Beachfront Promenade.

Group 2	Geology and Substrates	Hydrology and Water Resources	Air Quality and GHGs	Noise	Living Coastal and Marine Resources	Protected Species	Habitats	Socioeconomics and Environmental Justice	Land and Marine Management	Aesthetics and Visual Resources	Tourism and Recreational Use	Infrastructure	Public Health and Safety and Shoreline Protection
Popp's Ferry Causeway Park	-	-	S	s	-	NE	-	+	+	+	+	+	+
Pascagoula Beachfront Promenade	-	-	S	s	NE	NE	NE	+	+	+	+	+	+

- Represents an adverse impact; + represents a beneficial impact; s represents a short-term adverse impact; NE represents no effect

Summary of Impacts Group 2 Phase III Early Restoration Projects

All of the resource areas listed in **Error! Reference source not found.** above would be affected by at least some of the Phase III Early Restoration projects included in Group 2. These effects would not be anticipated to extend beyond the construction period for the most part. Some resource areas would be affected long term, some beneficially and some adversely. However, none of the Phase III Early Restoration projects included in Group 2 would result in any long-term adverse effects that rise above a minor status. In fact, for many of the resource, Phase III Early Restoration projects in Group 2 would result in long-term benefits to certain resources. Overall, long-term benefits from projects Phase III Early Restoration proposed in the Group 2 region are expected to outweigh the short-term adverse impacts necessary for project implementation as well as long-term minor adverse effects.

Identification of Past, Present and Reasonably Foreseeable Future Actions and Impacts

Past, present, and reasonably foreseeable activities in Group 2 have contributed to adverse cumulative effects to certain resources. Group 2 projects in Harrison and Jackson counties include infrastructure, marine transportation, energy, and restoration and environmental stewardship activities with various types of adverse impacts as well as benefits. Figure 10-22 displays the past, present, and reasonably foreseeable future activities.

The table below identifies past, present and reasonably foreseeable future projects in each of the categories described in Chapter 6. For each of the actions, the table provides (1) a brief description of the action and (2) a listing of NEPA resource categories that are the most likely areas of concern for cumulative impacts when the action is considered in conjunction with implementation of the Group 2 Phase III Early Restoration projects. In most cases, detailed environmental impact data are not available for these actions. Consequently, the analyses generally reflect qualitative discussions about potential impacts based on best professional judgment. Also, as noted previously, the focus of the cumulative

impacts analysis is on the resource areas that are deemed most likely to exhibit cumulative impacts; hence the analysis does not include in the listing those resources where impacts have been judged to be *de minimis.*

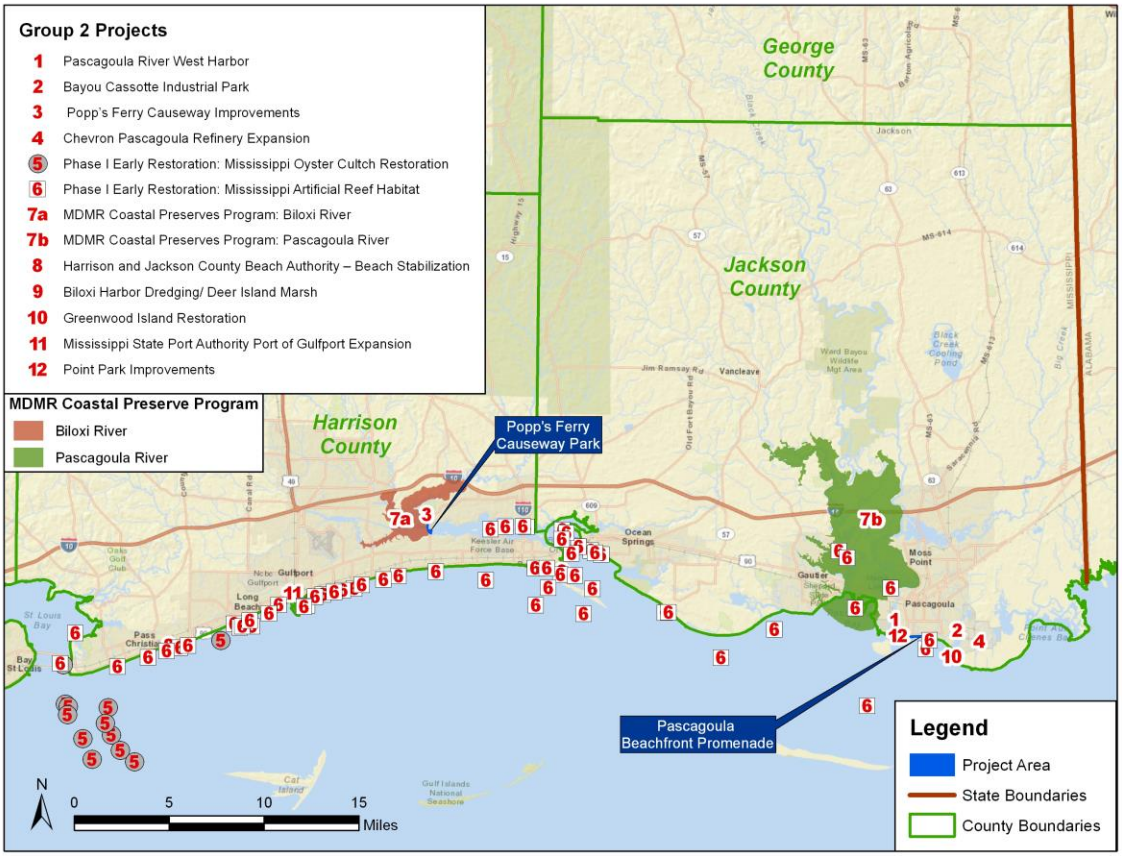

Figure 10-22. Group 2 Projects for the Cumulative Effects Analysis.

Table 10-39. Description of past, present, and reasonably foreseeable future actions that have been considered as part of this analysis for Group 2 projects.

Category/Projects	Project Description	Key Resource Areas with Potential for Cumulative Impacts
Restoration Related to the Spill (Early Restoration Phases I & II, Restore Act, Gulf Environmental Benefit Fund, North American Wetlands Conservation Fund, National Academy of Sciences)		
Phase I Early Restoration: Mississippi Oyster Cultch Restoration (Hancock County)	This project restored and enhanced approximately 1,430 acres of oyster cultch areas that cover approximately 12,000 acres of the Mississippi Sound. Initial cultch placement was completed in May of 2013.	Short-term to long-term impacts to: • geology and substrates • hydrology and water resources • living coastal and marine resources Long-term benefits to: • geology and substrates, • living coastal and marine resources • habitats • socioeconomic benefits
Phase I Early Restoration: Mississippi Artificial Reef Habitat (Hancock County)	This project deployed cultch among 67 nearshore artificial reefs, each deployment was approximately 0.5 to 3 acres, in the marine waters of Mississippi. Within Group 2 there are 59 artificial reefs. Cultch deployment was completed in June of 2013.	Short-term to long-term impacts to: • geology and substrates • living coastal and marine resources Long-term benefits to: • geology and substrates • hydrology and water resources • living coastal and marine resources • habitats • socioeconomic benefits
Mississippi Department of Marine Resources Beneficial Use of Dredge Material Program (Marsh Creation)	The project includes using dredge material to restore habitats such as marsh and wetland habitat.	Short-term to long-term impacts to: • geology and substrates, • hydrology and water resources • noise • living coastal and marine resources • habitat Long term benefits to: • geology and substrates • living and coastal marine resources • habitats
Military Operations		
No known projects		
Marine Transportation		
Pascagoula River West Harbor (dredging and Industrial expansions)	Harbor dredging and expansion of industrial facilities.	Short to long-term impacts to: • geology and substrates, • hydrology and water resources • air quality and GHGs • noise • living coastal and marine resources • habitats Long-term benefits to: • socioeconomic benefits • infrastructure
Biloxi Harbor Dredging/ Deer Island Marsh	Material dredged from Biloxi Harbor were used to create 45 acres of marsh adjacent to Deer Island. Approximately 364,000 cubic yards of fine-grained dredged material was used to create the marsh. The project was completed in 2003.	Short-term to long-term impacts to: • geology and substrates, • hydrology and water resources • noise • living coastal and marine resources • habitats Long-term benefits to: • habitats

Category/Projects	Project Description	Key Resource Areas with Potential for Cumulative Impacts
Mississippi State Port Authority Port of Gulfport Expansion	The proposed project involves filling of up to 300 acres of open water bottom in the Mississippi Sound; construction of terminal facilities and associated infrastructure, dredging and dredged material disposal and infrastructure; and construction of a breakwater of approximately 4,000 linear feet as well as elevating the expanded facility 25 feet above sea level to provide protection against future tropical storm surge events. Project completion is estimated to be late 2016.	Short-term to long-term impacts to: • geology and substrates • hyrology and water resources • air quality and GHGs • noise • living coastal and marine resources • habitats There would be long-term benefits to: • socioeconomics • infrastructure
Energy Activities (Offshore oil production, Offshore Natural Gas Facilities, State Oil and Gas Activities)		
Chevron Pascagoula Refinery Expansion	An ethane cracker will be built at Chevron Phillips Chemical's Cedar Bayou plant in Baytown and two polyethylene units will be built at a site in Old Ocean, near Chevron Phillips Chemical's Sweeny plant. Construction is expected to start in early 2014 with startup slated for 2017.	Short to long-term impacts to: • geology and substrates • hydrology and water resources • air quality and GHGs • noise • habitat Long-term benefits: • socioeconomics
Marine Mineral Mining, Including Sand and Gravel Mining		
No known projects		
Coastal Development and Land Use		
Bayou Cassotte Industrial Park (Channel Widening, dredging, Industrial Expansions)	Channel widening project, channel dredging, and industrial facilities expansion	Short to long-term impacts to: • geology and substrates • hydrology and water resources • air quality • noise • living and coastal marine resources • habitat Long-term benefits to: • socioeconomics • infrastructure
Mississippi Department of Marine Resources Coastal Preserves Program[15]	The project includes the general management, regulation, recreation, and restoration activities in MDMR areas	Short-term minor adverse impacts to: • habitats Long term benefits to: • habitats • protected species • living coastal and marine resources
Fisheries and Aquaculture		
No known projects		
Tourism and Recreation		
Harrison and Jackson County Beach Authority – Beach Stabilization	This project consists of the restoration of approximately 26 miles of dune systems, which was destroyed by Hurricane Katrina. Restoration would consist of placement of approximately 681,000 cubic yards of dune sand, fencing along a 134,000-foot-long perimeter, to offer protection to the resource, and approximately 125 acres of	Short-term to long-term impacts to: • geology and substrates • hydrology and water resources • noise • habitats Long-term benefits to: • habitat

[15] Present and foreseeable projects in this analysis refers to the on-going Mississippi Department of Marine Resources Coastal Preserves Program; does not include projects funded with National Fish and Wildlife Foundation funded from the Gulf Environmental Benefit Fund.

Category/Projects	Project Description	Key Resource Areas with Potential for Cumulative Impacts
	native vegetation plantings.	
Point Park	A 10-acre tract overlooking the Mississippi Sound would be converted to a park. Current construction includes parking, restrooms, amphitheater and boat launch. Future plans include additional parking, restrooms, rip-rap, boardwalks, lighting, landscaping, ramp improvements, pavilions, a playground, a stage and other features.	Short term impacts to: • geology and substrates • hydrology and water resources • noise Long-term benefits to: • recreational use • socioeconomics • infrastructure
Greenwood Island Restoration	Restoration activities on Greenwood island	Short-term to long-term impacts to: • geology and substrates • hydrology and water resources • noise • habitats Long-term benefits to: • habitats

10.10.4.1 Cumulative Impacts Analysis for Group 2 Projects

Looking across the array of present and reasonably foreseeable future projects, Table 10- identifies the following resources where there is a possibility that impacts of present and reasonably foreseeable future actions might overlap those of the Group 2 Phase III Early Restoration projects and therefore result in adverse cumulative impacts not identified through analysis of Group 2 Phase III Early Restorationprojects alone. The following resource categories are identified for further cumulative impacts analysis:

- Geology and substrates
- Hydrology and water resources
- Air quality and GHGs
- Noise
- Living coastal and marine resources
- Habitats
- Tourism and recreation
- Infrastructure

Cumulative impacts for each of these categories are discussed below.

Geology and Substrates

Group 2 Phase III Early Restoration projects would have long-term minor impacts to geology and substrates from the permanent filling of sediments and soils to construct boardwalks, walkways, promenades, fishing piers, parking lots, visitor centers and amenities (**Error! Reference source not found.**).

Eleven projects (Phase I Early Restoration: Mississippi Oyster Cultch Restoration, Phase I Early Restoration: Mississippi Artificial Reef Habitat, Mississippi Department of Marine Resources Beneficial Use of Dredge Material Program, Pascagoula River West Harbor, Biloxi Harbor Dredging/ Deer Island Marsh, Mississippi State Port Authority Port of Gulfport Expansion, Chevron Pascagoula Refinery

Expansion, Bayou Cassotte Industrial Park, Harrison and Jackson County Beach Authority – Beach Stabilization, Point Park and Greenwood Island Restoration; Table 10-) are identified as potential contributors to cumulative impacts on geology and substrates when their impacts are combined with those of the Group 2 Phase III Early Restoration projects. Geology and substrate impacts resulting from these projects would include dredge activity displacement of soft bottom sediments for port and harbor improvements and filling associated with industrial projects, energy projects and beach stabilization projects. These impacts are anticipated to be short- to long-term, minor to moderate adverse, but localized. Restoration projects (Phase I Early Restoration: Mississippi Oyster Cultch Restoration, Phase I Early Restoration: Mississippi Artificial Reef Habitat) would enhance remnant hard bottom habitat and eventually would be colonized to produce reefs which provide an ecological benefit. Beneficial Use projects would have included minor impacts to sediments from dredging, but proper placement will provide marsh benefits. Long term benefits would result from beach stabilization activities.

Group 2 Phase III Early Restoration projects in combination with other past, present, and reasonably foreseeable future actions, would result in long-term cumulative adverse impacts to geology and substrates. Group 2 Phase III Early Restoration projects would not contribute substantially to cumulative adverse impacts. Group 2 Phase III Early Restoration projects, carried out in conjunction with other restoration efforts have the potential to result in some long-term beneficial cumulative impacts to geology and substrates.

Hydrology and Water Resources

Group 2 Phase III Early Restoration projects would result in short-term minor impacts to hydrology and water resources. Impacts would include construction related increases in stormwater runoff as well as impacts to water quality from construction related runoff related to construction of trails, an interpretive center, parking and other facilities (Table 10-).

Eleven projects (Phase I Early Restoration: Mississippi Oyster Cultch Restoration, Phase I Early Restoration: Mississippi Artificial Reef Habitat, Mississippi Department of Marine Resources Beneficial Use of Dredge Material Program, Pascagoula River West Harbor, Biloxi Harbor Dredging/ Deer Island Marsh, Mississippi State Port Authority Port of Gulfport Expansion, Chevron Pascagoula Refinery Expansion, Bayou Cassotte Industrial Park, Harrison and Jackson County Beach Authority – Beach Stabilization, Point Park, and Greenwood Island Restoration; Table 10-39) are identified as potential contributors to cumulative impacts on hydrology and water resources when their impacts are combined with those of the Group 2 Phase III Early Restoration projects. Water quality impacts are primarily from turbidity as a result of deployment of cultch (Oyster cultch, artificial reefs), sediment placement (beneficial use), and soil and sediment disturbance (harbor and pier construction; dredging). Other water quality impacts include pollutants from construction or those carried in runoff from (marine transportation, coastal development, and tourism and recreation facility operations after construction). Oyster reefs and artificial reefs contribute long-term water quality benefit from biological filtering. Long-term beneficial impacts are anticipated from marshes that are created by beneficial use of dredge materials.

Group 2 Phase III Early Restoration projects in combination with other past, present, and reasonably foreseeable future actions, would result in long-term cumulative adverse impacts to hydrology and water resources. Group 2 would not contribute substantially to cumulative adverse impacts to

hydrology and water resources. Group 2 Phase III Early Restoration projects, carried out in conjunction with other restoration efforts have the potential to result in some long-term beneficial cumulative impacts to hydrology and water resources (water quality).

Air Quality and GHGs

Group 2 Phase III Early Restoration projects would have short-term minor construction related air impacts due to related to equipment use (Table 10-38).

Four projects (Pascagoula River West Harbor, Mississippi State Port Authority Port of Gulfport Expansion, Chevron Pascagoula Refinery Expansion, and Bayou Cassotte Industrial Park; Table 10-39) are identified as potential contributors to cumulative impacts to air quality or GHG impacts. The impacts would occur mainly during construction with some contribution likely from additional operations that result from facility expansion. Construction and operations impacts of each project would be short to long-term in nature, would constitute a very small portion of the overall inventory of air emissions in the region, and would not be expected to violate state or federal standards.

Group 2 Phase III Early Restoration projects in combination with other past, present, and reasonably foreseeable future actions, would have minor short-term to long-term cumulative adverse impacts to air quality. However, Group 2 would not contribute substantially to cumulative adverse air quality impacts.

Noise

Group 2 Phase III Early Restoration projects would have minor, short-term construction related noise impacts from the construction of fishing piers, walkways, road improvements, interpretive center construction, construction of a beach promenade and other facilities (Table 10-38). There would be sporadic, short term increases in noise due to visitor use.

Eight projects (Mississippi Department of Marine Resources Beneficial Use of Dredge Material Program, Pascagoula River West Harbor, Biloxi Harbor Dredging/ Deer Island Marsh, Mississippi State Port Authority Port of Gulfport Expansion, Chevron Pascagoula Refinery Expansion, Bayou Cassotte Industrial Park, Harrison and Jackson County Beach Authority – Beach Stabilization, Point Park, and Greenwood Island Restoration; Table 10-39) are identified as potential contributors to cumulative impacts including increases in noise levels. In most cases, the noise impacts would be of relatively short duration(ending upon completion of construction activities) and are projected to result in only minor adverse impacts. Operations noise could result from increased activities from facility expansions and visitor use of marine transportation, energy, coastal development, and tourism/recreation projects and could result in a long-term minor impact to noise. Recreational projects could result in increased visitor use and sporadic, short term increases in noise.

Group 2 Phase III Early Restoration projects in combination with other past, present, and reasonably foreseeable future actions, would result in short to long term cumulative adverse noise impacts. Group 2 Phase III Early Restoration projects would not contribute substantially to cumulative adverse noise impacts.

Living Coastal and Marine Resources

Group 2 Phase III Early Restoration projects would have minor, long term adverse affects to living coastal and marine resources from construction of piers, boardwalks and bank stabilization as well as enhanced access which could result in increases in bank fishing and crabbing (Popp's Ferry Causeway Park) in the area (Table 10-).

Eight projects (Phase I Early Restoration: Mississippi Oyster Cultch Restoration, Phase I Early Restoration: Mississippi Artificial Reef Habitat, and Mississippi Department of Marine Resources Beneficial Use of Dredge Material Program, Pascagoula River West Harbor, Biloxi Harbor Dredging/ Deer Island Marsh, Mississippi State Port Authority Port of Gulfport Expansion, Bayou Cassotte Industrial Park, and, Mississippi Department of Marine Resources Coastal Preserve Program; Table 10-39) are identified as potential contributors to cumulative impacts (adverse and beneficial) to living coastal and marine resources. Project types include restoration projects, marine transportation, and coastal land use (preservation). There would be minor to moderate short-term to long-term adverse impacts to benthic fauna resulting from cultch deployment (Oyster and artificial reefs), beneficial use of dredge materials, and hard structure installed for coastal development, and dredging operations associated with port and industrial and marine transportation projects. Reefs created by cultch deployment and marsh edge created by beneficial use will provide habitat for smaller organisms mainly consisting of crustaceans and mollusks, such as juvenile shrimp, crab, oysters and mussels that live on the reef, on marsh edge and in the sediment.

Group 2 Phase III Early Restoration projects in combination with other past, present, and reasonably foreseeable future actions, would result in short to long-term minor to moderate cumulative adverse impacts to living coastal and marine resources. However, Group 2 Phase III Early Restoration projects would not contribute substantially to cumulative adverse impacts to living coastal and marine resources. Group 2 Phase III Early Restoration projects, carried out in conjunction with other restoration efforts have the potential to result in some long-term beneficial cumulative impacts to living coastal and marine resources.

Habitats

Group 2 Phase III Early Restoration projects would have minor, short term impacts to habitat resulting from the construction of Popp's Ferry Causeway Park (Table 10-). Habitat impacts would include minor wetland impacts and impacts associated with shoreline stabilization with rip rap. There would be habitat fragmentation as a result of either project.

Eleven projects (Phase I Early Restoration: Mississippi Oyster Cultch Restoration, Phase I Early Restoration: Mississippi Artificial Reef Habitat, and Mississippi Department of Marine Resources Beneficial Use of Dredge Material Program, Pascagoula River West Harbor, Biloxi Harbor Dredging/ Deer Island Marsh, Mississippi State Port of Gulfport Expansion, Chevron Pascagoula Refinery Expansion, Bayou Cassotte Industrial Park, Mississippi Department of Marine Resources Coastal Preserves Program, Harrison and Jackson County Beach Authority – Beach Stabilization, and Greenwood Island Restoration; Table 10-39) are identified as potential contributors to cumulative adverse and beneficial impacts to various habitats. Project types include restoration projects, marine transportation, energy, coastal development/land use, and tourism/recreational use projects. Adverse impacts are anticipated to be due to the removal of vegetation (coastal use projects, recreational trails), filling/dredging of benthic habitat during construction (restoration, coastal development, marine transportation) and from

management activities on preserves (e.g. prescribed burns, physical and chemical removal of nuisance species). The impacts will be short to long term but minor and will be mitigated through use of BMPs. Implementation of restoration projects (Phase I Early Restoration: Mississippi Oyster Cultch Restoration, Phase I Early Restoration: Mississippi Artificial Reef Habitat, and Mississippi Department of Marine Resources Beneficial Use of Dredge Material Program) would result in the enhancement of and benefits to habitats including oyster reefs, nearshore hard bottom habitat (artificial reefs), marsh (beneficial use), island habitat and coastal wetland habitat (preservation and management).

Group 2 Phase III Early Restoration projects in combination with other past, present, and reasonably foreseeable future actions, would result in minor short to long-term cumulative adverse impacts to habitats. However, Group 2 Phase III Early Restoration projects would not contribute substantially to cumulative adverse habitat impacts. Group 2 Phase III Early Restoration projects, carried out in conjunction with other restoration efforts have the potential to result in some long-term beneficial cumulative impacts to habitats.

Socioeconomic and Environmental Justice

Group 2 Phase III Early Restoration projects would provide beneficial socioeconomic impacts due to increased expenditures related to enhanced access to the Popp's Ferry Park and Pascagoula Beachfront promenade (Table 10-38).

Eight projects (Phase I Early Restoration: Mississippi Oyster Cultch Restoration, Phase I Early Restoration: Mississippi Artificial Reef Habitat, Mississippi Department of Marine Resources Beneficial Use of Dredge Material Program, Pascagoula River West Harbor, Mississippi State Port Authority Port of Gulfport Expansion, Chevron Pascagoula Refinery Expansion, Bayou Cassotte Industrial Park, and Point Park; Table 10-39) are identified as potential contributors to cumulative impacts (beneficial) when their impacts are combined with those of the Group 2 Phase III Early Restoration projects. Restoration projects, marine transportation projects, coastal development, and tourism/recreation projects would contribute to socioeconomic benefit from job creation and revenues from enhanced tourism and recreation activities in the area. Socioeconomic benefits resulting from these projects are anticipated to be short- to long-term.

Group 2 Phase III Early Restoration projects in combination with other past, present, and reasonably foreseeable future actions, would not result in long-term cumulative adverse socioeconomic impacts. Group 2 would not contribute substantially to cumulative adverse socioeconomic impacts. Group 2 Phase III Early Restoration projects, carried out in conjunction with other projects have the potential to result in some long-term beneficial cumulative socioeconomic impacts.

Tourism and Recreation

Group 2 Phase III Early Restoration projects would result in beneficial impacts to tourism and recreation (Table 10-38). Project improvements would enhance access to coastal resources as well as visitor experience at those sites (Popp's Ferry Causeway Park and the Pascagoula Beachfront Promenade). There could be short-term minor impacts (e.g. noise, litter) due to increased visitor use.

The Point Park is identified as a potential contributor to cumulative impacts (beneficial) to tourism and recreational use (Table 10-). The project would provide long term benefits to the region.

Group 2 Phase III Early Restoration projects in combination with other past, present, and reasonably foreseeable future actions, would not result in cumulative adverse impacts to tourism and recreation. Group 2 Phase III Early Restoration projects would not contribute substantially to cumulative adverse impacts to recreation and tourism. Group 1 Phase III Early Restoration projects, carried out in conjunction with other projects have the potential to result in some long-term beneficial cumulative impacts to tourism and recreation.

Infrastructure

Group 2 Phase III Early Restoration projects would provide benefits to infrastructure (Table 10-). Popp's Ferry Causeway Park would include roadway improvements, parking, walkways, boardwalks, parking and other amenities. The Pascagoula Beachfront Promenade would provide pedestrian access to the Pascagoula Beach without pedestrians having to use Beach Boulevard.

Four projects (Pascagoula River West Harbor, Mississippi State Port Authority Port of Gulfport Expansion, Bayou Cassotte Industrial Park, and Point Park;Table 10-) are identified as potential contributors to cumulative impacts (beneficial) when their impacts are combined with those of the Group 2 Phase III Early Restoration projects. These marine transportation and recreation projects would contribute to infrastructure including improvements ports and harbors, and construction of parks, boat ramps and parking. Infrastructure benefits resulting from these projects are anticipated to be long-term.

Group 2 Phase III Early Restoration projects in combination with other past, present, and reasonably foreseeable future actions, would not result in cumulative adverse impacts to infrastructure. Group 2 Phase III Early Restoration projects would not contribute substantially to cumulative adverse impacts to infrastructure. Group 2 Phase III Early Restoration projects, carried out in conjunction with other project have the potential to result in some long-term beneficial cumulative impacts to infrastructure.

Summary of Cumulative Impacts

Analysis of present and reasonably foreseeable future actions and the anticipated resources to be impacted for these actions, the Group 2 Phase III Early Restoration projects are not expected to have long-term cumulative impacts that differ substantially from those identified in the environmental review for the project. Group 2 Phase III Early Restoration projects, carried out in conjunction with other projects have the potential to result in long term beneficial cumulative impacts to geology and substrates, hydrology and water resources, living and coastal marine resources, habitat, socioeconomics, tourism and recreational use, and infrastructure.

10.10.5 Other Planning Considerations

In addition to foreseeable actions identified in the table above, in November 2013, National Fish and Wildlife Foundation (NFWF) announced initial projects to receive funding from the Gulf Environmental Benefit Fund (http://www.nfwf.org/gulf/pages/gulf-projects.aspx). More than $112 million was obligated for 22 projects designed to protect, restore, and enhance natural and living resources across the Gulf Coast. Three of these projects are in Mississippi:

- Coastal Bird Stewardship Program
- Mississippi Coastal Preserve Program

- Coastal Stream & Habitat Initiative

RECORD OF DECISION
for the *Deepwater Horizon* Oil Spill: Final Programmatic and Phase III Early Restoration Plan and Early Restoration Programmatic Environmental Impact Statement (Phase III ERP/PEIS)

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RECORD OF DECISION
for the *Deepwater Horizon* Oil Spill: Final Programmatic and Phase III Early Restoration Plan and Early Restoration Programmatic Environmental Impact Statement (Phase III ERP/PEIS)

1 OVERVIEW

The federal and state natural resource Trustees (Trustees) for the *Deepwater Horizon* oil spill (the Spill[1]) have prepared a Programmatic and Phase III Early Restoration Plan, including a Programmatic Environmental Impact Statement (Phase III ERP/PEIS)for the purposes of accelerating meaningful restoration of injured natural resources and their services resulting from the Spill. The Phase III ERP/PEIS has been prepared under the authority of the Oil Pollution Act of 1990 (OPA), 33 U.S.C. §§ 2701 *et seq*. and integrated with a Programmatic Environmental Impact Statement in compliance with the Federal agency decision-making requirements of the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321 *et seq*. The Phase III ERP/PEIS provides information and analysis concerning: (1) the programmatic approach proposed by the Trustees for continuing Early Restoration; and (2) 44 specific Early Restoration projects.

The purpose of this Record of Decision (ROD) is to document the decisions made by the Trustees on the Phase III ERP/PEIS. The following federal agencies are the designated natural resource Trustees under OPA for this Spill:

- The United States Department of the Interior (DOI), as represented by the National Park Service (NPS), United States Fish and Wildlife Service (USFWS), and Bureau of Land Management;
- The National Oceanic and Atmospheric Administration (NOAA), on behalf of the United States Department of Commerce;
- The United States Department of Agriculture (USDA); and
- The United States Environmental Protection Agency (EPA).

The following state agencies are designated natural resources Trustees under OPA and are currently acting as Trustees for the Spill:

- Texas Parks and Wildlife Department (TPWD), Texas General Land Office (TGLO) and Texas Commission on Environmental Quality (TCEQ);
- The State of Louisiana's Coastal Protection and Restoration Authority (CPRA), Oil Spill Coordinator's Office (LOSCO), Department of Environmental Quality (LDEQ), Department of Wildlife and Fisheries (LDWF) and Department of Natural Resources (LDNR);

[1] The Spill includes activities conducted in response to the spilled oil.

- The State of Mississippi's Department of Environmental Quality (MDEQ);
- The State of Alabama's Department of Conservation and Natural Resources (ADCNR) and Geological Survey of Alabama (GSA); and
- The State of Florida's Department of Environmental Protection (FDEP) and Fish and Wildlife Conservation Commission (FWC).

The selection of the Preferred Alternative for the Programmatic Early Restoration Plan and selection of 44 projects for the Phase III Early Restoration Plan are subject to review under NEPA. DOI prepared a Draft and Final Phase III ERP/PEIS with the NOAA, EPA, and USDA, and Trustees from Alabama, Florida, Louisiana, Mississippi, and Texas as cooperating agencies in the PEIS.

NEPA permits a federal agency to adopt another agency's environmental impact statement provided that the statement meets the standards for an adequate statement under the NEPA regulations (40 C.F.R. §1506.3).Further, an agency participating in the NEPA process as a cooperating agency may adopt the environmental impact statement of a lead agency without recirculating the statement when, after an independent review of the statement, the cooperating agency concludes that its comments and suggestions have been satisfied. NOAA, USDA and EPA participated in the development of the Phase III ERP/PEIS as cooperating federal agencies for purposes of NEPA. Each agency has independently determined that the PEIS component of the Phase III ERP/PEIS is sufficient for the purposes of informing that agency's decisions and hence has adopted the PEIS in accordance with 40 C.F.R. §1506.3 and its agency-specific NEPA procedures[2]. This document serves as the NEPA Record of Decision (ROD) for DOI, NOAA, USDA, and EPA.

2 DECISIONS TO BE MADE BY TRUSTEES

This ROD documents two decisions by the Trustees for the Spill under OPA: 1) selection of the Preferred Alternative for the Programmatic Early Restoration Plan; and 2) selection of 44 projects for the Phase III Early Restoration Plan, subject to completing remaining permitting and consultation requirements, as specifically identified in Section9 below.

The Trustees are in the process of conducting a Natural Resource Damage Assessment (NRDA) to assess and quantify injuries to natural resources and lost resource services caused by the Spill. The NRDA will result in the identification of restoration to compensate the public for those injuries and lost services. While the NRDA for the Spill is ongoing, the Trustees and BP Exploration and Production, Inc. (BP), one of the parties responsible for the Spill, have begun a process of "Early Restoration" whereby the Trustees accelerate meaningful restoration of injured natural resources and their services resulting from the Spill.

The Phase III ERP/PEIS has been developed to guide the early restoration of injured natural resources and the services they provide. It serves as a Programmatic and Phase III Early Restoration Plan and a

[2] NOAA NEPA implementing procedures NAO 216-6, 5.09(f); USDA NEPA implementing regulations 7 C.F.R. Part 1b ; EPA NEPA implementing regulations 40 C.F.R. Part 6.

Programmatic Environmental Impact Statement, as well as the environmental impact statement for the 44 Phase III projects. The Programmatic Environmental Impact Statement (including Chapters 8-12) contains a comprehensive environmental review of the 44 projects and provides an Environmental Impact Statement that adequately covers the projects. The Phase III ERP/PEIS frames and helps to inform Early Restoration actions and identifies a range of Early Restoration programmatic alternatives and project types that could be applied at this time and in future phases of Early Restoration planning.

The Phase III ERP/PEIS has been prepared in accordance with federal regulations implementing OPA and federal agency requirements under the NEPA. The Trustees are issuing this ROD pursuant to NEPA regulations at 40 C.F.R.§1505.2 and OPA regulations at 15 C.F.R. § 990.23. The ROD documents the Trustees' decision to: 1) select the Preferred Alternative for the Programmatic Early Restoration Plan; and 2) select 44 projects for implementation under the Phase III Early Restoration Plan.

3 INTRODUCTION AND PURPOSEAND NEED

On or about April 20, 2010, the mobile offshore drilling unit, *Deepwater Horizon*, which was being used to drill a well for BP Exploration and Production, Inc. (BP) in the Macondo prospect (Mississippi Canyon 252–MC252),suffered a blowout, caught fire and subsequently sank in the Gulf of Mexico (the Gulf). Tragically, 11 workers were killed and 19 injured.

The Spill is one of the largest oil spills in U.S. history. The Spill discharged millions of barrels of oil over a period of 87 days. In addition, well over 1 million gallons of dispersants[3] were applied to the waters of the spill area in an attempt to disperse the spilled oil. An undetermined amount of natural gas was also released to the environment as a result of the Spill.

The U.S. Coast Guard responded and directed federal efforts to contain and clean up the *S*pill. The scope, nature and magnitude of the Spill caused impacts to coastal and oceanic ecosystems ranging from the deep ocean floor, through the oceanic water column, to the highly productive coastal habitats of the northern Gulf, including estuaries, shorelines and coastal marsh. Affected resources include ecologically, recreationally, and commercially important species and their habitats in the Gulf and along the coastal areas of Texas, Louisiana, Mississippi, Alabama, and Florida. These fish and wildlife species and their supporting habitats provide a number of important ecological and recreational use services.

In April 2011, the Trustees entered into an agreement under which BP agreed to provide up to $1 billion toward Early Restoration projects in the Gulf to address injuries to natural resources caused by the Spill. The Framework for Early Restoration Addressing Injuries Resulting from the Deepwater Horizon Oil Spill (Framework Agreement) is intended to facilitate and expedite restoration in the Gulf in advance of the completion of the NRDA process. The Framework Agreement provides a mechanism through which the Trustees and BP can work together "to commence implementation of Early Restoration projects that will

[3] Dispersants do not remove oil from the ocean. Rather, they are used to help break large globs of oil into smaller droplets that can be more readily dissolved into the water column.

provide meaningful benefits to accelerate restoration in the Gulf as quickly as practicable" prior to completion of the NRDA process or full resolution of the Trustees' natural resource damage claims (http://www.restorethegulf.gov/sites/default/files/documents/pdf/framework-for-early-restoration-04212011.pdf).

For the purpose of accelerating meaningful restoration under OPA, the Trustees need to identify restoration actions that contribute to making the environment and the public whole for injury to or loss of natural resources and services resulting from the Spill. The Trustees previously selected 10 Early Restoration projects for implementation, including eight projects documented in the April 2012 final "*Deepwater Horizon* Oil Spill Phase I Early Restoration Plan and Environmental Assessment" and two projects documented in the December 2012 final "*Deepwater Horizon* Oil Spill Phase II Early Restoration Plan and Environmental Review." In addition to the Phase I and II Early Restoration projects totaling approximately$71 million, the Trustees have identified restoration projects totaling $627 million in the Phase III ERP/PEIS, leaving approximately $300 million for future Phases of Early Restoration.

4 PUBLIC REVIEW AND COMMENT

Public input is an integral part of NEPA, OPA, and the Spill restoration planning effort. The process of public review has facilitated discussion regarding the programmatic approach to Early Restoration, restoration alternatives, and proposed projects; allowed the Trustees to solicit and consider public comment; and has helped ensure that the final plan addressed relevant issues.

4.1 Early Restoration PEIS Scoping

On June 4, 2013, under the authority of NEPA, OPA, and the implementing NRDA regulations, the Trustees published a Notice of Intent to Prepare a Programmatic Environmental Impact Statement for an Early Restoration Plan and Early Restoration Project Types, and to Conduct Scoping Meetings (78 FR. 33431) (http://www.gulfspillrestoration.noaa.gov/wp-content/uploads/phase-III-NOI.pdf). That Notice announced the Trustees' intent to prepare a PEIS for Early Restoration under NEPA to evaluate the environmental consequences of Early Restoration project types, as well as early restoration projects in an upcoming Phase III Draft Early Restoration Plan. As part of the Notice, the Trustees stated their intent to evaluate Early Restoration project types programmatically in the PEIS to allow for a better analysis of cumulative effects of Early Restoration and to support tiering of NEPA analyses for future Early Restoration projects/plans to the PEIS, where appropriate. During the public comment period for this scoping process, which ended on August 2, 2013, the Trustees held six public meetings throughout the Gulf States and in the District of Columbia.

4.2 Draft Phase III ERP/PEIS Public Meetings

After the release of the Draft Phase III ERP/PEIS on December 6, 2013 (78 FR 75919), the Trustees held a 75-day public comment period (including a 15-day extension of the originally announced 60-day comment period), which closed on February 19, 2014. During that time, the Trustees maintained a web-based comment submission site, P.O. Box, and email address and hosted nine public meetings.

The Trustees included a summary of all relevant public comments received on the Draft Phase III ERP/PEIS and their responses in the final document. The Trustees reviewed and considered all relevant public comments in developing the Final Phase III ERP/PEIS. The Final Phase III ERP/PEIS reflects revisions to the Draft Phase III ERP/PEIS arising from agency and public comments; progress on compliance with other laws, regulations and Executive Orders; and continuing Trustee project development and consideration of potentially relevant information. Key updates and revisions are identified in Section 1.12 of the Final Phase III ERP/PEIS.

4.3 Correspondence Received After Publication of the Final Phase III ERP/PEIS

Following the release of the Final Phase III ERP/PEIS, the Trustees received letters from several parties generally acknowledging the thorough consideration of comments and indicating that the commenters found the majority of the Phase III projects to be appropriate under the Oil Pollution Act (OPA) and to have undergone sufficient environmental analysis under the National Environmental Policy Act (NEPA). However, two (Ocean Conservancy and Gulf Restoration Network) of the three letters expressed specific concerns regarding the OPA and NEPA analyses for the Gulf State Park Enhancement Project. The substance of these concerns had either been previously addressed or requested actions that are not required by law. While the Trustees are not required to consider additional issues submitted after the public comment period has closed and are not required to respond to such issues, the Trustees have considered these issues and provide the following responses. The third late letter raised no new issues concerning the Phase III ERP/PEIS or the Phase III projects but provided several suggestions for consideration in preparing future Early Restoration plans.

1. Issue: The Gulf State Park Enhancement Project will result in significant impacts to the human environment, triggering the need for a project specific environmental impact statement (EIS).

   Response: The Trustees received this comment following the release of the Draft Phase III ERP/PEIS and responded in the Final Phase III ERP/PEIS, Chapter 13, comment and response number 241. The Final Phase III ERP/PEIS, including Section 11.7 that contains a comprehensive environmental review of the environmental consequences of the Gulf State Park Enhancement Project on a wide variety of resources present in the affected environment, provides an Environmental Impact Statement that covers this project adequately. There is no requirement that the Environmental Impact Statement covering the project be put into a separate document.

2. Issue: The final rule designating critical habitat for the Threatened Northwest Atlantic Ocean Distinct Population Segment of the loggerhead sea turtle was issued on July 10, 2014, and constitutes significant new information that the Trustees must address in a supplemental or separate EIS for the project.

   Response: The Trustees released the Final Phase III ERP/PEIS after release of the loggerhead critical habitat proposed rule and prior to the final rule designating loggerhead critical habitat. Based on the proposed rule, the Trustees evaluated the environmental consequences of the Gulf State Park Enhancement Project on proposed loggerhead critical habitat and concluded

there would be no adverse modification or destruction of proposed loggerhead critical habitat. As further discussed in Section 10.4.2.1 of the ROD, the Trustees evaluated the environmental consequences of this project on loggerhead sea turtle critical habitat as described in the final rule and have concluded that the final rule does not represent significant new information that the Trustees must address in a supplemental or separate EIS.

3. Issue: The Draft and Final Phase III ERP/PEIS contain inadequate alternatives analyses for the Gulf State Park Enhancement Project, and the alternatives analysis incorporated by reference into the Final Phase III ERP/PEIS is too narrow in scope and provides a post-hoc rationalization for the project.

   Response: The Trustees received a similar comment on the Draft Phase III ERP/PEIS suggesting that the alternatives analysis for the Gulf State Park Enhancement Project is too narrow. The Trustees considered the substance of this comment as described in the Final Phase III ERP/PEIS, Chapter 13, comment and response number 253. In response to this comment and as discussed in Section 11.6.4 of the Final Phase III ERP/PEIS, the Alabama Trustees made available a more complete alternatives analysis that was developed for the Gulf State Park Enhancement Project prior to finalizing the analysis presented in both the Draft and Final Phase III ERP/PEIS. As described in the Final Phase III ERP/PEIS, Chapter 13, comment and response number 89, the Framework Agreement and the need to negotiate projects with BP for funding constrains the range of project-level alternatives that can be considered formally in the Phase III ERP/PEIS. The alternatives analysis for the Gulf State Park Enhancement Project presented in the Final Phase III ERP/PEIS, including the alternatives analysis incorporated by reference, represents a reasonable range of alternatives given the context of Early Restoration.

4. Issue: The 2014 Habitat Conservation Plan (HCP) was not made publicly available during the comment period or during the current 30-day cooling off period, and therefore the Trustees have failed to properly incorporate the HCP.

   Response: The U.S. Fish and Wildlife Service (USFWS) issued an incidental take permit and approved a Habitat Conservation Plan (HCP) for Alabama beach mouse habitat in 2004 (2004 HCP), which the Trustees considered in the Draft Phase III ERP/PEIS. Following the release of the Draft Phase III ERP/PEIS, the Trustees received a public comment requesting more data on the Alabama beach mouse out of concern that most of the information presented in the Draft Phase III ERP/PEIS was out of date, including the 2004 HCP. In response to this request, USFWS updated its consultation on the Alabama Beach mouse, and issued a revised HCP on May 16, 2014 (2014 HCP). The public comment period on the Draft Phase III ERP/PEIS closed on February 19, 2014, therefore the 2014 HCP issued in response to public comments almost two months afterwards was not available during the public review and comment period. Consistent with USFWS practice, the 2014 HCP was made publicly available for review upon request when it was issued on May 16, 2014. USFWS has provided the 2014 HCP to all parties who have requested it, including requests made during the cooling off period prior to the issuance of the ROD.

5. Issue: The Trustees should establish an independent peer review process for vetting NRDA restoration projects.

   Response: The Trustees received a similar comment following the release of the Draft Phase III ERP/PEIS and responded in the Final Phase III ERP/PEIS, Chapter 13, comment and response number 23. The Trustees believe that the existing project selection criteria and process established under applicable law and the Framework Agreement provide the Trustees and the public with a robust process for vetting NRDA Early Restoration projects.

6. Issue: The Final Phase III ERP/PEIS does not provide the location and quantity of lost recreational uses that would be restored by the Gulf State Park Enhancement Project or the number of offsets BP would receive for funding the Project, and that prevents the public from assessing the claimed benefits of the Project against its environmental harms.

   Response: The Trustees received and addressed a similar comment on the Draft Phase III ERP/PEIS regarding a perceived lack of recreational loss information, and the Trustees considered that comment as described in the Final Phase III ERP/PEIS, Chapter 13, comment and response number 249. As previously stated in the Trustees' response to comments, the information provided in the Phase III ERP/PEIS is consistent with the Framework Agreement, applicable laws, regulations, and Pre-Trial Orders. The materials concerning Offsets exchanged with BP are settlement confidential and subject to Pre-Trial Orders in the Deepwater Horizon litigation. The Trustees identified the following offsets for the Gulf State Enhancement Project in Section 11.6.5 of the Draft and the Final Phase III ERP/PEIS: "NRDA Offsets are $171,010,610 expressed in present value 2013 dollars to be applied against the monetized value of lost recreational use provided by natural resources injured in Alabama, which will be determined by the Trustees' assessment of lost recreational use for the Oil Spill."

   Chapter 13, comment and response number 248 of the Final Phase III ERP/PEIS also provides information about specific loss of visitation and use of Gulf State Park for 2010 as compared to pre-spill conditions in 2009.

7. Issue: Any new road construction that might occur due to the construction of the Gulf State Park Enhancement Project is a connected action or cumulative impact related to the Project, and therefore the Trustees should have prepared an environmental review for new road construction.

   Response: New road construction related to the Gulf State Park Enhancement Project is not reasonably foreseeable at this time. As noted in the Trustees' response to comment number 257, the Trustees evaluated the environmental consequences of an increase in traffic and determined that the increase would be at a moderate level with site mitigation (see Section 11.7.6 "Traffic and Transportation" of the Phase III ERP/PEIS). The Trustee are not required, and do not have sufficient information, to prepare an environmental review for any new road construction that is speculative and not reasonably foreseeable.

8. Issue: There are numerous hotels in the area of Gulf State Park that provide short-term lodging options and there was no information in the Phase III ERP/PEIS showing a need for more short-term lodging options.

   Response: While hotels do exist in the general vicinity of Gulf State Park, they represent a small fraction of the overall lodging accommodations available. As discussed in Section 11.6.3 of Final Phase III ERP/PEIS, data gathered by the Alabama Trustees relating to this issue indicates that most current overnight visitation requires longer-term, 5-7 night rentals of condominiums and vacation homes. Consequently, there is a need for short-term lodging in this area. The lodge portion of the Gulf State Park Enhancement Project is intended to provide additional lodging options for visitors to the park and will be uniquely located on the beach unlike the vast majority of the other short-term lodging options.

9. Issue: There is no indication that the Gulf State Park Enhancement Project will make the environment and public whole.

   Response: This issue was addressed in Chapter 2, Section 2.1.2.1 and in Chapter 13, comment and response number 103: "It is not possible, nor intended, that all injuries will be made whole through the Early Restoration process, and the Trustees anticipate that many more projects, both ecological and human use, will be implemented as part of the long term restoration plan for the Spill."

10. Issue: The Alabama Trustees were biased in their decision to proceed with the Gulf State Park Enhancement Project since the lodge and conference center components had previously been discussed by the State.

    Response: The Trustees acknowledge that the lodge and conference center components of the Gulf State Park Enhancement Project had previously been considered by the State prior to the oil spill, just as many of the Phase III projects had previously been considered or partially developed by other trustees. This fact does not make these projects unsuitable for Early Restoration.

5 DESCRIPTION OF EARLY RESTORATION PROGRAMMATIC ALTERNATIVES

After considering public input and gathering many potential restoration ideas during the public scoping and various relevant public comment processes, the Trustees developed a set of project types for inclusion in programmatic alternatives, consistent with the desire to seek a diverse set of projects providing benefits to a broad array of potentially injured resources. Ultimately, this process resulted in the inclusion of 12 project types in the programmatic alternatives evaluated for Early Restoration in the Final Phase III ERP/PEIS, including:

1. Create and Improve Wetlands
2. Protect Shorelines and Reduce Erosion

3. Restore Barrier Islands and Beaches
4. Restore and Protect Submerged Aquatic Vegetation
5. Conserve Habitat
6. Restore Oysters
7. Restore and Protect Finfish and Shellfish
8. Restore and Protect Birds
9. Restore and Protect Sea Turtles
10. Enhance Public Access to Natural Resources for Recreational Use
11. Enhance Recreational Experiences
12. Promote Environmental and Cultural Stewardship, Education and Outreach

While the 12 project types can be combined in numerous ways to develop programmatic alternatives, the Trustees considered and evaluated the following four programmatic alternatives in the Final Phase III ERP/PEIS:

1. Alternative 1: No Action (no additional Early Restoration at this time);
2. Alternative 2: Contribute to Restoring Habitats and Living Coastal and Marine Resources (project types 1-9 above);
3. Alternative 3: Contribute to Providing and Enhancing Recreational Opportunities (project types 10-12 above); and
4. Alternative 4: Contribute to Restoring Habitats, Living Coastal and Marine Resources, and Recreational Opportunities (project types 1-12 above).

The Trustees believe that these alternatives and project types are consistent with relevant evaluation criteria and provide a reasonable range for consideration and evaluation. The Trustees' preferred alternative is Alternative 4, as identified in the Final Phase III ERP/PEIS.

5.1 Alternatives and Project Types Considered but Not Included in Detailed Analysis

Additional project types were considered by the Trustees for inclusion in programmatic alternatives, but were not evaluated in detail in the Final Phase III ERP/PEIS because the Trustees do not currently consider them appropriate for Early Restoration. For example, while the Trustees are concerned about and continue to evaluate potential Spill-related injuries to marine mammals and to components of the deep benthic environment (e.g., deep sea corals, mesophotic reefs, and deep soft bottom sediment habitat), additional time and effort are needed to enhance Trustee understanding of such injuries and to identify appropriate, reliable restoration methods.

6 COMPARISON OF THE ENVIRONMENTAL CONSEQUENCES OF THE PROGRAMMATIC ALTERNATIVES

This section provides a comparison of the potential environmental consequences from each of the programmatic alternatives analyzed. It first addresses direct and indirect impacts and then follows with a summary of cumulative impacts.

6.1 Direct and Indirect Impacts

Table 1 provides an overview of potential impacts to resource areas for each alternative. The information presented in the table represents the range of impacts and their duration estimated for each resource (e.g., minor to moderate, short-term) based on project-type-level analyses. Specific impacts of alternatives, when implemented, will depend on where individual projects may occur, the timing of planned construction and other activities, and the scale of the planned activities. This table provides a basis for comparing the ranges of the environmental impacts for the alternatives.

While most resources are expected to experience benefits across all alternatives, the Table does not identify benefits relative to potential adverse impacts, i.e., it is not intended to represent "net" benefits attributed to alternatives. Adverse impacts for all alternatives range from No Effect to Major Impacts, depending on the resource.

Trustees note that there are differences in environmental consequences that could result from recreational use project types (project types 10-12) as compared to ecological project types (project types 1-9). Table 1presents a range of potential impacts (e.g., minor to moderate) for each alternative, as, particularly for Alternative 4, the relative amount of recreational use restoration and ecological restoration that may ultimately occur are not known at this time. It should also be noted that the potential impacts associated with Alternative 4 are not the sum of impacts from Alternatives 2 and 3, but include the range of impacts evaluated and described for Alternatives 2 and 3 when considered together as a comprehensive alternative. Project-specific analyses included in the Phase III ERP/PEIS (in Chapters 8 – 12) and in any future tiered analyses will describe the specific impacts associated with the specific proposed projects.

On July 10, 2014, the USFWS and NOAA published final rules (79 FR 39756 and 79 FR 39855, respectively) designating critical habitat for the Northwest Atlantic Ocean Loggerhead Sea Turtle Distinct Population Segment (Loggerhead CH). The Trustees released the Final Phase III ERP/PEIS prior to this final rule, and therefore evaluated the environmental consequences of proposed early restoration alternatives on the proposed Loggerhead CH designation (78 FR 18000 and 78 FR 43005).

In the final rules, changes occurred to both the marine and terrestrial critical habitat designations. For marine critical habitat, the geographic extent of the proposed Sargassum unit (LOGG-S-02) was reduced in the final designation. The final designation eliminated some of the proposed CH in the eastern GOM, resulting in a majority of the CH being located west of the Mississippi River.

For terrestrial critical habitat, the USFWS made only a few substantive changes to Loggerhead CH between the proposed rule and the final rule, which are as follows: 1) updated information in the Background, Physical or Biological Features, and Special Management Considerations or Protection from recommended literature; 2) added "Natural coastal processes or artificially created or maintained habitat mimicking natural conditions" as a fourth Primary Constituent Element (PCE) of Loggerhead CH; 3) excluded all or portions of several proposed units in St. Johns, Volusia, and Indian River Counties, Florida; and 4) made other changes to maps, units, and the rule itself along the Atlantic Coast, and Dry Tortugas. In total, the final critical habitat designation has decreased from the proposed rule by 87.8 km

(54.5 mi).None of the excluded areas or map modifications occurred within the action area for the Phase III ERP/PEIS. The USFWS added the fourth PCE in the final designation in response to concerns and confusion regarding beach stabilization projects. "This PCE addresses artificial habitat types that mimic the natural conditions described in the PCE 1-3 for beach access, nest site selection, nest construction, egg deposition and incubation, and hatchling emergence and movement to the sea. Habitat modification and loss occurs with beach stabilization activities that prevent the natural transfer and erosion and accretion of sediments along the ocean shoreline. Beach stabilization efforts that may impact loggerhead nesting include beach nourishment, beach maintenance, sediment dredging and disposal, inlet channelization, and construction of jetties and other hard structures. However, when sand placement activities result in beach habitat that mimics the natural beach habitat conditions, impacts to sea turtle nesting habitat are minimized." (79 FR 39756)

The Trustees made the following assumptions in the Final Phase III ERP/PEIS to conduct the environmental analysis for programmatic project types: 1) proposed Loggerhead CH would eventually be designated as final, and 2) BMPs that the USFWS and NOAA would normally require to protect sea turtles and their habitats would be included in any early restoration project proposed by the Trustees regardless of final Loggerhead CH designation. The Trustees also did not differentiate between natural or artificial habitats in regards to evaluating the environmental consequences of early restoration programmatic alternatives on sea turtle nesting. If sea turtles were known to nest or likely to nest in the habitat, the Trustees considered the areas to be sea turtle nesting habitat. Because the Trustees' analysis did not distinguish between natural or artificial habitats and also incorporated BMPs to avoid or minimize potential impacts to beach access, nest site selection, nest construction, egg deposition and incubation, and hatchling emergence and movement to the sea (regardless of the presence of critical habitat), the Trustees have determined that no additional programmatic environmental analysis or programmatic BMPs are necessary to due to the finalization of Loggerhead CH.

Table 1. Benefits and Adverse Impacts of Alternatives by Resource and Alternative

Benefit	No Effect	Minor Adverse Effect	Minor to Moderate Adverse Effect	Moderate Adverse Effect	Minor to Major Adverse Effect	Moderate to Major Adverse Effect	Major Adverse Effect
B	0	1	2	3	4	5	6

Resources	Sub-Resources	Duration	Alternative 1	Alternative 2		Alternative 3		Alternative4	
Geology and Substrates	Upland Geology and Soil; Nearshore Coastal Geology and Sediment	Short Term	**0**	2		2		2	
		Long Term	**0**	2	B	2	B	2	B
Hydrology and Water Quality	Freshwater and Coastal Water Environments	Short Term	**0**	2	B	2		2	
		Long Term	**0**	1	B	1		1	B
Air Quality	–	Short Term	**0**	2		2		2	
		Long Term	**0**	0		1		1	
Noise	–	Short Term	**0**	4		4		4	
		Long Term	**0**	0		2		2	
Habitats	Wetlands, Barrier Islands; Beaches and Dunes; Submerged Aquatic Vegetation; Other Habitats in the Coastal Environment of the Northern Gulf of Mexico	Short Term	**0**	2		2		2	
		Long Term	**0**	2	B	2	B	2	B
Living Coastal and Marine Resources	Nearshore Benthic Communities; Oysters; Pelagic Microfaunal Communities; Sargassum; Finfish; Sea Turtles; Marine Mammals; Birds; Terrestrial Wildlife	Short Term	**0**	2		2		2	
		Long Term	**0**	2	B	2	B	2	B
Socioeconomics and Environmental Justice*	–	Short Term	**0**	B		B		B	
		Long Term	**0**	B		1	B	1	B
Cultural Resources **	–	Short Term	**0**	2		2		2	
		Long Term	**0**	2	B	2	B	2	B
Infrastructure	–	Short Term	**0**	4		4		4	
		Long Term	**0**	4	B	1	B	4	B
Land and Marine Management	National and State Parks; Refuges and WMAs; Land Trusts; Marine Protected Areas	Short Term	**0**	2		2		2	
		Long Term	**0**	B		B		B	
Tourism and Recreation Use	Wildlife Observation; Hunting; Beach and Waterfront (swimming, sightseeing, etc.); Boating; Recreational Fishing; Tourism; Museums, Cultural Resources, and Education Centers	Short Term	**0**	2		2		2	
		Long Term	**0**	B		B		B	

Resources	Sub-Resources	Duration	Alternative 1	Alternative 2	Alternative 3	Alternative4
Fisheries and Aquaculture	Commercial Fishing; Shellfish Fishery; Seafood Processing and Sales; Aquaculture	Short Term	**0**	2	2	2
		Long Term	**0**	B	B	B
Marine Transportation	-	Short Term	**0**	1	1	1
		Long Term	**0**	B	B	B
Aesthetics and Visual Res.	-	Short Term	**0**	4	2	4
		Long Term	**0**	2 B	2 B	2 B
Public Health and Safety, including Flood and Shoreline	-	Short Term	**0**	1	1	1
		Long Term	**0**	B	1 B	1 B

Notes: The Trustees note that there are differences in environmental consequences that could result from recreational use project types as compared to ecological project types. Table 1 presents a range of potential impacts (e.g., minor to moderate) for each alternative. The rating system reflects the range of impacts that could occur to each resource by project type. It is important to note that all techniques within a project type would not necessarily have the same level of impacts on resources. That is, some techniques could have no effect on the specific resource area. Note that the project-specific analyses in Section 10 of this ROD describe the specific impacts associated with those projects.

* Note that Socioeconomics and Environmental Justice are combined under a single heading in this table. However, consistent with EO 12898, benefits to Environmental Justice were not evaluated in the Final Phase III ERP/PEIS; hence the findings summarized in this table reflect only socioeconomic considerations. No disproportionally high and adverse environmental effects on minority, low-income populations were identified.

**Project types under all Alternatives could lead to long-term beneficial impacts through the identification of cultural resources. Cultural or historical sites that may otherwise have been unknown or unprotected may benefit from the NHPA Section 106 review process that could require it be avoided and preserved in its natural state. In this manner, some information may be retrieved and future impacts could be avoided. Although minor to moderate adverse effects could occur if cultural resources are present at project sites involving dredge, fill or ground-disturbing activities, a Section 106 consultation will be completed prior to implementation of these activities and appropriate avoidance and mitigation measures will be implemented prior to commencement of ground disturbing activities.

6.2 Cumulative Impacts

A cumulative impacts analysis was conducted that assessed the impacts of the proposed alternatives when added to other past, present, and reasonably foreseeable future actions. Specifically, the cumulative impacts analysis was conducted in the context of the affected environment, and the incremental impact of the proposed action (X) when added to the impacts from applicable past, present, and reasonably foreseeable future actions (Y), to understand the potential cumulative impacts to an affected resource (Z), or, where the effects may interact and/or be additive, X+Y=Z. Based on the analysis, the Trustees concluded that none of the alternatives would contribute substantially to cumulative adverse impacts for any of the affected resources analyzed. Several of the alternatives will contribute to cumulative beneficial impacts for specific resources. Alternative 2 was found to incrementally contribute to beneficial cumulative impacts for geology and substrates, hydrology and water quality, air quality and greenhouse gases, habitats, living coastal and marine resources, socioeconomics, infrastructure, land and marine management, tourism and recreation, fisheries and aquaculture, marine transportation, aesthetics and visual resources, and public health and safety. Alternative 3 was found to incrementally contribute to beneficial cumulative impacts for all the same resources except air quality and greenhouse gas emissions. Alternative 4 was found to contribute beneficial cumulative impacts similar to Alternatives 2 and 3.

7 PROGRAMMATIC ALTERNATIVE DECISIONANDFACTORSCONSIDEREDINTHEDECISION

7.1 The Programmatic Alternative Decision

The Trustees select Alternative 4 - Contribute to Restoring Habitats, Living Coastal and Marine Resources, and Recreational Opportunities- as described in the Phase III ERP/PEIS as the preferred Programmatic Early Restoration Plan for the Spill.

7.2 Factors Considered and Rationale for the Programmatic Decision

In reaching the programmatic decision, the Trustees considered the purpose and need for the action as described in Section 3 of this ROD, including the programmatic evaluation criteria developed for Early Restoration described below. The Trustees also carefully considered public comments, including comments on the programmatic alternatives analyses. The Trustees considered Alternative 1, the No Action alternative, in which no additional Early Restoration would be pursued at this time. The No Action alternative does not meet the Trustees' purpose of accelerating meaningful restoration of injured natural resources and their services resulting from the Spill while the natural resource damage assessment is ongoing.

The Trustees developed a suite of programmatic criteria to develop and evaluate Early Restoration programmatic alternatives that meet the purpose and need for taking action. First, the Trustees considered the following criteria found in the OPA regulations at 15 C.F.R. § 990.53(a) (2):

- Whether each alternative is comprised of primary and/or compensatory restoration components that address one or more specific injury(ies) associated with the incident;

- Whether each alternative is designed so that, as a package of one or more actions, the alternative would make the environment and public whole;[4]
- Whether each alternative is technically feasible; and
- Whether each alternative is in accordance with applicable laws, regulations, or permits.

In addition to the criteria identified above, the Trustees found three of the OPA regulation's evaluation standards (15 C.F.R. § 990.54(a) (2)-(4)) particularly suited to serving as programmatic criteria for evaluating Early Restoration programmatic alternatives:

- The extent to which each alternative is expected to meet the Trustees' goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses;
- The likelihood of success of each alternative; and
- The extent to which each alternative will avoid collateral injury as a result of implementing the alternative.[5]

The Framework Agreement and its criteria are important components of the Trustees' objectives for Early Restoration, and along with the OPA regulations, were considered in developing programmatic criteria. Although the Framework Agreement primarily contemplates project specific evaluation, the concepts can be applied to the development of programmatic alternatives. Thus, when evaluating programmatic alternatives for consistency with Framework Agreement criteria, the Trustees specifically considered whether the alternative:

- Addresses one or more specific injuries to natural resources or services associated with the incident; and
- Contributes to making the environment and the public whole by restoring, rehabilitating, replacing, or acquiring the equivalent of natural resources or services injured as a result of the Spill, or compensating for interim losses resulting from the incident.

Alternatives 2 and 3, when considered separately, were found to meet the criteria described above to varying degrees. However, Alternative 4 was determined to best meet all the evaluation criteria. Combining Alternatives 2 and 3 allows the Trustees to address a larger number of injuries caused by the Spill than those addressed by those Alternatives individually, thereby contributing more broadly to the Trustees' goal of making the environment and the public whole. Alternative 4 allows the Trustees to implement a greater variety of Early Restoration project types than Alternatives 2 and 3, and consequently provides the Trustees with a more flexible means of meeting the purpose and need for Early Restoration when compared to those

[4] Because Early Restoration will not, by itself, make the environment and the public whole, in Early Restoration planning, the Trustees consider whether each alternative will *contribute to* making the environment and public whole.

[5] This criterion is adapted from the regulatory language, which includes consideration of "the extent to which each alternative will prevent future injury as a result of the incident." This adaptation reflects the fact that Early Restoration takes place concurrently with, rather than after completion of, NRDA activities for this Spill.

provided by Alternatives 1 through 3.As a result of selecting this programmatic alternative, projects proposed in future restoration planning phases can include projects that restore habitat and living and coastal and marine resources, and can include projects that address lost recreational use.

7.3 Programmatic Mitigation Measures

Consistent with NEPA's implementing regulations, Appendix A lists those mitigation measures (i.e., Best Management Practices and Conservation Measures) that will be applied, as appropriate, to Phase III and future phases of Early Restoration projects that are consistent with Alternative 4 (40 C.F.R. § 1505.2). The mitigation measures identified in Appendix A will be applied to future Early Restoration projects based on the circumstances of a particular project. For example, the mitigation measures for bald eagles will be applied to future Early Restoration projects that have the potential to affect bald eagles, and would not be applied to future projects that do not have the potential to affect bald eagles. The Trustees are required to ensure all required consultation-specific mitigation measures are implemented for Phase III projects. The Trustees are also required to fulfill all necessary regulatory consultation requirements for future projects and comply with any mitigation measures that are required through the regulatory reviews and approvals. On July 10, 2014 DOI and NOAA designated Critical Habitat for Loggerhead sea turtles. Prior to the critical habitat designation, the Trustees conducted environmental analysis for programmatic project types, assuming: 1) proposed critical habitat would eventually be designated and 2) BMPs the USFWS and NOAA would normally require to protect sea turtles and their habitats would be required in any proposed project affecting sea turtles, regardless of critical habitat designation. Therefore, the Trustees have determined that no additional programmatic environmental analysis or programmatic BMPs are necessary due to the finalization of Loggerhead critical habitat. Based on the mitigation measures identified in Appendix A and the Trustees' decision to apply the measures to future projects based on site-specific circumstances, the Trustees have determined that all practicable means to avoid or minimize environmental harm from Alternative 4 have been adopted.

7.4 The Environmentally Preferred Programmatic Alternative

As required by the Council on Environmental Quality NEPA implementing regulations, a ROD must identify the alternative or alternatives considered to be environmentally preferable (40 C.F.R. § 1505.2(b)). The environmentally preferable alternative is the alternative that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources.

The Trustees have determined that Alternative 2: Contribute to Restoring Habitats and Living Coastal and Marine Resources is the environmentally preferred alternative as it specifically contributes to the initial restoration and protection of certain habitats and living coastal and marine resources. This alternative includes nine project types: Create and Improve Wetlands, Protect Shorelines and Reduce Erosion, Restore Barrier Islands and Beaches, Restore and Protect Submerged Aquatic Vegetation, Conserve Habitat, Restore Oysters, Restore and Protect Finfish and Shellfish, Restore and Protect Birds, Restore and Protect Sea Turtles. Although all of these project types would likely result in short-term adverse impacts associated with project construction, they would all result in long term benefits to the natural resources of the northern Gulf of Mexico. While the three project types in Alternative 3 (and thus Alternative 4) would contribute to restoring lost recreational uses and can enhance resource stewardship and education, they also can result in more long-term adverse environmental impacts when compared to impacts of project types in Alternative 2 alone.

8 PHASE III EARLY RESTORATION PLAN DECISION AND FACTORS CONSIDERED IN THE DECISION

As noted above, the Phase III ERP/PEIS provides information and analysis concerning: (1) the programmatic approach proposed by the Trustees for continuing Early Restoration; and (2) 44 specific Early Restoration projects. This section addresses the selection of the 44 specific Phase III Early Restoration projects.

The Trustees developed the Early Restoration project selection process to be responsive to the purpose and need for conducting Early Restoration. Early Restoration project identification is a step-wise process comprised of: (1) project solicitation, (2) project screening, (3) negotiation with BP, and (4) public review and comment.

Using this process, the Trustees identified the 44 projects included in the Phase III Early Restoration Plan. For each of these projects, the Phase III plan evaluated the proposed alternative to conduct the project as described in the project summary and a No Action alternative under which the project would not be pursued at this time for Early Restoration.

8.1 The Phase III Early Restoration Plan Decision

The Trustees have selected 44 Phase III Early Restoration projects for implementation in Phase III, subject to completing remaining permitting and consultation requirements. The projects total approximately $627 million in estimated project costs (including contingencies). Ecological projects comprise $396.9 million (63%) of this total, and recreational projects comprise the remaining $230 million (37%). Within the ecological project category, barrier island restoration accounts for $318.4 million of estimated project costs, followed by restoration of living shorelines ($66.6 million), oysters ($8.6 million), seagrasses ($2.7 million) and dune projects ($0.6 million). These projects and their expected effects, both beneficial and adverse, are described in the Phase III ERP/PEIS.

Table 2 provides the estimated cost (including contingencies) of each project and information about the type(s) of Offsets negotiated with BP for each project. The methods used to estimate Offsets for Early Restoration projects were implemented pursuant to the Framework Agreement and are based on the expected benefits for each project. In the context of Early Restoration under the Framework Agreement, the Trustees used the best information and methodologies available to judge the adequacy of proposed Early Restoration actions relative to OPA regulatory evaluation standards (see 15 C.F.R. § 990.54(a)), while determining that the agreements reached with BP under the Framework Agreement were also fair, reasonable, and in the public interest. It is important to note that, under the Framework Agreement, neither the amount of the Offsets nor the methods of estimation used in analyzing any project are a precedent for assessing the gains provided by any other projects either during the Early Restoration process or in the assessment of total injury.

Table 2. Phase III Early Restoration Projects: Estimated Costs and Offsets.

	PROJECT	LOCATION	COST (including potential contingencies)[6]	OFFSET[7]							
				BACK BARRIER MARSH HABITAT	SALT MARSH HABITAT	BEACH/DUNE HABITAT	SUBMERGED AQUATIC VEGETATION HABITAT	OYSTER SECONDARY PRODUCTIVITY	BENTHIC SECONDARY PRODUCTIVITY	PELICAN, TERN/SKIMMER AND GULL FLEDGLINGS	RECREATIONAL USE
1	Freeport Artificial Reef	TX	$2,155,365								X
2	Matagorda Artificial Reef	TX	$3,552,398								X
3	Mid/Upper Texas Coast Artificial Reef - Ship Reef[8]	TX	$1,919,765								X
4	Sea Rim State Park Improvements	TX	$210,100								X
5	Galveston Island State Park Beach Redevelopment	TX	$10,745,060								X
6	Louisiana Outer Coast Restoration	LA[9]	$318,363,000	X		X				X	
7	Louisiana Marine Fisheries Enhancement, Research, and Science Center	LA	$22,000,000								X
8	Hancock County Marsh Living Shoreline Project	MS	$50,000,000		X				X		
9	Restoration Initiatives at the INFINITY Science Center	MS	$10,400,000								X
10	Popp's Ferry Causeway Park	MS	$4,757,000								X
11	Pascagoula Beachfront Promenade	MS	$3,800,000								X
12	Alabama Swift Tract Living Shoreline	AL	$5,000,080		X				X		
13	Gulf State Park Enhancement Project	AL	$85,505,305								X
14	Alabama Oyster Cultch Restoration	AL	$3,239,485					X			

[6] Actual costs may differ depending on future contingencies, but will not exceed the amount shown without further agreement between the Trustees and BP.

[7] NRD Offsets arethe benefits expected from the project stated in either units of ecological service or monetary terms – that will be applied to reduce BP's NRD liability. Note that all accounting for Early Restoration Offsets as credits for injury would be conducted in the final natural resources damage claim.Offset Types indicated in this table provide general information about Offsets, for overview purposes only. Important, detailed information about Offsets is provided in project-specific write-ups included in Chapters 8-12 of the Phase III ERP/PEIS.

[8] As described in more detail in Chapter 8 of the Phase III ERP/PEIS, the Trustees include an alternative (the Corpus Artificial Reef Project) to the Mid/Upper Texas Coast Artificial Reef Ship Reef Project, to be implemented in the event the Ship Reef Project becomes technically infeasible (e.g., an appropriate ship cannot be acquired with available funding). The Corpus Artificial Reef Project 'Alternative' has its own project description, description of Affected Environment and analysis of environmental consequences in Chapter 8; is categorized within the same Programmatic Alternative as the Ship Reef Project; and will provide similar Offsets.

[9] One component of this project will be implemented on federally-managed lands and managed by DOI.

	PROJECT	LOCATION	COST (including potential contingencies)[6]	OFFSET[7]							
				BACK BARRIER MARSH HABITAT	SALT MARSH HABITAT	BEACH/DUNE HABITAT	SUBMERGED AQUATIC VEGETATION HABITAT	OYSTER SECONDARY PRODUCTIVITY	BENTHIC SECONDARY PRODUCTIVITY	PELICAN, TERN/SKIMMER AND GULL FLEDGLINGS	RECREATIONAL USE
15	Beach Enhancement Project at Gulf Islands National Seashore	FL[10]	$10,836,055								X
16	Gulf Islands National Seashore Ferry Project	FL[11]	$4,020,000								X
17	Florida Cat Point Living Shoreline Project	FL	$775,605		X				X		
18	Florida Pensacola Bay Living Shoreline Project	FL	$10,828,063		X				X		
19	Florida Seagrass Recovery Project	FL	$2,691,867				X				
20	Perdido Key State Park Beach Boardwalk Improvements	FL	$588,500								X
21	Big Lagoon State Park Boat Ramp Improvement	FL	$1,483,020								X
22	Bob Sikes Pier Parking and Trail Restoration	FL	$1,023,990								X
23	Florida Artificial Reefs	FL	$11,463,587								X
24	Florida Fish Hatchery	FL	$18,793,500								X
25	Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle	FL	$2,890,250								X
26	Shell Point Beach Nourishment	FL	$882,750								X
27	Perdido Key Dune Restoration Project	FL	$611,234			X					
28	Florida Oyster Cultch Placement Project	FL	$5,370,596					X			
29	Strategically Provided Boat Access Along Florida's Gulf Coast	FL	$3,248,340								X
30	Walton County Boardwalks and Dune Crossovers	FL	$386,291								X
31	Gulf County Recreation Projects	FL	$2,118,600								X
32	Bald Point State Park Recreation Areas	FL	$470,800								X
33	Enhancement of Franklin County Parks and Boat Ramps	FL	$1,771,385								X
34	Apalachicola River Wildlife and Environmental Area Fishing and Wildlife Viewing Access Improvements	FL	$262,989								X
35	Navarre Beach Park Gulfside Walkover Complex	FL	$1,221,847								X

[10]These projects will be implemented on federally-managed lands and managed by DOI.

	PROJECT	LOCATION	COST (including potential contingencies)[6]	OFFSET[7]							
				BACK BARRIER MARSH HABITAT	SALT MARSH HABITAT	BEACH/DUNE HABITAT	SUBMERGED AQUATIC VEGETATION HABITAT	OYSTER SECONDARY PRODUCTIVITY	BENTHIC SECONDARY PRODUCTIVITY	PELICAN, TERN/SKIMMER AND GULL FLEDGLINGS	RECREATIONAL USE
36	Navarre Beach Park Coastal Access	FL	$614,630								X
37	Gulf Breeze Wayside Park Boat Ramp	FL	$309,669								X
38	Developing Enhanced Recreational Opportunities on the Escribano Point Portion of the Yellow River Wildlife Management Area	FL	$2,576,365								X
39	Norriego Point Restoration and Recreation Project	FL	$10,228,130								X
40	Deer Lake State Park Development	FL	$588,500								X
41	City of Parker- Oak Shore Drive Pier	FL	$993,649								X
42	Panama City Marina Fishing Pier, Boat Ramp, and Staging Docks	FL	$2,000,000								X
43	Wakulla Mashes Sands Park Improvements	FL	$1,500,000								X
44	Northwest Florida Estuarine Habitat Restoration, Protection, and Education- Fort Walton Beach	FL	$4,643,547								X
		Total	$626,841,317								

8.2 Factors Considered and Rationale for Phase III Early Restoration Plan Decision

The Trustees developed an Early Restoration project screening process that reflects the purpose and need for conducting Early Restoration — to accelerate meaningful restoration under OPA, the Trustees need to identify restoration that contributes to making the environment and the public whole for injury to or loss of natural resources and services resulting from the Spill. Early Restoration is being initiated prior to completion of the full NRDA, and is not intended to fully address all injuries caused by the Spill.

The Trustees acted promptly to identify project proposals that met the OPA and Framework Agreement criteria as well as several practical considerations that, while not legally mandated, are nonetheless useful and permissible to help screen the large number of potential qualifying projects. None of these practical considerations are used as the sole basis for a decision; rather they are used as flexible, discretionary factors to supplement the criteria described above. For example, Trustees:

- Take into account how quickly a given project is likely to begin producing environmental benefits;
- Seek a diverse set of projects providing benefits to a broad array of potentially injured resources;

- Focus on types of projects with which they have significant experience, allowing them to predict costs and likely success with a relatively high degree of confidence and making it easier to reach agreement with BP on the Offsets attributed to each project, as required by the Framework Agreement; and
- Give preference to projects that are closer to being ready to implement.

All of these discretionary factors are consistent with a key objective for pursuing Early Restoration: to secure tangible restoration of natural resources and natural resource services for the public's benefit while the longer-term process of fully assessing injury and damages is still underway.

In addition, NRDA regulations (15 C.F.R. § 990.56) contemplate the use of existing restoration projects and regional restoration plans to address natural resource injuries where such a plan or project is determined to be the preferred alternative among a range of feasible restoration alternatives for an incident. Projects already developed under such plans, with completed engineering designs, cost analyses, partner coordination, and permit and NEPA requirements satisfied, could be implemented quickly, and are good candidates for consideration in the Early Restoration process.

The Trustees evaluated proposals for Phase III Early Restoration relative to the purpose and need for Early Restoration and with consideration of the evaluation criteria, potential impacts to the environment, and the discretionary factors identified above. Included in these proposals, the Trustees identified a number of previously developed projects. The Phase III Early Restoration Plan identifies 44 projects that meet the purpose and need while being able to quickly provide benefits across a diverse array of injured resources and for which the Trustees have experience in implementing and can do so in an expedient manner.

In addition, NOAA and DOI considered the restoration evaluation criteria to identify potential projects, with particular focus as described below:

- DOI identified projects that would take place both on and off DOI-managed lands. DOI has significant experience implementing restoration projects on lands managed by DOI, which allows DOI to predict costs and project success with a relatively high degree of confidence. Additionally, the Spill injured natural resources and related services on several of the National Wildlife Refuges and National Parks. Consequently, DOI prioritized some restoration projects that would be implemented on these National Wildlife Refuges and National Parks. For projects that will not take place on DOI lands, DOI has sought to partner with other Trustees to propose and implement Early Restoration projects that address injuries and comply with project evaluation criteria. As described in more detail in Chapters 9 and 12 of the Final Phase III ERP/PEIS, DOI will serve as a lead or co-lead implementing Trustee for 3 of the projects in the Final Phase III ERP/PEIS (Louisiana Outer Coast Restoration- North Breton restoration location, Beach Enhancement Project at Gulf Islands National Seashore, and Gulf Islands National Seashore Ferry Project).
- NOAA's project screening process included the application of the restoration evaluation criteria, as well as identification of projects that would restore for injuries specific to NOAA trust resources. Further, NOAA prioritized projects that would have benefits to both nearshore and offshore trust resources. NOAA sought to partner with other Trustees to propose and implement Early

Restoration projects that address injuries to NOAA trust resources, and comply with the project evaluation criteria. As described in more detail in Chapters 9-12 of the Final Phase III ERP/PEIS, NOAA will serve as a lead or co-lead implementing Trustee for 4 of the projects (Louisiana Outer Coast Restoration- Chenier-Ronquille restoration location; in Mississippi, the Hancock County Marsh Living Shoreline Project; Alabama Swift Tract Living Shoreline; and Florida Pensacola Bay Living Shoreline Project).

8.3 Compliance with Other Federal Laws and Executive Orders

In addition to the requirements of OPA and NEPA, requirements of other laws may apply to Early Restoration planning or Early Restoration implementation. The Trustees will comply with all applicable laws as part of the Early Restoration planning and implementation process. Whether and to what extent a law applies to a particular project depends on the specific characteristics of a particular project. For the Phase III Early Restoration projects, the subset of authorities listed below are the most commonly relevant:

- Endangered Species Act (16 U.S.C. §§ 1531 *et seq*.);
- National Historic Preservation Act (16 U.S.C. §§ 470 *et seq*.);
- Coastal Zone Management Act (16 U.S.C. §§ 1451-1464);
- Federal Water Pollution Control Act (Clean Water Act, 33 U.S.C. §§ 1251 *et seq*.);
- Clean Air Act (42 U.S.C. §§ 7401 *et seq*.);
- Migratory Bird Treaty Act (16 U.S.C. §§ 703-712);
- Bald and Golden Eagle Protection Act (16 U.S.C.§§ 668-668c);
- Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§ 1801 *et seq*.);
- Marine Mammal Protection Act (16 U.S.C. §§ 1361-1421h);
- Rivers and Harbors Act (33 U.S.C.§§ 401 *et seq*.)
- EO 11988: Floodplain Management
- EO 11990: Protection of Wetlands
- EO 12898: Environmental Justice
- EO 12962: Recreational Fisheries
- EO 13112: Invasive Species
- EO 13175: Consultation and Coordination with Indian Tribal Governments
- EO 13186: Responsibilities of Federal Agencies to Protect Migratory Birds

In addition, Trustees have or will have ensured compliance with applicable authorities in individual states. The Trustees will adhere to conditions, BMPs, or other conservation measures required by environmental regulatory reviews and environmental consultations. Documents requiring conditions, BMPs, or other conservation measures from these reviews and consultations will be made available to the public on DOI's Administrative Index website (http://www.doi.gov/deepwaterhorizon/adminrecord/index.cfm).

As discussed below, the Trustees, in some cases, have not yet completed all required consultations or environmental reviews. Where that is the case, the Trustees have conditioned project selection on completion of those consultations and reviews. Please refer to Section 9 of this document for additional detail on the

process. For purposes of this ROD, a compliance review or consultation is considered complete when it is complete to the extent necessary to begin project implementation.

As stated previously, on July 10, 2014, after publication of the Final Phase III ERP/PEIS, the USFWS and NOAA published the final rule designating critical habitat for the Northwest Atlantic Ocean Loggerhead Sea Turtle Distinct Population Segment. The critical habitat finalization affected 11 projects. DOI has conferenced on critical habitat and each conference report has been adopted as an informal consultation. NOAA has reinitiated 4 ESA consultations to address critical habitat. For more information on the ESA compliance changes due to loggerhead sea turtle critical habitat finalization at the restoration project level, review the "Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders" sections for the following projects: Freeport Artificial Reef Project (10.1.1.1), Matagorda Artificial Reef Project (10.1.2.1), Mid/Upper Texas Coast Artificial Reef – Corpus Artificial Reef Project (10.1.4.1), Louisiana Outer Coast Restoration C – Shell Island (10.2.5.1), Gulf State Park Enhancement Project (10.4.2.1), Beach Enhancement Project at Gulf Islands National Seashore (10.5.1.1), Perdido Key Dune Restoration Project (10.5.13.1), Strategically Provided Boat Access along Florida's Gulf Coast: Project Description A (City of Mexico Beach Marina Project) (10.5.15.1), Gulf County Recreation Projects: Highland View Boat Ramp (10.5.24.1), Gulf County Recreation Projects: Windmark Beach Fishing Pier Improvements (10.5.26.1), and Enhancement of Franklin County Parks and Boat Ramps: (Waterfront Park, Indian Creek Park, Eastpoint Fishing Pier Improvements, and St. George Island Fishing Pier Improvements) (10.5.28.1).

In addition, several projects have had their ESA consultations reinitiated so that NOAA could carefully consider determinations made in the past. For more information on the ESA compliance changes due to re-initiation at the restoration project level, see Sections 9.2 and the "Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders" sections for the following projects: Louisiana Outer Coast Restoration A – Caillou Lake Headlands (10.2.3.1), Louisiana Outer Coast Restoration B – Chenier Ronquille Barrier Island (10.2.4.1), Louisiana Outer Coast Restoration C – Shell Island (10.2.5.1), Gulf Islands National Seashore Ferry Project (10.5.2.1), Strategically Provided Boat Access along Florida's Gulf Coast: Project Description A (City of Mexico Beach Marina Project) (10.5.15.1), and Bald Point State Park Recreation Areas (10.5.27.1).

Table 3 summarizes the status of regulatory compliance requirements as of September 24, 2014 for each of the 44 Phase III projects, identifying regulatory reviews and approvals[11] as either complete, in progress, or not applicable.

[11] "Regulatory approvals" encompasses approvals generally including: consultations, authorizations, permits, coordinations, and consistency determinations

Table 3. Status of Regulatory Compliance for Phase III Projects

Location	Phase III Project Title	Essential Fish Habitat[12]	Endangered Species Act (NMFS)[13]	Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act coordination (USFWS)[14]	Marine Mammal Protection Act authorization/ Coordination (NMFS)[15]	National Historic Preservation Act[16]	Rivers and Harbors Act/ Clean Water Act[17]	Coastal Zone Management Act[18]
TX	Freeport Artificial Reef Project							
TX	Matagorda Artificial Reef Project							
TX	Mid/Upper Texas Coast Artificial Reef - Ship Reef Project							
TX	Mid/Upper Texas Coast Alternate Artificial Reef - Corpus Artificial Reef Project							
TX	Sea Rim State Park Improvements							
TX	Galveston Island State Park Beach Redevelopment							
LA	Louisiana Outer Coast Restoration – Caillou Lake Headlands							
LA	Louisiana Outer Coast Restoration - Chenier Ronquille Barrier Island							
LA	Louisiana Outer Coast Restoration - Shell Island							
LA	Louisiana Outer Coast Restoration - North Breton Island							
LA	Louisiana Marine Fisheries Enhancement, Research, and Science Center							
MS	Hancock County Marsh Living Shoreline Project							
MS	Restoration Initiatives at the INFINITY Science Center							
MS	Popp's Ferry Causeway Park							
MS	Pascagoula Beachfront Promenade							

[12] Refers to the Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat consultation

[13] Refers to consultation under the Endangered Species Act under jurisdiction of the National Marine Fisheries Service

[14] Refers to consultation under the listed Acts under jurisdiction of the U.S. Fish and Wildlife Service

[15] Refers to authorization and coordination with the Marine Mammal Protection Act under jurisdiction of the National Marine Fisheries Service

[16] Refers to consultation under Section 106 of the National Historic Preservation Act

[17] Refers to authorization under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act under jurisdiction of the U.S. Army Corps of Engineers

[18] Refers to the federal consistency determination for the Coastal Zone Management Act; this consistency determination has been made for purposes of project selection for all projects, but for some projects additional consistency reviews may be necessary for project implementation.

Location	Phase III Project Title	Essential Fish Habitat[12]	Endangered Species Act (NMFS)[13]	Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act coordination (USFWS)[14]	Marine Mammal Protection Act authorization/ Coordination (NMFS)[15]	National Historic Preservation Act[16]	Rivers and Harbors Act/ Clean Water Act[17]	Coastal Zone Management Act[18]
AL	Alabama Swift Tract Living Shoreline							
AL	Gulf State Park Enhancement Project							
AL	Alabama Oyster Cultch Restoration							
FL	Beach Enhancement Project at Gulf Islands National Seashore							
FL	Gulf Islands National Seashore Ferry Project							
FL	Florida Cat Point Living Shoreline Project							
FL	Florida Pensacola Bay Living Shoreline Project							
FL	Florida Seagrass Recovery Project							
FL	Perdido Key State Park Beach Boardwalk Improvements							
FL	Big Lagoon State Park Boat Ramp Improvement							
FL	Bob Sikes Pier, Parking and Trail Restoration							
FL	Florida Artificial Reef Creation and Restoration							
FL	Florida Gulf Coast Marine Fisheries Hatchery/ Enhancement Center							
FL	Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle							
FL	Shell Point Beach Nourishment							
FL	Perdido Key Dune Restoration Project							
FL	Florida Oyster Cultch Placement Project							
FL	Strategically Provided Boat Access along Florida's Gulf Coast - City of Mexico Beach Marina Project							
FL	Strategically Provided Boat Access along Florida's Gulf Coast - Panama City St. Andrews Marina Docking Facility Expansions							
FL	Strategically Provided Boat Access along Florida's Gulf Coast - City of Parker, Earl Gilbert Dock and Boat Ramp Improvements							
FL	Strategically Provided Boat Access along Florida's Gulf Coast - City of Port St. Joe, Frank Pate Boat Ramp Improvements							
FL	Strategically Provided Boat Access along Florida's Gulf Coast - City of St. Marks Boat Ramp Improvements							
FL	Strategically Provided Boat Access along Florida's Gulf Coast - Walton County, Lafayette Creek Boat Dock Improvements							
FL	Walton County Boardwalks and Dune Crossovers - Ed Walline							

Location	Phase III Project Title	Essential Fish Habitat[12]	Endangered Species Act (NMFS)[13]	Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act coordination (USFWS)[14]	Marine Mammal Protection Act authorization/ Coordination (NMFS)[15]	National Historic Preservation Act[16]	Rivers and Harbors Act/ Clean Water Act[17]	Coastal Zone Management Act[18]
	Beach Access Improvements							
FL	Walton County Boardwalks and Dune Crossovers - Gulfview Heights Beach Access Improvements							
FL	Walton County Boardwalks and Dune Crossovers - Palms of Dune Allen West Beach Access Improvements							
FL	Walton County Boardwalks and Dune Crossovers - Bayside Ranchettes Park Improvements							
FL	Gulf County Recreation Projects - Highland View Boat Ramp							
FL	Gulf County Recreation Projects - Improvements at Beacon Hill Veterans' Memorial Park							
FL	Gulf County Recreation Projects - Windmark Beach Fishing Pier Improvements							
FL	Bald Point State Park Recreation Areas							
FL	Enhancement of Franklin County Parks and Boat Ramps - Waterfront Park							
FL	Enhancement of Franklin County Parks and Boat Ramps - Indian Creek Park							
FL	Enhancement of Franklin County Parks and Boat Ramps - Eastpoint Fishing Pier Improvements							
FL	Enhancement of Franklin County Parks and Boat Ramps - St. George Island Fishing Pier Improvements							
FL	Apalachicola River Wildlife and Environmental Area Fishing and Wildlife Viewing Access Improvements - Cash Bayou							
FL	Apalachicola River Wildlife and Environmental Area Fishing and Wildlife Viewing Access Improvements - Sand Beach							
FL	Navarre Beach Park Coastal Access and Dune Restoration							
FL	Navarre Beach Park Gulfside Walkover Complex							
FL	Gulf Breeze Wayside Park Boat Ramp							
FL	Developing Enhanced Recreational Opportunities on the Escribano Point Portion of the Yellow River Wildlife Management Area							
FL	Norriego Point Restoration and Recreation Project							
FL	Deer Lake State Park Development							

Location	Phase III Project Title	Essential Fish Habitat[12]	Endangered Species Act (NMFS)[13]	Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act coordination (USFWS)[14]	Marine Mammal Protection Act authorization/ Coordination (NMFS)[15]	National Historic Preservation Act[16]	Rivers and Harbors Act/ Clean Water Act[17]	Coastal Zone Management Act[18]
FL	City of Parker - Oak Shore Drive Pier							
FL	Panama City Marina Fishing Pier, Boat Ramp, and Staging Docks							
FL	Wakulla Mashes Sands Park Improvements							
FL	Northwest Florida Estuarine Habitat Restoration, Protection, and Education - Fort Walton Beach							

Regulatory Reviews/Approvals Complete
Regulatory Reviews/Approvals In Progress
Regulatory Reviews/Approvals Not Applicable

8.4 Environmental Consequences of Phase III Projects

As part of the Phase III ERP/PEIS, Trustees evaluated potential direct, indirect, and cumulative impacts of the 44 projects on geology and substrates, hydrology, floodplains, water quality, noise, living coastal and marine resources, protected species, socioeconomics, environmental justice, cultural resources, land and marine management, tourism and recreational use, infrastructure, public health and safety, and shoreline protection. The potential impacts to these resources are identified for specific projects in Section 10 of this ROD.

8.5 Severability

In general, the Phase III projects presented in the Final Phase III ERP/PEIS are independent of each other and may be selected independently by the Trustees. A decision to substantially modify or not to implement one or more of the projects should not affect either the programmatic elements of the plan and associated decisions or the Trustees' implementation of the remaining Phase III Early Restoration projects.

9 IMPLEMENTATION

All Trustees have agreed that regulatory compliance must be completed prior to project implementation and that the terms and conditions of all federal and state permits must be complied with. Projects are selected subject to completion of such permits or approvals.

9.1 Outstanding Compliance as of the Date of this Record of Decision

For some projects selected for Phase III Early Restoration, the regulatory permitting, review, and/or approval processes are only partially complete at this time. This ROD specifies the status of federal regulatory permits/approvals (as of September 24, 2014) in Table 3. Table 3 will be posted for public review online (http://www.gulfspillrestoration.noaa.gov/restoration/early-restoration/phase-iii/compliance) and updated as regulatory compliance information changes. Prior to the completion of regulatory reviews and approvals on a project, the Trustees will not make any irreversible or irretrievable commitment of resources on that project that has the effect of foreclosing alternative measures to protect trust resources. This does not prohibit Trustees from conducting or authorizing nondestructive project planning activities before completion of regulatory reviews and approvals.

9.2 Compliance-Related Changes to Phase III Early Restoration Projects

If there are material changes to Phase III Early Restoration projects as a result of outstanding compliance requirements or changes in environmental, design or other reasons, the Trustees will conduct a project review to determine several factors. First, the Trustees will determine whether any change to the project is consistent with the environmental review in the Phase III ERP/PEIS or where there are substantial changes that are relevant to environmental concerns. Second, the Trustees will assess whether or not there are significant new circumstances or information relevant to environmental concerns not addressed in the impact analysis of the Phase III ERP/PEIS (40 C.F.R. § 1502.9 (c)). Third, the Trustees will evaluate whether changes to the project result in changes to the project description in

the Phase III ERP that affects their selection under OPA. In some circumstances, additional restoration planning and environmental review, including opportunity for public comment, may be necessary.

9.3 Future Early Restoration Projects

Future phases of Early Restoration will be prepared in accordance with the programmatic Early Restoration Plan and PEIS that support and inform this ROD, the Framework Agreement, federal regulations implementing OPA, and federal agency requirements under the NEPA. To comply with NEPA, the Trustees will tier future Early Restoration projects/plans from the Phase III ERP/PEIS whenever appropriate to eliminate repetitive analysis and to narrow the focus to the relevant issues (40 C.F.R. § 1508.28). If the proposed Early Restoration project is outside the scope of the NEPA analysis in the Phase III ERP/PEIS it may require an independent or supplemental NEPA review.

10 PHASE III EARLY RESTORATION PLAN MITIGATION MEASURES AND MONITORING

A project description, review of compliance status, mitigation measures, and OPA performance criteria and related monitoring and maintenance are described below for each of the 44 projects. Those subsections provide a summary of information relevant to decisions in this ROD.

For each of the 44 projects in Phase III, Trustees have or are in the process of obtaining all required federal, state and local environmental regulatory compliance consultations prior to project implementation. Trustees understand that they will be required to complete any remaining environmental review or consultation requirements prior to implementation, and as necessary during implementation. This requirement includes any consultation-specific mitigation and conservation measures as part of project implementation. The Trustees are required to ensure all consultation-specific mitigation measures are implemented. The Trustee(s) shall maintain and make available to the public on request monitoring records required as a result of environmental regulatory consultations, reviews or permits. Note that there may be minimal requirements for documentation, as well as legal constraints on releasing some types of information.

The Trustees have determined that all practicable means to avoid or minimize environmental harm from the selection of each of the 44 Phase III Early Restoration projects have been or will be (for those consultations underway at the time of this ROD) adopted through the application of mitigation measures either required by consultations in adherence to laws, regulations and executive orders or developed during the NEPA process (40 C.F.R. § 1505.2). The mitigation measures are identified in this ROD for each of the 44 Phase III Early Restoration projects (see Subsections below) include both specific requirements from environmental regulatory compliance consultations and other best management practices agreed to be undertaken by the implementing Trustee(s) to avoid or mitigate harmful impacts to resources. These mitigation measures, listed below, are categorized by whether they mitigate impacts to the physical environmental, biological resources, and human uses and socioeconomics. Although conservation measures and BMPs are listed under the specific resource that they are intended to benefit, they could also result in reduced impacts to other resources. Note this list is not an

exhaustive list of all existing policies, practices, and measures required by law, regulation, or agency policy that reduce the environmental impacts of designated activities, functions, or processes.

10.1 Texas

10.1.1 Freeport Artificial Reef Project

The Freeport Artificial Reef project will increase the amount of reef materials in a currently permitted artificial reef site, the George Vancouver (Liberty Ship) Artificial Reef, approximately 6 miles from Freeport, Texas. The current reef site is permitted for 160 acres, but only has materials in 40 acres. The project will place predesigned concrete pyramids in the remaining portions of the permitted area onto sandy substrate at a water depth of 55 feet.

Texas experienced a loss of recreational use along the Texas coast during the Spill, including recreational fishing, beach use, camping, diving, and wildlife viewing. The Freeport Artificial Reef project is intended to enhance recreational fishing opportunities (and limited diving opportunities since water clarity is not usually conducive for diving) by creating artificial reef habitat. Artificial reefs created in state waters benefit anglers by providing reefs that are more readily accessible than other natural areas, which can be more than 30 miles offshore. Transportation to the structures within state waters can be accomplished with smaller boats as well as decreased travel time and cost. The project will enhance opportunities for the public's use and enjoyment of natural resources, helping to offset adverse impacts to such uses caused by the Spill. Thus, the nexus to resources injured by the Spill is clear (See 15 C.F.R. § 990.54(a)(2) and Sections 6a-6c of the Framework Agreement).

The NEPA analysis of the environmental consequences suggests that minor adverse impacts to some resource categories and no moderate to major adverse impacts are anticipated. The Trustees evaluated the Texas artificial reef projects in combination with other present and reasonably foreseeable future actions on geology and substrates, water quality, air quality and greenhouse gases (GHGs), noise, living coastal and marine resources, protected species, socioeconomics and environmental justice, aesthetics and visual resources, as well as tourism and recreational use. Based on the cumulative impact analysis, Texas artificial reef projects will not substantially contribute to adverse cumulative effects to resources. The Texas artificial reef projects, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts to living coastal and marine resources, protected species, socioeconomics, tourism and recreational use.

10.1.1.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews for the Freeport Artificial Reef project under the Magnuson-Stevens Fishery Conservation and Management Act, Marine Mammal Protection Act, National Historic Preservation Act, Rivers and Harbors Act, and the Coastal Zone Management Act. Consultations have been initiated for the Endangered Species Act.

The Final Phase III ERP/PEIS stated that this project does not require further ESA consultations with NMFS. Since publication, this consultation has been reinitiated due to the July 2014 designation of critical habitat for loggerhead sea turtles.

10.1.1.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under the specific resource that they are intended to benefit, they could also result in reduced impacts to other resources.

10.1.1.2.1 Measures to Mitigate Impacts to the Physical Environment

- The nearshore deployment of artificial reef material will be implemented within the permitted area, avoiding any existing artificial reef materials as well as any identified hard outcrops, uneven surfaces, or geologic features.
- During deployment, anchors/anchor spread will be minimized and reef materials will be lowered slowly to reduce temporary turbidity.
- To reduce the release of GHG during project implementation, idling construction equipment will be shut down when feasible; staging areas will be located as close to construction sites as practicable to minimize driving distances; using the proper size of equipment for the job to maximize energy efficiency will be encouraged as well as the use of alternative fuels for generators at construction sites, where practicable.

10.1.1.2.2 Measures to Mitigate Impacts to Biological Resources

- The pyramids will be designed to be complex, with a large surface area to attract marine life. The predesigned concrete pyramids will be made of materials to match a natural reef in pH and substrate using concrete, limestone, and rebar or other similar materials.
- One side of the constructed pyramids will be open on the top half to allow sea turtles to move freely in and out of the structure.
- All existing artificial reef materials and other hard substrates will be avoided during placement of the reef materials.
- Reef materials will be lowered slowly, providing fish and wildlife with the opportunity to leave the reef deployment area.
- Project implementation will adhere to National Marine Fisheries Service's (NMFS) Sea Turtle and Smalltooth Sawfish Construction Conditions (2006), The Texas Artificial Reef Fishery Management Plan (TPWD 1990), the Guidelines for Marine Artificial Reef Materials (Atlantic and Gulf States Marine Fisheries Commissions 2004), The Texas Public Reef Building Program Standard Operating Protocol and Guidelines (TPWD 2012), and the National Artificial Reef Plan (as Amended): Guidelines for Siting, Construction, Development, and Assessment of Artificial Reefs (NMFS2007).
- During reef deployment, a monitor will be present that will be able to halt work if sea turtles, smalltooth sawfish, marine mammals, or other federally protected species are in the project area. Work will be halted until such time as the area is deemed safe, by the monitor, to continue the operation (i.e., species have left the area).

10.1.1.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- All conditions identified in the U.S. Army Corps of Engineers (USACE) permit (SWG-2010-00264) and Texas General Land Office (GLO) subsurface lease (SL20070057) will be adhered to.
- If any previously unknown historic or archeological remains are discovered while completing the project, the USACE, Galveston District, will be notified immediately.
- During project implementation, a 50-meter avoidance zone surrounding the George Vancouver Liberty Ship wreck will be maintained.
- Any boats in the area will be coordinated with prior to the deployment of any materials to ensure safety of everyone in the vicinity.
- The project will maintain the minimum clearance (33 feet) above the artificial reefs as required by the U.S. Coast Guard (USCG) to prevent an impediment to boat traffic.
- All navigation safety measures will be followed.
- All hazardous materials handled during construction will be contained and appropriate barriers will be in place to ensure the protection of adjacent water resources from potential spills and leaks.
- All occupational and marine safety regulations and laws will be followed to ensure safety of all workers and monitors.
- During construction of the predesigned concrete pyramids, the Guidelines for Marine Artificial Reef Materials will be followed and the materials will be stable, durable, and complex, and will be clean and free of any hazardous substances.
- In the event of a discharge of oil or release of hazardous substances, the release will be reported to the National Response Center (800-424-8802) and Texas Emergency Oil Spill and Hazardous Substance Reporting line (800-832-8224) as required.
- Proper procedures for handling, storage, transport and disposal of all hazardous materials during on site construction activities will be followed in accordance with Occupational Safety and Health Administration (OSHA) and state and local requirements.
- Personal protective equipment will be required for all construction personnel and authorized access zones will be established at the perimeter of the worksite during construction.

10.1.1.3 Performance Criteria, Monitoring and Maintenance

The Freeport Artificial Reef project includes monitoring efforts to ensure project designs are correctly implemented during construction. Monitoring has been designed around the project objective, which is to increase the amount of reef materials in a currently permitted artificial reef site (BA-336) through the random placement of 800 to 950 predesigned concrete pyramids within the open portions of the permitted reef site.

Performance criteria for this project will include a determination of successful construction of the project according to design, and then monitoring and maintenance to confirm that the reef materials are in place and available for recreational fishing. In order to determine successful placement of the constructed pyramids in accordance with the design, multi-beam side-scan surveys will be used to document the location of the pyramid structures and ensure all materials are located within the deployment zone and meet all permit conditions, including USCG clearance restrictions. Monitoring

using side-scan sonar will be conducted annually (for 2 years) and after major storm events to document any movement and settling of the structures. Recreational use of the reef observed during the side-scan monitoring will also be documented.

While not funded through Early Restoration, recreational use monitoring is being conducted through ongoing research. Currently Texas A&M University-College Station is studying the social and economic impacts of Texas artificial reefs. Also, as TPWD's Artificial Reef Program looks to expand existing reefs and identify locations for new permitted reef areas, TPWD's Artificial Reef Program will continue to receive feedback from user groups regarding placement and use of reefs in Texas.

No ongoing maintenance beyond the annual surveys and buoy maintenance is anticipated unless there is significant movement of artificial reef materials, which is not expected to occur. A USCG approved marker buoy is already installed at the Freeport reef site and will be maintained per USCG requirements. Regular maintenance of the buoy marker will include cleaning the chain, replacing the reflective TPWD decal as needed, and replacing or repairing the buoy as needed. Monitoring and maintenance activities will be managed by the TPWD's Artificial Reef Program.

10.1.2 Matagorda Artificial Reef Project

The Matagorda Artificial Reef project will create a new artificial reef site approximately 10 miles offshore of Matagorda County, Texas. The project will create a new artificial reef within the 160-acre permitted area, through deployment of predesigned concrete pyramids onto sandy substrate at a water depth of 60 feet.

Texas experienced a loss of recreational use along the Texas coast during the Spill, including recreational fishing, beach use, camping, diving, and wildlife viewing. The Matagorda Artificial Reef project is intended to enhance recreational fishing opportunities by creating artificial reef habitat. Artificial reefs created in state waters benefit anglers by providing reefs that are more readily accessible than other natural areas which can be more than 30 miles offshore. Transportation to the structures within state waters can be accomplished with smaller boats as well as decreased travel time and cost. The project will enhance opportunities for public use and enjoyment of natural resources, helping to offset adverse impacts to such uses caused by the Spill. Thus, the nexus to resources injured by the Spill is clear (See 15 C.F.R. § 990.54(a)(2) and Sections 6a-6c of the Framework Agreement).

The NEPA analysis of the environmental consequences suggests that minor adverse impacts to some resource categories and no moderate to major adverse impacts are anticipated. The Trustees evaluated the Texas artificial reef projects in combination with other present and reasonably foreseeable future actions on geology and substrates, water quality, air quality and GHGs, noise, living coastal and marine resources, protected species, socioeconomics and environmental justice, aesthetics and visual resources, as well as tourism and recreational use. Based on the cumulative impact analysis, Texas artificial reef projects will not substantially contribute to adverse cumulative effects to resources. The Texas artificial reef projects, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts to living coastal and marine resources, protected species, socioeconomics, tourism and recreational use.

10.1.2.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews for the Matagorda Artificial Reef project under the Magnuson-Stevens Fishery Conservation and Management Act, Marine Mammal Protection Act, Clean Water Act, Rivers and Harbors Act, and the Coastal Zone Management Act. Compliance with the National Historic Preservation Act has been initiated. Consultations have been initiated for the Endangered Species Act.

The Final Phase III ERP/PEIS stated that this project does not require further ESA consultations with NMFS. Since publication, this consultation has been reinitiated due to the July 2014 designation of critical habitat for loggerhead sea turtles.

10.1.2.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under the specific resource that they are intended to benefit, they could result in reduced impacts to other resources.

10.1.2.2.1 Measures to Mitigate Impacts to the Physical Environment

- The nearshore deployment of artificial reef material will be implemented within the permitted area, avoiding any identified hard outcrops, uneven surfaces, or geologic features.
- During deployment, anchors/anchor spread will be minimized and reef materials will be lowered slowly to reduce temporary turbidity.
- To reduce the release of GHG during project implementation, idling construction equipment will be shut down when feasible; staging areas will be located as close to construction sites as practicable to minimize driving distances; using the proper size of equipment for the job to maximize energy efficiency will be encouraged as well as the use of alternative fuels for generators at construction sites, where practicable.

10.1.2.2.2 Measures to Mitigate Impacts to Biological Resources

- The pyramids will be designed to be complex, with a large surface area to attract marine life. The predesigned concrete pyramids will be made of materials to match a natural reef in pH and substrate using concrete, limestone, and rebar or other similar materials.
- One side of the constructed pyramids will be open on the top half to allow sea turtles to move freely in and out of the structure.
- All existing artificial reef materials and other hard substrates will be avoided during placement of the reef materials.
- Reef materials will be lowered slowly, providing fish and wildlife with the opportunity to leave the reef deployment area.
- Project implementation will adhere to NMFS's Sea Turtle and Smalltooth Sawfish Construction Conditions (2006), The Texas Artificial Reef Fishery Management Plan (TPWD 1990), the Guidelines for Marine Artificial Reef Materials (Atlantic and Gulf States Marine Fisheries

Commissions 2004), The Texas Public Reef Building Program Standard Operating Protocol and Guidelines (TPWD 2012), and the National Artificial Reef Plan (as Amended): Guidelines for Siting, Construction, Development, and Assessment of Artificial Reefs (NMFS2007).

- During reef deployment, a monitor will be present that will be able to halt work if sea turtles, smalltooth sawfish, marine mammals, or other federally protected species are in the project area. Work will be halted until such time as the area is deemed safe, by the monitor, to continue the operation (i.e., species have left the area).

10.1.2.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- All conditions identified in the USACE permit (SWG-2009-01139) and GLO subsurface lease (SL20070057) will be adhered to.
- If any previously unknown historic or archeological remains are discovered while completing the project, the USACE, Galveston District, will be notified immediately.
- If wooden planking or other cultural materials that could represent shipwreck remains are encountered, field operations will cease and a representative from the Texas Historical Commission will be contacted to provide further guidance.
- The reef area will be added to the NOAA navigation charts.
- Any boats in the area will be coordinated with prior to the deployment of any materials to ensure safety of everyone in the vicinity.
- The project will maintain the minimum clearance (50 feet) above the artificial reefs as required by the USCG to prevent an impediment to boat traffic.
- All navigation safety measures will be followed.
- All hazardous materials handled during construction will be contained and appropriate barriers will be in place to ensure the protection of adjacent water resources from potential spills and leaks.
- All occupational and marine safety regulations and laws will be followed to ensure safety of all workers and monitors.
- During construction of the predesigned concrete pyramids, the Guidelines for Marine Artificial Reef Materials will be followed and the materials will be stable, durable, and complex, and will be clean and free of any hazardous substances.
- In the event of a discharge of oil or release of hazardous substances, the release will be reported to the National Response Center (800-424-8802) and Texas Emergency Oil Spill and Hazardous Substance Reporting line (800-832-8224) as required.
- Proper procedures for handling, storage, transport and disposal of all hazardous materials during on site construction activities will be followed in accordance with OSHA and state and local requirements.
- Personal protective equipment will be required for all construction personnel and authorized access zones will be established at the perimeter of the worksite during construction.

10.1.2.3 Performance Criteria, Monitoring and Maintenance

The Matagorda Artificial Reef project includes monitoring efforts to ensure project designs are correctly implemented during construction. Monitoring has been designed around the project objective, which is

to create an artificial reef through the random placement of 1,600 predesigned concrete pyramids within the permitted artificial reef site (BA-439).

Performance criteria for this project will include a determination of successful construction of the project according to design, and then monitoring and maintenance to confirm that the reef materials are in place and available for recreational fishing. In order to determine successful placement of the constructed pyramids in accordance with the design, multi-beam side-scan surveys will be used to document the location of the pyramid structures and ensure all materials are located within the deployment zone and meet all permit conditions, including USCG clearance restrictions. Monitoring using side-scan sonar will be conducted annually (for 2 years) and after major storm events to document any movement and settling of the structures. Recreational use of the reef observed during the side-scan monitoring will also be documented.

While not funded through Early Restoration, recreational use monitoring is being conducted through ongoing research. Currently Texas A&M University-College Station is studying the social and economic impacts of Texas artificial reefs. Also, as TPWD's Artificial Reef Program looks to expand existing reefs and identify locations for new permitted reef areas, TPWD's Artificial Reef Program will continue to receive feedback from user groups regarding placement and use of reefs in Texas.

No ongoing maintenance beyond the annual surveys is anticipated unless there is significant movement of artificial reef materials, which is not expected to occur. A buoy waiver was received from USCG so buoy maintenance is not expected for the Matagorda Reef project. The reef site is not located in a high traffic area and therefore no adverse impacts are expected by not marking the site with a buoy. Monitoring and maintenance activities will be managed by the TPWD's Artificial Reef Program.

10.1.3 Mid/Upper Texas Coast Artificial Reef - Ship Reef Project

The Ship Reef project will create a new artificial reef site in deep waters of the Gulf of Mexico, about 67 miles south-southeast of Galveston, Texas. The project will create an artificial reef by sinking a ship that is at least 200 feet long within the 80-acre permitted reef site, in waters that are approximately 135 feet deep. The ship will be cleaned of hazardous substances to meet EPA criteria, as well as pass all required Federal and State inspections, including EPA, TPWD, and USCG.

Texas experienced a loss of recreational use along the Texas coast during the Spill, including recreational fishing, beach use, camping, diving, and wildlife viewing. The Ship Reef project is intended to enhance recreational fishing and diving opportunities in the Gulf of Mexico offshore of Texas. This ship reef will benefit anglers and divers by creating additional habitat to attract a high diversity of reef species in an area that has good visibility for recreational diving activities. The project will enhance opportunities for public use and enjoyment of natural resources, helping to offset adverse impacts to such uses caused by the Spill. Thus, the nexus to resources injured by the Spill is clear (See 15 C.F.R. § 990.54(a)(2) and Sections 6a-6c of the Framework Agreement).

The NEPA analysis of the environmental consequences suggests that minor adverse impacts to some resource categories and no moderate to major adverse impacts are anticipated. The Trustees evaluated the Texas artificial reef projects in combination with other present and reasonably foreseeable future

actions on geology and substrates, water quality, air quality and GHGs, noise, living coastal and marine resources, protected species, socioeconomics and environmental justice, aesthetics and visual resources, as well as tourism and recreational use. Based on the cumulative impact analysis, Texas artificial reef projects will not substantially contribute to adverse cumulative effects to resources. The Texas artificial reef projects, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts to living coastal and marine resources, protected species, socioeconomics, tourism and recreational use.

10.1.3.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews for the Ship Reef project under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Marine Mammal Protection Act, National Historic Preservation Act, and the Rivers and Harbors Act.

10.1.3.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under the specific resource that they are intended to benefit, they could result in reduced impacts to other resources.

10.1.3.2.1 Measures to Mitigate Impacts to the Physical Environment

- The ship will be sunk within the permitted area, and avoid any identified hard outcrops, uneven surfaces, or geologic features.
- All hazardous materials will be removed from the ship before deployment per the Environmental Protection Agency (EPA) and U.S. Maritime Administration (MARAD) National Guidance: Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs (2006).This practice will ensure that water quality is not compromised from substances leaching from the ship itself.
- All hazardous materials handled during ship cleaning will be contained and appropriate barriers will be in place to ensure the protection of adjacent water resources from potential spills and leaks.
- To reduce the release of GHG during project implementation, idling construction equipment will be shut down when feasible; staging areas will be located as close to construction sites as practicable to minimize driving distances; using the proper size of equipment for the job to maximize energy efficiency will be encouraged as well as the use of alternative fuels for generators at construction sites, where practicable.

10.1.3.2.2 Measures to Mitigate Impacts to Biological Resources

- All existing artificial reef materials and other hard substrates will be avoided during deployment of the ship.
- Project implementation will adhere to NMFS's Sea Turtle and Smalltooth Sawfish Construction Conditions (2006), The Texas Artificial Reef Fishery Management Plan (TPWD 1990), the

Guidelines for Marine Artificial Reef Materials (Atlantic and Gulf States Marine Fisheries Commissions 2004), the National Artificial Reef Plan (as Amended): Guidelines for Siting, Construction, Development, and Assessment of Artificial Reefs (NMFS2007), and the National Guidance: Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs (EPA and MARAD 2006).

- The final sinking plan will be coordinated with the NMFS to minimize underwater impacts from explosives. The explosive charges employed will be the smallest needed (lowest possible net explosive weight per detonation) to puncture pre-cut plates in order to sink the ship. Detonations of explosives along the ship will be in a rapid series rather than simultaneous in order to minimize impacts to marine fauna. Devices will be used to create a delay between sections of the ship to minimize the high frequency energy from the charges that passes through the hull into the water.
- A protected species observer protocols which involves monitoring the zone of influence and stopping work if any federally protected species are observed will be developed with the final sinking plan and implemented during deployment.
- Aerial observations for protected species will begin prior to the planned sink time.
- If protected species observers see *Sargassum* rafts over 10 feet in diameter or any protected species including sea turtles or marine mammals, the scheduled detonation of explosives will be postponed for at least 30 minutes or until the impact zone is free from any condition that may cause injury to a protected species. Detonation of scare charges to intentionally harass sea turtles or marine mammals into leaving a project area is prohibited.
- Upon detonation, the area will continue to be surveyed to monitor for adversely impacted protected species.
- The sinking event will not be conducted if the area cannot be adequately monitored or if weather conditions do not permit full visibility of the area. Detonation of explosives will occur no sooner than 1 hour following sunrise and no later than 1 hour before sunset.

10.1.3.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- All conditions identified in the USACE permit (SWG-2013-00249) will be adhered to.
- If any previously unknown historic or archeological remains are discovered while completing the project, the USACE, Galveston District, will be notified immediately.
- If the ship that is proposed for acquisition for this project is a historical resource, it will be evaluated for its cultural significance and suitability for this project before it is used. MARAD conducts historical reviews on all ships in its inventory before disposal, which should satisfy all requirements under Section 106 of the National Historic Preservation Act.
- The project will maintain the minimum clearance (60 feet) above the artificial reef (ship) as required by the USCG to prevent an impediment to boat traffic.
- Prior to the arrival of the ship, TPWD will visually inspect the ship yard facility and meet with its managers to ensure environmental and worker safety plans are in place.
- Pollution booms and any other required pollution response equipment will be staged at the facility, ready for deployment to guard against any pollution discharge.

- A Spill Prevention and Emergency Response Plan will be developed and approved.
- In the event of a discharge of oil or release of hazardous substances, the release will be reported to the National Response Center (800-424-8802) and Texas Emergency Oil Spill and Hazardous Substance Reporting line (800-832-8224) as required and all state and federal regulations will be followed during the cleanup.
- A security system to protect the ship and workers will be provided to TPWD for approval. The security should have significant controls such as having a guarded entrance for ingress and egress of all personnel and materials, and 24-hour guard presence on the premises.
- The ship will be cleaned of debris, loose items, and hazardous materials to a level that meets or exceeds best management practices and complies with health and safety statutes and regulations as set forth by the EPA, MARAD, and Texas, including the *National Guidance: Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs* (EPA and MARAD 2006).
- All federal and state regulations will be followed to clean, remove and dispose all hazardous materials generated from the cleaning of the ship.
- A ship remediation plan to address cleanup and removal of hazardous materials from the ship will be submitted federal and state agencies for review prior to beginning work.
- The hull will be modified to ensure safety for divers and meet requirements, inspections, and modifications stipulated by TPWD, EPA and the USCG. Hull modifications will be made to meet depth clearance requirements established for the permitted reef site and to allow limited exploration of the ship by scuba divers while maintaining diver safety. Hull modifications will also be made to create the best opportunity for the ship to sink in an upright position on the Gulf bottom. Any hull modifications required will be designed and executed to retain the ship's original external characteristics as much as possible.
- The ship will be completely surveyed to identify worker hazards (e.g., unsafe deck and structure hazards, hazardous substances, unsafe air quality). Areas of hazard will be marked, repaired and/or removed. Workers will maintain all work areas by removing unneeded items. They will also set up areas for temporary storage of containerized waste and spill kits. A general area will be designated for an on-board office, decontamination trailer, supply containers, and waste containers. Confined spaces such as tanks will not be entered until atmospheric readings have been obtained and a confined space program is approved by a marine chemist or other qualified person.
- Proper procedures for handling, storage, transport and disposal of all hazardous materials during on site construction activities will be followed in accordance with OSHA and state and local requirements.
- Personal protective equipment will be required for all ship cleaning and explosives personnel and authorized access zones will be established at the perimeter during ship cleaning and explosives use.
- All occupational and marine safety regulations and laws will be followed to ensure safety of all workers and monitors.

- An explosives plan and associated safety procedures will be developed, reviewed, and approved by government agencies before project implementation.
- All navigation safety measures will be followed.
- A safety zone will be established around the reef site to exclude all ship and submarine traffic not participating in the sinking action. The specific radius will be determined by the USCG on site. Any traffic within this radius will be warned to alter course or will be escorted from the site. An immediate "STOP WORK" will be ordered if any unauthorized craft entered the safety zone and could not be contacted. Work will not continue until the safety zone was clear of unauthorized vessels.
- Weather that supports the ability to conduct final sinking preparation activities is required for maximum safety for all workers and observers involved in the activity. Operations are most affected by wind, visibility, and ocean surface conditions. Higher winds typically increase wave height and create “white cap” conditions, both of which compromise safety of personnel participating in and/or observing the sinking action. Weather conditions will be monitored closely to provide the largest good weather window for all activities needed to tow, moor, conduct final on-sight hull modifications, and sink the ship. Weather conditions considered marginal or poor will cause a “stop work” order.
- The reef area will be added to the NOAA navigation charts and a lighted, navigational buoy will be in the permitted reef area.

10.1.3.3 Performance Criteria, Monitoring and Maintenance

This Ship Reef project includes monitoring efforts to ensure project methods are correctly implemented during implementation. Monitoring has been designed around the project objective, which is to create an artificial reef through the sinking of a ship within the permitted artificial reef site (HI-A-424).

Performance criteria for this project will include a determination of successful construction of the project according to design, and then monitoring and maintenance to confirm that the ship is in place and available for recreational fishing and diving. In order to determine successful placement of the ship according to design plans, multi-beam side-scan surveys and/or divers will verify final location and orientation of the ship before and after project implementation. The post-implementation survey will also be used to confirm that the final project meets all permit conditions, including USCG clearance restrictions. Monitoring using side-scan sonar and/or divers will be conducted annually (for 2 years) and after major storm events to document any movement and settling of the ship. Recreational use of the reef observed during the annual monitoring will also be documented.

While not funded through Early Restoration, recreational use monitoring is being conducted through ongoing research. Currently Texas A&M University-College Station is studying the social and economic impacts of Texas artificial reefs. Also, as TPWD’s Artificial Reef Program looks to expand existing reefs and identify locations for new permitted reef areas, TPWD’s Artificial Reef Program will continue to receive feedback from user groups regarding placement and use of reefs in Texas.

No ongoing maintenance beyond the annual surveys and buoy maintenance is anticipated unless there is significant movement of artificial reef materials, which is not expected to occur. A lighted buoy, as

required by the USCG, will be installed within the reef area. Regular maintenance of the buoy marker will include cleaning the chain, replacing the light, and replacing or repairing the buoy as needed. The TPWD Artificial Reef Program currently has a buoy maintenance contract in place for other reef sites. This buoy will be added to the current contract. Monitoring and maintenance activities will be managed by the TPWD's Artificial Reef Program.

10.1.4 Mid/Upper Texas Coast Artificial Reef - Corpus Artificial Reef Project

[The Corpus Artificial Reef Project will only be implemented in the event that the Ship Reef Project becomes technically infeasible (e.g. an appropriate ship cannot be acquired with available funding).]

The Corpus Artificial Reef project will increase the amount of reef materials in a currently permitted artificial reef site, approximately 11 miles from Packery Channel (near Corpus Christi Bay, Texas). The current reef site is permitted for 160 acres, but only has materials in the northwest quadrant and in the center of the permitted area. The project will place predesigned concrete pyramids in the remaining portions of the 160-acre permitted area (about 115 acres) onto sandy substrate at a water depth of 73 feet. This project is an alternative to the Ship Reef Project, and is proposed for implementation only in the event that the Ship Reef Project proves to be technically infeasible.

Texas experienced a loss of recreational use along the Texas coast during the Spill, including recreational fishing, beach use, camping, diving, and wildlife viewing. The Corpus Artificial Reef project is intended to enhance recreational fishing opportunities by creating artificial reef habitat. Artificial reefs created in state waters benefit anglers by providing reefs that are more readily accessible than other natural areas which can be more than 30 miles offshore. Transportation to the structures within state waters can be accomplished with smaller boats as well as decreased travel time and cost. The project will enhance opportunities for public use and enjoyment of natural resources, helping to offset adverse impacts to such uses caused by the Spill. Thus, the nexus to resources injured by the Spill is clear (See 15 C.F.R. § 990.54(a)(2) and Sections 6a-6c of the Framework Agreement).

The NEPA analysis of the environmental consequences suggests that minor adverse impacts to some resource categories and no moderate to major adverse impacts are anticipated. The Trustees evaluated the Texas artificial reef projects in combination with other present and reasonably foreseeable future actions on geology and substrates, water quality, air quality and GHGs, noise, living coastal and marine resources, protected species, socioeconomics and environmental justice, aesthetics and visual resources, as well as tourism and recreational use. Based on the cumulative impact analysis, Texas artificial reef projects will not substantially contribute to adverse cumulative effects to resources. The Texas artificial reef projects, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts to living coastal and marine resources, protected species, socioeconomics, tourism and recreational use.

10.1.4.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews for the Corpus Artificial Reef project under the Magnuson-Stevens Fishery Conservation and Management Act, Marine Mammal Protection Act, Clean

Water Act, National Historic Preservation Act, Rivers and Harbors Act, and the Coastal Zone Management Act. Consultations have been initiated for the Endangered Species Act.

The Final Phase III ERP/PEIS stated that this project does not require further ESA consultations with NMFS. Since publication, this consultation has been reinitiated due to the July 2014 designation of critical habitat for loggerhead sea turtles.

10.1.4.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under the specific resource that they are intended to benefit, they could result in reduced impacts to other resources.

10.1.4.2.1 Measures to Mitigate Impacts to the Physical Environment

- The nearshore deployment of artificial reef material will be implemented within the permitted area, avoiding any existing artificial reef materials as well as any identified hard outcrops, uneven surfaces, or geologic features.
- During deployment, anchors/anchor spread will be minimized and reef materials will be lowered slowly to reduce temporary turbidity.
- To reduce the release of GHG during project implementation, idling construction equipment will be shut down when feasible; staging areas will be located as close to construction sites as practicable to minimize driving distances; using the proper size of equipment for the job to maximize energy efficiency will be encouraged as well as the use of alternative fuels for generators at construction sites, where practicable.

10.1.4.2.2 Measures to Mitigate Impacts to Biological Resources

- The pyramids will be designed to be complex, with a large surface area to attract marine life. The predesigned concrete pyramids will be made of materials to match a natural reef in pH and substrate using concrete, limestone, and rebar or other similar materials.
- One side of the constructed pyramids will be open on the top half to allow sea turtles to move freely in and out of the structure.
- All existing artificial reef materials and other hard substrates will be avoided during placement of the reefing materials.
- Reef materials will be lowered slowly, providing fish and wildlife with the opportunity to leave the reef deployment area.
- Project implementation will adhere to NMFS's Sea Turtle and Smalltooth Sawfish Construction Conditions (2006), The Texas Artificial Reef Fishery Management Plan (TPWD 1990), the Guidelines for Marine Artificial Reef Materials (Atlantic and Gulf States Marine Fisheries Commissions 2004), The Texas Public Reef Building Program Standard Operating Protocol and Guidelines (TPWD 2012), and the National Artificial Reef Plan (as Amended): Guidelines for Siting, Construction, Development, and Assessment of Artificial Reefs (NMFS2007).

- During reef deployment, a monitor will be present that will be able to halt work if sea turtles, smalltooth sawfish, marine mammals, or other federally protected species are in the project area. Work will be halted until such time as the area is deemed safe, by the monitor, to continue the operation (i.e., species have left the area).

10.1.4.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- All conditions identified in the USACE permit (SWG-2010-01047) and GLO subsurface lease (SL950008) will be adhered to.
- If any previously unknown historic or archeological remains are discovered while completing the project, the USACE, Galveston District, will be notified immediately.
- If wooden planking or other cultural materials that could represent shipwreck remains are encountered, field operations will cease and a representative from the Texas Historical Commission will be contacted to provide further guidance.
- Any boats in the area will be coordinated with prior to the deployment of any materials to ensure safety of everyone in the vicinity.
- The project will maintain the minimum clearance (50 feet) above the artificial reefs as required by the USCG to prevent an impediment to boat traffic.
- All navigation safety measures will be followed.
- All hazardous materials handled during construction will be contained and appropriate barriers will be in place to ensure the protection of adjacent water resources from potential spills and leaks.
- All occupational and marine safety regulations and laws will be followed to ensure safety of all workers and monitors.
- During construction of the predesigned concrete pyramids, the Guidelines for Marine Artificial Reef Materials will be followed and the materials will be stable, durable, and complex, and will be clean and free of any hazardous substances.
- In the event of a discharge of oil or release of hazardous substances, the release will be reported to the National Response Center (800-424-8802) and Texas Emergency Oil Spill and Hazardous Substance Reporting line (800-832-8224) as required.
- Proper procedures for handling, storage, transport and disposal of all hazardous materials during on site construction activities will be followed in accordance with OSHA and state and local requirements.
- Personal protective equipment will be required for all construction personnel and authorized access zones will be established at the perimeter of the worksite during construction.

10.1.4.3 Performance Criteria, Monitoring and Maintenance

The Corpus Artificial Reef project includes monitoring efforts to ensure project designs are correctly implemented during construction. Monitoring has been designed around the project objective, which is to increase the amount of reef materials in a currently permitted artificial reef site (MU-775) through the placement of 1,000 to 1,200 predesigned concrete pyramids within the open portions of the permitted reef site.

Performance criteria for this project will include a determination of successful construction of this project according to design, and then monitoring and maintenance to confirm that the reef materials are in place and available for recreational fishing opportunities. In order to determine successful placement of the constructed pyramids in accordance with the design, multi-beam side-scan surveys will be used to document the location of the pyramid structures and ensure all materials are located within the deployment zone and meet all permit conditions, including USCG clearance restrictions. Monitoring using side-scan sonar will be conducted annually (for 2 years) and after major storm events to document any movement and settling of the structures. Recreational use of the reef observed during the side-scan monitoring will also be documented.

While not funded through Early Restoration, recreational use monitoring is being conducted through ongoing research. Currently Texas A&M University-College Station is studying the social and economic impacts of Texas artificial reefs. Also, as TPWD's Artificial Reef Program looks to expand existing reefs and identify locations for new permitted reef areas, TPWD's Artificial Reef Program will continue to receive feedback from user groups regarding placement and use of reefs in Texas.

No ongoing maintenance beyond the annual surveys and buoy maintenance is anticipated unless there is significant movement of artificial reef materials, which is not expected to occur. A USCG approved marker buoy is already installed at the Corpus reef site and will be maintained per USCG requirements. Regular maintenance of the buoy marker will include cleaning the chain, replacing the light, and replacing or repairing the buoy as needed. Monitoring and maintenance activities will be managed by the TPWD's Artificial Reef Program.

10.1.5 Sea Rim State Park Improvements

The Sea Rim State Park project will build two wildlife viewing platforms (Fence Lake and Willow Pond), a comfort station, and a fish cleaning shelter in the Park.

Texas experienced a loss of recreational use along the Texas coast during the Spill, including recreational fishing, beach use, camping, diving, and wildlife viewing. The project will enhance the public's use and enjoyment of natural resources, helping to offset a portion of the adverse impacts to such uses caused by the Spill. Creating the infrastructure (viewing platforms, comfort station, and a fish cleaning shelter) will provide visitors increased opportunities for viewing wildlife while also maintaining sanitary conditions during the users' fishing and personal activities. Thus, the nexus to resources injured by the Spill is clear (See 15 C.F.R. § 990.54(a)(2) and Sections 6a-6c of the Framework Agreement).

The NEPA analysis of the environmental consequences suggests that minor adverse impacts to some resource categories and no moderate to major adverse impacts are anticipated. The Trustees evaluated the Texas state park projects in combination with other present and reasonably foreseeable future actions on geology and substrates; hydrology, floodplain, and water quality; air quality and GHGs; noise; living coastal and marine resources; protected species; socioeconomics and environmental justice; aesthetics and visual resources; tourism and recreational use; as well as infrastructure. Based on the cumulative impact analysis, Texas state park projects will not substantially contribute to adverse cumulative effects to resources. The Texas state park projects, carried out in conjunction with other

actions, have the potential to provide long-term beneficial cumulative impacts to living coastal and marine resources, protected species, socioeconomics, tourism and recreational use, as well as infrastructure.

10.1.5.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews for the Sea Rim State Park project under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act, National Historic Preservation Act, and the Coastal Zone Management Act. A Letter of Permission pursuant to Section 10 of the Rivers and Harbors Act has been received for the Fence Lake viewing platform. The USACE has determined that the Willow Pond viewing platform is not subject to their jurisdiction under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

10.1.5.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under the specific resource that they are intended to benefit, they could result in reduced impacts to other resources.

10.1.5.2.1 Measures to Mitigate Impacts to the Physical Environment

- Implementation of an erosion control and storm water management plan. Additional measures to minimize impacts include, the installation of sediment traps prior to commencement of construction activities, operating outside of set-backs from wetland areas, and ongoing construction monitoring to ensure compliance.
- Where necessary, all runoff will be controlled with sediment fencing around the construction zone to reduce impacts to the adjacent wetlands.
- The Willow Pond project area will be accessed while the wetlands are dry using tracked equipment.
- Soil and sediment stabilization measures will be incorporated into the Sea Rim State Park project design as needed in areas where the potential exists for erosion to occur in order to protect resources and ensure public health and safety.
- To reduce the release of GHG during project implementation, idling construction equipment will be shut down when feasible; staging areas will be located as close to construction sites as practicable to minimize driving distances; using the proper size of equipment for the job to maximize energy efficiency will be encouraged as well as the use of alternative fuels for generators at construction sites, where practicable.

10.1.5.2.2 Measures to Mitigate Impacts to Biological Resources

- To prevent any invasive species from becoming established during project construction, equipment, materials, and disturbed areas will be monitored for invasive species. If invasive

species are observed during normal post-construction monitoring, appropriate treatment methods will be used to remove them.

- Any revegetation following construction activities will use native species.
- To minimize impacts to migratory birds, the initial site access, clearing, and construction effort will be conducted outside of the spring nesting season (March 15 to July 1).
- Actions to minimize impacts to piping plovers during construction of the fish cleaning shelter include having an onsite monitor, avoiding work after dark, maintaining a speed limit of 10 mph, and stopping work if the birds are observed foraging within 100 feet of the work site. The onsite monitor will have stop work authority and will be present at the site when construction is occurring near the fish cleaning shelter. The trained monitor will survey the fish cleaning shelter project area daily prior to the initiation of any construction activity and periodically throughout the day. If vehicles or equipment are left in the fish cleaning shelter project area, the areas around the tires will be surveyed before moving the vehicle. The monitor will keep a daily log documenting all surveys conducted during the fish cleaning shelter construction project. These actions will only take place during construction of the fish cleaning shelter, where there is piping plover habitat.

10.1.5.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- All conditions identified in the USACE permit (SWG-2013-00686) will be adhered to.
- If any previously unknown historic or archaeological remains are discovered while completing the project, the USACE, Galveston District, will be notified immediately.
- All standards and provisions of TPWD's State Park Division Operating Plan (TPWD 2012a) and related regulations will be adhered to, including Texas State Park Operational Rules (Title 31, Texas Administrative Code Chapter 59) and Texas Accessibility Standards issued under the authority of the Texas Government Code, Chapter 469.
- The Willow Pond worksite will be monitored during construction to ensure that no archaeological sites are disturbed.
- All waste generated during construction of the improvements will be disposed in the appropriate waste or recycle collection receptacles in the Park or hauled off to an approved waste disposal site.
- All occupational and safety regulations and laws will be followed to ensure safety of all workers and the public.
- All hazardous materials handled during construction will be contained and appropriate barriers will be in place to ensure the protection of adjacent water resources from potential spills and leaks.
- In the event of a discharge of oil or release of hazardous substances, the release will be reported to the National Response Center (800-424-8802) and Texas Emergency Oil Spill and Hazardous Substance Reporting line (800-832-8224) as required.
- Proper procedures for handling, storage, transport and disposal of all hazardous materials during on site construction activities will be followed in accordance with OSHA and state and local requirements,

- Personal protective equipment will be required for all construction personnel and authorized access zones will be established at the perimeter of the worksite during construction.

10.1.5.3 Performance Criteria, Monitoring and Maintenance

This Sea Rim State Park project includes monitoring efforts to ensure project designs are correctly implemented during construction. Monitoring has been designed around the project objective, which is to construct two wildlife viewing platforms (Fence Lake and Willow Pond), one comfort station, and one fish cleaning shelter in Sea Rim State Park to enhance recreational use of the Park.

Performance criteria for this project will include a determination of successful construction of the project according to design to ensure that the opportunity for recreational use of the Park will be enhanced. Monitoring efforts will also be implemented to ensure that the project is constructed in accordance with construction documents. The State Park currently has visitation monitoring procedures to capture the number of daytime visitors, overnight visitors, and participants in interpretive programs. This information will be collected and shared annually to document performance monitoring of the project for 5 years after construction completion.

Ongoing maintenance of the constructed facilities will be the responsibility of Sea Rim State Park, which is owned and managed by the TPWD.

10.1.6 Galveston Island State Park Beach Redevelopment

The Galveston Island State Park project will redevelop the beach side of the Park by building new facilities, including multi-use campsites, tent campsites, beach access boardwalks, equestrian facilities, as well as restroom and shower facilities.

Texas experienced a loss of recreational use along the Texas coast during the Spill, including recreational fishing, beach use, camping, diving, and wildlife viewing. The project will enhance opportunities for public use and enjoyment of natural resources, helping to offset a portion of the adverse impacts to such uses caused by the Spill. Creating the infrastructure will provide facilities for over-night and day-use visitors as well as access and facilities for equestrian use. Thus, the nexus to resources injured by the Spill is clear (See 15 C.F.R. § 990.54(a)(2) and Sections 6a-6c of the Framework Agreement).

The NEPA analysis of the environmental consequences suggests that minor adverse impacts to some resource categories, moderate short-term impacts to tourism and recreational use, and no major adverse impacts are anticipated. The Trustees evaluated the Texas state park projects in combination with other present and reasonably foreseeable future actions on geology and substrates; hydrology, floodplain, and water quality; air quality and GHGs; noise; living coastal and marine resources; protected species; socioeconomics and environmental justice; aesthetics and visual resources; tourism and recreational use; as well as infrastructure. Based on the cumulative impact analysis, Texas state park projects will not substantially contribute to adverse cumulative effects to resources. The Texas state park projects, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts to living coastal and marine resources, protected species, socioeconomics, tourism and recreational use, as well as infrastructure.

10.1.6.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews for the of Galveston Island State Park Beach Redevelopment project under the Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, National Historic Preservation Act, Clean Water Act, Rivers and Harbors Act, and the Coastal Zone Management Act.

10.1.6.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under the specific resource that they are intended to benefit, they could result in reduced impacts to other resources.

10.1.6.2.1 Measures to Mitigate Impacts to the Physical Environment

- To control erosion, native vegetation will be planted near the campsites.
- Project implementation will adhere to the TCEQ Tier 1 checklist, including minimization measures for erosion control, post construction total suspended solids control, and sedimentation control.
- A comprehensive storm water pollution prevention plan will be developed to reduce the intensity of the construction-related impacts to water quality.
- Implementation an erosion control and storm water management plan. Additional measures to minimize impacts include the installation of sediment traps prior to commencement of construction activities, operating outside of set-backs from wetland areas, and ongoing construction monitoring to ensure compliance.
- Where necessary, all runoff will be controlled with sediment fencing around the construction zone to reduce impacts to the adjacent wetlands.
- Soil and sediment stabilization measures will be incorporated into the Galveston Island State Park project design as needed in areas where the potential exists for erosion to occur in order to protect resources and ensure public health and safety.
- To reduce the release of GHG during project implementation, idling construction equipment will be shut down when feasible; staging areas will be located as close to construction sites as practicable to minimize driving distances; using the proper size of equipment for the job to maximize energy efficiency will be encouraged as well as the use of alternative fuels for generators at construction sites, where practicable.
- To limit the adverse impacts of noise during construction, activity at project sites, including traffic ingress/egress to the site, will be limited to daytime hours; work crews will be made aware that prominent discrete tones and periodic noises (e.g., excessive dump truck gate banging) should be avoided as much as possible; and work crews will be required to seek pre-approval for any work conducted during weekends or outside of daytime hours.

10.1.6.2.2 Measures to Mitigate Impacts to Biological Resources

- To prevent any invasive species from becoming established during project construction, equipment, materials, and disturbed areas will be monitored for invasive species. If invasive species are observed due to construction activities, appropriate treatment methods will be used to remove them.
- All revegetation following construction activities will use native species.
- All observed sea turtle nests will be excavated and the eggs relocated for incubation, in coordination with the National Park Service's Sea Turtle Recovery Project.
- The construction of beach access boardwalks (the only development that will affect sea turtle nesting) has been scheduled to avoid nesting season, which extends from April 1until October 1.
- Actions to minimize potential impacts to piping plovers and red knots during construction of the beach access boardwalks (the only development that could impact these bird species) include having an onsite monitor, avoiding work after dark, maintaining a speed limit of 10 miles per hour, and stopping work if the birds are observed foraging within 100 feet of the work site. The onsite monitor will have stop work authority and will be present at the site when construction is occurring on the beach. The trained monitor will survey the beach area daily prior to the initiation of any construction activity and periodically throughout the day. If vehicles or equipment are left on the beach, the areas around the tires will be surveyed before moving the vehicle. The monitor will keep a daily log documenting all surveys conducted during construction of the beach access boardwalks. These actions will only take place during construction of the beach access boardwalks, where there is piping plover and red knot habitat.
- To minimize impacts to migratory birds the initial site access, clearing, and construction effort will be conducted outside of the spring nesting season (March 15 to July 1).

10.1.6.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- All conditions identified in the USACE permit (SWG-2012-00631) will be adhered to.
- If any previously unknown historic or archaeological remains are discovered while completing the project, the USACE, Galveston District, will be notified immediately.
- All standards and provisions of TPWD's State Park Division Operating Plan (TPWD 2012a) and related regulations will be adhered to, including Texas State Park Operational Rules (Title 31, Texas Administrative Code Chapter 59) and Texas Accessibility Standards issued under the authority of the Texas Government Code, Chapter 469.
- All waste generated during the construction of the amenities will be disposed in the appropriate waste or recycle collection receptacles in the Park or hauled off to an approved waste disposal site.
- All occupational and safety regulations and laws will be followed to ensure safety of all workers and the public.
- All hazardous materials handled during construction will be contained and appropriate barriers will be in place to ensure the protection of adjacent water resources from potential spills and leaks.

- In the event of a discharge of oil or release of hazardous substances, the release will be reported to the National Response Center (800-424-8802) and Texas Emergency Oil Spill and Hazardous Substance Reporting line (800-832-8224) as required.
- Proper procedures for handling, storage, transport and disposal of all hazardous materials during on site construction activities will be followed in accordance with OSHA and state and local requirements.
- Personal protective equipment will be required for all construction personnel and authorized access zones will be established at the perimeter of the worksite during construction.

10.1.6.3 Performance Criteria, Monitoring and Maintenance

This project includes monitoring efforts to ensure project designs are correctly implemented during construction. Monitoring has been designed around the project objective, which is to construct multi-use campsites, tent campsites, dune access boardwalks, equestrian facilities, as well as restroom and shower facilities on the beach side of Galveston Island State Park to enhance recreational use of the Park.

Performance criteria for this project will include a determination of successful construction of the project according to design to ensure that the opportunity for recreational use of the Park will be enhanced. Monitoring efforts will also be implemented to ensure that the project is constructed in accordance with construction documents and the Master Plan for the Park. The State Park currently has visitation monitoring procedures to capture the number of daytime visitors, overnight visitors, and participants in interpretive programs. This information will be collected and shared annually to document performance monitoring of the project for 5 years after construction completion.

Ongoing maintenance of the constructed facilities will be the responsibility of Galveston Island State Park, which is owned and managed by the TPWD.

10.2 Louisiana

10.2.1 Louisiana Marine Fisheries Enhancement, Research, and Science Center

The Louisiana Marine Fisheries Enhancement, Research, and Science Center ("the Center") will establish state of the art facilities to responsibly develop aquaculture-based techniques for marine fishery management. The project will include two sites (Calcasieu Parish and Plaquemines Parish) with the shared goals of fostering collaborative multi-dimensional research on marine sport fish and bait fish species; enhancing stakeholder involvement; and providing fisheries extension, outreach, and education to the public. Specifically, the project will provide Louisiana with an important management tool for monitoring the long term health of wild populations of popular recreation marine species by developing the ability to release known numbers of marked juveniles into pre-determined habitats as part of well-designed studies that will allow for measurement and detection of changes in wild populations of marine sport fish species. The Center will also establish living laboratories to support a variety of marine fisheries outreach and educational activities for the public.

The project will enhance the public's use and/or enjoyment of natural resources, helping to offset adverse impacts to such uses caused by the Spill. Recreational fishing in Louisiana was adversely

impacted by the Spill, as widespread closures of areas for recreational fishing were necessary because of oil and clean-up/response activities. The objective of this restoration project is to help compensate for the loss of recreational fishing services resulting from the Spill by constructing and operating facilities to support and improve the State of Louisiana's management of marine fishery resources (via the production of sport and bait fish and associated research) as well as public education and outreach.

This project was analyzed for its potential environmental consequences on geology and substrates; hydrology and water quality; air quality and GHGs; noise; living coastal and marine resources; protected species; socioeconomics and environmental justice; cultural resources; infrastructure; land and marine management; aesthetics and visual resources; tourism and recreational use; as well as public health and safety and shoreline protection. NEPA analysis of the environmental consequences suggests that minor adverse impacts to some resource categories and no moderate to major adverse impacts are anticipated to result. The project will provide long-term benefits by supporting the State of Louisiana's ongoing management of its saltwater sport fishery. Furthermore, based on the analysis of past, present and reasonably foreseeable future actions and the anticipated resources to be impacted by those actions, the Calcasieu and Plaquemines Parish facilities will not substantially contribute to adverse cumulative impacts to resources in the respective region.

10.2.1.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

Consultations or reviews have been completed under the Magnuson-Stevens Fishery Conservation and Management Act, the Endangered Species Act, the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, the Marine Mammal Protection Act, and the National Historic Preservation Act.

Consistency reviews of the Phase III early restoration projects in Louisiana were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Consultation under the Clean Water Act has been initiated and will be completed prior to implementation.

10.2.1.2 Mitigation Measures

The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.2.1.2.1 Measures to Mitigate Impacts to the Physical Environment

Calcasieu Parish Facility

- Coordination with local floodplain administrators and FEMA due to potential impacts to the 100-year floodplain that might modify the characteristics of floodwaters.
- During final design, a standard engineering review of runoff from the site will be performed to ensure that offsite effects will be reduced.

- A Stormwater Pollution Prevention Plan with BMPs to protect water quality (e.g., silt fence, re-vegetation) will likely mitigate impacts; these measures will also likely fulfill the requirements of the Section 401 Water Quality Certification and mitigate water quality impacts.
- Prior notification to and coordination with the LDNR Groundwater Resources Program will be provided before construction of process water wells for the developments.
- Pond lining will prevent seepage of pond water into groundwater.
- If required, additional evaluations including a review of the water balance of the Turn Basin and surrounding systems will be performed to assess any potential impacts to surrounding waters and determine if modifications to the design of the intake or effluent systems are needed.
- The project will meet applicable LPDES discharge standards.
- To remove excess nutrients from discharge water, the final design process will determine the appropriateness of using multi-trophic integrated aquaculture in conjunction with the lined, 0.5 acre settling ponds, ponds, or potentially with adjacent constructed wetlands.
- Coordination with the state administrative authority will be initiated to assist in a determination of LPDES applicability.
- Impacts to wetlands and other waters of the U.S. will be minimized by modifying the site plan to the extent practicable.
- Impacts to mature trees will be minimized through design and the surface herbaceous vegetation impacted during construction will be restored following construction. Native species will be utilized to the extent practicable.
- The facility site, staging, and buffer areas will be inspected for common invasive species prior to the onset of construction. A control plan will be implemented, if necessary, to ensure invasive plant species do not increase in distribution or abundance at the site due to project operation. The site will be inspected periodically to identify and control new colonies/individuals of an invasive species not previously observed prior to construction. During facility construction and operation, water extracted from water bodies, as well as equipment (including personal gear, machinery, vehicles, or vessels), will be inspected for presence of mud or soil, seeds, invasive aquatic weeds, and/or any other invasive vegetation before being brought to the site and before being moved from the site to prevent the transport and spread of such species. Propagated or transplanted vegetation will be inspected and certified as pest and disease free prior to planting in restoration project areas.
- The following mitigation measures have been identified to reduce emissions from the project:
    - Shut down idling construction equipment, if feasible.
    - Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
    - Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
    - Encourage the use of alternative fuels for generators at construction sites, such as propane or solar, or use electrical power where practicable.
- The use of recirculating aquaculture systems (“RAS”) technology will also minimize air emissions associated with water heating and cooling compared to facilities that use flow-through systems.

- An erosion control and storm water management plan will be implemented.
- Sediment traps will be installed prior to commencement of construction activities to minimize impacts to geology and substrates.
- Impacts to wetlands and other waters of the U.S. will be mitigated by fulfilling compensatory mitigation requirements of the Section 404 permit, if necessary.
- Construction will be limited to daylight working hours, when feasible, in order to reduce the noise impacts to the surrounding environment.

Plaquemines Parish Facility

- The facility site, staging, and buffer areas will be inspected for common invasive species prior to the onset of construction. A control plan will be implemented, if necessary, to ensure these species do not increase in distribution or abundance at a site due to project operation. The site will be inspected periodically to identify and control new colonies/individuals of an invasive species not previously observed prior to construction. During facility construction and operation, water extracted from water bodies, as well as equipment (including personal gear, machinery, vehicles, or vessels) will be inspected for presence of mud or soil, seeds, invasive aquatic weeds, and/or any other invasive vegetation before being brought to the site and before being moved from the site to prevent the transport and spread of such species propagated or transplanted vegetation will be inspected and certified as pest and disease free prior to planting in restoration project areas if required.
- An erosion control and storm water management plan will be implemented.
- Sediment traps will be installed prior to commencement of construction activities to minimize impacts to geology and substrates.
- Impacts to mature trees will be minimized through design and the surface herbaceous vegetation impacted during construction will be restored following construction. Native species will be utilized to the extent practicable.
- The project will be subjected to an Engineering Review under Section 408.
- During final design, standard engineering review of runoff from the site will be performed to ensure that offsite effects will be reduced.
- Pond lining will prevent seepage of pond water into groundwater.
- A Stormwater Pollution Prevention Plan with BMPs to protect water quality (e.g., silt fence, re-vegetation) will likely mitigate impacts; these measures will also likely fulfill the requirements of the Section 401 Water Quality Certification and mitigate water quality impacts.
- Coordination with the state administrative authority will be initiated to assist in a determination of LPDES applicability.
- The following mitigation measures have been identified to reduce emissions from the project:
    - Shut down idling construction equipment, if feasible.
    - Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
    - Encourage the use of the proper size of equipment for the job to maximize energy efficiency.

    - Encourage the use of alternative fuels for generators at construction sites, such as propane or solar, or use electrical power where practicable.
- The use of RAS will also minimize air emissions associated with water heating and cooling compared to facilities that use flow-through systems.
- Impacts to wetlands and other waters of the U.S. during construction will be mitigated by fulfilling compensatory mitigation requirements of the Section 404 Permit, if necessary.
- Construction will be limited to daylight working hours, when feasible, in order to reduce the noise impacts to the surrounding environment.

10.2.1.2.2 Measures to Mitigate Impacts to Biological Resources

Calcasieu Parish Facility

- The effluent discharge system will be constructed in such a way that aquatic species (such as fish and marine mammals) cannot be impinged or entrapped during operation.
- The effluent leaving the facility will pass through various levels of treatment prior to any discharge to the unnamed tributary of the Calcasieu River/GIWW. Treatment scenarios will include an integrated effluent treatment system for management of solids and nutrients so that discharged water will be pursuant to LPDES permit conditions including testing and monitoring.
- BMPs such as turbidity curtains, erosion control screens, and staked hay bales will be used to reduce or eliminate erosion and elevated turbidity during the construction phase.
- Equipment and transport vehicles could potentially release minor amounts of petroleum products into the water system and wetland areas through operational use and spillage. Water quality impacts to the pelagic water column could occur as a result of accidental spills of petroleum lubricants and fuel during pipeline construction. Implementation of preventative and mitigative BMPs using regulatory guidelines to reduce the risk of accidental construction spills will be used for protection of the aquatic ecosystem.
- Impacts from hydrostatic testing of the pipeline to verify material integrity immediately after construction could occur from toxic effects of chemical additives after discharge of the used test water. Hydrostatic test water will be treated as required by the LDEQ, and discharges will be conducted in accordance with applicable Louisiana Pollution Discharge Elimination System (LPDES) requirements.
- If required, additional evaluations including a review of the water balance of the Turn Basin and surrounding systems will be performed to assess any potential impacts to surrounding waters and determine if modifications to the design of the intake or effluent systems are needed.
- Fish production will be completed using established BMPs for marine fish production, and fish quality will be monitored and assessed using American Fisheries Society Bluebook Fish Health procedures.
- A disease and health management plan will be included in the LDWF operating plan, which will address the protocols for wild broodfish management in addition to standard fish culture practice.
- Water from the source water supply systems will be micro-screened, UV disinfected, and sand filtered before use in the hatchery.

- A genetic resource management plan will also be developed to avoid deleterious effects to the genetic integrity of wild populations.
- Damage prevention and/or control strategies for managing bird damage/and or losses at the facility will be assessed during project development.
- Ground-clearing construction activities will be conducted outside of the avian nesting season, March 15 to September 15, to the extent practicable, to avoid direct impacts to nesting birds, in accordance with the Migratory Bird Treaty Act. If the project schedule should require ground-clearing activities during this time, pre-construction nest surveys of areas to be cleared will be conducted by a qualified biologist. Any prevention or control measures will be established in compliance with the Migratory Bird Treaty Act and LDWF regulations.
- *Standard Conditions for In-water Work in the Presence of Manatees* (USFWS n.d.a.) will be implemented during construction to protect manatees from direct effects of the construction of the intake and outfall structures.
- During facility operation, the intake structure will be screened to prevent impingement of manatees as well as other aquatic species, such as ichthyofauna.

Plaquemines Parish Facility

- BMPs such as turbidity curtains, erosion control screens, and staked hay bales will be used to reduce or eliminate erosion and elevated turbidity during the construction phase.
- Erosion controls will be implemented to prevent discharges of storm water runoff into EFH during operation.
- During facility operation, the intake structure will be screened to prevent impingement of marine and estuarine fauna.
- Damage prevention and/or control strategies for managing bird damage/and or losses at the facility will be assessed during project development. Any prevention or control measures deemed necessary will be established in compliance with the Migratory Bird Treaty Act (e.g. non-lethal exclusionary or deterrent devices) and LDWF regulations.
- Ground clearing activities including tree and shrub removal, will be conducted outside of the avian nesting season, March 15 to September 15, to the extent practicable, to avoid direct impacts to nesting birds in accordance with the Migratory Bird Treaty Act. If the project schedule should require ground clearing activities during this time, pre-construction nest surveys of areas to be cleared will be conducted by a qualified biologist, and active nests will be avoided until nest fate is determined by a qualified biologist.

10.2.1.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

Calcasieu Parish Facility

- A complete review of this project under Section 106 of the NHPA will be completed prior to any project activities that would restrict consideration of measures to avoid, minimize or mitigate any adverse effects on historic properties located within the project area.
- This project will be implemented in accordance with all applicable laws and regulations concerning the protection of cultural and historic resources.

- A traffic control plan will be instituted during construction to provide for safe ingress/egress of construction workers, equipment and materials (e.g., scheduling, staging, signage, flagmen).
- Minor improvements such as an exclusive right turn lane will be considered in the event that traffic studies determine the need for road improvement.
- Some traffic control devices such as reduced speed signage will also considered if necessary to accommodate the increase in vehicular and pedestrian traffic.
- Established OSHA regulations for the transportation, storage and handling of hazardous materials will be adhered to.
- Employees whose responsibilities include handling hazardous materials must undergo required training.
- Personal protective equipment will be required for all construction personnel and authorized access zones will be established at the perimeter of the site during construction.
- Shoreline stabilization measures will be incorporated into design as needed in areas where the potential exists for erosion to occur in order to protect marine resources and ensure public health and safety.
- Noise levels during construction and facility operations will not exceed acceptable limits of OSHA regulations.

Plaquemines Parish Facility

- A complete review of this project under Section 106 of the NHPA will be completed prior to any project activities that would restrict consideration of measures to avoid, minimize or mitigate any adverse effects on historic properties located within the project area.
- This project will be implemented in accordance with all applicable laws and regulations concerning the protection of cultural and historic resources.
- A traffic control plan will be instituted during construction to provide for safe ingress/egress of construction workers, equipment and materials (e.g., scheduling, staging, signage, flagmen).
- Established OSHA regulations for the transportation, storage and handling of hazardous materials will be adhered to.
- Employees whose responsibilities include handling hazardous materials must undergo required training.
- Personal protective equipment will be required for all construction personnel and authorized access zones will be established at the perimeter of the site during construction.
- Shoreline stabilization measures will be incorporated into design as needed in areas where the potential exists for erosion to occur in order to protect marine resources and ensure public health and safety.
- Noise levels during construction and facility operations will not exceed acceptable limits of OSHA regulations.

10.2.1.3 Performance Criteria, Monitoring, and Maintenance

Monitoring will be designed around the objective of the project which is to develop two sites (Calcasieu Parish and Plaquemines Parish) with the shared goals of fostering collaborative multi-dimensional

research on marine sport fish and bait fish species; enhancing stakeholder involvement; and providing fisheries extension, outreach, and education to the public. Construction monitoring will be done before, during, and in a subsequent period following construction to ensure that project designs are correctly implemented. Successful implementation of this restoration project will be measured by (1) the completion of construction of the facilities and (2) the operations of the facilities as anticipated, including public outreach and education. LDWF will monitor the operations of the Center in multiple ways, including documenting compliance with all permitting requirements, monitoring the operational status of the hatchery components, and monitoring the number of fish produced and released annually. The Center is also designed as an education and outreach facility, so the number and types of visitors (e.g., tourists, school groups) to the facilities will be recorded.

The facilities at both Center locations are designed as research facilities, so there will be ongoing scientific efforts to optimize hatchery performance, including monitoring the effects of different protocols on outcomes. The production and release of marked hatchery fish are intended to be carried out in conjunction with LDWF's statewide fishery monitoring program and will help develop and evaluate strategies for the management of marine fish species by providing information on the recruitment, survival, health, and movements of these populations.

Maintenance and staffing of the facilities will be the responsibility of LDWF and will be done as specified in the design plans for the Center.

10.2.2 Louisiana Outer Coast Restoration

Louisiana Outer Coast Restoration will restore beach, dune, and back-barrier marsh habitats at four barrier island locations in Louisiana. From west to east, the four locations are Caillou Lake Headlands (also known as Whiskey Island), Chenier Ronquille, Shell Island (West Lobe and portions of East Lobe), and North Breton Island. The restoration work at each island involves placement of appropriately sized sediments to create beach, dune, and back-barrier marsh areas; installation of sand fencing to trap and retain wind-blown sediments and foster dune development; and revegetation of appropriate native species in dune and back-barrier marsh habitat. Louisiana's barrier islands, especially the islands located in the Barataria Hydrologic Basin, were heavily impacted by the Spill. Numerous dead and oiled brown pelicans, terns, skimmers, and gulls were collected during and following the Spill. The ecological resources and services gained by this restoration are anticipated to help compensate the public for Spill-related injuries to beach/dune and back-barrier marsh in Louisiana, as well as for injuries to brown pelicans, terns, skimmers, and gulls.

10.2.3 Louisiana Outer Coast Restoration A – Caillou Lake Headlands

Restoration at the Caillou Lake Headlands location will occur on Whiskey Island, a barrier island in the Isle Dernieres reach of the Terrebonne Basin barrier shoreline. Construction will utilize hydraulically dredged sediments to create beach, dune, and back-barrier marsh habitats. The project was federally authorized under the Water Resources Development Act of 2007 and selected as a preferred alternative in the Terrebonne Basin Barrier Shoreline Restoration Integrated Feasibility Study and Final Environmental Impact Statement (USACE 2010), and is included in the state's Master Plan (CPRA 2012). The project was designed to minimize adverse ecological impact(s) with emphasis on not disturbing

approximately 286 acres of existing mangroves on the island during construction. Louisiana will be the lead Trustee for the design and construction of this project, working cooperatively with NOAA and DOI.

DOI has adopted the LCA Integrated Feasibility Study and Final EIS for the TBBSR to fulfill DOI's NEPA requirements for analysis of the Caillou Lake Headlands restoration location and finds that it complies with CEQ and DOI requirements for adopting NEPA analyses prepared by other agencies. Analysis of the environmental consequences of the action (as described in the adopted EIS) suggest that while there will be minor adverse impacts to some resource categories, there will be no long-term moderate to major adverse impacts as a result of the project. The project will provide long-term benefits by restoring barrier island habitats.

The cumulative impact analysis included in the LCA EIS for the TBBSR considers the direct and indirect impacts of past, present and reasonably foreseeable future actions in the analysis of environmental consequences resulting from the project, including other Federal, State, local, and private restoration efforts across coastal Louisiana. There are no indications that there will be additional significant cumulative impacts associated with the implementation of the four island locations that are part of the Louisiana Outer Coast Restoration project that will result in impacts beyond what were analyzed in the previous cumulative impact analysis.

10.2.3.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

Consultations or reviews have been completed under the Magnuson-Stevens Fishery Conservation and Management Act, the Migratory Bird Treaty Act, the Clean Water Act Section 404 and Rivers and Harbors Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, the National Historic Preservation Act, the Coastal Barrier Resources Act, and the Coastal Zone Management Act.

Consultation, including a formal conference to address potential impacts of the Caillou Lake Headlands location to red knot under the Endangered Species Act (ESA), has been completed with the USFWS. The Final Phase III ERP/PEIS stated that this project does not require further ESA consultations with NMFS. Since that time, NMFS has requested that the Trustees reinitiate consultation. The consultation has been initiated.

10.2.3.2 Mitigation Measures

The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.2.3.2.1 Measures to Mitigate Impacts to the Physical Environment

- Sand fencing will be installed to trap and retain wind-blown sediments and help foster dune development.
- If necessary, dikes will be gapped within the first three years following completion of construction to allow for tidal exchange with the created marsh and to prevent ponding of water within the containment area. Considerations regarding if and when mechanical gapping

will be conducted will be based on site inspections and determinations will be made in cooperation with natural resource agencies.

- The dune platform and other supratidal areas will be planted with native vegetation shortly after construction.
- The back-barrier marsh platform will be planted after a period of compaction and dewatering has occurred and the platform is stable enough for planting activities.

10.2.3.2.2 Measures to Mitigate Impacts to Biological Resources

- To mitigate impacts to piping plover and red knot:
    - A baseline piping plover and red knot distribution survey will be conducted within the migrating and wintering season immediately prior to initial construction within the action area. As part of that survey, the project footprint will be delineated using a global position system (GPS) unit and appropriately marked/flagged for future survey reference and data collection.
    - A survey of the intertidal benthic prey species community will be conducted within the migrating and wintering season immediately prior to initial construction, at the same time as the piping plover and red knot distribution surveys, in order to establish a baseline of benthic prey species diversity and abundance.
    - Piping plover and red knot monitoring surveys will be conducted during the migrating and wintering seasons throughout initial project construction and three consecutive years following completion of initial construction.
    - To confirm re-establishment of suitable foraging habitat for migrating and wintering piping plover and red knot, monitoring surveys of the intertidal benthic prey species community will be conducted each year following completion of initial construction for three consecutive years, preferably at the same time as the bird surveys.
    - USFWS will be notified in writing at least six months prior to a re-nourishment event for each island. If re-nourishment events are conducted during the migrating and wintering season, piping plover and red knot monitoring surveys shall be conducted for the duration of construction activities. (Note that no re-nourishment events are planned for the project at this time).
    - A comprehensive report describing the actions taken to implement the RPMs and terms and conditions associated with this incidental take statement (including data sheets from surveys conducted) will be submitted to USFWS by June 1 of the year following completion of all required surveys.
    - Upon locating a dead or injured piping plover or red knot that may have been harmed or destroyed as a direct or indirect result of the project, CPRA and/or contractor will be responsible for notifying the USFWS's Lafayette, Louisiana, Field Office (337/291-3100) and the LDWF's Natural Heritage Program (225/765-2821). Care will be taken in handling an injured piping plover or red knot to ensure effective treatment or disposition and in handling dead specimens to preserve biological materials in the best possible state for later analysis.

- The Trustees agree to implement all non-discretionary terms and conditions listed in the consultations for these measures.

- If effects to listed species or their habitat differ from the effects subject to consultation, including unintended consequences to such species, the Trustees will re-initiate consultations with the regulatory agencies.
- Trustees will ensure due diligence with regard to ensuring no unanticipated effects to listed species and habitats occur, including ensuring that BMPs are implemented and continue to function as intended.
- Trustees will implement NMFS' *Sea Turtle and Smalltooth Sawfish Construction Conditions*.
- NMFS provided the following EFH conservation recommendations, and a response to each recommendation was included in the LCA Integrated Feasibility Study and Final EIS for the TBBSR, in accordance with the Magnuson-Stevens Fishery Conservation and Management Act. Only recommendations that apply to Caillou Lake Headlands are included here. The response to the recommendation is provided indented below the respective recommendation:
  - Recommendation: Including tidal creeks and ponds in created marsh platform designs should be considered to the maximum extent practicable to ensure the development of functional habitat heterogeneity.

    Response: The Preconstruction Engineering and Design (PED) process will develop island design alternatives that address habitat heterogeneity, stability, and longevity.
  - Recommendation: Containment dikes for the marsh platforms should be degraded or gapped in an acceptable manner to be developed through coordination with NMFS.

    Response: The Preconstruction Engineering and Design (PED) process will develop island design alternatives that address habitat heterogeneity, stability, and longevity.
  - Recommendation: During the PED phase of project implementation, the need for dredging windows to avoid or minimize potential impacts to blue crab in the vicinity of Ship Shoal should be considered through further coordination with NMFS, the Bureau of Ocean Energy Management, Regulation and Enforcement, and other interested resource agencies.

    Response: All concerned agencies will be consulted regarding timing of utilization of the Ship Shoal borrow areas in order to minimize impact to fisheries resources.
- The Trustees will implement the USFWS "Standard Conditions for In-water Work in the Presence of Manatees" and NOAA's Measures for Reducing Entrapment Risk to Protected Species, revised on May 22, 2012. The NOAA measures are included below:
  - Pre-construction Planning
    - During project design, the project proponents will incorporate at least one escape route into the retention structure(s) to allow any protected species to exit the area(s) to be enclosed. Escape routes must lead directly to open water outside the construction site and must have a minimum width of 100 feet. Escape routes should also have a depth as deep as the deepest natural entrance into the enclosure site and must remain open until a thorough survey of the

area, conducted immediately prior to complete enclosure, determines no protected species are present within the confines of the structure.

- Pre-construction Compliance Meeting
  - Prior to construction, project proponents, the contracting officer representative, and construction personnel should conduct a site visit and meeting to develop a project-specific approach to implementing these preventative measures.
- Responsible Parties
  - The project proponents will instruct all personnel associated with the project of the potential presence of protected species in the area and the need to prevent entrapment of these animals. All construction personnel will be advised that there are civil and criminal penalties for harming, harassing, or killing protected species. Construction personnel will be held responsible for any protected species harassed or killed as a result of construction activities. All costs associated with monitoring and final clearance surveys will be the responsibility of project proponents and will be incorporated in the construction plan.
- Monitoring During Retention Structure Construction
  - It is the responsibility of construction personnel to monitor the area for protected species during dike or levee construction. If protected species are regularly sighted over a 2 or 3 day period within the enclosure area during retention structure assembly, construction personnel must notify the project proponent. It is the responsibility of the project proponent to then coordinate with the NMFS Marine Mammal Health and Stranding Response team (1-877-WHALE HELP [1-877-942-5343]) or the appropriate State Coordinator for the Sea Turtle Stranding and Salvage Network (see http://www.sefsc.noaa.gov/species/turtles/stranding_coordinators.htm) to determine what further actions may be required. Construction personnel may not attempt to scare, herd, disturb, or harass the protected species to encourage them to leave the area.
- Pre-closure Final Clearance
  - Prior to completing any retention structure by closing the escape route, the project proponent will ensure that the area to be enclosed is observed for protected species. Surveys must be conducted by experienced marine observers during daylight hours beginning the day prior to closure and continuing during closure. This is best accomplished by small vessel or aerial surveys with 2-3 experienced marine observers per vehicle (vessel/helicopter) scanning for protected species. Large areas (e.g. >300 acres) will likely require the use of more than one vessel or aerial survey to ensure full coverage of the area. These surveys will occur in a Beaufort sea state (BSS) of 3 feet or less (measured within the area being closed by the containment), as protected species are difficult to sight in choppy water. Escape routes may not be closed until the final clearance determines the absence of protected species within the enclosure sight.
- Post closure Sightings

- If protected species become entrapped in an enclosed area, the project proponent and NMFS must be immediately notified. If observers note entrapped animals are visually disturbed, stressed, or their health is compromised then the project proponent may require any pumping activity to cease and the breaching of retention structures so that the animals can either leave on their own or be moved under the direction of NMFS.
- In coordination with the local stranding networks and other experts, NMFS will conduct an initial assessment to determine the number of animals, their size, age (in the case of dolphins), body condition, behavior, habitat, environmental parameters, prey availability and overall risk.
- If the animal(s) is/are not in imminent danger they will need to be monitored by the Stranding Network for any significant changes in the above variables.
- Construction personnel may not attempt to scare, herd, disturb, or harass the protected species to encourage them to leave the area. Coordination by the project proponent with the NMFS SER Stranding Coordinator may result in authorization for these actions.
- NMFS may intervene (catch and release and/or rehabilitate) if the protected species are in a situation that is life threatening and evidence suggests the animal is unlikely to survive in its immediate surroundings.
- Surveys will be conducted throughout the area at least twice or more in calm surface conditions (BSS 3 feet or less - measured within the area being closed by the containment)), with experienced marine observers, to determine whether protected species are no longer present in the area.

- A migratory bird abatement plan has been developed for the Caillou Lake Headlands project site and included within the Department of the Army permit for this project. The Trustees agree to implement all the measures included in that plan.
- If any bald eagle nests are observed prior to or during construction, appropriate best management practices *from the National Bald Eagle Management Guidelines* (USFWS 2007)to avoid disturbance to nesting bald eagles shall be implemented.

10.2.3.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- Some oil and gas pipelines are present in the vicinity of the action. To minimize the potential damage to these features, the pipeline locations have been identified so they may be avoided in the implementation of the action. The construction contractor will also verify the location of these features.
- Analyses of the data in the Whiskey 3A borrow area and associated conveyance corridor identified two targets (3A Targets 10 and 11) exhibiting characteristics that could represent submerged cultural resources in the conveyance corridor. Analyses of the data in the Ship Shoal Block 88 borrow area and conveyance corridor identified two targets (88 Targets 04 and 06) that could represent submerged cultural resources in the conveyance corridor. The project team consulted with BOEM and adjusted the project design to accommodate recommended buffers. A determination of “No historic properties affected” (36 C.F.R. 800.4) was recommended

provided that the four targets identified during data analyses are avoided by a distance determined through consultation with relevant authorities.

- DOI is initiating a complete review of this project under Section 106 of the NHPA. This review will be completed prior to any project activities that would restrict consideration of measures to avoid, minimize or mitigate any adverse effects on historic properties located within the project area.
- This project will be implemented in accordance with all applicable laws and regulations concerning the protection of cultural and historic resources.

10.2.4 Louisiana Outer Coast Restoration B – Chenier Ronquille Barrier Island

Chenier Ronquille is located along the Barataria Bay barrier shoreline, eight miles east of Grand Isle and forms the eastern boundary of Quatre Bayou Pass. The restoration on Chenier Ronquille Island will repair the breaches in the shoreline and inhibit creation of new breaches over the 20-year project life, while reestablishing and increasing the island's longevity via dune and marsh creation. Additionally, the project will restore the shoreline, dune, and back-barrier marsh to increase island habitat utilized by essential fish and wildlife species. The Chenier Ronquille barrier island restoration was authorized in 2010 as a candidate project under CWPPRA. Although it received design phase funding, it did not receive construction funding under CWPPRA. Chenier Ronquille barrier island restoration is also included in the state's Master Plan (CPRA 2012).NOAA will be the lead Trustee for the design and construction of this project, working cooperatively with Louisiana and DOI.

DOI has independently evaluated and adopted the 2013 Environmental Assessment for the Chenier Ronquille Barrier Island Restoration Project (Chenier Ronquille EA), BA-76, prepared by NOAA (NOAA 2013), and finds that it complies with CEQ and DOI requirements for adopting NEPA analyses prepared by other agencies. Analysis of the environmental consequences of the action (as described in the adopted EA) suggest that while there will be minor adverse impacts to some resource categories, there will be no long-term moderate to major adverse impacts as a result of the project. The project will provide long-term benefits by restoring barrier island habitats.

The cumulative impact analysis included in the Chenier Ronquille EA considers the direct and indirect impacts of past, present and reasonably foreseeable future actions in the analysis of environmental consequences resulting from the project, including other Federal, State, local, and private restoration efforts across coastal Louisiana. There are no indications that there will be additional significant cumulative impacts associated with the implementation of the four island locations that are part of the Louisiana Outer Coast Restoration project that will result in impacts beyond what were analyzed in the previous cumulative impact analysis.

10.2.4.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

Consultations or reviews have been completed under the Magnuson-Stevens Fishery Conservation and Management Act, the Migratory Bird Treaty Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, the National Historic Preservation Act, the Clean Water Act and Rivers and

Harbors Act, the Coastal Barrier Resources Act, and the Coastal Zone Management Act. Consultations have been initiated for the Endangered Species Act.

The Final Phase III ERP/PEIS stated that this project does not require further ESA consultations with NMFS. Since that time, NMFS has requested that the Trustees reinitiate consultation. The consultation has been initiated.

10.2.4.2 Mitigation Measures

The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.2.4.2.1 Measures to Mitigate Impacts to the Physical Environment

- If necessary, dikes will be gapped within the first three years to allow for tidal exchange with the created marsh and to prevent ponding of water within the containment area. Considerations regarding if and when mechanical gapping will be conducted will be based on site inspections and determinations will be made in cooperation with natural resource agencies.
- Sand fencing will be erected on the constructed dune to capture naturally windblown sand and passively build or maintain the dune feature.
- After a period of settlement and salinity stabilization of placed materials, native intertidal and dune habitat species will be planted in phased events over the first 3 years. Plantings will help establish the plant community, and foster retention of placed sediments.

10.2.4.2.2 Measures to Mitigate Impacts to Biological Resources

- The EA provides information on measures that will be taken to avoid and minimize potential adverse impacts to existing resources, such as threatened and endangered species. NOAA will uphold all avoidance and minimization measures identified in the Chenier Ronquille EA and associated consultation and included in the supplemental BA.
- Education of the Federal and State teams [i.e., any individuals working on the project] and construction contractors on the species interactions to avoid will be part of the ongoing Federal [i.e., NOAA] oversight.
- A migratory bird abatement plan is under development and will include measures to protect migratory birds during project implementation and thereby avoid take under the MBTA.
- The most recent version of the "Standard Conditions for In-water Work in the Presence of Manatees" provided by USFWS will be implemented.
- If any bald eagle nests are observed prior to or during construction, appropriate best management practices (USFWS 2007) to avoid disturbance to nesting bald eagles shall be implemented.
- A qualified biologist will inspect the project area for the presence of undocumented nesting birds and if needed, an abatement plan will be developed in coordination with USFWS and implemented for the duration of project construction.
- Trustees will implement NMFS' *Sea Turtle and Smalltooth Sawfish Construction Conditions*.

- The Trustees intend to implement NOAA's Measures for Reducing Entrapment Risk to Protected Species, revised on May 22, 2012 (NOAA 2012). These measures are listed above in the mitigation measures for the Caillou Lake Headlands project.
- If effects to listed species or their habitat differ from the effects subject to consultation, including unintended consequences to such species, the Trustees will re-initiate consultations with the regulatory agencies. Trustees will ensure due diligence with regard to ensuring no unanticipated effects to listed species and habitats occur, including ensuring that BMPs are implemented and continue to function as intended.

10.2.4.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- The area has numerous oil and gas pipelines in the vicinity of the action. To minimize the potential damage to these features, multiple surveys have identified their locations so they may be avoided in the course of the action. The construction contractor will also verify the location of these features. The preferred alternative obviates the need to cross pipeline infrastructure during the construction of the primary dike.
- Magnetic and acoustic anomalies identified as suggestive of potentially sensitive submerged cultural resources in the borrow areas will be avoided.
- DOI is initiating a complete review of this project under Section 106 of the NHPA. This review will be completed prior to any project activities that would restrict consideration of measures to avoid, minimize or mitigate any adverse effects on historic properties located within the project area.
- This project will be implemented in accordance with all applicable laws and regulations concerning the protection of cultural and historic resources.

10.2.5 Louisiana Outer Coast Restoration C – Shell Island

Restoration at the Shell Island (East and West Lobes) location will occur on Shell Island West and the western portion of Shell Island East, two barrier islands located along the southern margin of the Barataria Basin in Plaquemines Parish. Shell Island (East and West Lobes) is located approximately 49 miles south-southeast of New Orleans and comprises a portion of the Plaquemines barrier shoreline. Plans and proposals to restore Shell Island have been developed in multiple documents, including Coast 2050: Toward a Sustainable Coastal Louisiana (LCWCRTF and WCRA 1998), the Barataria Basin Barrier Shoreline Restoration Project (USACE 2012), and the state's Master Plan (CPRA 2012). Construction of Shell Island will utilize hydraulically dredged sediments to create beach, dune, and back-barrier marsh habitats. Louisiana will be the lead Trustee for the design and construction of this project, working cooperatively with NOAA and DOI.

DOI has adopted the LCA Barataria Basin Barrier Shoreline Restoration Final Integrated Construction Report and Final EIS (USACE 2012) to fulfill DOI's NEPA requirements for analysis of the Shell Island (East and West Lobes) location of the Louisiana Outer Coast Restoration project. Analysis of the environmental consequences of the action (as described in the adopted EIS) suggest that while there will be minor adverse impacts to some resource categories, there will be no long-term moderate to major adverse impacts as a result of the project. The project will provide long-term benefits by restoring barrier island habitats.

The cumulative impact analysis included in the LCA Barataria Basin Barrier Shoreline Restoration Final Integrated Construction Report and Final EIS considers the direct and indirect impacts of past, present and reasonably foreseeable future actions in the analysis of environmental consequences resulting from the project, including other Federal, State, local, and private restoration efforts across coastal Louisiana. There are no indications that there will be additional significant cumulative impacts associated with the implementation of the four island locations that are part of the Louisiana Outer Coast Restoration project that will result in impacts beyond what were analyzed in the previous cumulative impact analysis.

10.2.5.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

Consultations or reviews have been completed under the Magnuson-Stevens Fishery Conservation and Management Act, the Migratory Bird Treaty Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, the National Historic Preservation Act, the Clean Water Act and the Rivers and Harbors Act, the Coastal Barrier Resources Act, and the Coastal Zone Management Act. Consultations have been initiated for the Endangered Species Act.

The Final Phase III ERP/PEIS stated that this project does not require further ESA consultations with NMFS. Since that time, NMFS has requested that the Trustees reinitiate consultation. Also, this project is located within loggerhead sea turtle critical habitat. The consultation has been initiated.

10.2.5.2 Mitigation Measures

The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.2.5.2.1 Measures to Mitigate Impacts to the Physical Environment

- Sand fencing will be erected to capture naturally windblown sand and foster dune development.
- If necessary, dikes will be gapped within the first three years to allow for tidal exchange with the created marsh and to prevent ponding of water within the containment area. Considerations regarding if and when mechanical gapping will be conducted will be based on site inspections and determinations will be made in cooperation with natural resource agencies.
- The dune platform and portions of the supratidal areas will be planted with native vegetation shortly after construction.
- The back-barrier marsh platform will be planted after a period of compaction and dewatering has occurred and the platform is stable enough for planting activities.

10.2.5.2.2 Measures to Mitigate Impacts to Biological Resources

- Trustees will implement NMFS' *Sea Turtle and Smalltooth Sawfish Construction Conditions*.
- The supplemental BA proposed BMPs for Shell Island to avoid and minimize impacts to any piping plover, red knots and West Indian manatee as follows:

    - Education of the Federal and State teams [i.e., any individuals working on the project] and construction contractors on the species interactions to avoid will be part of the ongoing Federal oversight.
    - Nesting colonial waterbirds, piping plover, and red knot will be avoided given provisions provided by USFWS and NMFS Protected Resources.
    - The most recent version of the "Standard Conditions for In-Water Work in the Presence of Manatees" provided by USFWS will be implemented.
- If effects to listed species or their habitat differ from the effects subject to consultation, including unintended consequences to such species, the Trustees will re-initiate consultations with the regulatory agencies. Trustees will ensure due diligence with regard to ensuring no unanticipated effects to listed species and habitats occur, including ensuring that BMPs are implemented and continue to function as intended.
- The Trustees intend to implement NOAA's Measures for Reducing Entrapment Risk to Protected Species, revised on May 22, 2012 (NOAA 2012). These measures are listed above in the mitigation measures for the Caillou Lake Headlands project.
- If any bald eagle nests are observed prior to or during construction, appropriate best management practices (USFWS 2007) to avoid disturbance to nesting bald eagles shall be implemented.
- A migratory bird abatement plan has been developed for the Shell Island project site and accepted by the USFWS. The Trustees agree to implement all the measures included in that plan.

10.2.5.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- Numerous oil and gas pipelines are present in the vicinity of the action. To minimize the potential damage to these features, the pipeline locations have been identified so they may be avoided in the implementation of the action. The construction contractor will also verify the location of these features prior to any construction activities. The action obviates the need for any construction activities near pipeline infrastructure during the construction of the primary dike.
- "Potentially significant anomalies and anomaly clusters and associated sonar targets have been buffered and are recommended for avoidance." No historic properties will be impacted if:
    - In Investigation Area 35E, 300 foot buffers are maintained around CR-1 (magnetic anomaly 9 and side-scan sonar targets 1 and 2), CR-2 (magnetic anomalies 5 and 30), and CR-3 (magnetic anomalies 6, 7, 8, 10, and 11).
    - In Investigation Area 9, 300 foot buffers are maintained around the 15 potential cultural anomalies – CR-4 through CR-18 – identified in the survey.
    - In the two pipeline corridors, a 100 foot buffer is maintained around CR-19, a possible buried cultural anomaly.
- DOI is initiating a complete review of this project under Section 106 of the NHPA. This review will be completed prior to any project activities that would restrict consideration of measures to avoid, minimize or mitigate any adverse effects on historic properties located within the project area.

- This project will be implemented in accordance with all applicable laws and regulations concerning the protection of cultural and historic resources.

10.2.6 Louisiana Outer Coast Restoration D – North Breton Island

North Breton Island, located at the southern end of the Chandeleur Island chain in Louisiana, is part of the Breton NWR established in 1904 by Theodore Roosevelt. Breton NWR is recognized by the National Audubon Society as a globally important bird area because of the resources it provides to birds. This project aims to increase island longevity by restoring beach, dune, and back-barrier marsh habitats on the island, providing nesting and foraging habitat for brown pelicans, terns, skimmers and gulls injured by the Spill. Restoration work will reestablish a dune platform along the length of the shoreline and construct a marsh platform on the landward side of the dune. DOI will be the lead Trustee for the design and construction of this project, working cooperatively with Louisiana and NOAA.

This project was analyzed for its potential environmental consequences on geology and substrates; hydrology and water quality; air quality and GHGs; noise; living coastal and marine resources; protected species; socioeconomics and environmental justice; aesthetics and visual resources; tourism and recreational use; as well as infrastructure and public health and safety. The NEPA analysis of the environmental consequences suggests that minor adverse impacts are anticipated to all potentially affected resources except "Protected Species", where a short term moderate adverse impact is anticipated to piping plover and red knot due to construction and dredging related disturbances. No moderate to major adverse impacts are anticipated to result to all other resources. The project will provide long-term benefits by restoring barrier island habitats.

Overall, the cumulative impact of past, present and reasonably foreseeable future actions related to the North Breton Island location of the Louisiana Outer Coastal Restoration project will result in beneficial cumulative impacts over the long-term, as restoration and environmental stewardship activities and other barrier island restoration projects will all contribute to improving the natural environment. Similar to other past, present and reasonably foreseeable future actions, implementation of the North Breton Island location project will result in short-term adverse impacts from disturbance during construction that will no longer occur once the project is completed. There will be beneficial cumulative impacts from restored habitat to which the Breton Island location project will contribute.

10.2.6.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

Consultations or reviews have been completed under the Magnuson-Stevens Fishery Conservation and Management Act, the Endangered Species Act, the Migratory Bird Treaty Act, the Marine Mammal Protection Act, and the Bald and Golden Eagle Protection Act.

Consistency review of the Phase III Outer Louisiana Coast-Breton Island early restoration project was initiated by the Federal Trustees under the Coastal Zone Management Act and has been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur if necessary during permitting processes required for implementation.

Consultation under the National Historic Preservation Act, the Clean Water Act and the Rivers and Harbors Act has been initiated and will be completed prior to implementation.

10.2.6.2 Mitigation Measures

The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.2.6.2.1 Measures to Mitigate Impacts to the Physical Environment

- If necessary, dikes will be gapped within the first three years to allow for tidal exchange with the created marsh and to prevent ponding of water within the containment area. Considerations regarding if and when mechanical gapping will be conducted will be based on site inspections and determinations will be made in cooperation with natural resource agencies.
- Sand fencing will be erected to capture windblown sand and foster dune development.
- The dune and back barrier marsh areas will be planted with native vegetation shortly after construction, after a period of settlement and salinity stabilization.
- The borrow area will be sited and designed, to the extent feasible, to minimize adverse impacts to water quality due to inadequate circulation and stratification.
- Sediment analyses for the restoration site and potential borrow sites will be completed and analyzed prior to project implementation.
- Modeling exercises will be conducted as part of this project to assess possible changes in the wave climate due to changes in substrate contours resulting from source dredging.
- A Spill Prevention, Control, and Countermeasure Plan will be developed and implemented to reduce incidental discharges of fuel and oil from construction.
- All necessary evaluations will be undertaken during engineering and design to minimize adverse construction-related impacts to vegetated habitats, namely scrub-shrub and marsh acreage, on North Breton Island.

10.2.6.2.2 Measures to Mitigate Impacts to Biological Resources

- Impacts to birds will be avoided by implementing the Louisiana Guidelines for Minimizing Disturbance to Colonial Nesting Birds (USFWS 2014a). A bird abatement plan may also be necessary to avoid impacts to nesting birds.
- After a period of settlement and salinity stabilization of placed materials, native intertidal and dune habitat species will be planted in dune and marsh areas as applicable. Plantings will help establish the plant community and foster retention of placed sediments.
- The Trustees intend to implement the USFWS "Standard Conditions for In-water Work in the Presence of Manatees" and NOAA's Measures for Reducing Entrapment Risk to Protected Species, revised on May 22, 2012. The NOAA measures are listed above in the mitigation measures for the Caillou Lake Headlands project.

- The USFWS will ensure compliance with the Best Management Practices in National Marine Fisheries Service's *Sea turtle and smalltooth sawfish construction conditions* and *Measures for reducing entrapment risk to protected species*.
- The following Conservation Measures and Reasonable and Prudent Measures included within the Biological Opinion (USFWS 2014a) will be implemented to protect trust resources.
    - The Contractor shall be aware of threatened and endangered species and migratory birds, and implement practices and follow all conditions set forth by NOAA, USFWS, and LDWF to protect these resources.
    - The DOI should carefully mark and stake the boundaries of the project footprint on North Breton Island and ensure that those markers are maintained for the duration of project construction activities. Should the project actions (e.g., personnel, equipment, etc.) affect suitable habitat outside of those boundary markers and beyond the action area as described in the biological opinion, then the level of incidental take (i.e., all piping plovers using the existing 198 acres of bare sand, mud flat, and intertidal habitats) for this project will be exceeded and the DOI should reinitiate Section 7 consultation with the USFWS as soon as possible.
    - A baseline survey for piping plovers and red knots should be conducted within the migrating and wintering season immediately prior to initial construction in order to determine each species' preferred habitat use within the action area. Such information could then be used as an aid to determine whether specific project actions require slight modifications in order to minimize the effects of the take for future migrating and wintering seasons. For example, initial bird surveys may aid in locating and marking appropriate access routes for ORVs and other work-related equipment, as well as equipment staging areas, in order to reduce disturbance to foraging and roosting birds to the maximum extent practicable.
    - A simple diversity and abundance survey of the intertidal benthic prey species community should be conducted within the migrating and wintering season immediately prior to initial construction (preferably at the same time as the bird distribution surveys) in order to establish a baseline of benthic prey species diversity and abundance (e.g., biomass). Again, such information could then be used as an aid to determine whether specific project actions require slight modifications in order to minimize the effects of the take for future migrating and wintering seasons. For example, initial surveys could locate areas of abundant benthic prey where birds may tend to congregate for foraging, and those areas could be flagged for avoidance by regular personnel traffic to reduce disturbance to foraging piping plovers and red knots.
    - Piping plover and red knot monitoring surveys should be conducted during the migrating and wintering seasons throughout initial project in order to determine whether access routes are working or whether they need to be adjusted, and for three consecutive years following completion of initial construction to determine whether birds are still utilizing the project area during the benthic recovery period. The frequency of surveys will be determined in coordination with the USFWS.

- To determine if incidental take exceeds the anticipated recovery time (i.e., up to two years) of suitable foraging habitat on North Breton Island for migrating and wintering piping plovers and red knots, monitoring surveys of the intertidal benthic prey species community should be conducted each year following completion of initial construction for three consecutive years. Such information could also be used to determine whether corrective actions (that may be necessary to achieve the DOI's NRDAR success criteria) require slight modifications in order to minimize the effects of the take.
- Due to the remoteness of the project area, weather conditions, potential logistical constraints, and the need to closely coordinate with Breton NWR staff, the DOI should meet with the USFWS within six months of the date of this biological opinion to coordinate and develop a detailed monitoring plan and schedules for bird and benthic surveys.
- Due to the duration between receiving construction funds and letting out contracts, the USFWS should be notified in writing at least six months prior to mobilization when construction will be initiated so that the DOI and the USFWS can coordinate and exchange updated species and project information to ensure that re-initiation of consultation is not necessary.
- A comprehensive report describing the actions taken to implement the RPMs and terms and conditions associated with the incidental take statement shall be submitted to the USFWS by June 30 of the year following completion of all required surveys.

- To reduce potential impacts to the Gulf sturgeon, the cutterhead will remain completely buried in the sediment during dredging operations. The Contractor will be responsible for surveillance, management, and control of their construction activities to minimize interference with, disturbance to, and damage of water, fish, and wildlife resources.
- No Bald Eagles are known to nest in Breton NWR. If any bald eagle nests are observed prior to or during construction, appropriate best management practices (USFWS 2007) to avoid disturbance to nesting bald eagles shall be implemented.
- To ensure these pathways are "broken" and do not spread or introduce species the following BMPs will be implemented:
  - All equipment to be used during the project, including personal gear, will be inspected and cleaned such that there is no observable presence of mud, seeds, vegetation, insects (especially ants and snails), and other species.
  - Native vegetation will be used for planting.
  - Prior to bringing to vegetation to the island, it will be inspected and "non-target[19]" species will be removed.

[19] A non-target species is any species that is present on the species of choice but is not desirable and should be removed. For example, within soil that is often packed around plant roots, there may be species of snails capable of carrying parasites that can affect birds or fire ants that may attack bird eggs or chicks.

10.2.6.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- This project is currently being reviewed under Section 106 of the NHPA to identify any historic properties located within the project area and to evaluate whether the project will affect any historic properties.
- This project will be implemented in accordance with all applicable laws and regulations concerning the protection of cultural and historic resources.
- Magnetometer surveying within the target borrow area and associated conveyance corridors, access channels, and project fill areas will be conducted as part of project engineering and design before construction activities begin to better delineate these structures.
- If hazardous materials are encountered in the project area during construction activities, appropriate measures for the proper assessment, remediation, management, and disposal of the contamination will be required in accordance with applicable federal, state, and local regulations.
- All occupational and marine safety regulations and laws will be followed to ensure safety of all workers and monitors.

10.2.6.3 Performance Criteria, Monitoring and Maintenance

Monitoring activities at the Louisiana Outer Coast Restoration island locations are expected to take place over several years. Available data sets from pre-implementation, implementation, and post-implementation time periods are expected to be utilized. Successful implementation of this project will be measured using a combination of quantitative and qualitative monitoring efforts designed to evaluate whether the following restoration goals and objectives are met, and to determine whether corrective actions are necessary:

- Restore beach, dune, and back-barrier marsh habitats in Louisiana; and
- Support the presence of nesting pelicans, terns/skimmers and gulls, within restored habitat areas.

The Trustees will evaluate the stability and function of the restored islands and marsh habitat characteristics. Performance criteria will be established to determine whether the restored areas are functioning as healthy barrier islands and supporting nesting birds. Components of monitoring may include collecting data on the following parameters:

- Barrier island structure and function, potentially including metrics such as shoreline position, stability (e.g., frequency of overwash, number and status of breaches), area, elevation, and/or volume.
- Bird habitat use and nesting activity, potentially including metrics such as habitat occupancy surveys, colony size, and nest densities.
- Marsh habitat characteristics, potentially including metrics such as species composition, vegetation cover, nekton and invertebrate population densities, and habitat areal coverage.

Updates and additional details concerning the performance measures and monitoring for this project will be made available to the public as they are developed.

10.3 Mississippi

10.3.1 Hancock County Marsh Living Shoreline Project

The Hancock County Marsh Living Shoreline project is intended to employ living shoreline techniques including natural and artificial breakwater material and marsh creation to reduce shoreline erosion by dampening wave energy while encouraging reestablishment of habitat that was once present in the region. The project will provide for construction of up to 5.9 miles of living shoreline, approximately 46 acres of marsh creation, and 46 acres of subtidal oyster reef will be created in Heron Bay to increase secondary productivity in the area. The project will include shoreline erosion reduction, creation of habitat for secondary productivity, and protection and creation of salt marsh habitat. The project will restore injured salt marsh and lost benthic secondary productivity resulting from the Spill in an effort to make the environment whole by restoring, rehabilitating, replacing, or acquiring comparable natural resources injured by the Spill(see C.F.R. § 990.54(a) (2) and Sections 6(a)-(c) of the Early Restoration Framework Agreement).

This project was analyzed for its potential environmental consequences on geology and substrates; hydrology and water quality; air quality and GHGs; noise; living coastal and marine resources; protected species; socioeconomics and environmental justice; aesthetics and visual resources; tourism and recreational use; as well as infrastructure and public health and safety. NEPA analysis of the environmental consequences suggests that there will be long-term moderate impacts to geology and substrates, and there will be minor to moderate short term adverse impacts to other resource categories. The project will provide long-term benefits by creating approximately 46 acres of salt marsh, 46 acres of oyster habitat, and approximately 5.9 miles (19.9 acres) of reef. Based on the cumulative impact analysis, the Hancock County Marsh Living Shoreline project will not substantially contribute to adverse cumulative effects to resources. The Hancock County Marsh Living Shoreline project, carried out in conjunction with other actions, has the potential to provide long-term beneficial cumulative impacts to geology and substrates, living coastal and marine resources, protected species, socioeconomics, land and marine management, tourism and recreation, and public health and safety/shoreline protection.

10.3.1.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed coordination and reviews under the Endangered Species Act, the Migratory Bird Treaty Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Marine Mammal Protection Act, and the Bald and Golden Eagle Protection Act. Consistency reviews of the Phase III Early Restoration projects in Mississippi were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed. The Trustees have initiated consultation under the National Historic Preservation Act, the Clean Water Act, and the Rivers and Harbors Act.

10.3.1.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and Best Management Practices (BMPs), which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.3.1.2.1 Measures to Mitigate Impacts to the Physical Environment

- Spoil from temporary flotation channels will be placed on the seaward side of the channel to facilitate current-driven backfilling of channels.
- Gaps will be present between breakwater segments and created marsh areas that will allow tidal exchange flows and waterway access.
- Best management practices along with other avoidance and mitigation measures required by state and federal regulatory agencies, will be employed to minimize potential water quality and sedimentation impacts. U.S. Army Corps of Engineers (USACE) Section 10/404 and State Water Quality Certifications will be required and permit conditions will be adhered to.
- Appropriate BMPs such as routine maintenance, inspection, and proper refueling of construction equipment will be used to prevent, control, and mitigate impacts (from fuel leaks or spills).
- Suitable maintenance dredge sediments that have been examined for levels of contamination, consistent with applicable requirements, will be used as fill material in the project area.
- To reduce the release of GHG during project implementation, idling construction equipment will be shut down when feasible; staging areas will be located as close to construction sites as practicable to minimize driving distances; using the proper size of equipment for the job to maximize energy efficiency will be encouraged as well as the use of alternative fuels for generators at construction sites, where practicable. Measures to Mitigate Impacts to Biological Resources
- Contractors will be reminded of the potential presence of protected species.
- The entry locations for the channels will be determined by analyzing the shortest distance from the breakwaters to the appropriate depth of -8 ft. and excavated using BMPs to minimize environmental impacts.
- Effort will be made during construction and during placement of materials to avoid existing environmentally sensitive areas such as viable productive oyster reefs, emergent and SAV, and other live-bottom communities.
- Placement of all signage pilings will be achieved by “driving” in lieu of “jetting” to reduce the disturbance of bottom sediments and bottom-dwelling organisms.
- If any sea turtles are found to be present in the immediate project area during restoration activities, construction will be halted until species moves away from project area.
    - Precautionary measures will include construction personnel education, proper use and selection of siltation barriers, use of “no wake/idle” speeds in proper locations,

adherence to protection guidelines when a sea turtle is within 100 yards of activities, and reporting of turtle injuries.

- If possible, complete the in-water work when manatees are not expected to be present, i.e., when water temperatures are below 68F. If timing restrictions are not feasible, then conditions a, b, c, and d of the Standard Manatee Conditions for In-water Work will be followed. Report any collisions to the U.S. Fish and Wildlife Service (USFWS) or State trust resource agency. Temporary signs, if necessary, can be modified from the Florida Fish and Wildlife Conservation Commission's template to reflect local conditions.
- Project restoration features will be built close to the shoreline in shallow water (1-4 feet) and will not impede any migratory paths for Gulf sturgeon. Project components will be constructed in the months of May through October to the extent practicable, to avoid inter-riverine migration movements. Prior to breakwater construction, the contractor will be made aware of the potential presence of sturgeon. Project construction activities will be subject to a stop work order if the species is observed in the project footprint. Work will continue once the species leaves the area.
- If construction activities continued beyond the May to October window, there will be continued adherence to special conditions specified in the Sea Turtle and Smalltooth Sawfish Construction Conditions, dated March 23, 2006 (NMFS 2006).
- The project will follow Measures for Reducing Entrapment Risk to Protected Species, revised May 22, 2012 (NMFS 2006).
- If project implementation will occur during migratory bird nesting and within 300 feet of potential nesting habitat (660 feet for Bald eagles), pre-construction nesting surveys for migratory birds and raptors will be conducted. If evidence of nesting is found, coordination with the USFWS will be initiated to develop and implement appropriate conservation measures. Care will be taken to minimize noise and vibration near areas where foraging or resting migratory birds are encountered. Project construction will occur during daylight hours only.
- Work barges will be moored for overnight and weekends/holidays in areas where previous impacts have occurred (flotation channels, deployment areas).
- Spoil from flotation channels will be placed on the seaward side of the channel to facilitate current-driven backfilling of channels.
- Where practicable, shell obtained from commercial vendors that did not or will not impact the aquatic environments will be utilized for reef construction.
- Monitoring will be conducted before, during, and after project implementation to ensure compliance with project design and completion. If immediate post-construction monitoring reveals that unavoidable impacts to Essential Fish Habitat (EFH) have occurred, appropriate coordination with regional EFH personnel will take place to determine appropriate response measures, possibly including mitigation. If additional adaptive management of the breakwater structure is necessary after monitoring evens, all minimization measures discussed above will be followed.
- Any temporary access channels will be filled in naturally following construction to re-establish baseline elevations. Monitoring will assess whether unexpected impacts to EFH have occurred.

- All equipment to be used during the project, including personal gear, will be inspected and cleaned such that there is no observable presence of mud, seeds, vegetation, insects and other species.
- Sediments for marsh creation will come from the Mississippi Beneficial Use of Sediment Program or nearby sources. Since the sediments are regional they are expected to support the fauna in aquatic habitats at the project.
- Oyster cultch and vegetation will be treated or inspected to remove "non-target" species.

10.3.1.2.2 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- Barriers, navigation warning signs (lighted and unlighted), and other safety devices will be installed along the work area to protect boaters.
- Appropriate BMPs will be employed to prevent, mitigate, and control potential impacts from noise to boaters, work crews, and marine organisms.
- After completion of construction, the breakwater structure will be surveyed and permanent navigation signs will be installed in accordance with safety requirements.
- Either adequate survey information for the pipeline will be obtained prior to construction, or the alignment of the pipeline will be surveyed. The Pearl River-to-Heron Bay breakwater will have a sufficiently wide gap in the structure to avoid covering the pipeline and to allow maintenance vessels to navigate and operate over and around the pipeline if needed.
- In addition, proper safety precautions and protocols will be developed, and a safety zone around the pipeline alignments will be set up to keep all construction equipment clear of the pipelines.
    - Similar procedures will be utilized if other infrastructure is identified in the project area during inquiries prior to construction.
- Best management practices in accordance with Occupational Safety and Health Administration (OSHA) and state and local requirements will be incorporated into construction activities onsite to ensure the proper handling, storage, transport, and disposal of all hazardous materials.
- Personal protective equipment will be required for all construction personnel, and authorized access zones will be established at the perimeter of the project site.
- The specific breakwater construction elevation was selected to maximize shoreline protection.

10.3.1.3 Performance Criteria, Monitoring, and Maintenance

Monitoring will be used to evaluate the restoration objectives of the project: 1) construct reef structures to protect shoreline from erosion and support secondary productivity; 2) restore marsh habitat, and 3) restore oyster reefs to support secondary productivity. Post-construction performance monitoring is proposed for seven years following completion of the project and will evaluate the project's performance over time with respect to the production and support of organisms on the living shoreline (e.g., secondary productivity) and the performance of the created marsh.

Components of this monitoring may include collecting information with respect to:

- Water quality (e.g., salinity, dissolved oxygen)
- Structural integrity of breakwater structure;
- Height/elevation and area of breakwater structure;

- Consolidation rate of breakwater structure;
- Shoreline profile;
- Shoreline position;
- Bivalve density, size, biomass, and survival;
- Non-bivalve invertebrate density and biomass; and
- Percent cover of marsh vegetation.

This project will incorporate a mix of monitoring efforts to ensure project designs are correctly implemented during construction and will allow for corrective actions to be taken where necessary.

10.3.2 Restoration Initiatives at the INFINITY Science Center

The project is intended to restore lost recreational use by providing increased access to coastal estuarine habitats, wildlife viewing areas, and educational features. The project will enhance and expand a state-of-the-art interactive science, education, interpretive, and research center for use by visitors seeking to experience and learn about the coastal natural resources of the Gulf of Mexico. The project also will serve as a launching point for a comprehensive scenic byway trail system that can take visitors to beaches and tidal coastal estuarine environments.

The project will enhance recreational and educational opportunities and will promote the public's appreciation and awareness of the Gulf of Mexico's natural resources injured by the Spill. Accordingly, the project is intended to replace or provide recreational opportunities comparable to the types of opportunities lost as a result of the Spill (see C.F.R. § 990.54(a) (2) and Sections 6a-6c of the Early Restoration Framework Agreement).

This project was analyzed for its potential environmental consequences on geology and substrates; hydrology and water quality; air quality and GHGs; noise; living coastal and marine resources; protected species; socioeconomics and environmental justice; aesthetics and visual resources; tourism and recreational use; as well as infrastructure and public health and safety. NEPA analysis of the environmental consequences suggests that while there may be minor adverse impacts to some resource categories, there will be no long-term moderate to major adverse impacts as a result of the project. The project will provide long-term benefits by providing enhanced access to coastal resources and educational opportunities via the Heritage Trail-Possum Walk/Outdoor Education Center and state-of-the-art exhibits at the INFINITY Science Center. Based on the cumulative impact analysis, the Restoration Initiatives at INFINITY Science Center project will not substantially contribute to adverse cumulative effects to resources. The Restoration Initiatives at INFINITY Science Center project, carried out in conjunction with other actions, has the potential to provide long-term beneficial cumulative impacts to socioeconomics, and infrastructure.

10.3.2.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed coordination and reviews under the Endangered Species Act, the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and the Historic Preservation Act. Consistency reviews of the Phase III early restoration projects in Mississippi were initiated by the Federal

Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Coordination has been initiated for the Clean Water Act.

10.3.2.2 Mitigation Measures

Mitigation measures (including best management practices and conservation measures) required by consultations in adherence to laws, regulations and executive orders listed above and developed during the NEPA process are listed below. These mitigation measures are categorized by whether they correspond to the physical environmental, biological resources, and human uses and socioeconomics. Note this list is not an exhaustive list of all existing policies, practices, and measures required by law, regulation, or agency policy that reduce the environmental impacts of designated activities, functions, or processes.

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.3.2.2.1 Measures to Mitigate Impacts to the Physical Environment

- Construction in Mississippi is required to follow the "Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas" and the "Field Manual for Erosion and Sediment Control on Construction Sites in Mississippi" (MDEQ 2005).
- Heavy equipment use and storage will be minimized off the trail for the construction (boardwalk and outdoor education center), to reduce impacts to natural vegetation and water quality.
- During the construction of the native landscape/nursery area, vegetation will be planted to stabilize the soil. Any necessary fill material will be clean and will likely originate from the area.
- Clearing and grubbing will use a track-mounted dozer to mitigate soil compaction-
- Vegetation will be planted to stabilize the soil.
- Any necessary fill material will be clean and will likely originate from the area.
- A helical pier foundation system will be utilized to construct the boardwalk and Outdoor Education Center. This will minimize water quality impacts and will not require traditional or vibratory pile driving.
- During the design process, wetlands will be avoided in the final siting of pullovers and turnarounds, and opportunities will be identified to treat stormwater runoff in pervious areas to the extent practical.
- BMPs will be implemented to minimize short-term sediment transport and to prevent sedimentation and pollution in wetlands. BMPs include, but are not limited to, the use of sediment trapping techniques (such as silt fences and barriers), refueling and maintenance of equipment in uplands, and the use of non-creosote materials.

- A stormwater pollution prevention plan (SWPPP) will be prepared and erosion, sedimentation, and stormwater runoff will be managed in accordance with MDEQ stormwater requirements.
- In order to comply with a Section 404 of the Clean Water Act, all of the general conditions for the permit must be met. The conditions include, but are not limited to, guidance and BMPs concerning disrupting aquatic life movement, work within the 100-year floodplain, and sediment and erosion controls.
- Prior to all construction activities, coordination with USACE will be conducted to determine the extent of the wetlands and potential impacts and to secure authorization for proposed wetland fill and in-water activities.
- To reduce emissions of greenhouse gases, the operators will shut down idling construction equipment, if feasible; locate staging areas as close to construction sites as practicable to minimize driving/travel distances between staging areas and construction sites; encourage the use of the proper size of equipment for the job to maximize energy efficiency; and encourage the use of alternative fuels or power sources for generators at construction sites, such as propane or solar power, or use electrical power where practicable.

10.3.2.2.2 Measures to Mitigate Impacts to Biological Resources

- All construction materials will be delivered to the site using small vehicles to accommodate the narrow width of Heritage Trail-Possum Walk and to inflict minimal intrusion on the environment.
- Shading as a result of the construction of the boardwalk and Outdoor Education Center will be minimized by appropriate material that will allow light penetration to the marsh.
- Remove the minimum amount of vegetation necessary, use well-maintained tools to prevent damage when pruning adjacent or overhanging vegetation, and reduce soil compaction that will prevent regrowth of vegetation by minimizing the amount of heavy equipment.
- No in-water work will occur in Gulf Sturgeon critical habitat in the Pearl River. All available construction best management practices will be used to prevent and control any runoff to ensure none reaches the Pearl River.
- All workers will be informed of the potential for Louisiana black bear presence. If any bears are found to be present in the immediate project area during project activities, construction will be halted until the species move away from the project area. Construction best management practices (i.e. minimize noise and habitat disturbance) will be used to avoid or minimize any impacts during construction.
- No tree removal is anticipated and if necessary will be completed outside of nesting season or surveys for nesting birds will be conducted. Pre-construction migratory bird nesting surveys will be conducted and, if evidence of nesting is found, coordination with the USFWS will be initiated to develop and implement appropriate conservation measures.
- Care will be taken to minimize noise and vibration near areas where foraging or resting migratory birds are encountered. Project construction will occur during daylight hours only.
- All equipment to be used during the project, including personal gear, will be inspected and cleaned prior to being brought to the site such that there is no observable presence of mud,

seeds, vegetation, insects (especially ants and snails), and other species in order to prevent introduction of invasive species.

- Native vegetation will be used for planting. Prior to bringing to vegetation to the site, it will be inspected and "non-target[20]" species will be removed.
- The noise will be generated during daytime hours and is not expected to alter the activities of fauna that utilize the area. Appropriate BMPs will be employed to prevent, mitigate, and control potential impacts from noise.

10.3.2.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- Recycling collection areas will be established for paper, cardboard, aluminum cans and plastic bottles, as appropriate.
    - Increases in solid waste as a result of expected growth will be addressed by appropriate waste collection and maintenance activities.
- Underground utilities will be located prior to any construction activities.
- All construction activities will occur in daytime hours.

10.3.2.3 Performance Criteria, Monitoring, and Maintenance

The project's restoration objectives are to enhance and increase recreational opportunities as well as the public's appreciation and awareness of the Gulf of Mexico's natural resources. Successful completion of the project will enhance public use and enjoyment of these resources. This project includes monitoring efforts to ensure project designs are correctly implemented during construction to meet the stated restoration objectives. Further, the project will be monitored for visitor counts and facility usage at the INFINITY Science Center and its resources. Monitoring will include calculating the number of visitors to the INFINITY Science Center indoor facility/exhibits and the number of visitors using the Heritage Trail-Possum Walk and Outdoor Education Center. Visitation and public use of the facilities and associated amenities will be monitored for five years following completion of construction. The INFINITY Science Center will be responsible for maintaining the Science Center facilities, features, and exhibits.

10.3.3 Popp's Ferry Causeway Park: Project Description

The project is intended to restore lost recreational opportunities through the enhancement of increased access to coastal estuarine habitats and wildlife viewing areas. The project will enhance the public's use and/or enjoyment of natural resources by constructing and/or expanding an educational interpretive center, nature trails, piers, and other recreational enhancements that will enhance visitor access to the adjacent coastal estuarine environment and provide opportunities for visitors to fish, crab, and observe nature. Accordingly, the project is intended to replace or provide recreational opportunities comparable to the types of opportunities lost as a result of the Spill (see C.F.R. § 990.54(a) (2) and Sections 6a-6c of the Early Restoration Framework Agreement).

[20] A non-target species is any species that is present on the species of choice but is not desirable and should be removed.

This project was analyzed for its potential environmental consequences on geology and substrates; hydrology and water quality; air quality and GHGs; noise; living coastal and marine resources; protected species; socioeconomics and environmental justice; aesthetics and visual resources; tourism and recreational use; as well as infrastructure and public health and safety. NEPA analysis of the environmental consequences suggests that while there may be minor adverse impacts to some resource categories, there will be no long-term major adverse impacts as a result of the project. The project will provide long-term benefits by providing enhanced access to coastal resources and educational opportunities in the park, fishing piers, boardwalks, a marsh overlook, and interpretive center. Based on the cumulative impact analysis, the Popp's Ferry Causeway Park project will not substantially contribute to adverse cumulative effects to resources. The Popp's Ferry Causeway Park project, carried out in conjunction with other actions, has the potential to provide long-term beneficial cumulative impacts to socioeconomics, land and marine management, aesthetic and visual resources, tourism and recreation, infrastructure and public health and safety/shoreline protection.

10.3.3.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed coordination and reviews under the Endangered Species Act, the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Marine Mammal Protection Act, and the National Historic Preservation Act. Consistency reviews of the Phase III early restoration projects in Mississippi were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. The Trustees have initiated consultations under the Clean Water Act and the Rivers and Harbors Act.

10.3.3.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources, they could result in reduced impacts to other resources.

10.3.3.2.1 Measures to Mitigate Impacts to the Physical Environment

- Construction in Mississippi is required to follow the "Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas" (MDEQ 2012a) and the "Field Manual for Erosion and Sediment Control on Construction Sites in Mississippi" (MDEQ 2005).
- Low-impact lighting will be installed along the waterfront shoreline path.
- To the extent possible, pervious, vegetated treatment areas will be incorporated into the final design to facilitate stormwater storage and treatment throughout the site.
- The current site design has been developed to avoid and minimize impacts on wetlands. Contractors will be instructed to minimize disturbance during construction in wetlands. In addition, the Trustee will adhere to the conditions of the Mississippi Coastal Wetland Protection Act and Clean Water Act permits.

- Dewatering may be required for subsurface work such as utility installation. Water will be discharged to a vegetated pervious area for infiltration. Appropriate BMPs will be used to prevent, control, and mitigate potential impacts.
- To reduce emissions of greenhouse gases, the operators will shut down idling construction equipment, if feasible; locate staging areas as close to construction sites as practicable to minimize driving/travel distances between staging areas and construction sites; encourage the use of the proper size of equipment for the job to maximize energy efficiency; and encourage the use of alternative fuels or power sources for generators at construction sites, such as propane or solar power, or use electrical power where practicable.
- Piling driving will be completed with a vibratory hammer, which will minimize noise impacts.
- Every effort will be made to minimize the time required for pile installation.
- All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times and in all water depths where the draft of the vessel provides less than a 4-ft. clearance from the bottom.
- Construction contractors will preferentially follow deep-water routes (e.g., marked channels) whenever possible.
- The Trustee, or designee, will have monitors onsite during pile installation to ensure that conditions are met.

10.3.3.2.2 Measures to Mitigate Impacts to Biological Resources

- Contractors will be instructed to avoid the clearing of trees and minimize disturbance and compaction in wetlands where permitted activities will occur.
- If heavy equipment is necessary for any construction or installation work in sensitive areas, wetland mats and low ground pressure equipment will be used in order to minimize damage.
- Staging for construction will be confined to the site, and the contractor could be directed to stage equipment in areas that have been previously disturbed and that do not contain wetlands.
- Construction of the boardwalk to allow penetration by sunlight will reduce shading effects and allow vegetation to regrow.
- All landscaping work will use native species to the extent possible.
- The Trustee will identify and also avoid pocket beaches to the maximum extent practicable in the design of the project.
- The Trustee, or designee, shall advise all construction personnel regarding the civil and criminal penalties for harming, harassing, or killing West Indian manatees, which are protected under the Endangered Species Act of 1973.
- Establishment of Shut-Down Zone: The calculated radius for the 120 dB rms/Level B harassment zone (i.e., distance from driven pile to area where harassment would no longer be expected to occur) is 1,585 m. The area defined by this radius in all relevant directions from the pile driving activity will comprise the shut-down zone. Shut-down of pile driving activity will occur immediately upon observation of any marine mammal within or approaching this zone.
- Visual Monitoring and Shut-down of Pile Driving Activities: The shut-down zone will include all areas where underwater sound pressure levels are anticipated to equal or exceed the 120 dB

threshold, as described under "Establishment of Shut-Down Zone." Qualified observers will monitor these zones and advise project personnel when delay or shut-down of pile driving activities is required. The shut-down zone will be monitored for the presence of marine mammals before, during, and after any pile installation activity, beginning 15 minutes prior to initiating the start of pile installation and continuing for 15 minutes following the completion of pile installation. If marine mammals are present within the shut-down zone prior to pile installation, the start of pile installation will be delayed until the animals voluntarily leave the shut-down zone and have been visually confirmed beyond the zone, or until 15 minutes have elapsed without redetection. Shutdown of pile driving activities will occur if any marine mammal enters or approaches the established zone, and will not resume until the animal has voluntarily moved beyond the relevant shut-down zone radius, either through visual confirmation or by waiting until 15 minutes has elapsed without redetection.

- Qualified biologists will be present on site at all times during pile driving activities. The action area will be monitored by at least three observers during vibratory pile driving. One will be based on land; two will be on vessels traveling along and within the radius while visually scanning the area.
- Monitoring of the shut-down zone will be conducted using binoculars, spotting scopes and visual observations. Each monitor will have a radio for contact with other monitors or work crews. A GPS unit, range finder, or other suitable methodology will be used for determining the observation location and distance to marine mammals, vessels, and construction equipment.
- No pile driving will occur in low-light conditions, or when visibility is impaired such that the shut-down zone cannot be effectively monitored. Pile driving will only be conducted between one-hour post-sunrise through one hour prior to sunset. If waters exceed small craft advisories or conditions otherwise restrict biologists' ability to make observations or become unsafe for the observation boat to operate, pile installation will cease until conditions allow for monitoring to resume.
- If possible, complete the in-water work when manatees are not expected to be present, i.e., when water temperatures are below 68F. If timing restrictions are not feasible, then conditions A-D of the Standard Manatee Conditions for In-water Work, 2011, shall be followed when operating vessels or doing in-water work construction.
- If protected species enter the construction area, construction will be halted until the individual(s) leave the project area.
- Sea turtle and Smalltooth Sawfish Construction Guidelines (NMFS 2006) shall be followed when operating vessels or doing in-water work construction.
- If activities require tree or shrub removal during the migratory bird breeding season, pre-construction surveys will be completed. If evidence of nesting is found, coordination with the USFWS will be initiated to develop and implement appropriate conservation measures.
- Care will be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. Work will occur during daylight hours only.

- Anchoring and mooring will be restricted to impacted areas. Work barges will be moored for overnight and weekends/holidays in areas where previous impacts have occurred (deployment areas).
- Vibratory hammers are considered a minimization measure to decrease injury and behavior modification to fish and cetaceans. The project will use this method to install pilings for piers.
- Monitoring will be conducted before, during, and after project implementation to ensure compliance with project design.
- Structures will be designed to minimize shading impact to tidal and non-tidal wetland grasses.
- Appropriate BMPs will be employed to minimize impacts associated with the parking areas and during construction.
- All non-native species removed during clearing and grubbing will be properly handled to prevent spreading into other areas on the project site. Proper handling could include bagging, mulching, or burning removed vegetation to prevent regrowth.
- All equipment to be used during the project, including personal gear, will be inspected and cleaned prior to being brought to the site such that there is no observable presence of mud, seeds, vegetation, insects (especially ants and snails), and other species, in order to prevent introduction of invasive species.
- During operation and management of the facilities, native vegetation will be used for planting. Prior to bringing vegetation to the site, the vegetation will be inspected and "non-target[21]" species will be removed.
- The Trustees will conduct environmental compliance monitoring to ensure that all BMPs are implemented properly, the intent of the BMPs is achieved, and no unanticipated effects occur to fish and wildlife resources. Compliance monitoring results will be made available to the public.

10.3.3.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- Due to safety concerns, access to certain areas may be restricted during construction of each project feature.

10.3.3.3 Performance Criteria, Monitoring, and Maintenance

Successful completion of the project will meet the project's restoration objective to enhance recreational opportunities as well as provide access for enhanced appreciation and awareness of the surrounding natural resources impacted by the Spill. The Trustees will incorporate monitoring efforts to ensure project designs are correctly implemented. Additionally, the Trustees will monitor public use of the project and associated features for recreational activities and access to the natural resources. Monitoring will include visitor counts to reflect the number of visitors to the project during monitoring a five year period upon completion of construction. The monitoring period will conclude five years after the completion of construction. The City of Biloxi will be responsible for maintenance of the Popp's facilities, features, and exhibits.

[21] A non-target species is any species that is present on the species of choice but is not desirable and should be removed.

10.3.4 Pascagoula Beachfront Promenade

The Pascagoula Beachfront Promenade project is intended to restore lost recreational opportunities resulting from the Spill and related response actions. This project will enhance recreational shoreline access via the construction of a lighted concrete beachfront pedestrian pathway adjacent to a sand beach in Pascagoula, Mississippi. Project funds will be used to help complete a two-mile, 10-ft.-wide lighted concrete pathway complete with amenities. This Early Restoration project proposal will fund a portion (8,200 ft.) of the 10-ft. wide promenade, a portion of which has already been constructed. Completion of the project will enhance the public's use and/or enjoyment of natural resources, specifically, shoreline adjacent to the Mississippi Sound. The project is intended to replace or provide recreational opportunities comparable to the types of opportunities lost as a result of the Spill (see C.F.R. § 990.54(a) (2) and Sections 6a-6c of the Early Restoration Framework Agreement).

For the Pascagoula Beachfront Promenade, DOI adopted the U.S. Department of Housing and Urban Development (HUD) EA entitled "Environmental Assessment and Finding of No Significant Impact for HUD-funded Proposals, Pascagoula Beach Promenade Project" (HUD 2011). In addition, supplemental NEPA analysis was completed for elements of the project that were not covered in the HUD EA. The supplemental analysis included potential environmental consequences on geology and substrates; hydrology and water quality; air quality and GHGs; noise; living coastal and marine resources; protected species; socioeconomics and environmental justice; aesthetics and visual resources; tourism and recreational use; as well as infrastructure and public health and safety.

This project was analyzed for its potential environmental consequences on geology and substrates; hydrology and water quality; air quality and GHGs; noise; living coastal and marine resources; protected species; socioeconomics and environmental justice; aesthetics and visual resources; tourism and recreational use; as well as infrastructure and public health and safety. The environmental consequences (adopted EA and supplemental analysis) suggest that while there will be minor adverse impacts to some resource categories, there will be no long-term moderate to major adverse impacts as a result of the project. The project will provide long-term benefits by providing enhanced shoreline access via the promenade and associated amenities. Based on the cumulative impact analysis, the Pascagoula Beachfront Promenade project will not substantially contribute to adverse cumulative effects to resources. The Pascagoula Beachfront Promenade, carried out in conjunction with other actions, has the potential to provide long-term beneficial cumulative impacts to socioeconomics, land and marine management, aesthetic and visual resources, tourism and recreation, infrastructure and public health and safety.

10.3.4.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed coordination and reviews under the Endangered Species Act, the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and the National Historic Preservation Act. Although no further cultural resource investigations (i.e., a Phase I cultural resources survey) are recommended for the Pascagoula Beachfront Promenade Project area, a limited period of monitoring and documentation of the proposed modifications to the historic seawall by a qualified archeologist is recommended for the first two days of construction activities, with continuing

consultation with the Mississippi Department of Archives and History State Historic Preservation Office and the Department of the Interior if there are any changes to the project design. Consistency reviews of the Phase III early restoration projects in Mississippi were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. The Trustees have initiated consultation under the Clean Water Act and the Rivers and Harbors Act.

10.3.4.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.3.4.2.1 Measures to Mitigate Impacts to the Physical Environment

- A stormwater pollution prevention plan (SWPPP) will be prepared and erosion, sedimentation, and stormwater runoff will be managed in accordance with Mississippi Department of Environmental Quality (MDEQ) stormwater requirements.
- Construction in Mississippi is required to follow the "Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas" (MDEQ 2012) and the "Field Manual for Erosion and Sediment Control on Construction Sites in Mississippi" (MDEQ 2005).
- Although the project will be located in the floodplain, most of the components will be constructed essentially at grade, which will not aggravate current hazards to other floodplains and will not disrupt floodplain values.
- During construction, there will be short-term minor impacts from increased turbidity in the drainage channels resulting from stormwater runoff from the construction zone. Also, construction fluids (oil, gas, lubricant) from construction equipment and vehicles could potentially leak into these channels. Appropriate BMPs will be implemented to avoid and minimize these impacts.
- Shut down idling construction equipment, if feasible to limit greenhouse gas emissions.
- Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
- Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
- Encourage the use of alternative fuels or power sources for generators at construction sites, such as propane or solar power, or use electrical power where practicable.
- Noisy construction activities will not be conducted before 6:30 a.m. or after 7:00 p.m., Monday through Saturday, in compliance with the City of Pascagoula noise ordinance.

10.3.4.2.2 Measures to Mitigate Impacts to Biological Resources

- If any sea turtles are found to be present in the immediate project area during project activities, construction will be halted until the species move away from the project area. In addition,

impacts to lands or waters surrounding the project area will be prevented, controlled or mitigated by use of all available best management practices during construction.

- Pre-operational surveys will be completed if equipment has left ruts on the "beach" or if equipment is staged on the "beach." If any piping plovers or red knots are found to be present in the immediate project area during project activities, construction will be halted until the species move away from the project area or construction activities will resume at a safe distance from the species. During construction, attempts will be made to limit the use of heavy equipment on the "beach" area. Pets are currently not allowed on the "beach" except on the far western end. In addition, all available construction best management practices will be used to prevent control, or mitigate any impacts during construction especially from accidental leaks of fluids from equipment.
- Work will be completed in daylight hours. Care will be taken to minimize noise and vibration near areas where foraging or resting migratory birds are encountered. If evidence of nesting of migratory birds is found during construction, coordination with the USFWS will be initiated to develop and implement appropriate conservation measures.
- All equipment to be used during the project, including personal gear, will be inspected and cleaned such that there is no observable presence of mud, seeds, vegetation, insects, and other species.
- Oyster cultch and vegetation will be treated or inspected to remove "non-target" species.
- The Trustees will conduct environmental compliance monitoring to ensure that all BMPs are implemented properly, the intent of the BMPs is achieved, and no unanticipated effects occur to fish and wildlife resources. Compliance monitoring results will be made available to the public.

10.3.4.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- Public access will be restricted during active construction areas due to safety concerns.
- During construction, there will be safety concerns in the construction zone. However, signs and barricades will be used to ensure safety to workers and to the public.
- Litter removal will minimize the impact to native species or natural habitats. The City of Pascagoula will be responsible for monitoring litter accumulation, litter removal and maintenance.

10.3.4.3 Performance Criteria, Monitoring, and Maintenance

Successful completion of the project will meet the restoration objective to enhance public use and enjoyment of the natural resources injured by the Spill. This project includes monitoring efforts to ensure project designs are correctly implemented during construction. Trustees will conduct additional monitoring for public use of the Pascagoula Beachfront Promenade and the adjacent beach area through visitor counts on the promenade and associated amenities for a five [year period upon completion of construction. The City of Pascagoula will be responsible for maintenance of the project facilities, features, and exhibits.

10.4 Alabama

10.4.1 Swift Tract Living Shorelines

The Alabama Swift Tract Living Shoreline project is intended to employ living shoreline techniques that utilize natural and/or artificial breakwater material to stabilize shorelines along an area in the eastern portion of Bon Secour Bay, Alabama. As the lead implementing Trustee, NOAA will create breakwaters to dampen wave energy and reduce shoreline erosion while also providing habitat and increasing benthic secondary productivity. The project will provide for construction of up to 1.6 miles of breakwaters in Bon Secour Bay adjacent to the 615 acre Swift Tract parcel, which is part of the Weeks Bay National Estuarine Research Reserve (NERR). Over time, the breakwaters are expected to develop into reefs that support benthic secondary productivity, including, but not limited to, bivalve mollusks, annelid worms, shrimp, and crabs. The project will restore injured benthic secondary productivity by constructing breakwaters topped with oyster shell veneer, enhance injured salt marsh habitat by reducing future erosion, and compensate for interim losses of salt marsh habitat and benthic secondary productivity for impacts caused by the Spill in Alabama. Thus, the nexus to resources injured by the Spill is clear (See 15 C.F.R. § 990.54(a)(2) and Sections 6a-6c of the Early Restoration Framework Agreement).

NEPA analysis of the environmental consequences suggests that while minor adverse impacts to some resource categories will be expected, no major adverse impacts are anticipated to result. The potential for moderate adverse impacts were identified for Geology and Substrates, Hydrology and Water Quality, and Living Coastal and Marine Resources (Benthos, Motile Invertebrates, and Fishes) resource categories; however, these impacts will be short duration (during construction) and mitigation measures will be implemented to reduce these impacts to a minor level. No other resources were identified as having potential moderate impacts. The project will provide long-term benefits by creating approximately 1.6 miles of reefs. Cumulative impacts from the implementation of the Swift Tract Project will be similar to the direct impacts, with impacts being largely minor or less and long-term benefits due to the implementation of ecological restoration activities such as living shorelines and coastal land acquisition/management. The Swift Tract Project will not make a substantial contribution to cumulative impacts due to the use of BMPs and appropriate mitigation measures.

10.4.1.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, the Marine Mammal Protection Act, and the Coastal Barrier Resources Act. Consistency reviews of the proposed Phase III early restoration projects in Alabama were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance has been initiated for the National Historic Preservation Act and will need to be completed for the, the Clean Water Act, and Rivers and Harbors Act. Best management practices and conservation measures required by consultations in adherence to these laws are listed below categorized by whether they correspond to the physical environmental, biological resources, and human uses and socioeconomics. Mitigation Measures (including best management practices and

conservation measures) required by consultations in adherence to laws, regulations and executive orders listed above and developed during the NEPA process are listed below. These mitigation measures are categorized by whether they correspond to the physical environmental, biological resources, and human uses and socioeconomics. Note this list is not an exhaustive list of all existing policies, practices, and measures required by law, regulation, or agency policy that reduce the environmental impacts of designated activities, functions, or processes.

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.4.1.1.1 Measures to Mitigate Impacts to the Physical Environment

- Construction activities will be performed from water based resources with no activities on the shoreline adjacent to the site.
- Due to water depths in the vicinity of the project site, access channels may need to be dredged. The dredged sediments will be side cast and will be backfilled after construction is complete.
- Turbidity levels will be monitored during construction. BMPs [not listed] will be implemented to maintain ambient water quality standards at or below local and state regulatory permit levels.
- During construction, BMPs, such as floating turbidity barriers, may be used to contain turbid water and reduce impacts to ambient water quality conditions.
- The following mitigation measures have been identified to reduce or eliminate GHG emissions from the project:
    - Shut down idling construction equipment, if feasible.
    - Locate staging areas as close to construction sites as practicable to minimize driving and/or boating distances between staging areas and construction sites.
    - Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
    - Encourage the use of alternative fuels for generators at construction sites, such as propane or solar, or use electrical power where practicable.
- Rip rap will be topped with cultch material to encourage oyster colonization. The cultch material is expected to be land-sourced (as opposed to dredged) bagged oyster shell that will be placed on the surface of the rip rap.
- The pilings will be pushed into place instead of driven to minimize noise created from piling installation.
- If the reefs are not performing as designed or anticipated, then adaptive management procedures will be used by the implementing Trustee (NOAA) to correct the structure. Adaptive management activities may include adding additional shell veneer to the surface of the reefs, adding additional hardened structure (e.g. rip rap), and/or replacing warning signs.

10.4.1.1.2 Measures to Mitigate Impacts to Biological Resources

- Anchoring sites will be situated to avoid shading impacts to SAV, if it is found to be in the project area. Access over existing SAV will also be avoided to the maximum extent practicable to minimize prop-scarring impacts.
- The project will adhere to recommendations for Sea Turtle and Smalltooth Sawfish Construction Conditions (NMFS, 2006).
- The project will adhere to Standard Manatee Conditions for In Water Work (USFWS, 2011) and any applicable federal and state permit conditions.
- To minimize impacts to EFH, BMPs and mitigation measures may include, using floating turbidity barriers, locating staging areas in off-site upland areas, and maintaining loaded draft barge drafts so as not to impact the bottom substrate, driving pilings instead of jetting pilings to reduce turbidity, operating vessels at idle speeds to avoid collision with individuals and to minimize prop scarring, and obtaining shell cultch materials from shucking houses instead of dredged shell sources.
- The following measures will be implemented during breakwater construction based on the NMFS consultation:
    - The contractor will be made aware of the potential presence of sturgeon. If any are observed during construction, work will cease until the sturgeon have moved away from the construction area.
    - Pilings will be pushed into the soft bottom substrate instead of driven. Pushing the pilings will reduce, to the maximum extent practicable, any noise from piling installation.
- To not spread or introduce species all equipment to be used during the project, including personal gear, will be inspected and cleaned such that there is no observable presence of mud, seeds, vegetation, insects and other species.
- Conducting pre-construction surveys and monitoring for Alabama red bellied turtle presence (or suitable habitat conditions) during construction. Results of the pre-construction survey will be coordinate with USFWS to determine if additional conservation measures are necessary. During construction, the contractor will be made aware of the potential presence of the Alabama red bellied turtle. If turtles are found, construction in the area will be halted until the turtles move on of their own volition. Otherwise, coordination will occur with the USFWS to determine if relocating turtles (via permitted biologist) found within the construction area to nearby suitable habitat is necessary.
- To determine the potential for nesting birds, a pre-construction survey of wetland areas within the 500 feet of the project construction footprint will be conducted. If nests are observed prior to construction, NOAA will coordinate with FWS on specific conservation measures, which may include minimizing boat traffic within 300 feet of the nests and operating vessels at idle/no wake speed.
- Pre-construction surveys will include, at a minimum, wood stork and bald eagle nests. If wood stork nests are identified, boat traffic within 300 feet of the nests will be minimized to the maximum extent practicable and contractors will operate at idle/no wake speed. If bald eagle

nests are located, FWS best management practices (2007) will be followed to minimize harm to bald eagles. For water based construction activities that are intended to protect the shoreline, best practices include:

  - Conducting construction activities outside of nesting season, if nests are present;
  - If a nest is present and it is not possible to avoid construction, maintain a buffer of at least 660 feet from the nest; and,
  - Minimize the number of boat trips passing within 660 feet of the nest location.

- Noise impacts to all bird species, including wood stork, piping plover, and red knot will be minimized through operating boats at idle speed when near shorelines and working during the day only.

10.4.1.1.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- The specific elevations of the breakwaters and design techniques will be selected to maximize shoreline protection and meet individual state regulatory requirements.
- During construction, barriers, navigation warning signs (lighted and unlighted), etc. will be established and maintained along the work area to protect boaters.
- The work barge(s) will be selected and operated to safely meet the draft requirements in this area.
- Placement of the rip rap will be monitored to insure the breakwaters dimensions, slopes, and crest elevation is achieved.
- 6 Permanent warning / navigation signs placed on 12-inch diameter posts will be installed in accordance with safety requirements.

10.4.1.2 Monitoring

Performance Criteria, Monitoring and Maintenance Monitoring activities at the Swift Tract site are planned over a 7 year period (Baseline, Implementation, and Post Implementation) and are estimated to cost approximately $650,000.Existing local boat ramps (e.g. Weeks Bay) will be used to access the site. This monitoring approach will incorporate a mix of quantitative and qualitative monitoring efforts to ensure project designs are correctly implemented during construction and in a subsequent period, defined by contract, where corrective actions could be taken by the implementing Trustee (NOAA) to ensure the project meets the following objectives:

- construction of reefs that meet project design criteria and that are sustained for the expected lifespan of the project to support benthic secondary productivity and reduce shoreline erosion,
- support habitat utilization of the reefs by bivalves and other invertebrate infauna and epifauna to increase secondary benthic productivity at the project site, and
- reduction of shoreline erosion to protect existing salt marsh habitat.

Post construction performance monitoring will also be conducted to evaluate the project's performance over time. In general, components of this monitoring will evaluate the production and support of organisms on the reefs (e.g., benthic secondary productivity) and the performance of the protected vegetated habitats on the shoreline (e.g., salt marsh habitat).

Components of this monitoring effort are expected to include collecting information on the following parameters:

- Structural integrity observations of the breakwaters
- Height/elevation and area of the breakwaters
- Consolidation rate of breakwaters
- Shoreline profile
- Shoreline position
- Wave energy / height
- Bivalve species composition, density, size, and biomass
- Infauna and epifauna invertebrate species composition, density, and biomass

10.4.2 Gulf State Park Enhancement Project

The Gulf State Park Enhancement Project will implement ecologically-sensitive improvements to Gulf State Park (GSP) including: (1) rebuilding the Gulf State Park Lodge and Conference Center;(2) building an Interpretive Center; (3) building a Research and Education Center; (4) visitor enhancements including trail improvements and extensions, overlooks, interpretive kiosks and signage, rest areas, bike racks, bird watching blinds, or other visitor enhancements; and (5) ecological restoration and enhancement of degraded dune habitat. The goal of the Gulf State Park Enhancement Project is to provide partial compensation for recreational services lost as a result of DWH injuries to the natural resources of coastal Alabama.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts to some resource categories may occur, no major adverse impacts are anticipated to result. The potential for moderate adverse impacts was identified for traffic and transportation related impacts; however, mitigation measures will be implemented to reduce these impacts to a minor level. No other resources were identified as having potential moderate impacts. The project will provide long-term benefits by providing increased recreational and interpretive opportunities within GSP, as well as implementing additional dune restoration and enhancement within the park. Cumulative impacts from the implementation of the Gulf State Park Enhancement Project will be similar to the direct impacts, with impacts being largely minor or less, with the potential for moderate impacts to transportation networks that will be addressed though implementation of mitigation measures. The Gulf State Park Enhancement Project will not make a substantial contribution to cumulative impacts due to the use of BMPs and appropriate mitigation measures.

10.4.2.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act, National Historic Preservation Act, Clean Water Act, Rivers and Harbors Act, and the Coastal Zone Management Act.

Following the release of the Draft Phase III ERP/PEIS, the Trustees worked with the USFWS to revise an existing Incidental Take Permit and supporting biological opinion that would apply to Gulf State Park, which included a conference report addressing proposed Loggerhead CH. The Final Phase III ERP/PEIS evaluated the environmental consequence of the proposed Gulf State Park project on the proposed Loggerhead CH. Shortly after the Trustees released the Final Phase III ERP/PEIS, USFWS designated final Loggerhead CH. DOI requested the USFWS adopt the conference report as an informal consultation for final Loggerhead CH. The USFWS' informal consultation for loggerhead CH was completed on September 18, 2014 resulting in a concurrence that the Gulf State Park project, as proposed, would not result in adverse modification or destruction of final Loggerhead CH. Accordingly, the Trustees have determined that the final Loggerhead CH designation does not represent significant new information that requires supplemental environmental consequences analysis pursuant to NEPA.

10.4.2.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.4.2.2.1 Measures to Mitigate Impacts to the Physical Environment

Lodge, Conference Facility, and Interpretative Center

- No Work will occur on (except walkovers) or Gulfward of the Coastal Construction Line.

General Operations and Maintenance

- The practice of accessing and using the beach areas with off-road capable vehicles will be eliminated except for park personnel and emergency vehicles. Low impact beach driving guidelines (including minimizing vehicle access, the number of trips per day, and using low impact vehicles/tires) will be implemented for non-emergency needs.
- Where necessary, approved fencing or signage will be installed to funnel pedestrian traffic to utilize existing vehicular trails.
- Beach access points will be limited to those necessary. The approved beach accesses will consist of a path wide enough to accommodate the vehicle(s) that will be used by Park personnel. Currently, beach access by vehicles is limited to six locations: two at the fishing pier, one on the eastern edge of the old Lodge site, two at the Beach Pavilion, and one at the western end of the park. Vehicular access points are subject to fire marshal approval of the site plan. If the fire marshal requires a different location or type of access than the existing locations a minor (informal) change to the Habitat Conservation Plan (HCP) may be required.
- Environmental permitting for these projects will require erosion and sedimentation (E&S) plans to obtain building permits from the municipality. E&S plans ensure that erosion and sedimentation are minimized by using BMPs, including:
    - Cordoning off the work area with silt fences.

    - Covering piles of removed soil with sod to keep it in place.
    - Salvaging and reusing topsoil either in place or in other project areas.
    - Revegetating the area with native species so bare soil is no longer present, and
    - Wetting the area to minimize dust and erosion
    - Reclaiming topsoil
- Light construction equipment, such as ATVs or small pick-up trucks, will be used to transport vegetation that will be transplanted in the dune systems over the project area, except where the use of medium or heavy equipment has been approved by the USFWS.
- Prescribed corridors will be established so that equipment transport will not recklessly traverse the dunes.
- The removal of vegetation will be minimized whenever possible.
- To mitigate for the wetlands that will be filled, GSP will create 0.22 acres of replacement wetlands (3 times larger than the filled area) within the footprint of the lodge and conference center.
- Replant wetlands with native vegetation after removing the timber mats.
- Pollution discharge permits will be acquired to protect water quality.
- Stormwater management BMPs will capture the increased sediment before it could run off the site towards the Gulf.
- The U.S. Environmental Protection Agency (USEPA) requires incorporating the following components into an NPDES BMP plan:
    - Municipal oversight
    - Construction site planning and management
    - Erosion control
    - Runoff control
    - Sediment control
    - Proper materials management
- The NPDES permit will require disposal of all construction waste and excavated material according to state and local requirements. The contractor will also be required to use legally operating landfills for the disposal of project-generated waste materials.
- If necessary to control dust emissions, contractors will be required to implement fugitive dust control measures, such as watering exposed areas, installing dust covers on trucks, and using tracking mats to reduce dust emissions from truck tires.
- Other emission reduction measures, if necessary, could include:
    - Use of ultra-low sulfur diesel fuel in off-road construction equipment with engine horsepower (HP) rating of 60 HP and above.
    - Limiting unnecessary idling times on diesel-powered engines to 3 minutes.
    - Locating diesel-powered exhausts away from fresh air intakes.
    - Controlling dust related to construction site activities through a Soil Erosion Sediment Control Plan that includes spraying of a suppressing agent on dust piles (non-hazardous, biodegradable).
    - Covering trucks hauling loose materials.

- Construction will be limited to daylight hours and using material haul routes designed to avoid sensitive noise receptors.

10.4.2.2.2 Measures to Mitigate Impacts to Biological Resources

Lodge, Conference Facility and Interpretive Center

- The construction area will be trapped for Alabama beach mouse (ABM), the week prior to construction (see HCP for details). Should burrows with mice be encountered during construction, work at and around the burrow (radius of at least 50 feet from the point of observation) shall temporarily cease. The USFWS will be notified immediately and, within a 72 hour period, can relocate as many mice as feasible from the area of observation. If circumstances indicate such capture is infeasible, the USFWS will advise the applicant to proceed, while providing advice as to any reasonable modification of construction technology, procedure, or timing that will reduce or avoid further localized adverse effects on the mice in the area of disturbance. Instructions for handling dead or injured mice are addressed under the HCP and Biological Opinion.
- Use of temporary lighting during nighttime hours will be minimized during construction, wildlife-friendly lighting will be incorporated where possible.
- No fencing will be installed that may impede sea turtle movement, except that specifically designed to exclude turtles from walkover construction areas during their construction.
- Construction waste and debris will be stored, disposed of, monitored, and maintained in a manner such that rodents and predators are not attracted to the area
- A landscaping plan will be prepared and submitted to USFWS for approval.

- Dune walkover construction will be restricted to the period outside sea turtle nesting season (May 1-October 31) to the extent practicable.
    - If dune walkover construction is necessary within nesting season, surveys for sea turtle nests will be completed prior to initiation of construction. If nests are found, construction will be delayed until the nest has hatched. If no nests are found, the construction area will be fenced such that turtles cannot enter the area to nest during construction. Fencing will be removed immediately on the completion of walkover construction.
- Dune Walkover construction will occur during daylight hours only. No equipment may be used for dune walkover construction or new walkover maintenance except that which is essential to these purposes.
- All dune walkover construction activities will be conducted in a “top-down” manner in order to prevent further degradation of the dunes. Any disturbed areas outlying the outer edges of the walkovers will be restored.
- The most current version of the USFWS’ beach driving guidelines for use of vehicles and machinery during construction will be followed.
- Walkovers will be constructed on the smallest footprint/design that achieves project goals to reduce physical restrictions and shaded sand to the maximum extent practicable. Walkover

alignment will be established in coordination with and approval by the USFWS and Alabama Department of Environmental Management (ADEM).

- New walkovers will be constructed in accordance with all state and local laws and will also take into account optimal dune height during planning (i.e., new walkovers will be built approximately 5 feet above optimal dune height rather than existing grade such that sand maintenance is not necessary).
- Existing walkovers will be maintained as follows:
    - Consider raising the walkovers such that maintenance is not needed and identify optimal dune height in coordination with USFWS;
    - Until walkovers are raised and prior to maintenance, a permitted biologist will survey for mice burrows and tracks. Burrows and tracks will be flagged and avoided where possible.
    - If avoidance is not possible, a permitted biologist will trap and relocate the mice from the area and the area to be maintained will be fenced such that mice cannot re-enter the area during maintenance (see HCP for details). After initial maintenance, the fencing will be removed and the walkovers will continue to be maintained using the smallest tools available such that the walkover allows mice to transit the area (i.e., maintain connectivity) but does not have suitable burrow habitats (that will be disturbed during maintenance). These procedures will avoid unnecessary disturbance.
    - When the boardwalks need to be repaired or replaced, they will be installed in accordance with state and local laws and use the currently existing (as of May 16, 2014) or optimal dune height (as determined in coordination with USFWS) as a baseline to apply the clearance above grade requirement. This measure will avoid the future need for sand maintenance adjacent to walkovers.
- Unmanaged foot traffic through dune structures, which destroys dune vegetation and leads to dune degradation and erosion will be controlled by construction and use of the dune walkovers.
- Educational signage will be placed and maintained at walkovers and other locations to advise visitors of sea turtles and means to avoid them (see HCP for details).

Dune Restoration/Enhancement

- A program for monitoring, protecting, enhancing, and maintaining dunes within Gulf State Park will be implemented as described in the HCP, including the development and implementation of a Dune Restoration and Management Plan. Reporting requirements are also defined in the HCP.
- Alabama Department of Conservation and Natural Resources (ADCNR) will work with USFWS to determine the timing, construction methods, location, and dimensions for the corridors and dune enhancement activities.
- If Alabama beach mice are present based on surveys conducted in the area for restoration or enhancement, they will be captured and relocated by a permitted biologist if necessary as determined by the USFWS.

Visitor Enhancements

- Gopher tortoise, Alabama beach mouse, and bald eagle nest surveys will be conducted in the area for the trails and interpretive signs. Tortoise and beach mouse burrows and bald eagle nesting areas (following USFWS's 2007 National Bald Eagle Management Guidelines) will be marked with flagging and their locations mapped. The flagging and mapping will be used to design the trail and sign locations to avoid any burrows and prevent obstacles between burrows.
- Pre-construction site visits will be conducted by ADCNR (or their representatives) in coordination with USFWS to ensure the enhancements avoid ABM habitats and bald eagle nesting areas.

General Operations and Maintenance

- A lighting plan for currently proposed and future structures at Gulf State Park will be developed and submitted to USFWS for review and approval.
    - The lighting plan will describe how direct and indirect illumination of sea turtle and ABM habitats will be minimized including minimization of light overspill and brightness from interior spaces and windows and outdoor areas. The lighting plan may include a combination of: low pressure sodium lights, fully shielded fixtures, amber LED bulbs, fully shielded street lights, wildlife-friendly windows, and other new wildlife-friendly lighting technologies as they are developed. All lighting plans will use the information contained in USFWS's "Recommended Measures to Minimize Lighting Impacts to Wildlife Habitat" document (see HCP).
    - Directional outdoor floodlights or other lights that illuminate the primary dunes lying south of the property, the wet beach seaward of such dunes, or any portion of the Gulf of Mexico will not be installed upon nor used on the property.
    - The light emitting and/or reflecting portions of any light sources (including bulbs, tubes, reflectors, or globes) on the property shall be shielded or recessed, such that no portion of the cone or beam of light from any such sources is directed toward any area south of the crest of the primary dune.
- Predators will be controlled.
    - No free-roaming cats shall be allowed as pets, or otherwise, at Gulf State Park. If, during routine monitoring and reporting, surveys disclose the presence of cats and/or cat tracks in the developed parts of the project, immediate control measures will be instituted.
    - In addition to cats, trapping efforts will include the red fox and coyote. Any trapped predators will be taken to the local animal control facility.
    - Dogs shall be restricted to developed areas of the park only and not allowed in dune or beach habitat. Park guidelines require dogs to be on leashes at all times.
    - Restrictions for the property will prohibit tenants, or others, from supporting the presence of domestic or free-roaming feral cats by providing food, shelter, or any other life-supporting elements.

    - Means of control will be established, funded, and carried out by the applicant. Results will be reported during normal reporting cycles to USFWS.
- Refuse management is intended to prevent house mice from being introduced into Gulf State Park. However, if house mice are determined to exist, a house mouse trapping and extermination effort will be initiated and continued until control over house mice has been established.
- Walkways at the Interpretive Center will require sand maintenance and will be maintained using minimally invasive measures and in coordination with the USFWS Alabama Field Office.
- Waste receptacles for visitor use will be maintained in a manner such that rodents and predators are not attracted to them.
- Property fences will be of specific design so as to not fragment habitat or impede species movement and will be regularly inspected and maintained (see HCP for details).
- Efforts will be made to minimize the removal of vegetation whenever possible.
- Impacted bare areas will be replanted with native vegetation to stabilize soils.
- During construction activities, it may be necessary to lay down timber matting for heavy construction equipment to cross wetland areas, without compacting the soil.
- If land clearing must begin during nesting/hatching/or fledging, surveys for nesting birds will be conducted prior to the implementation of any land clearing or construction action. If nesting birds are located, activities will not begin around the nests until the birds have fledged. A buffer distance to avoid the nests will be determined in coordination with the U.S. Fish and Wildlife Service.
- To the extent practicable, staging areas for construction of the interpretive center will occur on areas that are already disturbed, such as the existing parking area for the beach pavilion.
- Construction activities will be timed to avoid the nesting seasons of Bald eagles. With respect to any active Bald eagle nests in proximity to project components, conservation measures outlined in the National Bald Eagle Management Guidelines (2007) will be followed to prevent take.

10.4.2.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- The construction limits of the project area will be clearly marked for the duration of construction, with a continuous fence, cable, or other substantial marking device. Signage will be posted at intervals of no less than one hundred feet along its limits inside the fence, with each sign to include the following or essentially similar language “Absolutely no construction activity or other entry permitted beyond this point. For further information, contact construction superintendents’ office.”
- If archeological resources are discovered during construction, all work will halt immediately in the vicinity of the discovery until the resources can be identified and documented and an appropriate mitigation strategy developed.
- In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act of 1990(25 U.S.C. § 3001) will be followed.
- During construction, the one previously recorded archaeological site will not be disturbed and all previous SHPO recommendations will be followed.

- In the event that subsurface disturbance to the site is unavoidable, archaeological monitoring of construction activities will occur.
- For all construction efforts, impacts could be minimized by a screening or visual barrier to obscure the construction site for the duration of construction.
- Install appropriate barriers, safety fencing, and/or signs as appropriate, prior to initiating construction activities on GSP properties.
- The site will be open to visitors during construction; however, when appropriate and as a safety precaution, safety zones may be established within which visitors will not be allowed. The contractor will post personnel along safety zones to inform visitors of ongoing construction.
- All building construction will follow State of Alabama building codes and be built to address hurricane conditions.
- During construction of the project elements, workers will follow standard safety measures in accordance with Occupational Safety and Health Administration regulations; these measures are further outlined in the construction action plan.

10.4.2.3 Monitoring

Monitoring for performance criteria is planned for each of the major subcomponents of the Gulf State Park Enhancement Project. Monitoring is needed to address both recreational use and ecological project performance.

The objective of the Gulf State Park Enhancement Project is to replace lost recreational use along the Alabama coast. The lodge and meeting facilities, as well as all other components of the Gulf State Park Enhancement Project, are designed to increase public access to Alabama's coastal natural resources. The performance criteria discussed below center on monitoring to ensure these projects are constructed according to plans and permitting requirements and to identify future increases in visitation attributable to the new facilities. To document the increase in recreational usage, for at least five years the park will make available annual information on total number of visitors to the rebuilt lodge, lodge occupancy rates, average length of stay, and the state of origin for visitors. In addition, information will be assembled each year for at least five years on the number of visitors attending meetings at the facility and, to the extent practical, their use and enjoyment of the park's natural resources.

The new interpretive, education and research facilities and trails are also expected to attract new visitors to the park and enhance their experiences. GSP park managers will provide a description of the interpretive, educational and research programs conducted and monitor participation in these programs on an annual basis. Data will include the number of participants by program and the length of the programs attended.

As a broader measure of the impact on visitation of park enhancements, park managers plan to assemble annual data on the total number of visitors to the park. This type of information has been collected extending back as far as the early 1990s and will provide a basis for long-term comparisons of park visitation, including comparisons to the time when the previous Gulf State Park Lodge was operating. For the improvements to the quality of the visitor experience, the park will use existing GSP protocols for the gathering and evaluating visitor feedback.

Ecological performance monitoring is necessary for two aspects of the GSP enhancement project. First, the dune restoration work will involve planting to stabilize dunes in the park. A monitoring plan will be implemented to ensure the establishment and survival of transplanted species. The growth and extent of coverage by transplants will be documented and, if required, replanting performed. Replanting will be performed if species survival of the original enhancement stock falls below 75 percent. Photographic documentation will be available for the newly stabilized areas. Also, sand fencing will be monitored, maintained, repaired, and replaced as necessary over the monitoring period. The duration of the monitoring plan will be established as a condition to the permit and through agency coordination.

Construction of the lodge will require wetlands mitigation. At least 0.228 acres of emergent wetlands will be created on-site to offset a 0.076 acre area of impacts—a 3:1 mitigation ratio. A multi-year monitoring plan will be implemented at the newly created wetland. The approved wetland mitigation plan requires a 5-year monitoring program to document success of the wetland. This monitoring plan will include quarterly monitoring during the first year after construction and semi-annual monitoring for the next four years. Monitoring will document surface and subsurface water depths; vegetation growth and coverage; invasive species coverage and removal efforts; and wildlife observed in the wetland. Photographs of the site will also be provided. In the event it is determined that the mitigation areas are not achieving success, then adaptive management strategies including but not limited to the evaluation of alternate sites, use of commercial mitigation banks, and other sources of mitigation credit will be evaluated (Volkert 2013a).

There will also be monitoring during dune restoration and throughout the construction activities for the trails, lodge, and the education and interpretive facilities. This will ensure that all these activities comply with the full set of environmental permit conditions, including conditions relating to endangered species like the Alabama Beach Mouse. The specific monitoring requirements during construction will be defined in conjunction with the final permits for work at the site.

10.4.3 Alabama Oyster Cultch Restoration:

The Alabama Oyster Cultch Restoration project will include placing approximately 30,000 – 40,000 cubic yards of suitable oyster shell cultch over approximately 319 acres of subtidal habitat in Mobile County, Alabama, near other oyster reefs currently managed by the ADCNR. The objective of this project is to enhance oyster biomass through the selective placement of oyster cultch in Alabama's estuarine waters. Cultch placements promote the settlement and growth of oyster spat and have been successful in producing new oysters in Alabama. The project will restore injured oyster reefs and/or partially compensate for interim losses of such natural resources for impacts caused by the Spill. Thus, nexus to resources injured by the Spill is clear (See C.F.R. § 990.54(a)(2) and Sections 6a-6c of the Early Restoration Framework Agreement).

NEPA analysis of the environmental consequences suggests that while minor adverse impacts to some resource categories may occur, no moderate to major adverse impacts are anticipated to result for either direct or cumulative impacts. The project will provide long-term benefits by creating new habitat for oysters and other species, which will in turn provide multiple ecosystem benefits.

10.4.3.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act, Clean Water Act, National Historic Preservation Act, Rivers and Harbors Act, and the Coastal Zone Management Act.

10.4.3.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs (sorted by resource type), which include voluntary measures as well as those identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in increased benefits (reduction of impacts) to other resources.

10.4.3.2.1 Physical Environment

- Air Quality and Greenhouse Gas Emissions
    - BMPs include practices such as the use of equipment that meets air quality standards as well as following appropriate equipment operation standards during implementation of the project.

10.4.3.2.2 Biological Resources

- Construction activities will take precautions to avoid peak migration periods and time of day to limit affects to brown shrimp, white shrimp and pink shrimp.
- Oyster cultch used in the project will be aged such that any potential invasive species will be rendered non-viable.
- The boats used in the construction and maintenance of the project will be local boats that do not discharge ballast water.
- Any equipment used in the monitoring and maintenance of the reef will be inspected for mud and plant material to ensure no invasive species are introduced.
- Risk of adverse effects to manatees and other marine mammals will be further minimized by following the USFWS “Standard Manatee Conditions for In-Water Work” during all project implementation and monitoring activities.
- Ideal project timeframes are generally just before the on-set of nesting season or after fledging has been completed. If nesting migratory birds are observed during project construction, the U.S. Fish and Wildlife Service will be contacted to determine if BMPs are necessary to avoid take. The Trustee will implement any BMPs such that the action will not result in take under the MBTA.
- Due to these species’ mobility and the implementation of NMFS’ Sea Turtle and Smalltooth Sawfish Construction Conditions, the risk of injury from construction will be minimal.

10.4.3.2.3 Human Uses and Socioeconomics

- If potential cultural resources are identified during implementation of the project, activities will cease and the Alabama SHPO will be contacted to determine the significance of these resources.

10.4.3.3 Monitoring

Project performance will be assessed through physical and biological monitoring of oyster cultch plants conducted by ADCNR. The monitoring program will determine whether the project goals and objectives have been achieved. The project restoration objectives are (1) create or enhance oyster cultch areas that are sustained for the expected lifespan of the project, and (2) support oyster settlement and growth. Components of this monitoring effort are expected to include collecting information on the following typical biological oyster metrics and parameters: oyster cultch area, oyster density, oyster mortality, and oyster size distribution. Post-construction monitoring is expected to be conducted annually in late summer, for an estimated 10 years. During sampling events additional dredge samples could be collected to determine if additional dives are necessary.

Oyster cultch plant maintenance will likely consist of cultch replenishment, as necessary. Cultch material may be lost over time due to weather events, harvest activity, etc. Mid-course enhancements will include additional cultch placement in areas of cultch loss. Once clean oyster cultch has been planted and larval oysters become attached, monitoring will take place to document growth and mortality rates.

10.5 Florida

10.5.1 Beach Enhancement Project at Gulf Islands National Seashore

The Beach Enhancement at Gulf Islands National Seashore project involves removing fragments of asphalt and road-base material (limestone aggregate and some chunks of clay) that have been scattered widely over the Fort Pickens, Santa Rosa, and Perdido Key areas of the Florida District of Gulf Islands National Seashore, managed by the National Park Service, and replanting areas, as needed, where materials are removed. The asphalt- and road-base-covered conditions are clearly unnatural and impact the visitor experience both aesthetically and physically in these National Seashore lands. The project will enhance and increase the public's use and enjoyment of the natural resources by improving the beach at the Gulf Islands National Seashore.

This project was analyzed for its potential environmental consequences on the following resource topics: Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources (i.e. protected species and their critical habitats, migratory birds and bald eagles, seagrass, fish, Essential Fish Habitat, shellfish, marine mammals, and non-native species), Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).

Final NEPA analysis of the environmental consequences suggests that while short-term moderate impacts may occur to soundscapes during project implementation because of the noise of heavy equipment, no other moderate impacts, and no major adverse impacts, are anticipated to result.

The Trustees evaluated the Beach Enhancement Project at Gulf Islands National Seashore in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Resources, Living Coastal and Marine Resources, Habitat, Socioeconomic, Aesthetics and visual resources, Tourism and Recreational use, and infrastructure. Based on the cumulative impact analysis, the Beach Enhancement Project at Gulf Islands National Seashore will not substantially contribute to adverse cumulative effects to resources. The Beach Enhancement Project at Gulf Islands National Seashore, carried out in conjunction with other actions, has the potential to provide long-term beneficial cumulative impacts.

10.5.1.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations or reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, the Coastal Barrier Resources Act and Rivers and Harbors Act has been initiated.

The Final Phase III ERP/PEIS evaluated the environmental consequence of the proposed project on proposed terrestrial Loggerhead CH. Shortly after the Trustees released the Final Phase III ERP/PEIS, USFWS designated final Loggerhead CH. DOI requested the USFWS adopt the conference report as an informal consultation for final Loggerhead CH. The USFWS' informal consultation for loggerhead CH was completed on September 22, 2014 resulting in a concurrence that the project, as proposed, would not result in adverse modification or destruction of final Loggerhead CH. Accordingly, the Trustees have determined that the final Loggerhead CH designation does not represent significant new information that requires supplemental environmental consequences analysis pursuant to NEPA.

10.5.1.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs (sorted by resource type), which include voluntary measures as well as those included from the consultations noted above. Although conservation measures and BMPs are listed under specific resources, they will result in increased benefits (reduction in impacts) to other resources.

10.5.1.2.1 Measures to Mitigate Impacts to the Physical Environment

- Although there are relatively few on-island water resources, for those that exist (e.g. permanent brackish ponds and lagoons or ephemeral ponds/swales), equipment will stay out of and a safe distance from (to be determined, but at least 10 ft.) them.
- Areas where groundwater is impacted– e.g., near ephemeral freshwater wetlands where groundwater is extremely shallow –will be avoided by equipment.

- BMPs along with other avoidance, mitigation and permit conditions required by state and federal regulatory agencies will be used to minimize water quality and sedimentation impacts.
- The project will be implemented in the in the late summer/fall/winter months when noise-sensitive recreationists will be much fewer.
- Mitigation measures that could limit noise during on-land activities include: limiting activity at project sites to daytime hours (dawn to dusk); promoting awareness among contractors that producing prominent discrete tones and periodic noises (e.g., excessive dump truck gate banging) should be avoided as much as possible; limiting activity to time periods when visitor use of the site is at its lowest (i.e. late summer, fall and winter; Monday through Friday, possibly Saturday, not Sunday); and possibly employing noise-controlled construction equipment to the maximum extent possible.
- Mitigation measures will include breaking up large pieces on land (rather than in-water) whenever possible, and keeping the backhoe vehicle itself out of the water as much as possible. Also, although the window of time for in-water cleanup activities is four months per year for four years, it is expected to only take a total of two months.

10.5.1.2.2 Measures to Mitigate Impacts to Biological Resources

- Project work will only occur during daylight hours; as such the project will not alter the natural light regime of the area.
- Mechanized equipment will not be allowed during the project on densely vegetated areas.
- All destroyed vegetation will be replaced within 12 months. This will be done either by removing all sparse vegetation before asphalt removal activities begin and replanting it afterwards, or by harvesting plant material (e.g., seeds, cuttings), cultivating it, and replanting the cleaned area with it.
- Appendix 2 of PM #77-1 presents a set of conditions that must be satisfied and best management practices (BMPs) that must be implemented for an action to qualify as excepted. If one or more of the conditions or BMPs cannot be met, then the action reverts to full compliance with PM #77-1 and a Wetland Statement of Findings is required. Additional BMPs or conditions may be appropriate depending on local conditions or special circumstances.
- All construction personnel will be notified of the potential presence of Perdido Key beach mice and reminded of the criminal and civil penalties associated with harassing, injuring, or killing Perdido Key beach mice.
- During project work, construction crews will be operating mechanized equipment on the beach and small crews may be walking along the beach removing fragments of material by hand. Machinery will not be used within dune habitats used by beach mice (Perdido Key Beach Mouse and non-listed Santa Rosa Beach Mouse); however crews could use hand tools.
- To minimize impacts to beach mice in burrows, a qualified biologist will survey the project site before work commences and flag potential burrows and tracks so that they can be avoided.
- Only hand tools will be used within a five-foot radius of a burrow opening or any observed mice tracks.
- Mechanized equipment will not be used to remove the materials within areas known to support

beach mice. Small crews, guided by a biologist, may remove product with hand tools to some extent.

- Equipment and vehicles will avoid the dune by 10 feet from the toe of the dune.
- Construction will occur during the day to minimize disturbance to nocturnal patterns.
- Equipment, vehicles, and project debris will not be stored in a manner or location where it could be colonized by mice.
- All construction personnel will be notified that if equipment is left onsite overnight, a qualified biologist will walk around the equipment and look for signs of mice before moving the equipment.
- The project will occur in very localized locations for very short periods of time, allowing for intact sand, mud, and algal flats, as well as surf-cast algae, back beach, salterns, spits and washover areas to remain nearby as others are disturbed.
- When plants are destroyed during the project, appropriate native plants will be planted in the same location to minimize effects to the vegetative composition of the area.
- Only hand tools will be used within the dunes, reducing possible impacts to burrows and reactions to noise and vibration.
- No mechanized equipment will be used or left in the dunes.
- All personnel associated with the project will be instructed in the potential presence of Gulf sturgeon. The project personnel will be informed of the civil and criminal penalties for harming, harassing, or killing species that are protected.
- Keep noise low (in air and in water) to the greatest extent possible.
- Care shall be taken in lowering equipment or material below the water surface and into the sediment. These precautions will be taken to ensure no harm occurs to any sturgeon which may have entered the project area undetected.
- In the unlikely event that a protected Gulf sturgeon approaches any near-shore areas of the project, work will immediately cease until the sturgeon moves away from the area on its own volition.
- The Sea Turtle and Smalltooth Sawfish Construction Conditions (NMFS 2006) will be implemented.
- The Beach Enhancement project will adhere to all applicable federal, state, and local permit conditions for the protection of marine mammals.
- Construction activities will be limited to the late summer, fall, and winter months when sea turtles are less likely to be nesting and hatchlings are less likely to be leaving the nest.
- The Seashore will increase turtle crawl and nest monitoring in areas between May 1 and Aug 31 in an effort to locate and identify all crawls, false crawls and nests. These nests will be marked for avoidance (following standard procedures) by foot traffic and vehicles.
- In areas where sea turtle nests are present, cleaning will not begin until after the nest hatches.
- Vehicles and equipment will be driven to avoid nests by a minimum of 10 feet.
- All construction personnel will be notified of the potential presence of sea turtles both on the beach and in the water and will be reminded of the need to avoid sea turtles.
- All construction personnel will be notified of the criminal and civil penalties associated with

harassing, injuring, or killing sea turtles.

- In areas where adults or hatchlings could be present and vehicles or mechanical equipment maybe used, a pre-operational survey will be conducted to ensure no adults or hatchlings are present or in the path of the equipment.
- All construction personnel will be trained/instructed as to what they are to do in the presence of a sea turtle.
- All ruts created during construction activities involving operation of mechanized equipment will be leveled in order to prevent entrapment of sea turtles.
- All holes created from removal of material will promptly be filled in order to prevent entrapment of sea turtles.
- No work will be completed in the nearshore area until all known nests in the vicinity have hatched.
- Driving on the beach for project implementation will be between sea turtle nesting seasons allowing for the full natural cycle of wind/rain erosion and accretion of sand to occur.
- All construction personnel will be instructed and trained in the protection of shorebirds and seabirds. Construction personnel will be notified of the criminal and civil penalties associated with harassing, injuring, or killing shorebirds and seabirds.
- Construction activities will be conducted in accordance with the Florida Fish and Wildlife Conservation Commission's Guidelines to Protect Nesting Shorebirds and Seabirds.
- If piping plovers or red knots are present, work will not occur until the birds have moved from the area by 150 feet.
- All construction personnel will be notified that if equipment is left onsite overnight, a qualified biologist will walk around the equipment and look for signs of birds before moving the equipment, contacting a qualified biologist if signs of birds' presence are detected.
- All construction personnel will be notified of the potential presence of West Indian manatee in the water and reminded of the criminal and civil penalties associated with harassing, injuring, or killing West Indian manatees.
- All workers will be educated that there could be West Indian manatees in the water and will be advised to look for manatees and, if observed, wait until manatees leave the area to put the equipment in the water.
- In-water construction activities will be limited to the late summer, fall and winter months when West Indian manatees are less likely to be present within the construction area. Care will be taken when lowering equipment into the water and the sediment in order to ensure that no harm is caused to West Indian manatee that may potentially be in the water within the construction area.
- Should a West Indian manatee come within 50 feet of the project area during construction activities, work will immediately cease until the West Indian manatee has moved away from the project area on its own.
- Construction noise will be kept to the minimum feasible.
- The project will not be implemented during shorebird/seabird nesting season.

- Care will be taken to minimize noise and vibration near areas where foraging or resting migratory birds or bald eagles are encountered.
- Care will be taken to avoid working near other raptor nests, and to minimize noise and vibration in their vicinities.
- A staff biologist will advise the contractor of the nesting status of all identified raptor nests near the project area and approve of work in the vicinity.
- If a bald eagle nest were observed in the vicinity of the project site, conservation measures from the National Bald Eagle Management Guidelines (USFWS 2007) will be implemented.
- Best Management Practices (BMPs) to control the spread of any invasive species present and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/vessels, and shipping material).

10.5.1.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- A solid waste management plan will be implemented to manage the collection, recycling and disposal of asphalt, road-base materials and non-project-related waste generated during implementation activities.
- Project implementation will occur during the slowest part of the tourist season – i.e., late summer, fall, and winter – and because other nearby areas will continue to be available.
- All hazardous materials (e.g., diesel fuels) handled during removal will be contained and appropriate barriers will be in place to ensure the protection of adjacent water resources from potential spills and leaks.
- Personal protective equipment will be required, as appropriate, for all construction personnel and authorized access zones will be established, if needed, at the perimeter of the project site during implementation.

10.5.1.3 Performance Criteria, Monitoring, and Maintenance

The restoration objective of this project is to restore a portion of the lost visitor use of the Seashore caused by the Spill by improving the future visitor experience there. This will be accomplished by improving the appearance of the Seashore and the public's enjoyment of use of the Seashore. The aesthetic and physical improvements will improve the visitors' experience by keeping them from walking on or swimming among the asphalt and road-base materials. The project will be deemed successful when observation shows road materials have been removed and replanted areas established. As such, performance criteria for this project are the removal of the materials from an area and the short-term survival (i.e., 80% after 90 days) of replanted vegetation. Each of these criteria can be easily monitored and confirmed through visual observation. To confirm materials have been removed from an area, monitoring will occur immediately after an area has been cleaned, and then again some days, weeks, or months later in case wind or water uncovers additional materials or in case storm overwash events have redistributed materials back into the same areas or into new areas. Additionally, visitor use will be monitored using existing Seashore protocols for the gathering and evaluation of visitor feedback, including the routine use of visitor comment card surveys.

Monitoring plant survival at replanted areas will likely occur three months after planting to confirm that the percent-survival performance criterion (at least 80%) is met.

No long-term maintenance activities beyond the five-year duration of this project are expected for this project and are not budgeted.

10.5.2 Gulf Islands National Seashore Ferry Project

The Gulf Islands National Seashore Ferry Project involves the purchase of up to three ferries to be used to ferry visitors (no automobiles) between the City of Pensacola, Pensacola Beach, and the Fort Pickens area of the Seashore in Florida. A viable ferry service to this area of the Seashore will allow visitors to enjoy the Seashore not only if the road were to be destroyed again, but also by providing alternative options for visitor access. The project will enhance and increase the public's use and enjoyment of the natural resources by providing a ferry service between the City of Pensacola, Pensacola Beach, and the Gulf Islands National Seashore.

This project was analyzed for its potential environmental consequences on the following resource topics: Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources (i.e. protected species and their critical habitats, migratory birds and bald eagles, seagrass, fish, Essential Fish Habitat, shellfish, marine mammals, and non-native species), Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection). This project is anticipated to have only minor impacts to those resources.

The Trustees evaluated the Gulf Islands National Seashore Ferry Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Resources, Living Coastal and Marine Resources, Habitat, Socioeconomic, Aesthetics and visual resources, Tourism and Recreational use, and infrastructure. Based on the cumulative impact analysis, the Gulf Islands National Seashore Ferry Project will not substantially contribute to adverse cumulative effects to resources. The Gulf Islands National Seashore Ferry Project, carried out in conjunction with other actions, has the potential to provide long-term beneficial cumulative impacts.

10.5.2.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations or reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act, National Historic Preservation Act, and the Coastal Barrier Resources Protection Act. Consultations have been initiated for the Endangered Species Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the Clean Water Act has been initiated. Best management practices and conservation measures required by consultations in adherence to these laws are listed below, categorized by whether

they correspond to the physical environmental, biological resources, and human uses and socioeconomics.

The Final Phase III ERP/PEIS stated that this project does not require further ESA consultations with NMFS. Since that time, NMFS has requested that the Trustees reinitiate consultation. The consultation has been initiated.

10.5.2.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs (sorted by resource type), which include voluntary measures as well as those included from the consultations noted above. Although conservation measures and BMPs are listed under specific resources, they will result in increased benefits (reduction in impacts) to other resources.

10.5.2.2.1 Measures to Mitigate Impacts to the Physical Environment

- Best management practices, promulgated by the U.S. Department of Transportation and the operating permit, will dictate mitigation measures needed to control and minimize impacts to water quality from the ferry service at the project areas.
- Mitigation for fueling operations will include a Spill Prevention, Control, and Countermeasures (SPCC) Plan.

10.5.2.2.2 Measures to Mitigate Impacts to Biological Resources

- Instruct all personnel associated with the construction and operational phases of the project in the potential presence of Gulf sturgeon and the need to avoid collisions with them.
- Inform the construction site personnel and personnel associated with operating the ferry of the civil and criminal penalties for harming, harassing, or killing species that are protected.
- Keep construction noise low (in air and in water) to the greatest extent possible.
- Construct piers from floating barges using floating turbidity barriers made of materials that will not allow Gulf sturgeon to become entangled. Barriers will be properly secured and will be monitored regularly so that no animals are entangled or trapped.
- Care shall be taken in lowering equipment or material below the water surface and into the sediment. These precautions will be taken to ensure no harm occurs to any sturgeon which may have entered the construction area undetected.
- Spill response kits on board during construction will be maintained.
- In the unlikely event that a protected Gulf sturgeon approaches (within 100 yards) any near-shore, littoral areas of the project, work will immediately cease until the sturgeon moves away from the area on its own volition.
- All vessels associated with the construction project shall operate at “no wake/idle” speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.
- Sea Turtle and Smalltooth Sawfish Construction Conditions (NMFS 2006) will be implemented.

- NPS will develop a Memorandum of Agreement with local government officials (responsible for the construction of related piers) that requires construction of new piers and Ferry Operation to be consistent with the Endangered Species Act consultations completed for the purchase and operation of the ferries and other measures included within the Phase III Early Restoration Plan/PEIS and this Record of Decision.
- The most recent version of the USFWS' *Standard Manatee Conditions for In-Water Work* (USFWS 2011) will be implemented and adhered to during project construction.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the National *Bald Eagle Management Guidelines* will be followed (USFWS 2007).
- To minimize risks in the aquatic environment, all construction conditions identified in the *Sea Turtle and Smalltooth Construction Conditions* will be implemented and adhered to during project construction to minimize the risk of collisions.
- In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated.

10.5.2.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- Construction work in the areas will be done to code, including meeting all OSHA standards for workers, including the standards to which the ferry boats themselves will be built.
- Areas under construction will be demarcated so that the public stay out and away from potentially harmful materials or situations.
- Once passengers are using these areas in the future, all federal, state, and local safety requirements for the operating of the ferry service will be followed. This includes the handling and use of hazardous materials such as boat fuel, solvents, biocides, lubricants, etc.
- Regarding hazardous materials, in the event of a fuel or oil spill from construction equipment, all procedures, regulations and laws pertaining to Oil Spill Prevention and Response will be adhered to and the incident will be reported to appropriate agencies.

10.5.2.3 Performance Criteria, Monitoring, and Maintenance

The restoration objective of this project is to restore a portion of the lost visitor use of the Seashore caused by the Spill. The success criteria for the project will be met if construction of the ferries is completed as specified, on schedule, and on budget. Visitor use of the ferries will be monitored through annual compilations of ridership statistics and through the use of existing park protocols for gathering visitor feedback. These existing protocols include the routine use of visitor comment card surveys and the collection of annual ridership statistics.

Regular boat maintenance will be the responsibility of the entity operating the service and will be funded by ongoing ticket sales.

10.5.3 Florida Cat Point Living Shoreline Project

The Cat Point (Franklin County) Living Shoreline project is intended to employ living shoreline techniques that utilize natural and/or artificial breakwater material to reduce shoreline erosion and provide habitat off Eastpoint, Florida. Combining these objectives, this project will create breakwaters to reduce wave energy, increase benthic secondary productivity, and create approximately 1 acre of salt marsh habitat. Activities include expanding an existing breakwater by creating up to 0.3 miles of new breakwater that will provide reef habitat and creating salt marsh habitat. As a result of the Deepwater Horizon oil spill and associated response activities, benthic secondary productivity and salt marshes along the north central Gulf coast suffered adverse impacts. This project seeks to foster reef development and salt marsh habitat, which will help compensate the public for Spill-related injuries and losses to benthic secondary productivity and salt marsh habitats. Thus, the nexus to resources injured by the Spill is clear. See 15C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The NEPA analysis of the environmental consequences suggests that minor adverse impacts to some resource categories and no moderate to major adverse impacts are anticipated to result. The project will provide long-term benefits by creation of approximately 1 acre of salt marsh, and approximately 0.3 miles of living shoreline.

The Trustees evaluated the Florida Cat Point Living Shoreline project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Florida Cat Point Living Shoreline Project will not substantially contribute to adverse cumulative effects to resources. The Florida Cat Point Living Shoreline Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.3.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.3.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during

the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.3.2.1 Measures to Mitigate Impacts to the Physical Environment

- All USACE permit conditions relating to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act will be adhered to during project construction.
- The restoration work includes placing the breakwater structures approximately 30 feet from the shoreline, which will likely have an approximate 5 foot crest width with a height that falls within the mean high and low water lines of the site. The specific breakwater elevation and technique design will be selected to maximize shoreline protection and meet state regulatory requirements.
- Construction of the breakwaters will occur during winter months (November through early March) when the extreme low tides will leave the breakwater material placement area exposed so materials can be placed from shore using a combination of cranes or backhoes.
- The location for the placement of the breakwater materials, along with any preferred transportation paths, will be marked during construction using PVC stakes that will be driven by hand using a post driver or other means into the sediment. Following final materials placement these stakes will be removed.
- Other measures to limit impacts to the physical environment:
    - Installation of floating turbidity barriers;
    - Installation of erosion control measures along the perimeter of all work areas;
    - Stabilization of all filled areas with sod, mats, barriers, or a combination;
    - Storing and fueling vehicles away from aquatic areas; and
    - Re-vegetation of exposed soils when construction activities are complete.

10.5.3.2.2 Measures to Mitigate Impacts to Biological Resources

- During construction, the Sea Turtle and Smalltooth Sawfish Construction Guidelines (NOAA, 2006), and Measures for Reducing Entrapment Risk to Protected Species (NOAA, 2012) will be implemented.
- The Standard Manatee Conditions for In-water Work (USFWS, 2011), will be implemented and adhered to during in-water work.
- Gaps will be constructed between the breakwater units, which will be a minimum of 3 feet wide, to minimize the risk of species entrapment.
- If bald eagles are found nesting within 660 feet of the construction area, then activities will need to occur outside of nesting season or the National Bald Eagle Management Guidelines (USFWS 2007) will be followed.
- If construction and planting occurs during shorebird nesting season (February 15 to August 31), the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds or rookeries and their recommendations will be implemented.
- Care will be taken to minimize noise and physical disruptions near areas where foraging or resting birds are encountered. Work will be conducted during daylight hours only.

- During construction, all appropriate BMPs will be followed to minimize the potential impacts of construction activities on EFH and species in the area. During construction, adjacent areas with equivalent or better habitat will be available and undisturbed and organisms could move away from disturbed areas.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.3.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction-related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids, and to avoid releases and spills. If a release should occur, it will be contained and cleaned up promptly in accordance with all applicable regulations, and the incident will be reported to appropriate agencies.

10.5.3.3 Performance Criteria, Monitoring, and Maintenance

Monitoring will be conducted to ensure project designs are correctly implemented and to evaluate project effectiveness. Performance criteria will be used to determine project success or the need for corrective actions. The monitoring has been designed around the project objectives: 1) to protect created marsh habitat from erosion, and 2) to promote reef development for bivalves and other invertebrates. Monitoring activities are planned for 5 years following the completion of the project. Specific success criteria include: 1) the construction of breakwaters that meet project design criteria, support benthic secondary productivity, reduce wave energy affecting the shoreline, and are sustained for the expected life of the project; 2) the creation of salt marsh habitat that meets project design criteria and achieves the designed percent cover by native saltmarsh vegetation; and 3) the reduction of shoreline erosion which protects created salt marsh habitat.

Baseline monitoring will be conducted to collect data that will be used as points of comparison for implementation and post-implementation monitoring data. Implementation monitoring will be conducted to ensure that the breakwaters were constructed with the appropriate dimensions. In general, components of this monitoring will evaluate the production and support of organisms on the breakwater (e.g., benthic secondary productivity), the performance of the breakwater in protecting the shoreline (e.g., salt marsh habitat), and the creation of salt marsh habitat. Performance criteria will be established to determine whether the project achieves the desired breakwater specifications, benthic secondary productivity, and salt marsh habitat created.

Components of this monitoring may include collecting information with respect to:

- Structural integrity of breakwater/reef structure;
- Height/elevation and width of breakwater/reef structure;
- Consolidation rate of breakwater/reef structure;
- Shoreline (salt marsh) profile;
- Shoreline (salt marsh) position;
- Bivalve density, size, biomass, and survival;
- Non-bivalve invertebrate density and biomass; and
- Percent cover and survival of planted marsh vegetation.

Adaptive management procedures will be used to correct deficiencies or maintenance needs identified through monitoring. Furthermore, a minimum of 80 percent of the plantings must be viable at the end of the first growing season subsequent to initial planting. Viable area coverage shall be monitored in following years to ensure establishment of salt marsh vegetation. Monitoring of the plantings will occur for a minimum of 5 years with a minimum of one site inspection per year. Annual reports and photographs will be prepared during the monitoring period.

10.5.4 Florida Pensacola Bay Living Shoreline Project

The Pensacola Bay Living Shorelines project is intended to employ living shoreline techniques that utilize natural and/or artificial breakwater material to reduce shoreline erosion and provide habitat at two sites within a portion of Pensacola Bay. This project will create reefs to reduce wave energy, increase benthic secondary productivity, and create salt marsh habitat. Activities include constructing breakwaters that will provide reef habitat and creating salt marsh habitat at both sites. In total, approximately 18.8 acres of salt marsh habitat and 4 acres of reefs will be created. As a result of the Deepwater Horizon oil spill and associated response activities, benthic secondary productivity and salt marsh habitats along Florida's Panhandle suffered adverse impacts. This project seeks to foster reef and salt marsh habitat development, which will help compensate the public for Spill-related injuries and losses to benthic secondary productivity and salt marsh habitat. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor or moderate adverse impacts may occur to some resource categories, no major adverse impacts are anticipated to result. The potential for moderate adverse impacts were identified for Geologic and Soil (substrate) Resources and may result in long-term impacts to sandy bottom substrate which will be covered with hard structure due to breakwater construction and short-term impacts due to sediment excavation for salt marsh creation. The project will provide long-term benefits by creation of approximately 18.8 acre of salt marsh, and approximately 4 acres of reefs.

The Trustees evaluated the Florida Pensacola Bay Living Shoreline project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources,

infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Florida Pensacola Bay Living Shoreline Project will not substantially contribute to adverse cumulative effects to resources. The Florida Pensacola Bay Living Shoreline Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.4.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated. Activities associated with breakwater construction and salt marsh habitat creation are regulated by the U.S. Army Corps of Engineers (Corps). The discharge of dredged or fill material into waters of the United States, including wetlands, or work affecting navigable waters associated with this project will be coordinated with the Corps pursuant to the Clean Water Act Section 404 and Rivers and Harbors Act (CWA/RHA). Coordination with the Corps and final authorization pursuant to CWA/RHA will be conducted during the engineering and design of the project and will be completed prior to project implementation.

10.5.4.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations. Although conservation measures and BMPs are listed under resource types that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.4.2.1 Measures to Mitigate Impacts to the Physical Environment

- All USACE permit conditions relating to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act will be adhered to during project construction.

- Best management practices will be implemented to control turbidity levels and meet state requirements during construction activities. The State of Florida requires that turbidity levels are less than or equal to 29 Nephelometric Turbidity Units (NTU) above natural background conditions for waters of the State. Floating turbidity screens that meet FDEP specifications will be deployed during project construction to contain and control turbidity or silt in the project area. Additional best management practices will be implemented if turbidity levels during construction exceed local and state regulatory/permit levels. Sediment control measures will also remain in place throughout the dredging and filling process.

- Borrow source sediments will be determined to be free of contaminants via the methodology described in the USACE Inland Testing Manual (Evaluation of Dredged Material Proposed For Discharge in Waters of the U.S., USACE 1998). Or other methods required by Florida testing protocols. In addition, borrow areas in water depths of six (6) feet or less will be limited to excavated depths of four (4) feet below the sediment line. Borrow areas in six (6) feet or more of water depth will be limited to excavated depths of six (6) feet below the sediment line.
- The breakwaters will have variable crest widths that fall within the mean high and low water lines (intertidal) of the site with appropriately sized gaps between breakwater structures to maintain tidal exchange. The specific breakwater elevation and design will be selected to maximize protection of salt marsh habitat created, meet state regulatory requirements, and avoid or minimize conflicts with current uses at the sites.
- Boater warning safety signs will be placed on 12-inch diameter posts and pushed into the bottom in several locations adjacent to the breakwaters. Sign installation methods will be selected to minimize the generation of underwater sound. Therefore, it is expected that sign posts will be pushed in rather than using a pile driver or jetting the piles into place, unless necessary due to site conditions.

10.5.4.2.2 Measures to Mitigate Impacts to Biological Resources

- Anchoring sites during construction will be situated to avoid impacts to seagrass if found to be in the project area. Access over existing seagrass will also be avoided to the extent practicable to minimize prop-scarring impacts.
- The project will adhere to the following guidance to avoid impacts to protected species: *Sea Turtle and Smalltooth Sawfish Construction Conditions (2006), U.S. Fish and Wildlife Service (USFWS) Standard Manatee Conditions for In-water Work (2011),* NOAA's *Measures for Reducing Entrapment Risk to Protected Species (2012),* and any applicable federal and state permit conditions.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the *National Bald Eagle Management Guidelines* (USFWS 2007) will be followed.
- To avoid potential impacts to protected species, the project will not use a hopper dredge unless required due to site conditions at the selected dredge material source sites. Additional site evaluation and sediment testing will also be conducted to identify the most suitable borrow sites.
- Pre-construction surveys will identify any nesting migratory bird species that may be disturbed by construction noise and BMPs developed in consultation with USFWS will be implemented to minimize this potential disturbance.
- Care will be taken to minimize noise and physical disruptions (e.g., vibration) near areas where foraging or resting birds are encountered.
- If the project will be implemented during shorebird nesting season, areas that could be affected by project noise will be examined for nesting shorebirds or evidence of nesting shorebirds. If nesting or evidence of nesting is observed, the most recent version of the Florida Fish and

Wildlife Conservation Commission's (FWC) standard guidelines to protect against impacts to nesting shorebirds will be obtained and followed.

- Creation of marsh habitat will involve the use of native marsh species and follow strict protocol established by the state of Florida to ensure local sources of native species are used to create marsh habitat.
- Best Management Practices to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material).There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.4.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- The project design will incorporate and accommodate existing marine uses within the area to prevent or minimize any potential impacts.
- Barriers, navigation warning signs (lighted and unlighted), and other markers will be established along the work area to protect boaters. These will be maintained throughout the project until permanent markers are established.
- Permanent boating safety warning signs placed on 12-inch diameter posts will be pushed into the bottom adjacent to breakwaters.

10.5.4.3 Performance Criteria, Monitoring, and Maintenance

As part of the project costs, monitoring will be conducted to ensure project designs were correctly implemented and to evaluate project effectiveness. Performance criteria will be used to determine project success or the need for corrective actions. The monitoring will be designed around the following project objectives: 1) protect created marsh habitat from erosion, and 2) promote reef development for bivalves and other invertebrates. Monitoring activities will be planned for up to a seven year period. Specific success criteria include: 1) the construction of reefs that meet project design criteria, support benthic secondary productivity, reduce wave energy affecting the shoreline, and are sustained for the expected life of the project; 2) the creation of salt marsh habitat that meets project design criteria and achieves the designed percent cover by native saltmarsh vegetation; and 3) the reduction of shoreline erosion which protects created salt marsh habitat.

Baseline monitoring will be conducted to collect data that will be used as a point of comparison for implementation and post implementation monitoring data. Performance criteria will be established to determine whether the project achieves the desired breakwater specifications, benthic secondary productivity, and salt marsh habitat created. Components of this monitoring may include collecting information with respect to:

- Structural integrity of breakwater/reef structure;
- Height/elevation and width of breakwater/reef structure;
- Consolidation rate of breakwater/reef structure;
- Shoreline (salt marsh) profile;
- Shoreline (salt marsh) position;
- Wave energy;
- Bivalve density, size, biomass, and survival;
- Non-bivalve invertebrate density and biomass; and
- Percent cover and survival of planted marsh vegetation.

Adaptive management procedures will be used to correct deficiencies or maintenance needs identified through monitoring. Adaptive management activities may include adding additional material to the surface of a breakwater, adding additional hardened structure (e.g. riprap), adding additional natural materials (e.g. fossilized oyster shell), and/or replacing warning signs. Furthermore, a minimum of 80 percent of the plantings must be viable at the end of the first growing season subsequent to initial planting. Viable area coverage shall be monitored in following years to ensure establishment of salt marsh habitat. All monitoring and adaptive management procedures will follow disturbance minimization measures, especially as they relate to vessel use around the project area.

Anticipated pre and post project monitoring activities: Monitoring activities will be performed at various times beginning prior to construction and continuing up to seven years post construction. The monitoring activities will include:

- Topographic/bathymetric surveys,
- Vegetation surveys (i.e. species composition and % cover), and
- Biological monitoring (i.e. oyster and invertebrate density and biomass)

Monitoring will ensure project designs are correctly implemented during construction and in a subsequent period, defined by contract, where corrective actions could be taken. Post construction performance monitoring will also be conducted to evaluate the project's performance over time with respect to the agreed upon Offsets, goals, and objectives. In general, components of this monitoring will evaluate the production and support of organisms on the breakwater for the establishment of reefs (e.g., benthic secondary productivity) and the performance of the created salt marsh habitats.

Components of this monitoring will include collecting information with respect to: the breakwater height and structural integrity; salt marsh coverage; water quality parameters (e.g., salinity, dissolved oxygen), survival of planted species/vegetated area, bivalve and algal presence, coverage, and composition on the reef.

Anticipated Maintenance / Adaptive Management Activities: If the breakwaters are not performing as designed or anticipated, then adaptive management procedures will be used to correct the structures. Adaptive management activities may include adding additional material to the surface of a breakwater, adding additional hardened structure (e.g. riprap), adding additional natural materials (e.g. fossilized

oyster shell), and/or replacing warning signs. All monitoring and adaptive management procedures will follow disturbance minimization measures, especially as they relate to vessel use around the project area.

For the breakwaters, one maintenance activity will take place within the first four years following construction. The maintenance activity will allow for the capping of the breakwaters with riprap and fossilized oyster shell material. The breakwaters are anticipated to experience the greatest consolidation of the subgrade in the first years following construction. The need for additional placement of rock and shell on the breakwater will be assessed based upon the monitoring plan. Maintenance activity construction methods are similar to the breakwater construction process as described in the Construction and Installation section above. Maintenance activities for the created salt marsh habitat may occur within the first 5 years following construction. Maintenance may include additional plantings of native salt marsh habitat to meet project performance criteria.

No long term operations or maintenance requirements are anticipated.

10.5.5 Florida Seagrass Recovery Project

The Florida Seagrass Recovery project will address boat damage to shallow seagrass beds in the Florida panhandle by restoring scars located primarily in turtle grass (Thalassia testudinum) habitats located in St. Joseph Bay Aquatic Preserve in Gulf County, with additional potential sites in Alligator Harbor Aquatic Preserve in Franklin County, and St. Andrews Aquatic Preserve, in Bay County. A boater outreach and education component of the project will install non-regulatory Shallow Seagrass Area signage, update existing signage and buoys where applicable, and install educational signage and provide educational brochures about best practices for protecting seagrass habitats at popular boat ramps in St. Joseph Bay, Alligator Harbor, and St. Andrews Bay. As a result of the Deepwater Horizon oil spill and associated response activities, submerged aquatic vegetation in the Florida Panhandle suffered adverse physical impacts. The project seeks to restore injured submerged aquatic vegetation. The ecological benefits that will be gained by this restoration project are anticipated to help compensate the public for Spill-related injuries and losses to submerged aquatic vegetation. Thus, nexus to resources injured by the Spill is clear. See15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will provide long-term benefits by restoring approximately 2 acres of seagrass habitat.

The Trustees evaluated the Florida Seagrass Recovery project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Florida Seagrass Recovery Project will not substantially contribute to adverse cumulative effects to resources.

The Florida Seagrass Recovery Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.5.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.5.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.5.2.1 Measures to Mitigate Impacts to the Physical Environment

- All USACE permit conditions relating to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act will be adhered to during project construction.
- Available BMPs will be employed to prevent, mitigate, and control potential air pollutants during project implementation.
- Project noise levels will be kept to a minimum via BMPs such as turning boats off during idling, and working only during daylight hours.

10.5.5.2.2 Measures to Mitigate Impacts to Biological Resources

- Project installation activities will use BMPs including impact avoidance of existing seagrass habitat through the use of small vessels.
    - Construction activities will incorporate the guidance and requirements set forth in the *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat* (U.S. Army Corps of Engineers/National Marine Fisheries Service, 2001)
- The Standard Manatee Conditions for In-water Work (USFWS 2011) will be implemented.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the *National Bald Eagle Management Guidelines* will be followed (USFWS 2007).
- Care will be taken to minimize noise and vibration near areas where foraging or resting migratory birds are encountered. Work will occur during daylight hours only.

    - Construction within 300 feet of suitable nesting habitat will be avoided during the nesting season. If construction is not able to avoid the nesting season, a preconstruction survey will be conducted by a qualified biologist, and if nesting birds are identified within 300 feet of project activities, the FWC and USFWS will be contacted regarding the placement of appropriate buffers to ensure no impacts to nesting birds will occur.
- Contractors will be required to be aware of and comply with applicable laws prohibiting harm to migratory birds and endangered species.
- BMPs to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material).There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.5.3 Performance Criteria, Monitoring, and Maintenance

As part of the project costs, monitoring will be conducted to ensure project designs were correctly implemented and to evaluate project effectiveness. Performance criteria will be used to determine project success or the need for corrective actions. The monitoring has been designed around the project objective, which is to restore injured submerged aquatic vegetation. Specific success criteria includes: the creation of new submerged aquatic vegetation in previously scarred areas that meets project design criteria and is sustained for the expected life of the project.

Post construction performance monitoring will initially focus on plant survival and revegetation of the existing scars. This monitoring may include collection of habitat information such as the depth of the scar at different points in time, and percent vegetative cover of the scar. Additional information collected may include utilization and integrity of the bird stakes over time and nature and extent of any subsequent seagrass habitat scaring in areas where the new non-regulatory buoys are placed.

Pre- and post-project monitoring could compare restoration progress in both control and study areas. Changes in the number, length, and cover of propeller scars will be determined in large replicate photograph plots within each study area. Aerial photography may be performed annually, in late summer. Data layers will be created using ArcMap to determine the increase or decrease in scar number, length, and area over time.

Field surveys will be performed biannually in the early spring and late summer to monitor the progress of the restoration activities. Methods designed to measure percent-cover and shoot counts will be used to compare recovery rates of prop scars located within treated and untreated locations of the project area. Permanent (fixed) transects will be incorporated into the study in order to monitor changes in the number of untreated prop scars. Underwater photographs and video may also be taken to document site characteristics prior to and following restoration efforts.

The Florida Department of Environmental Protection (FDEP) Aquatic Preserve staff or a third party will be responsible for monitoring and maintenance of the project after the initial 3-year monitoring of the project. Pre- and post-project monitoring will compare restoration progress in both control and study areas. In addition, routine maintenance of signs and buoys will be conducted by FDEP throughout the monitoring period.

10.5.6 Perdido Key State Park Beach Boardwalk Improvements

The Perdido Key project will improve a number of existing boardwalks in Perdido Key State Park in Escambia County. The improvements include removing and replacing six existing boardwalks leading to the beach from two public access areas. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Perdido Key State Park Beach Boardwalk Improvements project is intended to enhance and/or increase recreational beach use opportunities by improving beach access. The project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational beach use opportunities by improving beach access.

The Trustees evaluated the Perdido Key State Park Beach Boardwalk Improvements project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Perdido Key State Park Beach Boardwalk Improvements Project will not substantially contribute to adverse cumulative effects to resources. The Perdido Key State Park Beach Boardwalk Improvements Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.6.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.6.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.6.2.1 Measures to Mitigate Impacts to the Physical Environment

- Dune walkovers/boardwalks will be implemented per the USFWS' most recent version of the *Conservation Measures for Dune Walkover Construction*.
- Construction materials will be staged in the parking lot that accesses each of the existing boardwalk complexes. Additional materials could be temporarily placed *near but not within* the dune as needed to support the construction of the boardwalk (e.g., ladders, scaffolding, daily construction materials). Access will occur through existing points only (i.e., no new access points will be created).
- If erosion control measures are determined necessary, it will be required as a part of the permitting process and will be managed by the construction contractor throughout construction activities and will be monitored on a daily basis by the contracting authority (FDEP).

10.5.6.2.2 Measures to Mitigate Impacts to Biological Resources

- Dune walkovers/boardwalks will be implemented per the USFWS' most recent version of the *Conservation Measures for Dune Walkover Construction*.
- The extent of any walkover/boardwalks lengthening will be addressed in the final engineering design and plan development. However, efforts will be made to minimize the lengthening to avoid encroachment into areas on the Gulf side of the dunes where sea turtles might nest.
- No lighting will be installed on the walkovers/boardwalks.
- The USFWS Panama City Field Office (PCFO) will be contacted prior to conducting the restoration, regarding dune plantings to balance habitat for listed and migratory birds and beach mouse.
- In Florida, conservation measures to protect active bird nesting sites during nesting season must be considered to reduce potential disturbances of certain project activities.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the National Bald Eagle Management Guidelines (USFWS 2007) will be followed.
- Should work be undertaken between May 1 and October 31 the conservation measures below will be followed:
    - All construction personnel will be notified of the potential presence of sea turtles and reminded of the criminal and civil penalties associated with harassing, harming, or killing sea turtles (all life stages).

    - The local sea turtle nesting surveyor will conduct daily sea turtle nesting surveys will assess the need for the relocation of sea turtle nests that could be affected by the project construction prior to project implementation each day
    - If a sea turtle (either adult or hatchling) is observed, maintain at least 200 feet between the turtle and personnel.
    - All actions shall observe a 10-foot buffer from marked sea turtle nests. Between May 1 and August 31, actions with mechanized equipment or vehicles shall not begin prior to 9:00 am to ensure sea turtle monitoring surveys are completed for the day.
    - Avoid driving over the wrack line or areas of dense seaweed, as these habitats may contain sea turtle hatchings or baby birds that are difficult to see.
- The following measures shall be implemented (regardless of seasonality):
    - All construction personnel will be notified of the presence of critical habitat and reminded to avoid impacting it otherwise additional restoration may be necessary.
    - The nearest, existing staging, access and egress areas, travel corridors, pathways, and roadways shall be used (including those provided by the State, local governments, land managers, trustee, or private property owner, with proper permissions).
    - No new staging areas, access or egress, or travel corridors shall be created.
    - Vegetation removal will be minimized.
    - When driving equipment or vehicles on the beach, they will enter at designated access areas, proceed directly to the hard-packed sand near or below the high tide line and stay below the tide line when driving long distances.
    - Personnel will avoid driving on the upper beach whenever possible, and never drive over any dunes or beach vegetation.
    - The smallest footprint possible will be used to complete the project.
    - If altered, beach topography shall be restored in all areas to the natural beach profile by 20:00 hours each day. Restoring beach topography includes raking of tire ruts, filling pits or holes.
    - No lighting will be installed.
- All construction personnel will be notified of the potential presence of Perdido Key Beach Mice (and other protected species) and reminded of the criminal and civil penalties associated with harassing, injuring, or killing Perdido Key Beach Mice.
- To minimize impacts to Perdido Key beach mice in burrows, a qualified, permitted, biologist will survey the project site before work commences and flag potential burrows and tracks so that they can be avoided.
- Construction noise will be kept to the minimum feasible, and construction will occur during the day to minimize disturbance to nocturnal patterns.
- Equipment, vehicles, and project debris will not be stored in a manner or location where it could be colonized by mice.
- Personnel will remove trash or anything that will attract nuisance wildlife to work areas daily.
- Project related trash or debris shall not be allowed to blow into open water, onto beaches or in the dunes.

- Appropriate waste/trash receptacles will be installed and maintained at boardwalks so that predators are not attracted to the area.
- The project will occur in very localized locations for very short periods of time, allowing the mosaic of primary, secondary scrub vegetation and dune structure to remain unchanged or increase after implementation.
    - If native dune plants are destroyed during the project, appropriate native plants will be planted in the same location to minimize impacts to the vegetative composition of the area. Any dune restoration should mimic natural dunes including the relative abundance of dunes and swales and vegetated and unvegetated areas.
    - A fertilizer to help jump start the plant growth process from initial shock of being planted may be necessary.
    - If sand fencing is to be used, it should be used judiciously and moved up regularly as dune grows. Sand fencing should be removed as dune and plants are large enough to capture sand on their own.
    - Use some larger plants mixed with the smaller typical planting size plants to trap sand naturally and grow the dune.
    - Post and rope should be used/maintained around the entire restoration area to keep people out.
    - ATVs should stay out of dunes and as low to the water line as possible. Plants may have to be walked up to the planting area from ATV travel path.
- If necessary (due to food source removal during construction and growing periods for replacement plants), supplemental beach mouse food sources will be provided.
- Project work will only occur during daylight hours.
- If project activities occur during shorebird nesting season (February 15 to August 31), the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds or rookeries and their recommendations will be implemented.
    - Care will be taken to minimize noise and physical disruptions near areas where foraging or resting birds are encountered.
- If construction occurs within the period from August to May: shorebird surveys (for piping plover and red knot) will be conducted in the project area; and within the project area a 300-foot wide buffer zone where either species congregates will be established. Any and all construction will be prohibited in the buffer zone until the individuals move from the area of their own volition.
- Care will be taken to minimize noise and physical disruptions near areas where foraging or resting birds are encountered. Work will occur during daylight hours only.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for

integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.6.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- Post and rope should be used and maintained around the entire restoration area to keep people from affecting the restoration.
- The project areas will be isolated by construction fencing to prevent incidental access. This fencing material will be erected by hand driving (e.g., with a sledge hammer or post driver) stakes as necessary. These stakes will likely be less than 2 inches in diameter and driven to a depth of 1 foot to 2 feet to secure the fencing.
- Construction will likely occur between October and March, the low visitation season which will also avoid the turtle nesting season.

10.5.6.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational beach use opportunities by improving beach access. Performance monitoring will evaluate the removal and replacement of the six existing boardwalks. Specific success criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the boardwalks are available and open.

Long-term monitoring and maintenance of the improved facilities will be completed by staff from the Florida Park Service as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by the Florida Park Service.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the post construction performance monitoring period, the Florida Park Service will monitor the recreational use activity at the site. Florida Park Service staff will monitor the number of visitors at the boardwalks on a routine basis. The visitation numbers will be kept by the Florida Park Service which is part of the Florida Department of Environmental Protection.

State park staff will perform operation and maintenance of the facility, which includes keeping the area clean of debris, routine inspection and repair of the boardwalks (e.g., maintaining or fixing loose boards), and similar tasks. Monitoring will include construction monitoring and enhanced use numbers.

The construction will be intensely monitored to ensure that the boardwalks are built according to plans, specifications, and permits. Once the construction is complete, the boardwalks will be under a 1-year warrantee period. Periodically the facilities will be reviewed for structural integrity and any failures will be required to be repaired by the contractor during the year under warrantee. A final complete

warrantee inspection will be performed by the contract manager and state parks personnel. State Park staff will provide maintenance after the warrantee period at the end of the year, and any defects that might be noted and repairs that might be required will be made by the contractor. Once the boardwalks are built, State Park staff will record usage of the boardwalks, through parking lot counts during the off season, and revenue acquired during the high visitation season.

10.5.7 Big Lagoon State Park Boat Ramp Improvement

The Big Lagoon State Park project will involve enhancing an existing boat ramp and surrounding facilities in the Big Lagoon State Park in Escambia County. These improvements will include adding an additional lane to the boat ramp, expanding boat trailer parking, improving traffic circulation at the boat ramp, and providing a new restroom facility to connect the park to the Emerald Coast Utility Authority (ECUA) regional sanitary sewer collection system. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Big Lagoon State Park Boat Ramp Improvements project is intended to enhance and/or increase recreational boating and fishing opportunities by improving the existing boat ramp area. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories may occur, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational boating and fishing opportunities by improving the existing boat ramp area.

The Trustees evaluated the Big Lagoon State Park Boat Ramp Improvement Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Big Lagoon State Park Boat Ramp Improvement Project will not substantially contribute to adverse cumulative effects to resources. The Big Lagoon State Park Boat Ramp Improvement Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.7.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan.

Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.7.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.7.2.1 Measures to Mitigate Impacts to the Physical Environment

- BMPs will be employed to prevent, mitigate, and control potential air pollutants during project implementation, such as following speed limits and prohibiting idling unless necessary to run equipment.
- The following mitigation measures have been identified to reduce or eliminate GHG emissions from the project:
    - Shut down idling construction equipment, if feasible.
    - Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
    - Encourage the use of the proper equipment size for the job to maximize energy efficiency.
    - Encourage the use of alternative fuels for generators at construction sites, such as propane or solar, or use electrical power where practicable.
- Sediment analysis for contaminants at the boat ramp site and potential borrow pits will be completed and analyzed prior to project implementation. If hazardous materials were encountered in the project area during construction activities, appropriate measures for the proper assessment, remediation, management, and disposal of the contamination will be required in accordance with applicable federal, state, and local regulations.
- All permit conditions, including mitigation measures for siltation, erosion, turbidity, and release of chemicals, will be strictly followed. During construction, BMPs and boom placement along with other avoidance and mitigation measures required by state and federal regulatory agencies will be employed to minimize any water quality and sedimentation impacts, as well as the damage and loss of wildlife habitats. FDEP permit conditions require erosion and turbidity mitigation measures, which include the following: 1) Installation of floating turbidity barriers, 2)Installation of erosion control measures along the perimeter of all work areas, 3) Stabilization of all filled areas with sod, mats, barriers, or a combination, and 4)Stoppage of work if turbidity thresholds are exceeded. The soils will then be stabilized, work procedures modified, and the FDEP will be notified.
- A wetlands permit will be required for the project and will stipulate appropriate BMPs and mitigation.

- In addition to construction BMPs, the contractor will implement BMPs for adequate erosion control. Erosion control is necessary to prevent damage to adjacent property, natural features, site property, and work in progress. Erosion control measures will be in place prior to any land alteration and will be used throughout the construction process until soils are stabilized. Erosion control BMPs are as follows:
    - To protect against wind and stormwater-runoff erosion, the contactor will place, as appropriate, hay bales and silt fencing with wire fence reinforcement, with sediment to be removed when it reaches approximately one-half of the height of the barrier.
    - Silt fences will be of optimal design and materials for adequate sediment control.
    - Side slopes created during construction will be stabilized at the earliest possible date to avoid erosion with adequate use of compacted soil and staked hay bales.
    - Any disturbed area that will not be paved, sodded, or built upon will have a minimum vegetative cover of 80% and be mature enough to control soil erosion and survive severe weather conditions prior to final inspection.
    - Sod will be sufficiently grown and maintained to secure a dense stand of live grass.

10.5.7.2.2 Measures to Mitigate Impacts to Biological Resources

- The conditions and guidelines of the Sea Turtle and Smalltooth Sawfish Construction Conditions (NOAA, 2006) and the Standard Manatee Conditions for In-Water Work (USFWS, 2011) will be implemented and adhered to during all in-water construction activity.
- The Trustees will work with staff from the PCFO regarding specific language to inform/educate visitors that nearby areas support protected species and provide guidance with respect to how activities could be pursued in a way that will avoid harming these species. Further, the State of Florida Trustees and DOI recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient to evaluate the effectiveness of conservation measures, then, an in-person survey will be taken of a sample of recreational users at the project location at the same time as the planned twice annual performance monitoring of the project by the same party performing such monitoring.
- Preconstruction vegetation surveys and preconstruction and post-construction weed treatments will likely be required. The presence of any special status species will be considered during the design phase of the project, and precautions will be taken to avoid them.
- If a bald eagle nest is observed in the vicinity of the project area, the National Bald Eagle Management Guidelines (USFWS 2007) will be implemented. If project activities occur during shorebird nesting season (February 15 to August 31), the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds or rookeries and their recommendations will be implemented.

- Care will be taken to minimize noise and physical disruptions near areas where foraging or resting birds are encountered. Work will occur during daylight hours only.
- Notices will be posted advising park users of high piping plover use areas.
- If project activities occur during shorebird nesting season (February 15 to August 31), the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds or rookeries and their recommendations will be implemented.
- Undeveloped areas disturbed during construction will be monitored, and exotic species removed.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.7.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction-related hazardous materials, and to avoid releases and spills. If a release should occur, it will be handled promptly in accordance with all applicable regulations.
- All occupational and marine safety regulations and laws will be followed to ensure safety of all workers and monitors.
- Required spill containment measures will be implemented for applicable construction activities. FDEP permit conditions require spill containment protection and mitigation measures as follows:
    - Prohibiting boat repair or fueling facilities over the water
    - Prohibiting activities such as hull cleaning and painting; discharge or release of oils or greases; and related metal-based bottom paints associated with hull scraping, cleaning, and painting.
- Construction could occur at any time but will ideally take place during the time of year when recreation use is lowest to minimize impacts to boat ramp users.
- At the end of the day the area is checked for debris, sediment and possible spillage and these are properly removed and disposed of before shutting down the site.

10.5.7.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational boating and fishing opportunities by improving the existing boat ramp area. Performance monitoring will evaluate: 1) the construction of an

additional lane to the boat ramp; 2) the expansion of the boat trailer parking; 3) the improvement to the traffic circulation at the boat ramp; and 4) the construction of a new restroom facility that will be connected the park to the Emerald Coast Utility Authority (ECUA) regional sanitary sewer collection system. Specific success criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the boat ramp area is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by Big Lagoon State Park staff as part of their regular public facilities maintenance activities. Corrective actions necessary after completion and signoff of the project will be undertaken by park staff. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by Big Lagoon State Park.

Park staff will operate, monitor, and maintain the new and expanded facilities under the existing management plan. Maintenance will include tasks such as checking and cleaning restrooms, removing debris and trash from the boat ramp and boat trailer parking areas, and maintaining the parking area over time. Monitoring will include construction monitoring and tracking visitor use.

During and following the post construction performance monitoring period, the State of Florida park staff will monitor the human use activity at the site. Park staff keeps track of visitation and usage at the park and will provide visitation numbers by the month. This use information is kept by the Florida Department of Environmental Protection.

The State of Florida Trustees and the Department of the Interior recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient, concurrent with the twice annual performance monitoring, and performed by the same party, a survey will be taken of a sample of recreational users at the project location.

10.5.8 Bob Sikes Pier, Parking and Trail Restoration

The Bob Sikes Pier Restoration project will improve access to a fishing pier in the Pensacola area in Escambia County as well as enhancing the quality of the experience for its recreational users. The improvements include renovating parking areas, enhancing bicycle/pedestrian access, and aesthetic improvements to the surrounding area. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Bob Sikes Pier, Parking and Trail Restoration project is intended to enhance and/or increase recreational fishing and beach use opportunities by improving access to the existing fishing pier and the associated beach access trail. The project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset

adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational fishing and beach use opportunities by improving access to the existing fishing pier and the associated beach access trail.

The Trustees evaluated the Bob Sikes Pier, Parking and Trail Restoration Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Bob Sikes Pier, Parking and Trail Restoration Project will not substantially contribute to adverse cumulative effects to resources. The Bob Sikes Pier, Parking and Trail Restoration Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.8.1 Compliance with Relevant Federal Environmental Laws, Regulations and Executive Orders

The Trustees have completed consultations and reviews under the, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.8.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.8.2.1 Measures to Mitigate Impacts to the Physical Environment

- Available BMPs will be employed to prevent, mitigate, and control potential air pollutants and GHG emissions during Project implementation.
- BMPs along with other avoidance and mitigation measures required by state and federal regulatory agencies will be employed to minimize any water quality and sedimentation impacts.

- Mitigation measures that serve to limit noise during construction include: limiting activity at project sites to daytime hours; limiting truck traffic ingress/egress to the site to daytime hours; promoting awareness that producing prominent discrete tones and periodic noises (e.g., excessive dump truck gate banging) should be avoided as much as possible; and requiring that work crews seek pre-approval for any weekend activities, or activities outside of daytime hours.
- Contaminated soils at the project area are not anticipated, if during construction areas of concern are identified appropriate testing and actions will be taken.

10.5.8.2.2 Measures to Mitigate Impacts to Biological Resources

- Precautions during construction will be used to protect any migratory birds that may be feeding, loafing, or resting in or near the project area. Such precautions include minimizing construction noise to the extent practicable, using care to avoid birds when operating machinery or vehicles near birds, and general contractor awareness of bird presence
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors.

10.5.8.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- All waste generated during construction will be disposed of in the appropriate waste or recycling receptacles on-site, and will be taken off-site and disproved in an approved waste disposal site by the construction contractor. All occupational and safety regulations will be followed to ensure safety of all workers and the public.
- All hazardous materials handled during construction including paints, solvents, chemicals and petroleum products will be contained and appropriate barriers will be in place to ensure the protection of adjacent water resources from potential spills and leaks. In the event of a discharge of oil or release of hazardous substances all spills will be reported to the FDEP and all federal and state regulations will be followed during the cleanup.
- BMPs in accordance with the Occupational Safety and Health Administration (OSHA) and state and local requirements will be incorporated into construction activities to ensure proper handling, storage, transport and disposal of all hazardous materials. While the majority of project work will take place within the existing footprint of the recreational site and no changes to infrastructure or habitat will occur, soil and sediment stabilization measures will be incorporated into project design as needed in areas where the potential for erosion exists in order to protect resources and public health and safety.

10.5.8.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational fishing and beach use opportunities by improving access to the existing pier and the associated beach access trail. Performance monitoring will evaluate: 1) the addition of solar-powered lighting; 2) the completion of a series of minor pier and rail modifications; 3) renovation and rehabilitation of designated parking areas; 4) construction of informational/educational signage; 5) enhancement of bicycle/pedestrian access trail;; and 6) the completion of the aesthetic improvements to the parking area, parking access road and multipurpose trail leading to Bob Sikes Pier. Specific success criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the pier is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by Escambia County as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by Escambia County.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the post construction performance monitoring period, the Escambia County will monitor the recreational use activity at the site. Escambia County will visit the site twice a year to count the number of users at the fishing pier. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

10.5.9 Florida Artificial Reef Creation and Restoration

The Florida Artificial Reef Creation and Restoration project will place artificial reefs in permitted areas in Escambia, Santa Rosa, Okaloosa, Walton, and Bay Counties. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Florida Artificial Reef Creation and Restoration project is intended to enhance and/or increase recreational fishing opportunities by increasing the number of artificial reefs in state waters. The project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational fishing opportunities by increasing the number of artificial reefs in state waters.

The Trustees evaluated the Florida Artificial Reef Creation and Restoration Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources,

and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Florida Artificial Reef Creation and Restoration Project will not substantially contribute to adverse cumulative effects to resources. The Florida Artificial Reef Creation and Restoration Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.9.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.9.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.9.2.1 Measures to Mitigate Impacts to the Physical Environment

- Available BMPs will be employed to prevent, mitigate, and control potential air pollutants during project implementation.
- All USACE permit conditions relating to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act will be adhered to during project construction.
- BMPs, along with other avoidance and mitigation measures required by state and federal regulatory agencies, will be employed to minimize any water quality and sedimentation impacts.
- Efforts to reduce turbidity in the shallow water emplacement areas consistent with existing best practice guidelines will be followed.
- A survey will be conducted to determine the placement, alignment, and boundaries of the artificial reefs. The final engineering and design process will determine material needs for intertidal reef construction. If alternative materials are proposed, their suitability will first be evaluated against criteria in existing guidelines for reef materials (Atlantic and Gulf States Marine Fisheries Commissions, 2004). Equipment will be selected considering its draft and considering the specific project location. This will help avoid/minimize the risk of prop dredging or blowouts or impacts from grounding in shallow water locations.

- For the shallower water disk-type reef modules, each reef module is deployed from a tripod which is set in place adjacent to a barge which is in a fixed position. The top of the fully constructed disk reef with central piling is suspended by a hydraulic collar. Once the hollow center pipe is placed in position in contact with the sea floor, ambient saltwater is pumped through the center of the hollow pipe and the pipe subsides to the appropriate depth in the sand layer. The pump is then turned off, the positioning of the disk reef is double checked, the piling is held in place by the tripod for a few minutes until the medium-coarse grained sand re-consolidates around the piling, the hydraulic collar and tripod are then removed and the next disk module is similarly deployed.
- For the deeper water pyramid type modules, each module will be lifted separately, by crane, from the barge deck using a pelican hook and then lowered to the seafloor where the hook will be disengaged, modules will not be indiscriminately dumped. Modules will be deployed on either side of the vessel in a specific order and adjusted so each successive placement will be far enough from the previous one to prevent any two modules from touching.
- Barges and machinery and equipment used during artificial reef creation will generate noise, which may disturb wildlife and humans using the area, but will be kept to a minimum using BMPs (e.g., state requirement to use appropriately muffled equipment).

10.5.9.2.2 Measures to Mitigate Impacts to Biological Resources

- The *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NMFS, 2006) and *Standard Manatee Conditions for In-Water Work* (USFWS, 2011) will both be adhered to during in-water work.
- Access over existing seagrass will be avoided to the extent practicable to minimize prop-scarring impacts.
- Care will be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. Work will occur during daylight hours only.
- The Trustees have determined disturbance to any EFH and species using the habitat in areas adjacent to artificial reef placement will be brief and insignificant, with risks further mitigated by identified best management practices during construction so no adverse impacts to other EFH types will result from the project.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.9.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- All required permits will be obtained, and conditions, permit requirements, and best management practices (BMPs) will be followed during construction.

10.5.9.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, both pre-construction and post-construction monitoring will be conducted by the contracted entity (typically a county agency) or their subcontractors to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is enhance and/or increase recreational fishing opportunities by creating artificial reefs in Escambia, Santa Rosa, Okaloosa, Walton, and Bay counties. Specific success criteria include: 1) completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined that the reefs are available for public use.

Pre-construction monitoring will primarily be related to siting and determining that there is no hard substrate already present. Post-construction monitoring (typically annually for at least 3 years) is required by permits, and generally includes 1) observations of organisms that populate the structures, and 2) documentation and measurement of physical changes to the reef over time. Additional post-construction monitoring of recreational use will be required by the terms of agreements with the local governments implementing the project and will likely consist of boat or snorkeler diver counts taken at pre-determined intervals for at least 3 years post-construction. The recreational use data will be provided to the Florida Department of Environmental Protection.

Monitoring activities will be performed at various times, beginning before construction and continuing after construction. Monitoring will ensure project designs are correctly implemented during construction and in a subsequent period, defined by contract, where corrective actions could be taken. Monitoring activities will include the following:

- Topographic/bathymetric surveys
- Public use monitoring

Pre-restoration deployment will be conducted to confirm that no hard substrate is already present in areas where artificial reef structures will be placed.

Construction-related monitoring will consist of having divers observe the placement of the modules and record exact coordinates of placed materials so that existing state databases can be updated.

Post-construction monitoring will be conducted to evaluate the project's performance over time with respect to the agreed-upon Offsets, goals, and objectives. In general, monitoring will evaluate the production and support of organisms on the living shoreline structure (e.g., secondary production), document and measure physical changes to the reef over time, and possibly provide observations of public use. Components of this monitoring will include collecting information with respect to reef height and structural integrity, water quality parameters (e.g., salinity, dissolved oxygen), bivalve and algal presence, coverage, and composition on the reef.

In accordance with the USACE permitting process, fathometer scans will be conducted once per year for all artificial reef sites to verify material location and condition. Yearly monitoring will also include the use of SCUBA to conduct Level 1, 2, 4, and 4a monitoring. Definitions of each monitoring level are provided in the USACE permit.

Over the long term, project sites will be incorporated into FWC's ongoing diver-based artificial reef monitoring survey program, which evaluates the status of emplaced reef modules. In addition, some counties (e.g., Escambia) also have their own independent reef monitoring programs. Once placed, artificial reef units will require little or no maintenance. Over a period of years to decades, the artificial reef structures will degrade gradually or may be covered through a combination of subsidence and sediment transport/accumulation.

10.5.10 Florida Gulf Coast Marine Fisheries Hatchery/Enhancement Center

The Florida Gulf Coast Marine Fisheries Hatchery/Enhancement Center project will involve constructing and operating a saltwater sportfish hatchery in Pensacola, Florida. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Florida Gulf Coast Marine Fisheries Hatchery/Enhancement Center project is intended to enhance and/or increase recreational fishing opportunities by producing and releasing highly sought-after sportfish species. The project will enhance and/or increase opportunities for the public's use and enjoyment from the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational fishing opportunities by producing and releasing highly sought-after sportfish species.

The Trustees evaluated the Florida Gulf Coast Marine Fisheries Hatchery/Enhancement Center Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Florida Gulf Coast Marine Fisheries Hatchery/Enhancement Center Project will not substantially contribute to adverse cumulative effects to resources. The Florida Gulf Coast Marine Fisheries Hatchery/Enhancement Center Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.10.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed coordination and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden

Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.10.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.10.2.1 Measures to Mitigate Impacts to the Physical Environment

- Available BMPs will be employed to prevent, mitigate, and control potential air pollutants during project implementation. No air quality–related permits will be required. The following mitigation measures have been identified to reduce or eliminate GHG emissions from the project:
    - Shut down idling construction equipment, if feasible.
    - Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
    - Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
    - Encourage the use of alternative fuels for generators at construction sites, such as propane or solar, or use electrical power where practicable.
- Incorporating BMPs (e.g., wetting to control fugitive dust, limited idling) during construction will help mitigate these potential air quality impacts. These BMPs will be incorporated in construction permits.
- In the short term, particularly during the period of intensive excavation and grading, there is the potential for increased sediment transport off the construction site during storm events. Incorporation of BMPs for construction (e.g., silt fencing, hay baling sensitive areas) will ensure that these potentially adverse water quality impacts are minimized.
- Water that is not reused will be treated in two phases. The first phase will consist of on-site filtration to remove large solids. The solids will be disposed of by Emerald Coast Utilities Authority. Next, the water will flow to the storage pond to allow the settling of additional solids. The remaining effluent will be transported to the plant production pond or filtration marsh where nutrients will be removed by native plants before the water is returned as sheet flow back to Pensacola Bay.
- Water quality monitoring will be required by the industrial wastewater permit to ensure there is no water quality impairment of discharges into the bay. All permit conditions, including

mitigation measures for siltation, erosion, turbidity, and release of chemicals, will be strictly adhered to. During construction, BMPs along with other avoidance and mitigation measures required by state and federal regulatory agencies will be employed to minimize any water quality and sedimentation impacts. FDEP permit conditions require erosion and turbidity mitigation measures, which include:

- Installation of floating turbidity barriers;
- Installation of erosion control measures along the perimeter of all work areas;
- Stabilization of all filled areas with sod, mats, barriers, or a combination; and
- Stoppage of work if turbidity thresholds are exceeded. The soils will then be stabilized, work procedures will be modified, and the FDEP will be notified.

10.5.10.2.2 Measures to Mitigate Impacts to Biological Resources

- The production of sport fish will be conducted in a manner consistent with the relevant rules and best management practices (BMPs) that have been developed for the release of marine organisms in the state of Florida (FWC 2009a, 2009b, 2009c). These rules and guidance describe conditions under which marine organisms may be collected, as well as considerations to be addressed prior to the release of any marine organisms into the environment (e.g., genetic risk from the release).
- To reduce risks and potential in-water impacts to protected species, all in-water work will comply with the recommendations contained within the Sea Turtle and Smalltooth Sawfish Construction Conditions (NMFS, 2006) and the Standard Manatee Construction Conditions for In-Water Work (USFWS, 2011) guidance documents.
- The water in-take pipe will be designed and operated in a manner such that manatees cannot be entrained or entrapped. To minimize potential risks of impingement and entrainment the intake pipe will incorporate that a design and screen that ensures water velocity at the screen is less than 15 cm/second (equivalent to 0.15m/s) when water is being pumped.
- Construction activities will cause some disturbance to vegetation in the site's upland habitat. This small area contains remnant native vegetative communities and will be avoided to adhere to city ordinances regarding tree protection. Using construction BMPs to prevent erosion and sediment runoff, disturbance or degradation to these areas will minimize these impacts. Any impacts to native vegetative communities will be short term and minor.
- The large oak and pecan trees on site will be avoided during site grading and project construction to avoid impacts on nesting songbirds.
- Care will be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. Work will occur during daylight hours only.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and

vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.10.2.3 Measures to Mitigate Impacts to Human uses and Socioeconomics

- The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction-related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids and to avoid releases and spills. If a release should occur, such releases will be contained and cleaned up promptly in accordance with all applicable regulations.

10.5.10.3 Performance Criteria, Monitoring, and Maintenance

As part of the project costs, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational fishing opportunities by constructing and operating a saltwater sportfish hatchery. Performance monitoring will evaluate the construction and operation of the hatchery. Specific success criteria include: 1) the completion of the construction as designed and permitted; 2) operation of the hatchery as permitted; and 3) enhanced and/or increased public access provided to the natural resources, which will be determined by observation that the hatchery is open and operational.

A detailed project timeline and associated monitoring framework will be developed as the first step in the initial project design phase. Overall project quality control and assurance will be overseen by the Florida Trustees and quarterly progress reports will be prepared to help track the successful implementation, performance, and completion of the various goals and objectives outlined in the scope of work. Existing fisheries monitoring programs will be leveraged to provide information on recreational catch and effort, and abundance of select sportfish species. The project proposal provides for five years of Trustee data collection during which detailed data on fisheries abundance, catch, effort and angler preferences will be collected to define the impact of the project on recreational fishing.

Assuming accurate analysis of the genetic risks (FWC 2009a), the release of Phase I hatchery fish will have a long-term benefit on estuarine and marine resources by supplementing native populations of fish species. The success of the hatchery releases will be determined by an ongoing comprehensive monitoring program. Specific objectives of this monitoring program will be to estimate the short- and long-term survival of stocked fish; the potential long-term impact on wild sport fish populations; and the respective contributions of hatchery fish to local fish populations and recreational catches. Methods that may be implemented as part of a multidisciplinary and integrative monitoring program to evaluate hatchery program success are described below:

- **Hatchery Production.** Staff at the hatchery will collect and maintain a captive sport fish brood stock; produce hatchling sport fish and rear them to the appropriate size for release; mark larger fish with coded wire tags (CWT); and participate in fish releases.

- **Fish Health.** Staff will work with a suite of qualified partners to evaluate the health of all hatchery-reared offspring before release. Post-release surveys will also be used assess the survival and health status of hatchery-reared sport fish.
- **Fisheries-Dependent Monitoring (FDM).** Recreational anglers will be surveyed to monitor fishing effort, catch and other variables such as targeted species. Fin clips from harvested sport fish will also be obtained for genetic testing.
- **Fisheries-Independent Monitoring (FIM).** Staff will systematically collect sport fish of all sizes from estuarine and coastal waters via stratified random sampling and directed fishing using small mesh seines, trammel nets, and hook-and-line. Fish will be scanned by an onboard detector for the presence of CWTs and fin clips, or other tissue will be collected for genetic testing. Fish collected with CWT will be retained. Other fish will be measured and released; those greater 100 millimeters (standard length) will be fin-clipped.
- **Angler-based Fin Clip Program (FCP).** Staff will develop a volunteer-based fin-clip program to identify hatchery-released fish. Recreational anglers will be provided with kits to collect fin clips and record collection data.
- **Radio Telemetry.** A number of larger fish will be tagged with transmitters to identify patterns of movement and habitat preferences of released fish.

The project proposal also provides for five years of Trustee operation and maintenance which will provide for regular facility maintenance and repair (electrical, plumbing, physical facility, etc.) as well as periodic maintenance and repair of aquaculture systems (including tanks, filtration systems, and specialized instrumentation). After five years, upkeep and repair of facility buildings as well as maintenance of stormwater and effluent retention ponds, and filtration marsh will be provided by FWC and its governmental, university, or non-profit partners.

A hatchery maintenance plan will be developed that provides specific plans for short- and long-term equipment inspection, repair, and replacement. Short-term maintenance will include regular facility upkeep (e.g., cleaning) and periodic inspection and repair of aquaculture systems including tanks, filtration systems, specialized instruments, and basic facility systems (e.g., electrical, plumbing). Long-term maintenance will include provisions for upkeep and repair of facility buildings, stormwater pond, storage pond, and the plant production pond or filtration marsh to ensure effective productivity.

10.5.11 Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle

The Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle project will involve enhancing local scallop populations in targeted areas in the Florida Panhandle. The improvements include the harvesting and redistribution of naturally-occurring juvenile scallops supplemented with stocking from a commercial scallop hatchery. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle project is intended to enhance and/or increase recreational fishing opportunities by increasing scallop populations. The project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to

offset adverse impacts to such uses caused by the Spill and related response activities. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational fishing opportunities by increasing scallop populations.

The Trustees evaluated Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle Project will not substantially contribute to adverse cumulative effects to resources. The Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.11.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

Trustees have completed coordination and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act, and the National Historic Preservation Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the Clean Water Act and Rivers and Harbors Act has been initiated.

10.5.11.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.11.2.1 Measures to Mitigate Impacts to the Physical Environment

- Available BMPs will be employed to prevent, mitigate, and control potential air pollutants during project implementation.

10.5.11.2.2 Measures to Mitigate Impacts to Biological Resources

- To reduce risks and help avoid in-water impacts to protected species, the recommendations for in-water work within the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NMFS 2006) and the *Standard Manatee Conditions for In-Water Work* (USFWS 2011), will be adhered to.
- Project installation activities will use BMPs, including impact avoidance of existing seagrass habitat through the use of small vessels for placement of scallops. Every effort will be made to access the scallop placement sites during periods of high tide using shallow draft vessels to minimize potential adverse impacts to seagrass habitat as a result of navigation.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the *National Bald Eagle Management Guidelines* will be followed (USFWS 2007).
- Care will be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. Work will occur during daylight hours only.
- State-listed birds such as oystercatchers (*Haematopus* sp.*)* or least terns may nest on beaches or mudflats in the vicinity of the project area. If project activities occur during the nesting season (February 15 to August 31), these birds could be disturbed by noise generated by in-water activities. In such circumstances, FWC nesting shorebird avoidance measures will be followed. These measures generally call for surveys within 300 feet and an avoidance buffer of 300 feet for nesting birds.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material).There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.11.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction-related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids, and to avoid releases and spills.

10.5.11.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational fishing opportunities by increasing the local scallop populations in targeted areas. Performance monitoring will evaluate the number of spat per unit

area in newly stocked regions of Wakulla, Gulf, Franklin, Walton, Okaloosa, Santa Rosa, and Escambia counties. Specific success criteria include: increased likelihood that the scallop population density is increased to and sustained at recreational harvesting levels.

The monitoring will occur for the life of the project, which is ten years. These assessments will be conducted by FWC under established protocols. Long term maintenance activities include annual procurement of larvae and spat from a commercial shellfish hatchery and monthly harvest and rearing of naturally occurring scallop spat to supplement collapsed or transitional populations.

Recreational use on scallop areas open to harvest will be assessed using both boat counts (aerial or boat-based) and a shore-based survey of scallopers currently used by FWC. This assessment will occur at least once during the three month recreational harvesting season. The recreational use numbers will be provided to the Florida Department of Environmental Protection.

10.5.12 Shell Point Beach Nourishment

The Florida Shell Point Beach Nourishment project will involve the renourishment of Shell Point Beach in Wakulla County. The improvements include the placement of approximately 15,000 cubic yards of sand on county owned section of the beach from an approved upland borrow area to restore the width and historic slope/profile of this beach. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Shell Point Beach Nourishment project is intended to enhance and/or increase recreational beach use opportunities by improving the county owned section of the beach. The project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

Draft NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational beach use opportunities by improving the county owned section of the beach.

The Trustees evaluated Florida Shell Point Beach Nourishment Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Florida Shell Point Beach Nourishment Project will not substantially contribute to adverse cumulative effects to resources. Florida Shell Point Beach Nourishment Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.12.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed coordination and reviews under the Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.12.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.12.2.1 Measures to Mitigate Impacts to the Physical Environment

- Sand used as part of this project will comply with requirements set forth by Florida DEP Rule 62B-41.007(2)(j), F.A.C., requires that any material placed on a Florida beach "maintains the general character and functionality of the material occurring on the beach and in the adjacent dune and coastal system". Florida DEP will be consulted to ensure that the sand source is acceptable and all guidelines are properly adhered to.
- Best management practices (BMPs) for shoreline and beach work will be employed to ensure that natural resources are minimally disturbed during restoration activities. The berm width will range between 25 and 50 feet at a constant elevation of +4.0 feet, NAVD 1988 and be graded to the landward edge of the mean high water line at varying slopes. Based on this beach fill shape, the potential for the direct impact of sea grasses will be avoided.
- All appropriate permits regarding water quality will be obtained and work will adhere to conditions, permit requirements, and BMPs to ensure that any potential adverse impacts are minimized.
- BMPs will be followed to ensure that noise disturbance is minimized, such as only performing nourishment activities during normal daylight hours.

10.5.12.2.2 Measures to Mitigate Impacts to Biological Resources

- Adhere to appropriate avoidance windows [for piping plover and red knot] to the maximum extent possible.
- To avoid impacts to any foraging or resting migratory birds, the following measures will be implemented:
    - Driving on the beach for construction shall be limited to the minimum necessary within the designated travel corridor, which will be established just above or just below the primary "wrack" line.

- Predator-proof trash receptacles shall be installed and maintained during construction at all beach access points used for the project construction to minimize the potential for attracting predators of migratory birds.
- Workers shall be briefed on the importance of not littering and keeping the project area trash and debris free.
- Educational signs shall be installed at public access points within the project area with emphasis on the importance of the beach habitat and wrack line for migratory birds.
- When the project area has a pet or dog regulation, the provisions of the regulation shall be included on the educational signs.

- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.12.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- Standard conditions in state contracts for addressing hazardous and toxic materials include:
  - All paints, solvents, chemicals and petroleum products used stored on site will be contained so that any leakage or spills that may occur do not run off into surrounding properties or waterways. All leaks or spills will be promptly cleaned up, and all absorbent materials used will be promptly removed from the site and properly disposed to an appropriate facility. Any spills will be reported to the FDEP.
  - The contractor will have sufficient number and size of waste container(s) on site for the proper disposal of all waste material generated during construction activities. The contractor will remove or have waste containers emptied and waste material disposed to a properly licensed facility when full and all containers must be removed at the conclusion of construction.
  - If during the course of performing the work the Contractor uncovers unsuitable or contaminated material he shall cease work in that area and notify the FDEP. A site assessment report and remedial action plan will be prepared and approved by the FDEP before any further activity or construction in the affected area is resumed.
- Temporary signage and other access controls will be placed to indicate the beach is effectively the site of an active construction project where heavy equipment is being operated, which will mitigate risks to human safety during construction.

10.5.12.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational beach use opportunities by improving the county owned section of the beach. Performance monitoring will evaluate the renourishment of the beach. Specific success criteria include: 1) the completion of the renourishment as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the beach is open and available.

Operation and maintenance for this project will include pre- and post-restoration monitoring and long- and short-term maintenance. Pre-restoration monitoring will focus on reconnaissance to identify tar balls at the project area. Pre-restoration monitoring will also include monitoring for threatened, endangered, and special status species, both floral and faunal.

Long-term monitoring will be completed by Wakulla County. Funding for monitoring is not included in the previously provided value for the project cost and will be accomplished by Wakulla County.

Wakulla County will monitor the recreational use activity at the site. Wakulla County will visit the site twice a year to count the number of users at the beach. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

10.5.13 Perdido Key Dune Restoration Project

The Florida Perdido Key Dune Restoration project will restore appropriate dune vegetation to approximately 20 acres of degraded beach dune habitat in Perdido Key, Florida, including habitat used by the federally endangered Perdido Key Beach Mouse. The project will consist of planting appropriate dune vegetation (e.g., sea oats, panic grasses, cord grasses, sea purslane, beach elder) approximately 20 – 60' seaward of the existing primary dune to provide a buffer to the primary dune and enhance dune habitats. In addition, gaps in existing dunes within the project area will be re-vegetated to provide a continuous dune structure. As a result of the Deepwater Horizon oil spill and related response activities, dune habitat in Florida's Panhandle was adversely impacted. This project seeks to restore injured dune habitat by planting new dune vegetation. The ecological benefits that will be gained by this restoration project are anticipated to help compensate the public for Spill-related injuries and losses to the dune habitat. Thus, nexus to resources injured by the Spill is clear. See15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will provide long-term benefits by restoring and enhancing approximately 20 acres of degraded dune habitat.

The Trustees evaluated Perdido Key Dune Restoration Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure,

land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Perdido Key Dune Restoration Project will not substantially contribute to adverse cumulative effects to resources. Perdido Key Dune Restoration Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.13.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed coordination and reviews under the Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

The Final Phase III ERP/PEIS evaluated the environmental consequence of the proposed project on proposed terrestrial Loggerhead CH. Shortly after the Trustees released the Final Phase III ERP/PEIS, USFWS designated final Loggerhead CH. DOI requested the USFWS adopt the conference report as an informal consultation for final Loggerhead CH. The USFWS' informal consultation for loggerhead CH was completed on September 22, 2014 resulting in a concurrence that the project, as proposed, would not result in adverse modification or destruction of final Loggerhead CH. Accordingly, the Trustees have determined that the final Loggerhead CH designation does not represent significant new information that requires supplemental environmental consequences analysis pursuant to NEPA.

10.5.13.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.13.2.1 Measure to Mitigate Impacts to the Physical Environment

- Available BMPs will be employed to prevent, mitigate, and control potential minor air pollutants during project implementation.
- Sand fencing should be moved up regularly as the dune grows and removed as soon as the dune and plants are large enough to capture sand.
- Use some larger plants mixed with the typically used smaller plants to help capture sand immediately.
- No movement of sand is envisioned for the project, but sand fencing will be installed to trap and retain wind-blown sediments and protect the plants for dune restoration purposes. Sand fencing shall be placed in a sea turtle compatible design and be made of biodegradable material.

Appropriate signs to designate and indicate the purpose of the conservation area may be used if necessary. If dune vegetation is impacted during the implementation activities in some areas within the project, these areas shall be restored by planting the appropriate vegetation in those areas with the same survival performance measures as the other planted areas.

- Sand/soil removed for plantings will be packed around the planted unit to support regrowth. Only the excavated sand/soil removed to make room for the plantings will be placed on the site and it will be used to anchor the planted vegetation. Incidental trash encountered during project activities will be removed. No irrigation lines or pipes will be installed.
- To protect the dune habitat, most of the work will be done by hand with ATVs potentially used to shuttle plants and other materials to sites of active replanting. Access to the dunes will be established through existing emergency vehicle paths and rights-of-way. Staging areas will be established in existing parking lots.
- ATVs should stay out of the dunes and as low to the water line as possible. Plants may have to be walked up to the planting area from the ATV travel path.
- No storage of equipment or materials will occur on the beach or dunes throughout the project area. No activity, except as needed to plant and monitor vegetation shall occur on existing dunes during any time of the year.
- All appropriate permits will be obtained prior to the beginning of construction and all BMPs and conditions set forth will be followed.
- Noise will be kept to a minimum using best management practices.

10.5.13.2.2 Measures to Mitigate Impacts to Biological Resources

- In accordance with Rule 62B-41.007(2)(l), Fla. Admin. Code, all vegetation used for the restoration will be native salt-resistant vegetation suitable for beach and dune stabilization, and grown from seeds or cuttings from the Alabama coast or North Florida to ensure appropriate genetic stocks are used in the project. The seedlings to be planted shall be at least 1 inch by 1 inch with a 2.5-inch pot. Vegetation shall be planted with an appropriate amount of fertilizer and anti-desiccant material, as appropriate, for the plant size. Planting will generally be on 18-inch centers throughout the created dune; however, 24-inch centers may be acceptable depending on the area to be planted.
- The planting shall be patterned after the species composition in native communities adjacent to a project site, if possible. This vegetation will be planted using hand tools to excavate cavities where the root ball from the planting container can be placed and secured with the excavated sand/soil.
- The Panama City Field Office (PCFO) will be contacted prior to conducting the restoration, regarding dune plantings to balance habitat for listed and migratory birds and beach mouse.
- Should work be undertaken between May 1 and October 31 the following conservation measures will be followed.
    - All construction personnel will be notified of the potential presence of sea turtles and reminded of the criminal and civil penalties associated with harassing, harming, or killing sea turtles (all life stages).

    - The local sea turtle nesting surveyor will conduct daily sea turtle nesting surveys will assess the need for the relocation of sea turtle nests that could be affected by the project construction prior to project implementation each day
    - If a sea turtle (either adult or hatchling) is observed, maintain at least 200 feet between the turtle and personnel.
    - All actions shall observe a 10-foot buffer from marked sea turtle nests. Between May 1 and August 31[22], actions with mechanized equipment or vehicles shall not begin prior to 9:00 am to ensure sea turtle monitoring surveys are completed for the day.
    - Avoid driving over the wrack line or areas of dense seaweed, as these habitats may contain sea turtle hatchings or baby birds that are difficult to see.
- The following measures shall be implemented (regardless of seasonality):
    - All construction personnel will be notified of the presence of critical habitat and reminded to avoid impacting it otherwise additional restoration may be necessary.
    - The nearest, existing staging, access and egress areas, travel corridors, pathways, and roadways shall be used (including those provided by the State, local governments, land managers, trustee, or private property owner, with proper permissions).
    - No new staging areas, access or egress, or travel corridors shall be created.
    - Vegetation removal will be minimized.
    - If driving equipment or vehicles on the beach, enter at designated access, proceed directly to the hard-packed sand near or below the high tide line and stay below the tide line when driving long distances.
    - Avoid driving on the upper beach whenever possible, and never drive over any dunes or beach vegetation.
    - Use the smallest footprint possible to complete the project.
    - If altered, beach topography shall be restored in all areas to the natural beach profile by 20:00 hours each day. Restoring beach topography includes raking of tire ruts, filling pits or holes.
    - No lighting will be installed.
- All construction personnel will be notified of the potential presence of Perdido Key Beach Mice and reminded of the criminal and civil penalties associated with harassing, injuring, or killing Perdido Key Beach Mice.
- To minimize impacts to Perdido Key beach mice in burrows, a qualified, permitted, biologist will survey the project site before work commences and flag potential burrows and tracks so that they can be avoided.
- Construction noise will be kept to the minimum feasible, and construction will occur during the day to minimize disturbance to nocturnal patterns.
- Equipment, vehicles, and project debris will not be stored in a manner or location where it could be colonized by mice.

[22] Turtle *nesting* season is May 1 to August 31, while turtle *hatching* continues until October 31. The remaining turtle BMPs will be implemented May 1 through October 31 and BMPs for proposed critical habitat will be implemented all year.

- Other Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.
- Personnel will remove trash or anything that will attract nuisance wildlife to work areas daily.
- Project related trash or debris shall not be allowed to blow into open water, onto beaches or in the dunes.
- The project will occur in very localized locations for very short periods of time, allowing the mosaic of primary, secondary scrub vegetation and dune structure to remain unchanged or increase after implementation.
    - If native dune plants are destroyed during the project, appropriate native plants will be planted in the same location to minimize impacts to the vegetative composition of the area. The Panama City Field Office will be contacted regarding dune plantings to balance habitat for listed and migratory birds and beach mouse. Any dune restoration should mimic natural dunes including the relative abundance of dunes and swales and vegetated and unvegetated areas.
    - A fertilizer to help jump start the plant growth process from initial shock of being planted may be necessary.
    - If sand fencing is to be used, it should be used judiciously and moved up regularly as dune grows. Sand fencing should be removed as dune and plants are large enough to capture sand on their own.
    - Use some larger plants mixed with the smaller typical planting size plants to trap sand naturally and grow the dune.
    - ATVs should stay out of dunes and as low to the water line as possible. Plants may have to be walked up to the planting area from ATV travel path.
- If necessary (due to food source removal during construction and growing periods for replacement plants), supplemental beach mouse food sources will be provided.
- Project work will only occur during daylight hours.
- Post and rope should be used and maintained around the entire restoration area to keep people from affecting the restoration.
- If construction occurs within the period from August to May: shorebird surveys (for piping plover and red knot) will be conducted in the project area; and within the project area a 300-foot wide buffer zone where either species congregates will be established. Any and all construction will be prohibited in the buffer zone until the individuals move from the area of their own volition.

- If project activities occur during shorebird nesting season (February 15 to August 31), the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds or rookeries and their recommendations will be implemented.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the National Bald Eagle Management Guidelines (USFWS 2007).
- Care will be taken to minimize noise and physical disruptions near areas where foraging or resting birds are encountered.
- In addition to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.13.3 Performance Criteria, Monitoring, and Maintenance

As part of the project costs, monitoring will be conducted to ensure project designs were correctly implemented and to evaluate project effectiveness. Performance criteria will be used to determine project success or the need for corrective actions. The monitoring has been designed around the project objective, which is to restore and enhance injured dune habitat. Specific success criteria include: the construction of dune habitat that meet project design criteria, achieves the designed percent cover by native vegetation, and is sustained for the expected life of the project.

This project will incorporate a mix of monitoring efforts to ensure project designs are correctly implemented during construction and in a subsequent period, defined by contract, where corrective actions could be taken. Monitoring will include construction monitoring and restoration success.

The number of acres restored, number of dune plants installed, and survivorship of installed dune plants will be reported. Short-term maintenance activities will include periodic watering of dune plants by selected contractor, if needed, and replanting where dune plants have not survived. Specific criteria for evaluating revegetation success will be accomplished through implementation of standard state guidelines.

Post construction performance monitoring will initially focus on plant survival. Plants that do not survive to 90 days post-planting will be replaced. At least 80 percent of plants must survive after 6 months or replanting will occur. Approximately $30,000 in funding has been set aside for monitoring the results of the project and plant survival. No movement of sand will be envisioned for the project, but sand fencing will be installed to protect the plants. The sand fencing will have a one year warranty period. Topographic surveys will not be necessary due to the lack of physical movement of sand, but species survival and cover will be monitored as part of this project.

Escambia County will take over maintenance of the project once survival of the plants is accomplished. Additional performance monitoring could include collection of information such as the utilization of the habitat by the endangered Perdido Key beach mouse to assist with future habitat enhancement and restoration efforts focused on benefitting this species

10.5.14 Florida Oyster Cultch Placement Project

The Florida Oyster Cultch project will enhance and improve the oyster populations in Pensacola Bay, Andrew Bay and Apalachicola Bay. The improvements include the placement of a total of 42,000 cubic yards of suitable cultch material over 210 acres of previously constructed oyster bars for the settling of native oyster larvae and oyster colonization in three Florida Bays. As a result of the Deepwater Horizon oil spill and associated response actions, oyster secondary productivity along the north central Gulf coast suffered adverse impacts. This project seeks to foster reef development, which will help compensate the public for Spill-related injuries and losses to oyster secondary productivity. Thus, nexus to resources injured by the Spill is clear. See 15C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will provide long-term benefits by promoting reef development for oysters by restoring approximately 210 acres of existing oyster reef habitat.

The Trustees evaluated Florida Oyster Cultch Placement Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Florida Oyster Cultch Placement Project will not substantially contribute to adverse cumulative effects to resources. Florida Oyster Cultch Placement Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.14.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed coordination and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.14.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific

resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.14.2.1 Measures to Mitigate Impacts to the Physical Environment

- All USACE permit conditions relating to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act will be adhered to during project construction.
- Available BMPs will be employed to prevent, mitigate, and control potential air pollutants during project implementation. No air quality–related permits will be required.
- BMPs, along with other avoidance and mitigation measures required by state and federal regulatory agencies, will be employed to minimize any water quality and sedimentation impacts.

10.5.14.2.2 Measures to Mitigate Impacts to Biological Resources

- The equipment (e.g., shallow draft barges) selected for the delivery of the cultch is made in these project to avoid potential prop dredging or scraping of bottom areas in order to avoid adversely impacting important habitats such as submerged aquatic vegetation beds. .
- The Sea turtle and Smalltooth Sawfish Construction Guidelines (NOAA, 2006) and Standard Manatee Conditions for In-water Work (USFWS, 2011) will be implemented and adhered to during in-water work.
- BMPs to avoid impacts to seagrass have been incorporated into the construction plan, including 1) situating anchoring sites to avoid impacts to seagrass, if found to be in the project area; 2) avoiding access over existing seagrass to the extent practicable to minimize prop-scarring impacts; and 3) monitoring turbidity levels during construction and implementing additional BMPs if turbidity levels rise too high based on local and state regulatory/permit levels.
- Care will be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. Work will occur during daylight hours only.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.14.3 Performance Criteria, Monitoring, and Maintenance

As part of the project costs, monitoring will be conducted to ensure project designs were correctly implemented and to evaluate project effectiveness. Performance criteria will be used to determine project success or the need for corrective actions. The monitoring has been designed around the project objective. The project objective is to promote reef development for oysters by restoring existing oyster

reef habitat. Specific success criteria include: construction of reefs that meet project design criteria, support oyster secondary productivity, and are sustained for the expected life of the project.

Post construction performance monitoring will focus on the recruitment and growth of oysters on the new cultch placements. Restored reefs may become productive in as few as 3 to 6 months under optimal conditions, with oyster reaching market size in 12 to 18 months. However, since recruitment and survival can be highly variable, some reefs may not become productive for 2-5 years. It has been shown that restored reefs can remain productive for more than 10 years with little additional maintenance (dragging to re-expose shell material and substrate enhancement). However, if poor recruitment to restored reefs is observed, management and maintenance activities to improve spat settlement and growth will be investigated; additional management activities will be conducted as necessary and as funding allows. Based on the expected longevity of the restored reefs, a monitoring program will assess oyster population parameters for ten years.

DACS will be responsible for effectively assessing or providing guidance on the status of oyster resources on reefs that are restored during this project. Specific metrics to delineate reef locations and reef area, measure population parameters, and estimate production potential will be accomplished.

The monitoring will include collecting samples following project completion on all restored reefs and establishing a sampling schedule based on expected recruitments cycles. All restored reefs will be sampled twice a year from year-one through year-five and once a year from year-six through year-ten. Sampling intervals may be modified to assess significant events which may affect oyster population dynamics. A total of sixteen sampling trips are planned for each restored reef.

The monitoring program will establish and describe the parameters and metrics required to accurately assess oyster reef habitat and populations on restored reefs. Reefs will be measured and delineated to determine the surface area and reef boundaries, and estimate the coverage forming available reef habitat. The Standard Oyster Resource Management Protocol utilized by the state of Florida will be used to establish baseline and serial oyster population data to measure and report changes in oyster populations and oyster population dynamics.

The Standard Oyster Resource Management Protocol is based on collecting oyster samples from quadrats established at specific sampling locations on restored reefs. Samples are collected by divers using current standard procedures and returned to the laboratory for analyses. Live oysters collected during replicated samples are individually measured, dead oysters and recent boxes are counted, predators are identified and counted, and the general condition of the reef is recorded. The numbers and size of live oysters are converted to size frequency distributions that are used to develop population parameters, such as density, production levels, recruitment, growth, and survival, which in turn, can be applied to predict population trends and identify adverse impacts from events such a hurricanes, floods and drought.

The Standard Oyster Resource Management Protocol provides that estimated production exceeding 400 bags of oysters per acre indicates healthy oyster reefs capable of sustaining commercial harvesting. Accordingly, oyster populations are 1) capable of supporting limited commercial harvesting when stocks

exceed 200 bags/acre, 2) below levels necessary to support commercial harvesting when stocks fall below 200 bags/acre, and 3) considered depleted when marketable stocks are below 100 bags/acre (Berrigan, 1990). Generally, the protocol has been an accurate indicator of oyster production in Florida.

10.5.15 Strategically Provided Boat Access along Florida's Gulf Coast: Project Description A (City of Mexico Beach Marina Project)

The Strategically Provided Boat Access along Florida's Gulf Coast (City of Mexico Beach Marina) project will improve the existing Mexico Beach Canal Park boat ramp in the City of Mexico Beach. The improvements include replacing the boardwalk dock with a concrete surface and increasing the width, removing and replacing eighteen existing finger piers, and replacement of the existing retaining wall. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Strategically Provided Boat Access along Florida's Gulf Coast (City of Mexico Beach Marina) project is intended to enhance and/or increase recreational boating and fishing opportunities by improving the boat ramp area. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational boating and fishing opportunities by improving the boat ramp area.

The Trustees evaluated the Strategically Provided Boat Access along Florida's Gulf Coast (City of Mexico Beach Marina) Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection). Based on the cumulative impact analysis, the Strategically Provided Boat Access along Florida's Gulf Coast (City of Mexico Beach Marina) Project will not substantially contribute to adverse cumulative effects to resources. The Strategically Provided Boat Access along Florida's Gulf Coast (City of Mexico Beach Marina) Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.15.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, USFWS Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consultations have been initiated for the NMFS Endangered Species Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been

completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

The Final Phase III ERP/PEIS stated that this project does not require further ESA consultations with NMFS. Since that time, NMFS has requested that the Trustees reinitiate consultation. The consultation has been initiated. In addition, the Final Phase III ERP/PEIS evaluated the environmental consequence of the proposed project on proposed terrestrial Loggerhead CH. Shortly after the Trustees released the Final Phase III ERP/PEIS, USFWS designated final Loggerhead CH. DOI requested the USFWS adopt the conference report as an informal consultation for final Loggerhead CH. The USFWS' informal consultation for loggerhead CH was completed on September 22, 2014 resulting in a concurrence that the project, as proposed, would not result in adverse modification or destruction of final Loggerhead CH. Accordingly, the Trustees have determined that the final Loggerhead CH designation does not represent significant new information that requires supplemental environmental consequences analysis pursuant to NEPA.

10.5.15.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.15.2.1 Measures to Mitigate Impacts to the Physical Environment

- Best management practices for erosion control will be implemented and maintained in upland areas at all times during construction to prevent siltation and turbid discharges into surface waters. Methods for this control will include but are not limited to the use of staked hay bales, staked filter cloth, sodding, seeding, and mulching; and staged construction. The erosion control measures will remain in place and be maintained until all authorized work is completed and the site has been stabilized.
- All permit conditions requiring mitigation measures for siltation, erosion, turbidity and release of chemicals will be strictly adhered to. During construction, Best Management Practices and boom placement along with other avoidance and mitigation measures required by state and federal regulatory agencies will be employed to minimize any water quality and sedimentation impacts. The FDEP permit conditions require erosion and turbidity mitigation measures. These include:

    - Install floating turbidity barriers
    - Install erosion control measures along the perimeter of all work areas
    - Stabilize all filled areas with sod, mats, barriers or a combination
    - If turbidity thresholds are exceeded the project must stop, stabilize the soils, modify the work procedures, and notify the FDEP.

- During construction, turbidity barriers will be installed with weighted skirts that extend to within one foot of the bottom around all work areas that are in, or adjacent to, surface waters. These turbidity barriers will remain in place and be maintained until the authorized work has been completed and all erodible materials have been stabilized.
- Required spill containment measures will be implemented for applicable construction activities. FDEP permits require spill containment protection and mitigation measures such as:
    - No boat repair or fueling facilities over the water,
    - Prohibited activities include hull cleaning and painting, discharges or release of oils or greases, and related metal-based bottom paints associated with hull scraping, cleaning, and painting.
- The project will comply with state water quality standards and other aquatic resource protection requirements.
- Construction noise will be temporary and limited to daytime hours, and the construction period is not anticipated to last more than 2 years.

10.5.15.2.2 Measures to Mitigate Impacts to Biological Resources

- During all in-water work, including transit to the project site, the measures within the *Vessel Strike Avoidance Measures and Reporting for Mariners* relevant for this project will be implemented.
- In addition, the best management practices identified within the Sea Turtle and Smalltooth Sawfish Construction Conditions (NOAA, 2006) will be implemented during periods of in-water work.
- Development of final plans will also incorporate the guidance and requirements set forth in the *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat* (U.S. Army Corps of Engineers/National Marine Fisheries Service, 2001) should an SAV survey indicate sea grasses are located in the project area for the pier work. Among other impacts, implementing these guidelines will require pilings for the dock expansion be placed a minimum of 10 feet apart.
- Predator-proof waste receptacles will be installed and maintained such that an increase in predator abundance does not occur due to use of the project.

- Informational signs on the fishing piers will explain what to do in case of hooking a sea turtle and remind individuals of measures needed to avoid all wildlife during recreational activities.
- No project activities or staging will occur on the beach or within the dunes. Fencing/signage/barriers will be used to ensure no equipment or material is inadvertently placed/stored in the dune area during the project implementation period.
- No lighting is proposed for the project at this time; however, should lighting become necessary it will be wildlife-friendly.
- All construction conditions identified in the Standard Manatee Conditions for In-water Work (USFWS 2011) will be implemented and adhered to during project construction.
- If project activities occur during shorebird nesting season (February 15 to August 31), the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds and their

recommendations will be implemented if shorebird nesting is occurring within 300 feet of the project site.

- Care will be taken to minimize noise and physical disruptions near areas where foraging or resting birds are encountered.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.15.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- Project construction will utilize mechanical equipment and barges that use oil, lubricants and fuels. The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids, and to avoid releases and spills. If a release should occur such releases will be contained and cleaned up promptly in accordance with all applicable regulations.
- All occupational and marine safety regulations and laws will be followed to ensure safety of all workers and monitors.

10.5.15.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational boating and fishing opportunities by improving the existing marina. Performance monitoring will evaluate: 1) the repair of the existing retaining wall; 2) the replacement of a number of the existing finger piers; and 3) the improvement of the existing boardwalk. Specific success criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the marina is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by the City of Mexico Beach as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by the City of Mexico Beach.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, the City of Mexico Beach will monitor the recreational use activity at

the site. City of Mexico Beach staff will visit the site twice a year to count the number of users at the boat ramp. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

10.5.16 Strategically Provided Boat Access along Florida's Gulf Coast: Project Description B (Panama City St. Andrews Marina Docking Facility Expansions)

The Strategically Provided Boat Access along Florida's Gulf Coast (Panama City St. Andrews Marina Docking Facility Expansions) project will improve the existing St. Andrews Marina docking facility in Panama City. The improvements include adding three boat slips, replacing the boat ramp, and replacing a fixed wooden dock with a concrete floating dock. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of their natural resources along Florida's Panhandle was denied or severely restricted. The Strategically Provided Boat Access along Florida's Gulf Coast (Panama City St. Andrews Marina Docking Facility Expansions) project is intended to enhance and/or increase recreational boating and fishing opportunities by improving the marina. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational boating and fishing opportunities by improving the marina.

The Trustees evaluated the Strategically Provided Boat Access along Florida's Gulf Coast (Panama City St. Andrews Marina Docking Facility Expansions) Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection). Based on the cumulative impact analysis, the Strategically Provided Boat Access along Florida's Gulf Coast (Panama City St. Andrews Marina Docking Facility Expansions) Project will not substantially contribute to adverse cumulative effects to resources. The Strategically Provided Boat Access along Florida's Gulf Coast (Panama City St. Andrews Marina Docking Facility Expansions) Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.16.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone

Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.16.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.16.2.1 Measures to Mitigate Impacts to the Physical Environment

- All applicable best management practices (BMPs) and permit conditions will be followed to minimize any adverse impacts of construction. BMPs for erosion control will be implemented and maintained at all times during construction to prevent discharges into surface waters.
    - Methods for land-based portions of the project construction could include, but may not be limited, to the use of staked hay bales, staked filter cloth, sodding, seeding, and mulching; staged construction; and installation of turbidity screens around the immediate project site. Prior to the initiation of any work, erosion control measures will be put in place along the perimeter of construction zone.
    - Erosion control measures will remain in place and be maintained until all authorized work is completed and the site has been stabilized. During and following construction, all construction waste materials will be disposed of appropriately.
- All permit conditions requiring mitigation measures for siltation, erosion, turbidity and release of chemicals will be strictly adhered to. During construction, Best Management Practices and boom placement along with other avoidance and mitigation measures required by state and federal regulatory agencies will be employed to minimize any water quality and sedimentation impacts. The FDEP permit conditions require erosion and turbidity mitigation measures. These include:
    - Install floating turbidity barriers
    - Install erosion control measures along the perimeter of all work areas
    - Stabilize all filled areas with sod, mats, barriers or a combination
    - If turbidity thresholds are exceeded the project must stop, stabilize the soils, modify the work procedures, and notify the FDEP.
- Turbidity barriers with weighted skirts extending to within one foot of the bottom will be installed along the entire shoreline length of the in-water project area prior to initiation of construction. Turbidity barriers will remain in place and be maintained until the authorized work has been completed and all erodible materials have been stabilized.
- Required spill containment measures will be implemented for applicable construction activities. FDEP permits require spill containment protection and mitigation measures such as:

    - No boat repair or fueling facilities over the water,
    - Prohibited activities include hull cleaning and painting, discharges or release of oils or greases, and related metal-based bottom paints associated with hull scraping, cleaning, and painting.
- BMPs, to limit the noise from any pile driving (e.g., consideration of bubble curtains) will be evaluated with the selection of the final construction methods and implemented, as appropriate.
- Construction noise will be temporary and limited to daytime hours, and the construction period is not anticipated to last more than one year.

10.5.16.2.2 Measures to Mitigate Impacts to Biological Resources

- As part of this engineering and site assessment, a survey of submerged aquatic vegetation (SAV) in the area will be completed. Should SAV be identified in the project area, the conditions in the *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat* (U.S. Army Corps of Engineers/National Marine Fisheries Service, 2001) will be implemented. Among other elements this will require that pilings for the dock expansion be placed at a minimum of 10 feet apart.
- The conditions and guidelines of the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NMFS, 2006) will be implemented and adhered to during project implementation.
- All construction conditions identified in the Standard Manatee Conditions for In-water Work (USFWS 2011) will be implemented and adhered to during project construction.
- Any lighting installed as a part of the project will be wildlife-friendly and comply with guidance provided in the most current version of the FWC's Lighting Technical Manual.
- Educational signage will be posted at all ramps reminding visitors of nearby trust resources and any protective measures that may be necessary to avoid and minimize impacts in their habitats either at the project site or when visiting nearby islands. This signage will be developed in coordination with FWC and the Panama City Ecological Services Field Office. The State of Florida Trustees and DOI recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient to evaluate the effectiveness of conservation measures, then, an in-person survey will be taken of a sample of recreational users at the project location at the same time as the planned twice annual performance monitoring of the project by the same party performing such monitoring.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the *National Bald Eagle Management Guidelines* will be followed (USFWS 2007).
- Care will be taken to minimize noise and physical disruptions near areas where foraging or resting birds are encountered. Work will occur during daylight hours only.

- Protective measures will also be implemented in the design phase and include the use of pointy, white, piling caps and containers for waste fishing gear.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.16.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids, and to avoid releases and spills. If a release should occur such releases will be contained and cleaned up promptly in accordance with all applicable regulations.
- All occupational and marine safety regulations and laws will be followed to ensure safety of all workers and monitors.

10.5.16.3 Performance Criteria, Monitoring and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational boating and fishing opportunities by improving an existing marina facility. Performance monitoring will evaluate: 1) the construction of the three new boat slips; 2) the replacement of the existing boat ramp; and 3) the replacement of the existing fixed wooden dock with a concrete floating dock. Specific performance criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the marina is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by Panama City as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by Panama City.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, Panama City will monitor the recreational use activity at the site. Panama City staff will visit the site twice a year to count the number of users at the boat ramp. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

In addition, the State of Florida Trustees and the Department of Interior recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient, concurrent with the twice annual performance monitoring, and performed by the same party, a survey will be taken of a sample of recreational users at the project location.

10.5.17 Strategically Provided Boat Access along Florida's Gulf Coast: Project Description C (City of Parker, Donaldson Point Boat Ramp Improvements)

The Strategically Provided Boat Access along Florida's Gulf Coast: City of Parker, Donaldson Point Boat Ramp Improvements project component has been dropped from the Final Phase III ERP/PEIS.

10.5.18 Strategically Provided Boat Access along Florida's Gulf Coast: Project Description D (City of Parker, Earl Gilbert Dock and Boat Ramp Improvements)

The Strategically Provided Boat Access along Florida's Gulf Coast (City of Parker Earl Gilbert Dock and Boat Ramp Improvements) project will improve the existing Earl Gilbert dock and boat ramp in the City of Parker. The work includes improving the existing dock and expanding the existing parking. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of their natural resources along Florida's Panhandle was denied or severely restricted. The Strategically Provided Boat Access along Florida's Gulf Coast (City of Parker Earl Gilbert Dock and Boat Ramp Improvements) project is intended to enhance and/or increase recreational boating and fishing opportunities by improving the boat ramp area. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses caused by the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational boating and fishing opportunities by improving the boat ramp area.

The Trustees evaluated the Strategically Provided Boat Access along Florida's Gulf Coast (City of Parker Earl Gilbert Dock and Boat Ramp Improvements) Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection). Based on the cumulative impact analysis, the Strategically Provided Boat Access along Florida's Gulf Coast (City of Parker Earl Gilbert Dock and Boat Ramp Improvements) Project will not substantially contribute to adverse cumulative effects to resources. The Strategically Provided Boat Access along Florida's Gulf Coast (City of Parker Earl Gilbert Dock and Boat

Ramp Improvements) Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.18.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.18.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.18.2.1 Measures to Mitigate Impacts to the Physical Environment

- Best management practices (BMPs) for erosion control associated with the ramp and parking lot work will be implemented and maintained at all times during construction to prevent siltation and turbid discharges into waters of the state.
- Upland silt and sedimentation control measures will be installed and properly maintained at all points where runoff from disturbed areas could result in water quality impacts. This may include the use of filter fences (staked or floating), sedimentation screens, erosion control blankets or other appropriate erosion and turbidity control measures. The in-water use of silt curtains and the dewatering of work areas for the boat ramp repairs will further help limit the scope, nature, and extent, of any turbidity impacts.
- All permit conditions requiring mitigation measures for siltation, erosion, turbidity and release of chemicals will be strictly adhered to. During construction, Best Management Practices and boom placement along with other avoidance and mitigation measures required by state and federal regulatory agencies will be employed to minimize any water quality and sedimentation impacts. The FDEP permit conditions require erosion and turbidity mitigation measures. These include:
    - Install floating turbidity barriers
    - Install erosion control measures along the perimeter of all work areas
    - Stabilize all filled areas with sod, mats, barriers or a combination
    - If turbidity thresholds are exceeded the project must stop, stabilize the soils, modify the work procedures, and notify the FDEP.

- Required spill containment measures will be implemented for applicable construction activities.
- Implementation of stormwater management controls for the project.
- The project will comply with state water quality standards and other aquatic resource protection requirements.
- Construction noise will be temporary and limited to daytime hours, and the construction period is not anticipated to last more than one year.

10.5.18.2.2 Measures to Mitigate Impacts to Biological Resources

- As part of the dock renovations there will be an initial survey of submerged aquatic vegetation (SAV) in the area where the work will be completed. Should SAV be identified in the project area, the conditions in the *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat* (U.S. Army Corps of Engineers/National Marine Fisheries Service, 2001) will be implemented, as relevant.. Among other elements, these guidelines address decking material and spacing.
- During any in-water construction activity, the conditions and guidelines of the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NMFS, 2006) will be implemented and adhered to during project construction.
- Any lighting installed as a part of the project will be wildlife-friendly and comply with guidance provided in the most current version of the FWC's Lighting Technical Manual.
- All construction conditions identified in the Standard Manatee Conditions for In-water Work (USFWS 2011) will be implemented and adhered to during project construction.
- Educational signage will be posted at all ramps reminding visitors of nearby trust resources and any protective measures that may be necessary to avoid and minimize impacts in their habitats either at the project site or when visiting nearby islands. This signage will be developed in coordination with FWC and the Panama City Ecological Services Field Office. The State of Florida Trustees and DOI recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient to evaluate the effectiveness of conservation measures, then, an in-person survey will be taken of a sample of recreational users at the project location at the same time as the planned twice annual performance monitoring of the project by the same party performing such monitoring.
- Nesting is not known at the project site for migratory birds, if project activities occur during shorebird nesting season (February 15 to August 31). If nests are found, the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds or rookeries and their recommendations will be implemented.
- Care will be taken to minimize noise and physical disruptions near areas where foraging or resting birds are encountered. Work will occur during daylight hours only.

- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the National Bald Eagle Management Guidelines will be followed (USFWS 2007).
- Protective measures will also be implemented in the design phase and include the use of pointy, white, piling caps and containers for waste fishing gear.
- During construction, all appropriate BMPs will be followed to minimize the potential impacts of construction activities on EFH and species in the area.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.18.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids, and to avoid releases and spills.
- If a release should occur such releases will be contained and cleaned up promptly in accordance with all applicable regulations.
- In the event of a fuel or oil spill from construction equipment, all procedures, regulations and laws pertaining to Oil Spill Prevention and Response will be adhered to and the incident will be reported to appropriate agencies.
- All occupational and marine safety regulations and laws will be followed to ensure safety of all workers and monitors.

10.5.18.3 Performance Criteria, Monitoring and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational boating and fishing opportunities by improving the existing boat ramp facility. Performance monitoring will evaluate: 1) the improvement of the existing dock, and 2) expansion of the existing parking. Specific performance criteria include: 1) completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the boat ramp facility is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by the City of Parker as part of their regular public facilities maintenance activities. Funding for this post-construction

maintenance is not included in the previously provided value for the project cost and will be accomplished by the City of Parker.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, the City of Parker will monitor the recreational use activity at the site. The City of Parker will visit the site twice a year to count the number of users at the boat ramp. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

In addition, the State of Florida Trustees and the Department of the Interior recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient, concurrent with the twice annual performance monitoring, and performed by the same party, a survey will be taken of a sample of recreational users at the project location.

10.5.19 Strategically Provided Boat Access along Florida's Gulf Coast: Project Description E (City of Port St. Joe, Frank Pate Boat Ramp Improvements)

The Strategically Provided Boat Access along Florida's Gulf Coast (City of Port St. Joe Frank Pate Boat Ramp Improvements) project will improve the existing Frank Pate boat ramp in the City of Port St. Joe. The improvements include constructing an additional boarding dock, boat trailer parking, access drive, staging area, and a fish cleaning station. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Strategically Provided Boat Access along Florida's Gulf Coast (City of Port St. Joe Frank Pate Boat Ramp Improvements) project is intended to enhance and/or increase recreational boating and fishing opportunities by improving the boat ramp area. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational boating and fishing opportunities by improving the boat ramp area.

The Trustees evaluated the Strategically Provided Boat Access along Florida's Gulf Coast (City of Port St. Joe Frank Pate Boat Ramp Improvements) Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land

and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection). Based on the cumulative impact analysis, the Strategically Provided Boat Access along Florida's Gulf Coast (City of Port St. Joe Frank Pate Boat Ramp Improvements) Project will not substantially contribute to adverse cumulative effects to resources. The Strategically Provided Boat Access along Florida's Gulf Coast (City of Port St. Joe Frank Pate Boat Ramp Improvements) Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.19.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.19.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.19.2.1 Measures to Mitigate Impacts to the Physical Environment

- BMPs for erosion control will also be implemented and maintained at all times during upland construction to prevent siltation and turbid discharges into surface waters. Methods could include but are not limited to the use of staked hay bales, staked filter cloth, sodding, seeding, and mulching; staged construction; and installation of turbidity screens around the immediate project site.
- All permit conditions requiring mitigation measures for siltation, erosion, turbidity and release of chemicals will be strictly adhered to. During construction, Best Management Practices and boom placement along with other avoidance and mitigation measures required by state and federal regulatory agencies will be employed to minimize any water quality and sedimentation impacts. The FDEP permit conditions require erosion and turbidity mitigation measures. These include:
    - Install floating turbidity barriers
    - Install erosion control measures along the perimeter of all work areas
    - Stabilize all filled areas with sod, mats, barriers or a combination

    - If turbidity thresholds are exceeded the project must stop, stabilize the soils, modify the work procedures, and notify the FDEP.
- Required spill containment measures will be implemented for applicable construction activities. FDEP permits require spill containment protection and mitigation measures such as:
    - No boat repair or fueling facilities over the water,
    - Prohibited activities include hull cleaning and painting, discharges or release of oils or greases, and related metal-based bottom paints associated with hull scraping, cleaning, and painting
- Implementation of stormwater management controls.
- The project will comply with state water quality standards and other aquatic resource protection requirements.
- Boat wakes created by additional boat traffic that could increase shoreline erosion will be controlled through no-wake or speed zones to mitigate shoreline erosion.
- Should any lighting be installed or upgraded the new lighting will be wildlife friendly and comply with the guidance provided in the current edition of the FWC's Lighting Technical Manual.
- Construction noise will be temporary and limited to daytime hours, and the construction period is not anticipated to last more than one year.

10.5.19.2.2 Measures to Mitigate Impacts to Biological Resources

- During periods of in-water work the guidelines and conditions within the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NMFS, 2006) will be implemented and adhered to.
    - These provisions include stopping operation of any equipment if sea turtles or smalltooth sawfish come within 50 feet of the equipment until the time when animals leave the project area of their own volition.
- Development of final plans will incorporate the guidance and requirements set forth in the *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat* (U.S. Army Corps of Engineers/National Marine Fisheries Service, 2001) should an SAV survey indicate sea grasses are located in the project area. Among other impacts, implementing these guidelines will require pilings for the dock expansion to be placed at a minimum of 10 feet apart.
- Implementation of Best Management Practices (BMPs) for species protection and turbidity and erosion control to be implemented. This will help minimize the damage and loss of habitats. All construction activities will be done in compliance with FDEP and USACE permit conditions.
- No work (including staging or storing of equipment, materials, or debris) will occur on sandy beach areas that could be used for sea turtle nesting. Any sand or gravel material brought to the project site and not used during construction will be removed and will not be place on the beach.
- Lighting is not proposed in this project; however, should it become necessary, lighting will follow be wildlife-friendly and comply with the guidance provided in the current edition of the FWC's Lighting Technical Manual.
- All construction conditions identified in the Standard Manatee Conditions for In-water Work (USFWS 2011) will be implemented and adhered to during project construction.

- Pilings for the dock will be placed by a combination of water jetting and mechanical auguring to minimize noise.
- If construction occurs when piping plover or red knot could be present, a shorebird survey will be conducted in the project area and a 300-foot wide buffer zone (no work zone) will be established where either or both of the species congregate in significant numbers. Any and all construction will be prohibited in the buffer zone.
- Project activity will not extend into designated critical habitat for species or expand beyond existing developed areas.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the *National Bald Eagle Management Guidelines* will be followed (USFWS 2007).
- If project activities occur during shorebird/seabird nesting season (February 15 to August 31), the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds/seabirds or rookeries and their recommendations will be implemented.
- Care will be taken to minimize noise and physical disruptions near areas where foraging or resting seabirds are encountered. Work will occur during daylight hours only.
- Educational signage will be posted at all ramps reminding visitors of nearby trust resources and any protective measures that may be necessary to avoid and minimize impacts in their habitats either at the project site or when visiting nearby islands. This signage will be developed in coordination with FWC and the Panama City Ecological Services Field Office. The State of Florida Trustees and DOI recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient to evaluate the effectiveness of conservation measures, then, an in-person survey will be taken of a sample of recreational users at the project location at the same time as the planned twice annual performance monitoring of the project by the same party performing such monitoring.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.19.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- Project construction will utilize mechanical equipment that uses oil, lubricants and fuels. The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids, and to avoid releases and spills.
- If a release should occur such releases will be contained and cleaned up promptly in accordance with all applicable regulations.
- In the event of a fuel or oil spill from construction equipment, all procedures, regulations and laws pertaining to Oil Spill Prevention and Response will be adhered to and the incident will be reported to appropriate agencies.
- All occupational and marine safety regulations and laws will be followed to ensure safety of all workers and monitors.

10.5.19.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational boating and fishing opportunities by improving an existing boat ramp. Performance monitoring will evaluate: 1) construction of a boarding dock; 2) the addition of boat trailer parking; 3) the construction of an access drive; 4) the addition of a staging area; and 5) the construction a fish cleaning station. Specific performance criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the boat ramp is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by the City of Port St. Joe as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by the City of Port St. Joe.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, the City of Port St. Joe will monitor the recreational use activity at the site. The City of Port St. Joe will visit the site twice a year to count the number of users at the boat ramp. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

10.5.20 Strategically Provided Boat Access along Florida's Gulf Coast: Project Description F (City of St. Marks Boat Ramp Improvements)

The Strategically Provided Boat Access along Florida's Gulf Coast (City of St. Marks Boat Ramp Improvements) project will improve the existing City of St. Marks boat ramp. The improvements include adding a boarding dock to the one-lane boat ramp. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Strategically Provided Boat Access along Florida's Gulf

Coast (City of St. Marks Boat Ramp Improvements) project is intended to enhance and/or increase recreational boating and fishing opportunities by improving the boat ramp area. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational boating and fishing opportunities by improving the boat ramp area.

The Trustees evaluated the Strategically Provided Boat Access along Florida's Gulf Coast (City of St. Marks Boat Ramp Improvements) Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection). Based on the cumulative impact analysis, the Strategically Provided Boat Access along Florida's Gulf Coast (City of St. Marks Boat Ramp Improvements) Project will not substantially contribute to adverse cumulative effects to resources. The Strategically Provided Boat Access along Florida's Gulf Coast (City of St. Marks Boat Ramp Improvements) Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.20.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.20.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.20.2.1 Measures to Mitigate Impacts to the Physical Environment

- BMPs for erosion control will be implemented and maintained at all times during construction to prevent siltation and turbid discharges into surface waters from land-based activity.
    - Methods for land-based portions of the project construction will include, but may not be limited to, the use of staked hay bales, staked filter cloth, sodding, seeding, and mulching; staged construction; and installation of turbidity screens around the immediate project site. Prior to the initiation of any work, erosion control measures will be put in place along the perimeter of all landward work areas to prevent the displacement of fill material into the St. Marks River.
- Turbidity barriers with weighted skirts extending to within one foot of the bottom will be installed along the entire shoreline length of the in-water project area prior to initiation of construction. Turbidity barriers will remain in place and be maintained until the authorized work has been completed and all erodible materials have been stabilized.
- All permit conditions requiring mitigation measures for siltation, erosion, turbidity and release of chemicals will be strictly adhered to. During construction, Best Management Practices and boom placement along with other avoidance and mitigation measures required by state and federal regulatory agencies will be employed to minimize any water quality and sedimentation impacts. The FDEP permit conditions require erosion and turbidity mitigation measures. These include:
    - Install floating turbidity barriers
    - Install erosion control measures along the perimeter of all work areas
    - Stabilize all filled areas with sod, mats, barriers or a combination
    - If turbidity thresholds are exceeded the project must stop, stabilize the soils, modify the work procedures, and notify the FDEP.
- Required spill containment measures will be implemented for applicable construction activities. FDEP permits require spill containment protection and mitigation measures such as:
    - No boat repair or fueling facilities over the water,
    - Prohibited activities include hull cleaning and painting, discharges or release of oils or greases, and related metal-based bottom paints associated with hull scraping, cleaning, and painting.
- The project will comply with state water quality standards and other aquatic resource protection requirements.
- Construction noise will be temporary and limited to daytime hours, and the construction period is not anticipated to last more than one year.

10.5.20.2.2 Measures to Mitigate Impacts to Biological Resources

- Should SAV be identified in the potential project area where pilings will need to be placed, the conditions in the *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat* (U.S. Army Corps of Engineers/National Marine Fisheries Service, 2001) will be implemented. Among other elements this will require pilings for the canoe/kayak launch be placed a minimum of 10 feet apart.

- Implementation of Best Management Practices (BMPs) for species protection and turbidity and erosion control to be implemented. This will help minimize the damage and loss of habitats. All construction activities will be done in compliance with all permit conditions.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the *National Bald Eagle Management Plan* guidelines will be followed (USFWS 2007).Care will be taken to minimize noise and physical disruptions near areas where foraging, resting, or nesting migratory birds are encountered. Work will occur during daylight hours only.
- During construction, all appropriate BMPs will be followed to minimize the potential impacts of construction activities on EFH and species in the area.
- The Standard Manatee Conditions for In-Water work (USFWS 2011) will be implemented.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.20.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- Project construction will utilize mechanical equipment that uses oil, lubricants and fuels. The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids, and to avoid releases and spills.
- If a release should occur such releases will be contained and cleaned up promptly in accordance with all applicable regulations. As a result, no impacts associated with construction-related hazardous materials will be anticipated.
- In the event of a fuel or oil spill from construction equipment, all procedures, regulations and laws pertaining to Oil Spill Prevention and Response will be adhered to and the incident will be reported to appropriate agencies.
- All occupational and marine safety regulations and laws will be followed to ensure safety of all workers and monitors.

10.5.20.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational boating and fishing opportunities by improving an existing boat ramp. Performance monitoring will evaluate the construction of the boarding dock to the one-lane boat ramp. Specific performance criteria include: 1) the completion of

the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the boat ramp is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by the City of St. Marks as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by the City of St. Marks.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, the City of St. Marks will monitor the recreational use activity at the site. The City of St. Marks will visit the site twice a year to count the number of users at the boat ramp. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

10.5.21 Strategically Provided Boat Access along Florida's Gulf Coast: Project Description G (Walton County, Choctaw Beach Boat Ramp Improvements)

The Strategically Provided Boat Access along Florida's Gulf Coast: Walton County, Choctaw Beach Boat Ramp Improvements project component was not included in the Final Phase III ERP/PEIS.

10.5.22 Strategically Provided Boat Access along Florida's Gulf Coast: Project Description H (Walton County, Lafayette Creek Boat Dock Improvements)

The Strategically Provided Boat Access along Florida's Gulf Coast (Walton County Lafayette Creek Boat Dock Improvements) project will improve the existing Lafayette Creek boat dock in Walton County. The improvements include expanding the dock by 400 feet at the boat ramp to accommodate larger vessels and additional vessels. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Strategically Provided Boat Access along Florida's Gulf Coast (Walton County Lafayette Creek Boat Dock Improvements) project is intended to enhance and/or increase recreational boating and fishing opportunities by improving the boat ramp area. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational boating and fishing opportunities by improving the boat ramp area.

The Trustees evaluated the Strategically Provided Boat Access along Florida's Gulf Coast (Walton County Lafayette Creek Boat Dock Improvements) Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public

health and safety and shoreline protection). Based on the cumulative impact analysis, the Strategically Provided Boat Access along Florida's Gulf Coast (Walton County Lafayette Creek Boat Dock Improvements) Project will not substantially contribute to adverse cumulative effects to resources. The Strategically Provided Boat Access along Florida's Gulf Coast (Walton County Lafayette Creek Boat Dock Improvements) Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.22.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.22.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.22.2.1 Measures to Mitigate Impacts to the Physical Environment

- Prior to starting construction, the existing FDEP permit indicates roughly 800' of turbidity barrier will be installed in Lafayette Creek to minimize direct water quality impacts, primarily turbidity increases. These turbidity barriers will have weighted skirts extending to within one foot of the bottom and will remain in place and be maintained until the authorized work has been completed and all erodible materials have been stabilized.
- Methods for limiting the impact of the land-based portions of the project construction will include, but may not be limited, to the use of staked hay bales, staked filter cloth, sodding, seeding, and mulching; staged construction; and installation of turbidity screens around the immediate project site.
- Immediately after completion of the final grading of land surface, all slopes, land surfaces, and filled areas will be stabilized using sod, degradable mats, barriers, or a combination of similar stabilizing materials to prevent erosion. Erosion control measures will remain in place and be maintained until all authorized work is completed and the site has been stabilized.
- All permit conditions requiring mitigation measures for siltation, erosion, turbidity and release of chemicals will be strictly adhered to. During construction, Best Management Practices and boom placement along with other avoidance and mitigation measures required by state and

federal regulatory agencies will be employed to minimize any water quality and sedimentation impacts. The FDEP permit conditions require erosion and turbidity mitigation measures. These include:

  - Install floating turbidity barriers
  - Install erosion control measures along the perimeter of all work areas
  - Stabilize all filled areas with sod, mats, barriers or a combination
  - If turbidity thresholds are exceeded the project must stop, stabilize the soils, modify the work procedures, and notify the FDEP.

- Required spill containment measures will be implemented for applicable construction activities. The FDEP permits require spill containment protection and mitigation measures such as:
  - No boat repair or fueling facilities over the water,
  - Prohibited activities include hull cleaning and painting, discharges or release of oils or greases, and related metal-based bottom paints associated with hull scraping, cleaning, and painting
- The project will comply with state water quality standards and other aquatic resource protection requirements.
- Boat wakes created by additional boat traffic that could increase shoreline erosion will be controlled through no-wake or speed zones to mitigate shoreline erosion along Lafayette Creek.
- Construction noise will be temporary and limited to daytime hours, and the construction period is not anticipated to last more than one year.

10.5.22.2.2 Measures to Mitigate Impacts to Biological Resources

- The conditions and guidelines of the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NMFS, 2006) will be implemented and adhered to during all in-water construction activity.
- All construction conditions identified in the Standard Manatee Conditions for In-water Work (USFWS 2011) will be implemented and adhered to during project construction.
- Educational signs will be posted to inform visitors of the potential for marine mammals and any necessary precautions.
- Nesting is not known at the marina for migratory birds, however, preconstruction nesting surveys will be conducted if project activities occur during shorebird nesting season (February 15 to August 31). The FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds or rookeries and their recommendations will be implemented. If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the *National Bald Eagle Management Plan* guidelines will be followed (USFWS 2007).Care will be taken to minimize noise and physical disruptions near areas where foraging, resting, or nesting migratory birds are encountered. Work will occur during daylight hours only.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection,

pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.22.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- During and following construction, all construction waste materials will be disposed of appropriately.
- The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids, and to avoid releases and spills.
- If a release should occur such releases will be contained and cleaned up promptly in accordance with all applicable regulations.
- In the event of a fuel or oil spill from construction equipment, all procedures, regulations and laws pertaining to Oil Spill Prevention and Response will be adhered to and the incident will be reported to appropriate agencies.
- All occupational and marine safety regulations and laws will be followed to ensure safety of all workers and monitors.

10.5.22.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational boating and fishing opportunities by improving an existing boat ramp. Performance monitoring will evaluate the construction of the dock. Specific performance criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the boat ramp facility is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by Walton County as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by Walton County.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, Walton County will monitor the recreational use activity at the site. Walton County will visit the site twice a year to count the number of users at the boat ramp. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

10.5.23 Walton County Boardwalks and Dune Crossovers all Components (Ed Walline Beach Access Improvements, Gulfview Heights Beach Access Improvements, Palms of Dune Allen West Beach Access Improvements, and Bayside Ranchettes Park Improvements)

The Walton County Boardwalks and Dune Crossovers: Ed Walline Beach Access Improvements project will improve the Ed Walline regional beach access facility in Walton County. The improvements include replacing pavilions and restroom fixtures and upgrading all interior plumbing. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Walton County Ed Walline Beach Access Improvement project is intended to enhance and/or increase recreational beach use opportunities by improving the facilities at the Ed Walline beach access point. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The Walton County Boardwalks and Dune Crossovers: Gulfview Heights Beach Access Improvements project will improve the Gulfview Heights beach access facility in Walton County. The improvements include replacing restroom fixtures, updating all interior plumbing, and repairing all soffits on pavilions. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Walton County Gulfview Heights Beach Access Improvements project is intended to enhance and/or increase recreational beach use opportunities by improving the existing facilities at the beach access point. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The Walton County Boardwalks and Dune Crossovers Project: Grayton Dunes Beach Access Boardwalk Improvements project component was included in Final Phase III ERP/PEIS. However, it has since been dropped from funding consideration and is not included in this Record of Decision. Walton County requested that the Trustees withdraw the project from consideration, since the County had already constructed the project with another funding source. Total funds allocated to Grayton Dunes Beach Access Boardwalk Improvements project component were $168,076.00. The funds from the Walton County Boardwalks and Dune Crossovers Project: Grayton Dunes Beach Access Boardwalk Improvements project component will be left in the Early Restoration Subaccount and will be available to fund future early restoration projects. The re-allocation of funds from the Grayton Dunes Beach Access Boardwalk Improvements project component to the Early Restoration Subaccount does not affect the Benefit to Cost Ratio (BCR) that was negotiated with BP for the Walton County Boardwalks and Dune Crossovers project.

The Walton County Boardwalks and Dune Crossovers Project: Dothan Beach Access Boardwalk Improvements project component was included in Final Phase III ERP/PEIS. However, it has since been

dropped from funding consideration and is not included in this Record of Decision. Walton County requested that the Trustees withdraw the project from consideration, since the County is in the process of constructing the project with another funding source. Total funds allocated to Dothan Beach Access Boardwalk Improvements project component were $188,909.00. The funds from the Walton County Boardwalks and Dune Crossovers Project: Dothan Beach Access Boardwalk Improvements project component will be left in the Early Restoration Subaccount and will be available to fund future early restoration projects. The re-allocation of funds from the Dothan Beach Access Boardwalk Improvements project component to the Early Restoration Subaccount does not affect the BCR that was negotiated with BP for the Walton County Boardwalks and Dune Crossovers project.

The Walton County Boardwalks and Dune Crossovers: Palms of Dune Allen West Beach Access Improvements project will improve the Palms of Dune Allen West beach access facility in Walton County. The improvements include constructing a dune walkover, allowing beach visitors to access the beach. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Walton County Palms of Dune Allen West Beach Access Improvements project is intended to enhance and/or increase recreational beach use opportunities by improving beach access. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The Walton County Boardwalks and Dune Crossovers: Bayside Ranchettes Park Improvements project will improve the Bayside Ranchettes Park in Walton County. The improvements include constructing a parking area, a picnic table, a dock, and steps into the water allowing access to the bay. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Walton County Palms of Dune Allen West Beach Access Improvements project is intended to enhance and/or increase recreational beach use opportunities by improving beach access. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. These projects will enhance and/or increase recreational beach use opportunities by improving beach access, and by improving recreational opportunities at parks.

The Trustees evaluated the Walton County Boardwalks and Dune Crossovers Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and

recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Walton County Boardwalks and Dune Crossovers Project will not substantially contribute to adverse cumulative effects to resources. The Walton County Boardwalks and Dune Crossovers Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.23.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

For the Ed Walline Beach Access Improvements component, the Gulfview Heights Beach Access Improvements component, and the Palms of Dune Allen West Beach Access Improvements, the Trustees have completed consultations and reviews under the Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with Clean Water Act and Rivers and Harbors Act has been initiated. Compliance with the National Historic Preservation Act has also been initiated for the Ed Walline Beach Access Improvements component, and the Palms of Dune Allen West Beach Access Improvements component – this consultation is complete for the Gulfview Heights Beach Access Improvements component.

For the Bayside Ranchettes Park Improvements component, the Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.23.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.23.2.1 Measures to Mitigate Impacts to the Physical Environment

- The following conservation measures for dune walkover construction will be implemented at each site:
    - **Boardwalks**: A dune walkover will be constructed at a height (minimum 3 feet above grade) to accommodate natural dune growth and associated vegetation.

- **Equipment storage**: No storage of equipment or materials will occur on the beach or dunes throughout the entire year.
- **Dune protection**: No activity, except as needed to repair/replace/construct the walkovers, will occur on existing healthy dunes during any time of the year. Activities in this area will be limited to maintenance and restoration of the habitat. If dunes are impacted, they will be restored by planting the appropriate vegetation or installing sand fence. Appropriate signs will be used to designate and indicate the purpose of the conservation area, if necessary.
- **Sand fence**: Minimal use of sand fence will be encouraged. When used, the fence will be used for restoration of dune blowouts. Post and rope are preferred for beach visitor access, pedestrian traffic control, and wildlife exclusion zones (e.g., bird wintering areas). If used for dune restoration, the fence will be placed in a sea turtle–compatible design and be made of biodegradable material.
- **Native landscaping**: The habitat quality of all non-developed areas will be maximized and the habitats will be connected by landscaping with native dune plants. The landscaping plan will be reviewed and approved by the U.S. Fish and Wildlife Service.
- **Dune vegetation**: All dune vegetation used in dune restoration will be native to the specific Walton County dunes and grown from northwest Florida plant stock. Vegetation will be planted with an appropriate amount of fertilizer and anti-desiccant material, as appropriate, for the plant size. Planting must be on 18-inch centers throughout the created dune; however, 24-inch centers may be acceptable depending on the area to be planted. No irrigation lines or pipes will be installed. If dunes are impacted during implementation of the projects, they will be restored by planting the appropriate vegetation or installing sand fence
- **Refuse**: Sturdy animal-proof garbage containers will be installed and maintained to prevent the invasion of house mice and predators (cats, raccoons, fox, and coyotes).
- **Lighting**: No lighting will be used on the dune walkover. Any lighting for pavilions or other features will be wildlife friendly and will comply with Walton County's Wildlife Conservation Zone Lighting ordinance using best available technology.

- Bayside Ranchettes dock construction
  - BMPs for erosion control will also be implemented and maintained at all times during upland construction to prevent siltation and turbid discharges into surface waters. Methods could include but are not limited to the use of staked hay bales, staked filter cloth, sodding, seeding, and mulching; staged construction; and installation of turbidity screens around the immediate project site.
- Should the parking area improvements result in an increase in the area of impermeable surface a site stormwater management plan will also be developed to control impacts from water flowing from the site to the Bay.
- Rule 62B-41.007, Fla. Admin. Code, which is titled Design, Siting, and Other Requirements, requires additional measures to protect beaches and dunes, which will be adhered to in the development of this project.

- In addition to construction BMPs and dune walkover conservation measures, two of the sites (Palms of Dune Allen West, and Bayside Ranchettes) are within the Coastal Construction Control Line (CCCL). The CCCL program is designed to protect the coastal system from improperly sited and designed structures that can erode, destabilize, or destroy the beach and dune system, with the overall goal of balancing development and the health of these natural systems. The following environmental-related permit obligations/best practices will be followed for the above referenced projects:
    - The contractor will use extreme care to prevent any impacts to the beach and dune system, marine turtles, their nests and habitat, or adjacent property and structures.
    - The construction will not result in removal or destruction of native vegetation, which will either destabilize a frontal, primary, or significant dune or cause a significant impact to the beach and dune system from increased erosion by wind or water.
    - The construction will not direct discharges of water or other fluids in a seaward direction and in a manner that will result in significant impacts. For the purposes of this rule, construction will be designed to minimize erosion-induced surface-water runoff within the beach and dune system and to prevent additional seaward or off-site discharges associated with a coastal storm event.
    - Construction traffic will not occur and building materials will not be stored on vegetated areas seaward of the control line unless specifically authorized by the permit.
    - The contractor will not disturb existing beach and dune topography and vegetation except as expressly authorized in the permit, and will restore any disturbed topography or vegetation prior to completing the project.
    - All fill material placed seaward of the control line will be sand, which is similar to that already existing on the site in both coloration and grain size.
    - The construction will not result in removal or disturbance of in situ sandy soils of the beach and dune system to such a degree that a significant impact to the beach and dune system will result from either a) reducing the existing ability of the system to resist erosion during a storm or b) lowering existing levels of storm protection to upland properties and structures.
    - If not specifically authorized elsewhere in the permit, no operation, transportation, or storage of equipment or materials are authorized seaward of the dune crest or rigid coastal structure during the marine turtle nesting season. The marine turtle nesting season is May 1 through October 31.
- Permit-required erosion control measures will be implemented at all of the project sites, and contractors will use BMPs to control erosion and minimize compaction.
    - Implementation of stormwater and sediment control plans.
    - Contractors will take special precautions when working within the CCCL and around coastal dune lake habitats.
- BMPs will be employed to prevent, mitigate, and control potential air pollutants during project implementation, such as following speed limits and prohibiting idling unless necessary to run

equipment. The following mitigation measures have been identified to reduce or eliminate GHG emissions from the project:

- Shut down idling construction equipment, if feasible.
- Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
- Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
- Encourage the use of alternative fuels for generators at construction sites, such as propane or solar, or use electrical power where practicable.

10.5.23.2.2 Measures to Mitigate Impacts to Biological Resources

- At all project sites, no lighting will be installed on the boardwalks. Any other lighting used (in parking areas, sidewalks, signage, etc.) will be required to comply with Walton County's Wildlife Conservation Zone lighting zone ordinance using the best available technology. Any parking lot lighting should be fully-shielded, wildlife-friendly lighting.
- At all project sites, should work be undertaken between May 1 and October 31 the following conservation measures will be followed:
    - The existing, local, sea turtle nesting surveyor will conduct daily sea turtle nesting surveys will assess the need for the relocation of sea turtle nests that could be affected by project construction prior to project implementation each day.
    - If a sea turtle (either adult or hatchling) is observed, maintain at least 200 feet between the turtle and personnel.
    - If altered, beach topography shall be restored in all areas to the natural beach profile by 20:00 hours each day. Restoring beach topography includes raking of tire ruts, filling pits or holes.
    - All actions shall observe a 10-foot buffer from marked sea turtle nests. Between May 1 and August 31, actions with mechanized equipment or vehicles shall not begin prior to 9:00 am to ensure sea turtle monitoring surveys are completed for the day.
- At all project sites, if construction occurs between August and May:
    - Shorebird surveys will be conducted in the project area;
    - Within the project area a 300-foot wide buffer zone will be established where piping plovers or red knots congregate in significant numbers;
    - Any and all construction will be prohibited in the buffer zone.
- At all project sites except Bayside Ranchettes:
    - All construction personnel will be notified of the potential presence of Choctawhatchee Beach Mice and reminded of the criminal and civil penalties associated with harassing, injuring, or killing these mice.
    - A qualified, permitted, biologist will survey the project sites before work commences and flag potential beach mouse burrows and tracks for avoidance.
    - Only hand tools will be used within a five-foot radius of a burrow opening or any observed mice tracks.

- Equipment and vehicles will avoid the dune by 10 foot from the toe of the dune.
- Construction noise will be kept to the minimum feasible.
- Construction will occur during the day only.
- Equipment, vehicles, and project debris will not be stored in a manner or location where it could be colonized by mice.
    - Prior to bringing any equipment (including personal gear, machinery, vehicles or vessels) to the work site, inspect each item for mud or soil, seeds, and vegetation. If present, the equipment, vehicles, or personal gear shall be cleaned until they are free from mud, soil, seeds, and vegetation. This inspection will occur each time equipment, vehicles, and personal gear are being prepared to go to a site or prior to transferring between sites to avoid spreading exotic, nuisance species.
    - Inspect sites periodically to identify and control new colonies/individuals of an invasive species not previously observed prior to construction.
    - Remove trash or anything that will attract nuisance wildlife to work areas daily.
- Project related trash or debris shall not be allowed to blow into open water, onto beaches or in the dunes.
- Appropriate waste/trash receptacles will be installed and maintained at boardwalks so that predators are not attracted to the area.

- Standard Manatee Conditions for In-Water Work (USFWS 2011) will be implemented and adhered to for the Bayside Ranchettes Park project.
- All walkover construction will follow the recent guidance for such work issued by the USFWS Panama City Field Office (USFWS 2013).
- If native plants are destroyed during the project, appropriate native plants will be planted in the same location.
- If necessary (due to food source removal during construction and growing periods for replacement plants), supplemental beach mouse food sources will be provided.
- Bayside Ranchettes dock construction
    - As part of final dock design effort, a survey of submerged aquatic vegetation (SAV) in the area will be completed. Should the site assessment for the project identify SAV in the project area, the conditions in the *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat* (U.S. Army Corps of Engineers/National Marine Fisheries Service, 2001) will be implemented.
        - Among other elements that will result should these guidelines need to be implemented, there will requirements that pilings be placed a minimum of 10 feet apart and there will be requirements for the height of the pier and spacing of decking materials.
    - The conditions and guidelines of the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NOAA, 2006) will be implemented and adhered to during all in-water construction activity.

    - Standard Manatee Conditions for In-Water Work (USFWS 2011) will be implemented and adhered to during all in-water construction activity. The project will adhere to all applicable permit conditions and federal, state, and local requirements for the protection of marine mammals during construction.
- The projects will install and maintain sturdy animal-proof garbage containers to prevent the invasion of house mice and predators (cats, raccoons, fox, and coyotes) while providing a place for visitors to dispose of refuse.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the National Bald Eagle Management Guidelines will be followed (USFWS 2007). Care will be taken to minimize noise and physical disruptions near areas where foraging or resting migratory birds are encountered. Work will occur during daylight hours only.
- If project activities occur during shorebird nesting season (February 15 to August 31), the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds or rookeries and their recommendations will be implemented.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices to mitigate invasive species will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.23.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- The project area could be isolated by construction fencing to prevent incidental access.

10.5.23.3 Performance Criteria, Monitoring, and Maintenance

Ed Walline:

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objectives are to enhance and/or increase recreational beach use opportunities by improving the facilities at the Ed Walline beach access point. Performance monitoring will evaluate: 1) the replacement of the pavilions; 2) the replacement of the restroom fixtures; and 3) the update of all interior plumbing. Specific performance criteria include: 1) completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the facilities are open and available.

Gulfview Heights:

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objectives are to enhance and/or increase recreational beach use opportunities by improving the existing facilities at the beach access point. Performance monitoring will evaluate: 1) the replacement of the restroom fixtures; 2) the update of all interior plumbing; and 3) the repair of all soffits on pavilions. Specific performance criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the facilities are open and available.

Palms of Dune Allen:
As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational beach use opportunities by improving beach access. Performance monitoring will evaluate construction of the dune walkovers. Specific performance criteria include: 1) completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the dune walkover is open and available

Bayside Ranchettes Park:
As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. Project objective is to enhance and/or increase recreational beach use opportunities by improving recreational opportunities at the park. Performance monitoring will evaluate: 1) the construction of a parking area; 2) the construction of a picnic table; 3) the construction of a dock; and 4) the construction of steps into the water allowing access to the bay. Specific performance criteria include: 1) completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the park is open and available.

All Components

Long-term monitoring and maintenance of the improved facilities will be completed by Walton County as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by Walton County.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, Walton County will monitor the recreational use activity at the site. Walton County staff will visit the site twice a year to count the number of users at the beach access point. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

10.5.24 Gulf County Recreation Projects: Indian Pass Boat Ramp and Highland View Boat Ramp

The Gulf County Recreation Projects: Indian Pass Boat Ramp project component was not included in the Final Phase III ERP/PEIS.

The Gulf County Recreation Projects: Highland View Boat Ramp project will improve the existing Highland View boat ramp in Gulf County. As part of this project, the amenities at this boat ramp site will be upgraded. No work to the ramp itself if planned. This work will include some renovations to the existing pier structure such as replacing planking and side bumpers. Expanding the pier footprint is not anticipated and no new piling placement is expected. Additional work will include renovating and expanding the existing informal sand parking area to provide a more stable long-term surface. In addition, current project plans call for providing some sort of restroom facilities (e.g., a port-a-potty).As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Gulf County Highland View Boat Ramp project is intended to enhance and/or increase recreational boating and fishing opportunities by improving the boat ramp area. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. These projects will enhance and/or increase recreational boating and fishing opportunities by improving the boat ramp area.

The Trustees evaluated the Gulf County Recreation Projects: Highland View Boat Ramp Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources,

tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Gulf County Recreation Projects: Highland View Boat Ramp Project will not substantially contribute to adverse cumulative effects to resources. The Gulf County Recreation Projects: Highland View Boat Ramp Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.24.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

The Final Phase III ERP/PEIS evaluated the environmental consequence of the proposed project on proposed terrestrial Loggerhead CH. Shortly after the Trustees released the Final Phase III ERP/PEIS, USFWS designated final Loggerhead CH. DOI requested the USFWS adopt the conference report as an informal consultation for final Loggerhead CH. The USFWS' informal consultation for loggerhead CH was completed on September 22, 2014 resulting in a concurrence that the project, as proposed, would not result in adverse modification or destruction of final Loggerhead CH. Accordingly, the Trustees have determined that the final Loggerhead CH designation does not represent significant new information that requires supplemental environmental consequences analysis pursuant to NEPA.

10.5.24.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.24.2.1 Measures to Mitigate Impacts to the Physical Environment

- All permit conditions, including mitigation measures for siltation, erosion, turbidity, and release of chemicals, will be strictly adhered to. During construction, BMPs and boom placement along with other avoidance and mitigation measures required by state and federal regulatory agencies will be employed to minimize any water quality and sedimentation impacts. FDEP permit conditions require erosion and turbidity mitigation measures, which may include the following:
    - Installation of floating turbidity barriers.
    - Installation of erosion control measures along the perimeter of all work areas.
    - Stabilization of all filled areas with sod, mats, barriers, or a combination.

    - Stoppage of work if turbidity thresholds are exceeded. The soils will then be stabilized, work procedures modified, and the FDEP will be notified.

- The project will comply with state water quality standards and other aquatic resource protection requirements.
- Required spill containment measures will be implemented for applicable construction activities. FDEP permit conditions typically spill containment protection and mitigation measures such as:
    - Prohibiting boat repair or fueling facilities over the water.
    - Prohibited activities include hull cleaning and painting, discharges or release of oils or greases, and related metal-based bottom paints associated with hull scraping, cleaning, and painting.
- Boat wakes created by additional boat traffic that could increase shoreline erosion will be controlled through no-wake or speed zones to mitigate shoreline erosion.
- Available BMPs will be employed to prevent, mitigate, and control potential air pollutants during project implementation. No air quality-related permits will be required.

10.5.24.2.2 Measures to Mitigate Impacts to Biological Resources

- Educational signage will be posted at all ramps reminding visitors of nearby trust resources and any protective measures that may be necessary to avoid and minimize impacts in their habitats either at the project site or when visiting nearby islands. This signage will be developed in coordination with FWC and the Panama City Ecological Services Field Office. The State of Florida Trustees and DOI recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient to evaluate the effectiveness of conservation measures, then, an in-person survey will be taken of a sample of recreational users at the project location at the same time as the planned twice annual performance monitoring of the project by the same party performing such monitoring.
- No work (including staging or storing of equipment) will occur on sandy beach areas that could be used by nesting sea turtles.
- Repairs and construction will occur in the existing project footprint, and no material will be staged, stored, or dumped on the beach. Any sand or gravel material brought to the project site and not used during construction will be removed and will not be placed on the beach.
- Lighting is not proposed in this project; however, should it become necessary, lighting will follow the most recent version of the FWC's Lighting Technical Manual.
- The Standard Manatee Conditions for In-Water Work (USFWS 2011) will be implemented during any in-water activities.
- All construction conditions identified in the Sea Turtle and Smalltooth Construction Conditions (NOAA 2006) will be implemented and adhered to during project construction.

- If construction occurs between August and May:
    - Shorebird surveys (for piping plover and red knot) will be conducted in the project area;
    - Within the project area a 300-foot wide buffer zone (no work zone) will be established where piping plover or red knot congregate in significant numbers.
    - Any and all construction will be prohibited in the buffer zone.
- Project activity will not extend into designated critical habitat or expand beyond existing developed areas.
- If project activities occur during shorebird/seabird nesting season (February 15 to August 31), the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds/seabirds or rookeries and their recommendations will be implemented.
- Care will be taken to minimize noise and physical disruptions near areas where foraging or resting migratory birds are encountered. Work will occur during daylight hours only.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the National Bald Eagle Management Guidelines will be followed (USFWS 2007).
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.24.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- The project area will be isolated by construction fencing to prevent incidental access.
- Construction could occur at any time but will ideally take place during the time of year when recreation use is lowest to minimize impacts to boat ramp users.
- The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction-related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids.

10.5.24.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational boating and fishing opportunities by improving the boat ramp area. Performance monitoring will evaluate: 1) the renovation of the existing pier structure; 2) the renovation and expansion of the parking area; and 3) the new restroom facilities. Specific performance criteria include: 1) the completion of the construction as designed and permitted,

and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the boat ramp is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by Gulf County as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by Gulf County.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, Gulf County will monitor the human use activity at the site. Gulf County staff will visit the site twice a year to count the number of users at the boat ramp. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

10.5.25 Gulf County Recreation Projects: Improvements at Beacon Hill Veterans' Memorial Park

The Gulf County Recreation Project – Improvements at Beacon Hill Veterans' Memorial Park project will improve and enhance the existing facilities at the Beacon Hill Veterans' Memorial Park Gulf County. The project will improve the park, including: the construction of a small amphitheater, pavilions, upgrade/replace existing restrooms and possible development of a nature trail and additional area for vehicle parking. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Gulf County Beacon Hill Veterans' Memorial Park Improvements project is intended to enhance and/or increase recreational beach use opportunities by improving the park. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational beach use opportunities by improving the park.

The Trustees evaluated the Gulf County Recreation Projects: Improvements at Beacon Hill Veterans' Memorial Park Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Gulf County Recreation Projects: Improvements at Beacon Hill Veterans' Memorial Park Project will not substantially contribute to adverse cumulative effects to resources. The Gulf County Recreation Projects: Improvements at Beacon

Hill Veterans' Memorial Park Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.25.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.25.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.25.2.1 Measures to Mitigate Impacts to the Physical Environment

- Because project plans are not yet finalized, all efforts will be made to design the project elements to have the least possible effect on the local hydrology, and best management practices (BMPs) will be implemented. BMPs that may be implemented and will help avoid potential adverse impacts to water quality include:
    - All construction will be performed in accordance with all local, state, and federal requirements and all permit requirements to protect the surrounding vegetation and natural condition.
    - The contractor will submit a plan for control of surface water runoff in accordance with all local, state, and federal requirements and all permit requirements to protect the surrounding vegetation and natural condition.
    - All construction adjacent to open water will be separated and confined by appropriate siltation screens and turbidity barriers to protect the quality of open water. However, for this project, no construction will occur adjacent to open water.
    - Upon completion of construction, the site will be cleared of all construction materials and restored to its natural state as shown on the plan drawings.
    - The contractor will be responsible for assuring compliance with all permit requirements.
- In addition to construction BMPs, the contractor will implement BMPs for adequate erosion control. Erosion control measures will be in place prior to any land alteration, and will be used throughout the construction process until soils are stabilized. Erosion control BMPs are as follows:

    - To protect against wind and stormwater runoff erosion, the contactor will place as appropriate hay bales and silt fencing with wire fence reinforcement, with sediment to be removed when it reaches approximately one-half the height of the barrier (.
    - Silt fences will be of optimal design and materials for adequate sediment control.
    - Side slopes created during construction will be stabilized at the earliest possible date to avoid erosion with adequate use of compacted soil and staked hay bales.
    - Any disturbed area not to be paved, sodded, or built upon will have a minimum vegetative cover of 80% and be mature enough to control soil erosion and survive severe weather conditions prior to final inspection.
    - Sod will be sufficiently grown and maintained to secure a dense stand of live grass.
    - The road surface at the entrance will require a maintained condition of slope to prevent tracking or flow of mud onto the existing public roadway.
- A wetlands permit will be required for the project and will stipulate appropriate BMPs and mitigation.
- Available BMPs will be employed to prevent, mitigate, and control potential air pollutants during project implementation.
- Noise may disturb wildlife and humans using the area, but will be kept to a minimum via BMPs such as working only during daytime hours, turning equipment off when idling, etc.

10.5.25.2.2 Measures to Mitigate Impacts to Biological resources

- The presence of threatened or endangered plants will be considered during the design phase of the project. Care will be taken to site park improvements in areas that minimize disturbance to vegetation.
- Construction of facilities will occur in areas within the park that had been previously cleared or built on as part of the original park construction.
- No trees associated with the park nor any of the surrounding forested areas will be cleared as part of facilities' construction and operation (including design and layout of nature trails).
- Any new lighting will be sea-turtle/wildlife friendly.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or The National Bald Eagle Management Guidelines will be followed (USFWS 2007).
- Precautions during construction will be used to protect any migratory birds that may be feeding, loafing, or resting in or near the project area. Such precautions include minimizing construction noise to the extent practicable, using care to avoid birds when operating machinery or vehicles near birds, and general contractor awareness of bird presence.
- Soil disturbance may encourage the encroachment of invasive or nuisance species. Those undeveloped areas disturbed during construction will be monitored, and invasive species will be removed.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/

vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.25.2.3 Human Uses and Socioeconomics

- The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction-related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids, and to avoid releases and spills.

10.5.25.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational beach use opportunities by improving the Beacon Hill Veterans' Memorial Park. Performance monitoring will evaluate: 1) the construction of pavilions; 2) the construction of restrooms; 3) the building of a nature trail; 4) the construction of a new parking area; and 5) the construction of a small amphitheater. Specific performance criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the park is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by Gulf County as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by Gulf County.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, Gulf County will monitor the recreational use activity at the site. Gulf County staff will visit the site twice a year to count the number of users at the park. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

10.5.26 Gulf County Recreation Projects: Windmark Beach Fishing Pier Improvements

The Gulf County Recreation Project – Windmark Beach Fishing Pier Improvements project will construct a fishing pier at Windmark Beach in Gulf County. The improvements include constructing a fishing pier into the Gulf of Mexico. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of their natural resources along Florida's Panhandle was denied or severely restricted. The Gulf County Windmark Beach Fishing Pier Improvements project is intended to enhance and/or increase recreational fishing opportunities by constructing a fishing pier. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources

injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational fishing opportunities by constructing a fishing pier.

The Trustees evaluated the Gulf County Recreation Projects: Windmark Beach Fishing Pier Improvements Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Gulf County Recreation Projects: Windmark Beach Fishing Pier Improvements Project will not substantially contribute to adverse cumulative effects to resources. The Gulf County Recreation Projects: Windmark Beach Fishing Pier Improvements Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.26.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, USFWS Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the NMFS Endangered Species Act, Marine Mammal Protection Act, National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

The Final Phase III ERP/PEIS evaluated the environmental consequence of the proposed project on proposed terrestrial Loggerhead CH. Shortly after the Trustees released the Final Phase III ERP/PEIS, USFWS designated final Loggerhead CH. DOI requested the USFWS adopt the conference report as an informal consultation for final Loggerhead CH. The USFWS' informal consultation for loggerhead CH was completed on September 22, 2014 resulting in a concurrence that the project, as proposed, would not result in adverse modification or destruction of final Loggerhead CH. Accordingly, the Trustees have determined that the final Loggerhead CH designation does not represent significant new information that requires supplemental environmental consequences analysis pursuant to NEPA.

10.5.26.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during

the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.26.2.1 Measure to Mitigate Impacts to the Physical Environment

- All USACE permit conditions relating to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act will be adhered to during project construction.
- During construction BMPs for erosion control will also be implemented and maintained at all times during upland activity to prevent siltation and turbid discharges into surface waters. Methods could include, but are not limited to, the use of staked hay bales, staked filter cloth, sodding, seeding, and mulching; staged construction; and installation of turbidity screens around the immediate project site. The direct goal of these actions is to limit sediment discharges into the water that will adversely affect turbidity.
- BMPs, including those to prevent degradation of ambient water quality parameters, will be used throughout construction activities. These may include monitoring the integrity of turbidity control screens and/or other devices to control erosion, sedimentation, and turbidity during piling installation and any excavation activities required for pier construction.
- Upland soils will be disturbed during construction as well, but those will be re-contoured and stabilized after construction is completed.
- BMPs will be employed to contain suspended solids and as conditioned by state and federal permits, and all areas potentially disturbed by construction must be contained using turbidity screens or similar devices to protect ambient water quality parameters.
- These noise levels will be kept to a minimum by BMPs such as turning boats off during idling and working only during daylight hours.

10.5.26.2.2 Measures to Mitigate Impacts to Biological Resources

- Should work be undertaken between May 1 and October 31 the following measures will be implemented:
    - All construction personnel will be notified of the potential presence of sea turtles and proposed critical habitat and reminded of means to protect them and the criminal and civil penalties associated with harassing, harming, or killing sea turtles (all life stages).
    - The local sea turtle nesting surveyor will conduct daily sea turtle nesting surveys will assess the need for the relocation of sea turtle nests that could be affected by the project construction prior to project implementation each day.
    - All actions shall observe a 10-foot buffer from marked sea turtle nests. Between May 1 and August 31, actions with mechanized equipment or vehicles shall not begin prior to 9:00 am to ensure sea turtle monitoring surveys are completed for the day.
    - If a sea turtle (either adult or hatchling) is observed, maintain at least 200 feet between the turtle and personnel.
    - All actions shall observe a 10-foot buffer from marked sea turtle nests.

    - If altered, beach topography shall be restored in all areas to the natural beach profile by 20:00 hours each day. Restoring beach topography includes raking of tire ruts, filling pits or holes.
- Any lighting will be required to be consistent with the guidance provided in the most current edition of the FWC's Lighting Technical Manual.
- Avoid driving over the wrack line or areas of dense seaweed, as these habitats may contain sea turtle hatchings or baby birds that are difficult to see.
- The nearest, existing staging, access and egress areas, travel corridors, pathways, and roadways shall be used (including those provided by the State, local government, land managers, trustee, or private property owner, with proper permissions).
- If driving on the beach, vehicles will enter at designated access, proceed directly to the hard-packed sand near or below the high tide line and stay below the tide line when driving long distances.
- No new staging areas, access or egress, or travel corridors shall be created.
- Avoid driving on the upper beach whenever possible, and never drive over any dunes or beach vegetation.
- Use the smallest footprint possible to complete the project.
- When complete, all pier pilings will incorporate pointed covers to discourage birds from perching on the pier which will help prevent increased predation on nearby nesting birds, eggs, and chicks.
- Several fishing line collection units should be placed along the pier to reduce snagging injures to all birds, especially pelicans.
- During all in-water construction activity, the conditions and guidelines of the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NOAA, 2006) will be implemented and adhered to.
- The final orientation of the pier will also be evaluated as part of the effort to develop final plans. As part of this assessment, a survey of submerged aquatic vegetation (SAV) in the area will be completed. Should the site assessment for the project identify SAV in the project area, the conditions in the *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat* (U.S. Army Corps of Engineers/National Marine Fisheries Service, 2001) will be implemented. Among other elements this will require placing pilings for the dock expansion a minimum of 10 feet apart. Orientation options for the fishing pier will also consider site specific features such as sand bars off the point and the bathymetry of the area.
- The Standard Manatee Conditions for In-Water Work (USFWS 2011) will be implemented and adhered to during project construction.
- Surveys for red knot (and piping plover if present) will be conducted on a regular basis (between August and May) during the construction period. Where either species congregates, an exclusion zone will be placed around the birds and no work will occur with 150 feet of the exclusion zone until the bids move on their own volition.
- The dune crossover will be constructed using following the USFWS most current best management practice guidelines for dune walkover construction (USFWS, 2013c).

- All construction personnel will be notified of the potential presence of St. Andrew Beach Mouse and reminded of the criminal and civil penalties associated with harassing, injuring, or killing this species.
- A qualified, permitted, biologist will survey the project sites before work commences and flag potential beach mouse burrows and tracks for avoidance.
- Construction noise will be kept to the minimum feasible, and construction will occur during the day only.
- Equipment, vehicles, and project debris will not be stored in a manner or location where it could be colonized by mice.
- Remove trash or anything that will attract nuisance wildlife to work areas daily.
- Project related trash or debris shall not be allowed to blow into open water, onto beaches or in the dunes.
- Appropriate waste/trash receptacles will be installed and maintained at boardwalks so that predators are not attracted to the area.
- If native dune plants are destroyed during the project, appropriate native plants will be planted in the same location. The USFWS Panama City Field Office will be contacted regarding dune planting to balance habitat for birds and beach mice.
- If necessary (due to food source removal during construction and growing periods for replacement plants), supplemental beach mouse food sources will be provided.
- BMPs will include installation of protective barrier fencing to prevent construction disturbances (limited land clearing for project site access and work staging areas) to the existing dune systems.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or The National Bald Eagle Management Guidelines will be followed (USFWS 2007).
- During the design phase of the project, coordination with the USFWS Panama City Field Office and FWC will occur so that the pier and the walkover can be sited and designed to avoid being placed in habitat used by colonial migratory birds.
- Care will be taken to minimize noise and physical disruptions near where foraging or resting birds are encountered.
- If FWC or PCFO determines that visitor use may impact nesting shorebirds/seabirds, additional BMPs (e.g., signage or roping a protective area that excludes visitors) will be provided.
- If project activities occur during shorebird/seabird nesting season (February 15 to August 31), the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds/seabirds or rookeries and their recommendations will be implemented.
- These noise levels will be kept to a minimum by BMPs such as turning boats off during idling and working only during daylight hours.
- BMPs for construction and in-water work will be followed to minimize impacts and disturbance to species.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In

general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

  - Prior to bringing any equipment (including personal gear, machinery, vehicles or vessels) to the work site, inspect each item for mud or soil, seeds, and vegetation. If present, the equipment, vehicles, or personal gear shall be cleaned until they are free from mud, soil, seeds, and vegetation. This inspection will occur each time equipment, vehicles, and personal gear are being prepared to go to a site or prior to transferring between sites to avoid spreading exotic, nuisance species.
  - Inspect sites periodically to identify and control new colonies/individuals of an invasive species not previously observed prior to construction.

- Staging of most construction materials will occur in the existing parking area although some materials may be delivered by barge.
- Additionally, a kiosk/booth will be placed at the entrance to the pier with additional information for best practices on catch and release and other fishing practices (e.g., placing cut line and hooks for disposal in trash cans, not feeding dolphins) designed to limit potential adverse impacts to species.
  - The signage in this kiosk will include the NMFS "Dolphin Friendly Fishing and Viewing Tips" sign with NMFS' "Protect Dolphin" signs along the pier and signage/notices not feed gulls.
- No fish cleaning stations will be included in the design and construction of these piers to help mitigate/avoid issues of species attraction to the pier.
- Finally, prior to the opening of the pier to the public, fixed signs that are consistent with National Oceanic and Atmospheric Administration (NOAA) and State of Florida guidelines with instructions on what to do in the event of hooking a listed species (e.g., sea turtle) will be placed at the entrance to the fishing pier and strategically at fixed intervals along its length.
- Educational signage will be posted at all ramps reminding visitors of nearby trust resources and any protective measures that may be necessary to avoid and minimize impacts in their habitats either at the project site (specifically to include "no gull feeding") or when visiting nearby islands. This signage will be developed in coordination with FWC and the Panama City Ecological Services Field Office. The State of Florida Trustees and DOI recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the

completion of construction. If the online surveying is insufficient to evaluate the effectiveness of conservation measures, then, an in-person survey will be taken of a sample of recreational users at the project location at the same time as the planned twice annual performance monitoring of the project by the same party performing such monitoring.

10.5.26.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- The fishing pier construction will be conducted and maintained in accordance with state and federal permits for the project area in Gulf County. All permit conditions and requirements will be implemented. Therefore, potential adverse impacts to land and marine management resources will not be expected.
- The project will incorporate solid waste and recyclable material collection receptacles to enhance or encourage proper solid waste disposal practices to prevent pollution of the waters located in the project area.

10.5.26.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational fishing opportunities by constructing a fishing pier at Windmark Beach. Performance monitoring will evaluate the construction of the fishing pier. Specific performance criteria include: 1) completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the fishing pier is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by Gulf County as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by Gulf County.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, Gulf County will monitor the recreational use activity at the site. Gulf County staff will visit the site twice a year to count the number of users at the fishing pier. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

10.5.27 Bald Point State Park Recreation Areas

The Bald Point State Park Recreation Areas project will improve the existing visitor areas at Bald Point State Park in Franklin County. The project activity will involve constructing a visitor day-use area including picnic pavilions, a restroom with an aerobic treatment system and associated septic system drainfield, and an integrated system of boardwalks providing access through the area to a new floating dock, and a canoe/kayak launch area on Chaires Creek. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Bald Point State Park Recreation Areas project is intended to enhance and/or increase recreational boating and beach use opportunities by improving the

existing visitor areas. The project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational boating and beach use opportunities by improving the existing visitor areas.

The Trustees evaluated the Bald Point State Park Recreation Areas Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Bald Point State Park Recreation Areas Project will not substantially contribute to adverse cumulative effects to resources. The Bald Point State Park Recreation Areas Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.27.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, USFWS Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consultations have been initiated for the NMFS Endangered Species Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

The Final Phase III ERP/PEIS stated that this project does not require further ESA consultations with NMFS. Since that time, NMFS has requested that the Trustees reinitiate consultation. The consultation has been initiated.

10.5.27.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.27.2.1 Measures to Mitigate Impacts to the Physical Environment

- All USACE permit conditions relating to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act will be adhered to during project construction.
- Careful consideration will be given to the design of the park improvements to have the least effect on waters and wetlands within the park. All efforts will be made to design the project elements to have the least effect possible on the local hydrology.
- State water quality standards as required by the Clean Water Act will not be exceeded. The FDEP Wetland and Environmental Resource Field permits require the implementation of best management practices for turbidity and erosion.
- BMPs may include, but will not necessarily be limited to the following:
    - Installation of floating turbidity barriers
    - Installation of erosion control measures along the perimeter of all work areas
    - Stabilization of all filled areas with sod, mats, barriers, or a combination
    - Storing and fueling vehicles away from aquatic areas
    - Re-vegetation of exposed soils when construction activities are complete
- All dredging activities will be done in compliance with FDEP and USACE permit conditions. These will typically include the following:
    - Taking measures to prevent spoil material from entering waters of the state
    - Monitoring turbidity at the dredge and spoil disposal sites
    - Taking immediate corrective actions if a disposal site leaks or breaks
    - After recontouring, replanting vegetation of the size, densities, and species as is present in the adjacent areas if the area dredged is vegetated
- Available best management practices will be employed to prevent, mitigate, and control potential air pollutants during project implementation.
- Machinery and equipment used during construction will generate noise. This noise may disturb wildlife and humans using the area but will be kept to a minimum using best management practices.

10.5.27.2.2 Measures to Mitigate Impacts to Biological Resources

- All conditions and mitigation measures contained in the permit will be followed for installation of the floating boat dock/kayak launch.
- Due to the prevalence of both weeds and rare plants in the park, preconstruction vegetation surveys and pre/post-construction weed treatments will likely be required.
- Precautions will be taken to avoid colonies of Geoffrey's blazing starplants, which are listed as endangered by the State of Florida.
- Care will also be taken to site any park improvements where disturbance to vegetation will be minimized. Vegetation that could be used for nesting migratory birds will be removed during the non-breeding season.
- Soil disturbance may encourage the encroachment of invasive or nuisance species. Those undeveloped areas disturbed during construction will be monitored and invasive species removed.

- Precautions during construction will be used to protect any migratory birds that may be feeding, loafing, or resting in or near the project area. Such precautions include minimizing construction noise to the extent practicable, using care to avoid birds when operating machinery or vehicles near birds, and general contractor awareness of bird presence.
- If visitors are likely to approach migratory bird nesting areas through use of the project area after implementation (as determined by Park staff, Florida Fish and Wildlife Conservation Commission or the U.S. Fish and wildlife Service), educational signage will be posted at strategic locations. Signage will remind visitors of important migratory bird areas within the Park and any necessary precautions to avoid impacts to the species and their habitats. Signage will be coordinated with the Florida Fish and Wildlife Conservation Commission and the Panama City Ecological Services Field Office.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the *National Bald Eagle Management Guidelines* will be followed (USFWS 2007).
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.
- Educational signage will be posted at all ramps reminding visitors of nearby trust resources and any protective measures that may be necessary to avoid and minimize impacts in their habitats either at the project site or when visiting nearby islands. This signage will be developed in coordination with FWC and the Panama City Ecological Services Field Office. The State of Florida Trustees and DOI recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient to evaluate the effectiveness of conservation measures, then, an in-person survey will be taken of a sample of recreational users at the project location at the same time as the planned twice annual performance monitoring of the project by the same party performing such monitoring.

10.5.27.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction-related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids, and to avoid releases and spills.
- If a release should occur, it will be contained and cleaned up promptly in accordance with all applicable regulations and the incident will be reported to appropriate agencies.

10.5.27.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational boating and beach use opportunities by improving the existing visitor areas. Performance monitoring will evaluate: 1) the construction of the visitor day-use are including picnic pavilions; 2) the construction of an integrated system of boardwalks; 2) the construction of a restroom with an aerobic treatment system and associated septic system drainfield; and 4) the construction of a floating dock and a canoe/kayak launch area. Specific success criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the visitor area is open and available.

Long term maintenance of the improved facilities will be completed by Bald Point State Park staff as part of their regular public facilities maintenance activities. Corrective actions necessary after completion and signoff of the project will also be undertaken by park staff. Funding for this post-construction maintenance is not included in the project cost estimate and will be assumed by Bald Point State Park.

During and following the post construction performance monitoring period, the State of Florida park staff will monitor the recreational use activity at the site. Park staff keeps track of visitation and usage at the park and will provide visitation numbers by the month. This use information is kept by the Florida Department of Environmental Protection.

10.5.28 Enhancement of Franklin County Parks and Boat Ramps: (Abercrombie Boat Ramp Project, Waterfront Park, Indian Creek Park, Eastpoint Fishing Pier Improvements, and St. George Island Fishing Pier Improvements)

The Enhancement of Franklin County Parks and Boat Ramps: Abercrombie Boat Ramp Project component was not included in the Final Phase III ERP/PEIS.

The Enhancement of Franklin County Parks and Boat Ramps – Waterfront Park project will improve the existing Waterfront Park in Apalachicola. The improvements include enhancing existing parking and adjacent tie-up docks to enhance water access. In addition an existing onsite building will be enhanced to serve as an information center and dock master office. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Franklin County Waterfront Park project is intended to enhance and/or increase recreational boating and fishing opportunities by improving the waterfront park. The project will enhance and/or increase opportunities for the public's use and

enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The Enhancement of Franklin County Parks and Boat Ramps – Indian Creek Park project will improve the existing Indian Creek Park boat launch facility in Franklin County. The improvements include constructing restroom facilities, connecting them to an existing central wastewater facility nearby, and renovating the existing boat ramp, bulkhead, and parking area to enhance water access. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Franklin County Indian Creek Park project is intended to enhance and/or increase recreational boating and fishing opportunities by improving the existing boat launch facility. The project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The Enhancement of Franklin County Parks and Boat Ramps – Eastpoint Fishing Pier Improvement project will add restroom facilities to the base of the existing public East Point Fishing Pier in Franklin County. The improvements include not only constructing new restrooms, but a holding tank that will be pumped out regularly. In addition, signage will be installed/updated to provide users of the ramp with information on sensitive species and areas, as well as on appropriate actions to take with species interactions (e.g., what to do if a sea turtle or nesting migratory bird is encountered).As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Franklin County Eastpoint Fishing Pier Improvement project is intended to enhance and/or increase recreational fishing opportunities by improving the fishing pier. The project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses caused by the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The Enhancement of Franklin County Parks and Boat Ramps – St. George Island Fishing Pier Improvements project will enhance the existing public St. George Island public Fishing Pier in Franklin County. The improvements include constructing restrooms and a holding tank that will be pumped out regularly since there is no central wastewater facility on the island. The improvements also include renovating the existing bulkhead that leads up to the pier and protects the road to the pier. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Franklin County St. George Island Fishing Pier Improvements project is intended to enhance and/or increase recreational fishing opportunities by improving the fishing pier. The project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. These projects will enhance and/or increase recreational fishing and boating opportunities by improving the existing boat ramp area, fishing piers, and the waterfront park.

The Trustees evaluated the Enhancement of Franklin County Parks and Boat Ramp Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Enhancement of Franklin County Parks and Boat Ramp Project will not substantially contribute to adverse cumulative effects to resources. The Enhancement of Franklin County Parks and Boat Ramp Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.28.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

For the Waterfront Park component, the St. George Island Fishing Pier Improvements component, and the Indian Creek Park component, the Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

For the Eastpoint Fishing Pier Improvement component, the Trustees have completed consultations and reviews under the Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

The Final Phase III ERP/PEIS evaluated the environmental consequence of the proposed project on proposed terrestrial Loggerhead CH. Shortly after the Trustees released the Final Phase III ERP/PEIS, USFWS designated final Loggerhead CH. DOI requested the USFWS adopt the conference report as an informal consultation for final Loggerhead CH. The USFWS' informal consultation for loggerhead CH was completed on September 22, 2014 resulting in a concurrence that the project, as proposed, would not result in adverse modification or destruction of final Loggerhead CH. Accordingly, the Trustees have

determined that the final Loggerhead CH designation does not represent significant new information that requires supplemental environmental consequences analysis pursuant to NEPA.

10.5.28.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.28.2.1 Measures to Mitigate Impacts to the Physical Environment

- Best management practices (BMPs) for erosion control will be implemented and maintained at all times during construction to prevent siltation and turbid discharges into waters of the state. This may include the use of filter fences (staked or floating), sedimentation screens, erosion control blankets or other appropriate erosion and turbidity control measure
- BMPs along with other avoidance and mitigation measures required by state and federal regulatory agencies will be employed to minimize any water quality and sedimentation impacts associated with construction activities.
- BMPs will be employed to prevent, mitigate, and control potential air pollutants during project implementation.
- Mitigation measures that serve to limit noise during construction include: limiting activity at project sites to daytime hours; limiting truck traffic ingress/egress to the site to daytime hours; promoting awareness that producing prominent discrete tones and periodic noises (e.g., excessive dump truck gate banging) should be avoided as much as possible; and requiring that work crews seek pre-approval for any weekend activities, or activities outside of daytime hours.

10.5.28.2.2 Measure to Mitigate Impacts to Biological Resources

- **ALL**
    - Care will be taken to minimize noise and physical disruptions during construction near areas where foraging or resting birds are encountered. Work will occur during daylight hours only.
    - No work will occur in adjacent vegetated areas where upland birds could be nesting.
    - If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the *National Bald Eagle Management Guidelines* will be followed (USFWS 2007).
    - During all in-water construction activity, the conditions and guidelines of the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NOAA, 2006) will be implemented and adhered to along with the conditions identified in the *Standard Manatee Conditions for In-water Work* (USFWS, 2011) will be followed.
    - Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the projects will be implemented. In general, best management practices will primarily address risk

associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

  - Educational signage will be posted at all ramps reminding visitors of nearby trust resources and any protective measures that may be necessary to avoid and minimize impacts in their habitats either at the project site or when visiting nearby islands. This signage will be developed in coordination with FWC and the Panama City Ecological Services Field Office. The State of Florida Trustees and DOI recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient to evaluate the effectiveness of conservation measures, then, an in-person survey will be taken of a sample of recreational users at the project location at the same time as the planned twice annual performance monitoring of the project by the same party performing such monitoring.

- **Waterfront Park**
  - As part of the engineering and site assessment for the dock placement, a survey of submerged aquatic vegetation (SAV) in the area will be completed. Should SAV be identified in the project area, the conditions in the *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat* (U.S. Army Corps of Engineers/National Marine Fisheries Service, 2001) will be implemented. Among other elements this will require pilings for the dock expansion be placed a minimum of 10 feet apart.

10.5.28.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- Construction waste will be removed by the contractor to an appropriate landfill using dump trucks, roll-off dumpsters, or trailers.
- All hazardous materials handled during construction will be contained and appropriate barriers will be in place to ensure the protection of adjacent water resources from potential spills and leaks.
- BMPs in accordance with OSHA and state and local requirements will be incorporated into construction activities on site to ensure the proper handling, storage, transport and disposal of all hazardous materials.

- Personal protective equipment will be required for all construction personnel and authorized access zones will be established at the perimeter of the worksite during construction.
- Soil and sediment stabilization measures will be incorporated into project design as needed in areas where the potential exists for erosion to occur in order to protect resources and ensure public health and safety.

10.5.28.3 Performance Criteria, Monitoring, and Maintenance

Waterfront Park

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational boating and fishing opportunities by improving the waterfront park. Performance monitoring will evaluate: 1) the improvements to the existing parking area and tie-up docks; 2) the enhancement of an existing building onsite to serve as an information area and dock master office at Waterfront Park; and 3) the construction of the kiosk. Specific success criteria include: 1) completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the waterfront park is open and available.

Long-term monitoring and maintenance of the improved facilities, after completion of the project, will be undertaken by Franklin County as part of their regular public facilities maintenance activities. Franklin County will also be responsible for long-term maintenance of parking area, docks, and enhanced facility and will inspect them regularly. Franklin County will also be responsible for contracting for or control of garbage pick-up and litter control at the site. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be assumed by Franklin County.

The State of Florida Trustees and the Department of the Interior recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient, concurrent with the twice annual performance monitoring, and performed by the same party, a survey will be taken of a sample of recreational users at the project location.

Indian Creek Park

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational boating and fishing opportunities by improving the existing boat ramp. Performance monitoring will evaluate: 1) the construction of the new restrooms and connecting them to a nearby existing central wastewater facility; 2) the renovation of the existing boat ramp and bulkhead; 3) the renovation of the existing parking area to enhance access and

use; and 4) the construction of the kiosk. Specific success criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the boat ramp facility is open and available.

Long-term monitoring and maintenance of the improved facilities, after completion of the project, will be undertaken by Franklin County as part of their regular public facilities maintenance activities. Franklin County will also be responsible for long-term maintenance of boat ramp and its restored bulkhead associated with the boat ramp and will inspect it regularly. Franklin County will also be responsible for contracting for or control of garbage pick-up and litter control at the site. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be assumed by Franklin County.

Eastpoint Fishing Pier

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational fishing opportunities by improving the public fishing pier. Performance monitoring will evaluate: 1) the construction of the new restrooms and holding tank, and 2) construction of the kiosk. Specific success criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the visitor area is open and available.

Long-term monitoring and maintenance of the improved facilities, after completion of the project, will be undertaken by Franklin County as part of their regular public facilities maintenance activities. Regular pump-out of the holding tank will be contracted out and paid for by Franklin County. In addition in the event of a tropical storm or hurricane the facility's holding tank will be pumped out and the restrooms closed to public use to prevent discharge of sewage into the bay. Franklin County will also be responsible for contracting for garbage pick-up and litter control at the site. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be assumed by Franklin County.

St. George Island Fishing Pier

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational fishing opportunities by improving the existing fishing pier. Performance monitoring will evaluate: 1) the construction of the restrooms and holding tank; 2) the renovation of the bulkhead; and 3) the construction of the kiosk. Specific success criteria include: 1) the completion of the construction as designed and permitted, 2) and enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the fishing pier is open and available.

Long-term monitoring and maintenance of the improved facilities, after completion of the project, will be undertaken by Franklin County as part of their regular public facilities maintenance activities. Franklin

County will also be responsible for long-term maintenance of the restored bulkhead and will inspect it regularly. Regular pump-out of the holding tank will be contracted out and paid for by Franklin County. In addition in the event of a tropical storm or hurricane the facility's holding tank will be pumped out and the restrooms closed to public use to prevent discharge of sewage into the bay. Franklin County will also be responsible for contracting for or control of garbage pick-up and litter control at the site. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be assumed by Franklin County.

All Components

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, Franklin County will monitor the recreational use activity at the site. Franklin County will visit the site twice a year to count the number of users at the boat ramp. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

10.5.29 Apalachicola River Wildlife and Environmental Area Fishing and Wildlife Viewing Access Improvements (Cash Bayou and Sand Beach)

The Apalachicola River Wildlife and Environmental Area Fishing and Wildlife Viewing Access Improvements Cash Bayou project will improve public access at Cash Bayou in the Apalachicola River Wildlife and Environmental Area. The improvements include constructing a fishing and wildlife observation structure and parking area. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Apalachicola River Wildlife and Environmental Area Fishing and Wildlife Viewing Access Improvements: Cash Bayou project is intended to enhance and/or increase recreational use and wildlife viewing opportunities by improving access to the wildlife and environmental area. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The Apalachicola River Wildlife and Environmental Area Fishing and Wildlife Viewing Access Improvements: Sand Beach project will improve public access at Sand Beach in the Apalachicola River Wildlife and Environmental Area. The improvements include constructing an elevated boardwalk that will be built on an existing, periodically wet interpretative trail. As a result of the *Deepwater Horizon* oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Apalachicola River Wildlife and Environmental Area Fishing and Wildlife Viewing Access Improvements: Sand Beach project is intended to enhance and/or increase recreational use and wildlife viewing opportunities by improving access to the wildlife and environmental area. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. These projects will enhance and/or increase recreational use and wildlife viewing opportunities by improving access to the wildlife and environmental area.

The Trustees evaluated the Enhancement of Apalachicola River Wildlife and Environmental Area Fishing and Wildlife Viewing Access Improvements Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection).Based on the cumulative impact analysis, the Enhancement of Apalachicola River Wildlife and Environmental Area Fishing and Wildlife Viewing Access Improvements Project will not substantially contribute to adverse cumulative effects to resources. The Apalachicola River Wildlife and Environmental Area Fishing and Wildlife Viewing Access Improvements Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.29.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

For the Cash Bayou component, the Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

For the Sand Beach component, the Trustees have completed consultations and reviews under the Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.29.2 Mitigation Measures

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific

resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.29.2.1 Measures to Mitigate Impacts to the Physical Environment

- During the construction process typical site maintenance BMPs (e.g., hay bailing to control runoff, fueling vehicles and equipment away from the water) will be followed to avoid runoff-related impacts to the aquatic environment.
- Specific mitigation measures will be implemented during construction to minimize erosion and overall soil impacts. These will include following established best management practices (BMPs) such as the implementation of an erosion control and storm water management plan, the installation of sediment traps prior to commencement of construction activities; and ongoing construction monitoring to ensure compliance.
- BMPs along with other avoidance and mitigation measures required by state and federal regulatory agencies will be employed to minimize any water quality and sedimentation impacts.
- Available BMPs will be employed to prevent, mitigate, and control potential air pollutants during project implementation.
- Mitigation measures that serve to limit noise during construction include: limiting activity at project sites to daytime hours; limiting truck traffic ingress/egress to the site to daytime hours; promoting awareness that producing prominent discrete tones and periodic noises (e.g., excessive dump truck gate banging) should be avoided as much as possible; and requiring that work crews seek pre-approval for any weekend activities, or activities outside of daytime hours.

10.5.29.2.2 Measures to Mitigate Impacts to Biological Resources

- **ALL**
    - Precautions during construction will be used to protect any migratory birds that may be in or near the project area. Such precautions include: avoiding the removal of trees and shrubbery during nesting season, minimizing construction noise to the extent practicable, using care to avoid birds when operating machinery or vehicles near birds, and general contractor awareness of bird presence. Work will be conducted during daylight hours only.
    - If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the *National Bald Eagle Management Guidelines* will be followed (USFWS 2007).
    - Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational

materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

- **Cash Bayou**
    - During all in-water construction activity, the best management practices identified within the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NOAA, 2006) will be implemented. Disturbance to any EFH and species using the habitat in areas adjacent to locations where the project (Cash Bayou) is to take place will be brief and insignificant with risks further mitigated by following identified best management practices during construction.
    - On March 17, 2014 NOAA concurred that as long as the structure complied with the *Dock Construction Guidelines in Florida for Docks or Other Minor Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat (U.S. Army Corps of Engineers/National Marine Fisheries Service, 2001)* the project is not likely to adversely affect EFH and disturbance to any EFH will be brief and insignificant (Fay, 2014).
- **Sand Beach**
    - No new trail will be constructed and no trees will need to be removed to build the boardwalk.

10.5.29.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- A construction phase solid waste management plan will be implemented to manage the collection, recycling, and disposal of all construction and demolition waste and non-construction related waste generated during construction activities.
- All hazardous materials handled during construction including paints, solvents, chemicals, and petroleum products will be contained, and appropriate barriers will be in place to ensure the protection of adjacent water resources from potential spills and leaks.
- In the event of a discharge of oil or release of hazardous substances, all spills will be reported to the FDEP and all federal and state regulations will be followed during the cleanup.
- BMPs in accordance with the Occupational Safety and Health Administration (OSHA) and state and local requirements will be incorporated into construction activities to ensure proper handling, storage, transport and disposal of all hazardous materials.
- All waste generated during construction will be disposed of in the appropriate waste or recycling receptacles on-site will be taken off-site and disproved in an approved waste disposal site by the construction contractor.
- All occupational and safety regulations will be followed to ensure safety of all workers and the public.

- During construction, soil and sediment stabilization measures will be incorporated into project design as needed in areas where the potential for erosion exists in order to protect resources and public health and safety.

10.5.29.3 Performance Criteria, Monitoring, and Maintenance

Cash Bayou

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational use and wildlife viewing opportunities by improving access to the Apalachicola River Wildlife and Environmental Area. Performance monitoring will evaluate: 1) the construction of a 700 square-foot fishing and wildlife observation structure, and 2) the construction of a parking area. Specific success criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the facility is open and available.

Sand Beach

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational use and wildlife viewing opportunities by improving access to the wildlife and environmental area. Performance monitoring will evaluate the construction of a 6-foot-wide boardwalk on the periodically wet 1/4-mile Sand Beach interpretive trail. Specific success criteria include: 1) completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the boardwalk is open and available.

All Components

Long-term monitoring and maintenance of the improved facilities will be completed by Florida Fish and Wildlife Conservation Commission (FWC) and Franklin County as part of their regular public facilities maintenance activities. FWC or Franklin County will also be responsible for contracting for or control of garbage pick-up and litter control at the site. Franklin County will also be responsible for long-term maintenance of the observation platform and parking area and will inspect them regularly. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be assumed by FWC and Franklin County.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, FWC and Franklin County will monitor the recreational use activity at the site. FWC and Franklin County staff will visit the site twice a year to count the number of users at the new fishing and wildlife observation structure. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

10.5.30 Navarre Beach Park Gulfside Walkover Complex, Coastal Access and Dune Restoration

The Navarre Beach Park Coastal Access and Dune Restoration Project will improve access for the public seeking to access the beach and water of Santa Rosa Sound from the existing pavilion/parking lot areas. In addition, construction of a new canoe/kayak launch will increase access opportunities to the waters

of the sound for recreational boaters. The enhancement of the recreational experience from these infrastructure improvements will also be complemented by the restoration of a roughly 1 acre parcel of degraded dune habitat in the project area. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Navarre Beach Coastal Access project is intended to enhance and/or increase recreational boating and beach use opportunities by constructing new infrastructure for recreational opportunities. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear.See15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The Navarre Beach Park Gulfside Walkover Complex Project will enhance access to the shoreline at Navarre Beach Park to enhance recreational use of the natural resources. The improvements include constructing an entrance, driveway, and parking area; constructing a restroom facility; constructing pavilions with boardwalk connections; lifeguard tower; and constructing a dune walkover that will provide access to the beach. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Navarre Beach Park Gulfside Walkover Complex project is intended to enhance and/or increase recreational beach use opportunities by improving beach access. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts to some resource categories, no moderate to major adverse impacts are anticipated to result. These projects will enhance and/or increase recreational boating and beach use opportunities by constructing new infrastructure for recreational opportunities and by improving beach access.

The Trustees evaluated the Navarre Beach Park Coastal Access and Dune Restoration Project and the Navarre Beach Park Gulfside Walkover Complex Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection). Based on the cumulative impact analysis, the Navarre Beach Park Coastal Access and Dune Restoration Project and the Navarre Beach Park Gulfside Walkover Complex Project will not substantially contribute to adverse cumulative effects to resources. The Navarre Beach Park Coastal Access and Dune Restoration Project and the Navarre Beach Park Gulfside Walkover Complex Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.30.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

For the Navarre Beach Park Coastal Access and Dune Restoration component, the Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

For the Navarre Beach Park Gulfside Walkover Complex component, the Trustees have completed consultations and reviews under the Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.30.2 Mitigation Measures

Mitigation measures, including best management practices and conservation measures, required by consultations in adherence with applicable laws, regulations and executive orders listed above and developed during the NEPA process are listed below. These mitigation measures are categorized by whether they correspond to the physical environmental, biological resources, and human uses and socioeconomics. Note this list is not an exhaustive list of all existing policies, practices, and measures required by law, regulation, or agency policy that reduce the environmental impacts of designated activities, functions, or processes.

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.30.2.1 Measures to Mitigate Impacts to Physical Environment

- Two new boardwalks will be added to the coastal access site, one going to the Canoe/Kayak launch, and the other to the sound beach area. Construction of these will minimize disturbance to adjacent naturally vegetated areas. Dune walkover shall be constructed at a height (minimum 3 feet above grade) that will accommodate natural dune growth and associated vegetation.
- No storage of equipment or materials shall occur on the beach or dunes throughout the entire year.

- Minimal use of sand fences is encouraged. When used, the fence must be used for restoration of dune blowouts. Post and rope are preferred for beach visitor access, pedestrian traffic control, and wildlife exclusion zones (i.e., bird wintering areas). If used for dune restoration, any fence shall be placed in a sea turtle–compatible design and be made of biodegradable material.
- No activity, except as needed to repair the walkover, shall occur on existing healthy dunes during any time of the year. Limit activities in this area to maintenance and restoration of the habitat. Use appropriate signs to designate and indicate the purpose of the conservation area, if necessary. If dunes are impacted, they should be restored by planting the appropriate vegetation or installing a sand fence.
- To protect the environmental functions of Florida's beaches, only beach compatible fill shall be placed on the beach or in any associated dune system. Beach compatible fill is material that maintains the general character and functionality of the material occurring on the beach and in the adjacent dune and coastal system. Such material shall be predominately of carbonate, quartz or similar material with a particle size distribution ranging between 0.062mm (4.0$^{\phi}$) and 4.76mm (-2.25$^{\phi}$) (classified as sand by either the Unified Soils or the Wentworth classification), shall be similar in color and grain size distribution (sand grain frequency, mean and median grain size and sorting coefficient) to the material in the existing coastal system at the disposal site and shall not contain:
    - Greater than 5 percent, by weight, silt, clay or colloids passing the #230 sieve (4.0$^{\phi}$);
    - Greater than 5 percent, by weight, fine gravel retained on the #4 sieve (2.25$^{\phi}$);
    - Coarse gravel, cobbles or material retained on the 3/4 inch sieve in a percentage or size greater than found on the native beach;
    - Construction debris, toxic material or other foreign matter; and
    - Not result in cementation of the beach.
- If rocks or other non-specified materials appear on the surface of the filled beach in excess of 50% of background in any 10,000 square foot area, then surface rock should be removed from those areas. These areas shall also be tested for subsurface rock percentage and remediated as required. If the natural beach exceeds any of the limiting parameters listed above, then the fill material shall not exceed the naturally occurring level for that parameter.
- Permit-required erosion control measures will be implemented at all of the sites, and contractors will use BMPs to control erosion, turbidity, and minimize compaction.
- This project will use the construction BMPs to minimize erosion-related construction impacts as well as impacts to surface water, groundwater, and wetlands.
- Contractors will take special precautions when working within the CCCL and around coastal dune lake habitats.
- Available BMPs will be employed to prevent, mitigate, and control potential air pollutants during project implementation. The following mitigation measures have been identified to reduce or eliminate GHG emissions from the project.
    - Shut down idling construction equipment, if feasible.
    - Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.

- Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
- Encourage the use of alternative fuels for generators at construction sites, such as propane or solar, or use electrical power where practicable.

10.5.30.2.2 Measure to Mitigate Impacts to Biological Resources

- All dune vegetation to be used in dune restoration shall be native to the specific county dunes and grown from northwest Florida plant stock. Vegetation shall be planted with an appropriate amount of fertilizer (if needed) and anti-desiccant material, as appropriate, for the plant size. Planting must be on 18-inch centers throughout the created dune; however, 24-inch centers may be acceptable depending on the area to be planted. No irrigation lines or pipes shall be installed.
- The USFWS Panama City Field Office will be contacted regarding dune plantings to balance habitat for listed and migratory birds and beach mice.
- Install and maintain sturdy animal-proof garbage containers to prevent the invasion of house mice and predators (such as cats, raccoons, fox, and coyotes).
- No lighting is proposed for the project. If lighting should become necessary, it will follow the most recent edition of the FWC's Lighting Technical Guidance.
- The conditions and guidelines of the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NOAA, 2006) will be implemented and adhered to during all in-water construction activity.
- The Standard Manatee Conditions for In-Water Work (USFWS 2011) will be implemented during any in-water activities.
- Surveys for piping plovers and red knots will be conducted on a regular basis from August through May during construction. Where either species congregates, an exclusion zone will be placed around the birds and no work will occur within 150 feet of the exclusion zone until the birds move on their own volition.
- All Conservation Measures for Dune Walkover Construction (USFWS 2013) will be implemented and adhered to during project construction.
- Should work be undertaken between May 1 and October 31 the following measures will be implemented:
    - The local sea turtle nesting surveyor will conduct daily sea turtle nesting surveys will assess the need for the relocation of sea turtle nests that could be affected by the project construction prior to project implementation each day.
    - If a sea turtle (either adult or hatchling) is observed, maintain at least 200 feet between the turtle and personnel.
    - All actions shall observe a 10-foot buffer from marked sea turtle nests. Between May 1 and August 31, actions with mechanized equipment or vehicles shall not begin prior to 9:00 am to ensure sea turtle monitoring surveys are completed for the day.
    - If altered, beach topography shall be restored in all areas to the natural beach profile by 20:00 hours each day. Restoring beach topography includes raking of tire ruts, filling pits or holes.

- Educational signage will be posted at all ramps reminding visitors of nearby trust resources and any protective measures that may be necessary to avoid and minimize impacts in their habitats either at the project site or when visiting nearby islands. This signage will be developed in coordination with FWC and the Panama City Ecological Services Field Office. The State of Florida Trustees and DOI recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient to evaluate the effectiveness of conservation measures, then, an in-person survey will be taken of a sample of recreational users at the project location at the same time as the planned twice annual performance monitoring of the project by the same party performing such monitoring.
- The following environmental-related permit obligations/BMPs will be followed for the above referenced projects:
    - The contractor will use extreme care to prevent any adverse impacts to the beach and dune system, marine turtles, their nests, and habitat, or adjacent property and structures.
    - The construction will not result in removal or destruction of native vegetation that will either destabilize a frontal, primary, or significant dune or cause a significant adverse impact to the beach and dune system due to increased erosion by wind or water.
    - The construction will not direct discharges of water or other fluids in a seaward direction and in a manner that will result in significant adverse impacts. Construction shall be designed so as to minimize erosion-induced surface water runoff within the beach and dune system and to prevent additional seaward or off-site discharges associated with a coastal storm event.
    - Construction traffic shall not occur, and building materials shall not be stored on vegetated areas seaward of the control line unless specifically authorized by the permit.
    - The contractor shall not disturb existing beach and dune topography and vegetation except as expressly authorized in the permit, and will restore any disturbed topography or vegetation prior to completing the project.
    - All fill material placed seaward of the control line shall be sand that is similar in both coloration and grain size to material already existing on the site.
    - The construction will not result in removal or disturbance of in situ sandy soils of the beach and dune system to such a degree that a significant adverse impact to the beach and dune system will result from either reducing the existing ability of the system to resist erosion during a storm or lowering existing levels of storm protection to upland properties and structures.
    - If not specifically authorized elsewhere in the permit, no operation, transportation, or storage of equipment or materials is authorized seaward of the dune crest or rigid

coastal structure during the marine turtle nesting season. The marine turtle nesting season is May 1 through October 31.

- If Gulf Coast lupine were to occur in the project area, measures will be taken in coordination with the FWC to adequately manage the species in the context of the project.
- Care will be taken to minimize noise and physical disruptions near areas where foraging or resting birds are encountered. Work will occur during daylight hours only.
- If project activities occur during shorebird/seabird nesting season (February 15 to August 31), the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds/seabirds or rookeries and their recommendations will be implemented.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the National Bald Eagle Management Guidelines will be followed (USFWS 2007).
- Select a USFWS approved design alternative for the project (including any necessary parking) to minimize impacts to least tern nesting areas. Coordinate with the park or other appropriate parties to recommend means to mitigate other potential impacts to least terns.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the projects will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. Outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.30.3 Performance Criteria, Monitoring and Maintenance

Coastal Access and Dune Restoration

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational boating and beach use opportunities by constructing new infrastructure for recreational opportunities. Performance monitoring will evaluate: 1) the construction of the two new beach access boardwalk; 2) the construction of a new canoe/kayak boat launch facility and boardwalk; and 3) the restoration of approximately 1 acre of degraded beach dune habitat. Specific success criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the new visitor use infrastructure is open and available.

Post-construction performance monitoring in the restored dunes will initially focus on plant survival. Plants that do not survive to 90 days post-planting will be replaced. At least 80% of plants must survive after 6 months or replanting will occur.

Long-term monitoring and maintenance of the improved facilities will be completed by Santa Rosa County as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by Santa Rosa County.

During the one year construction performance period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the construction performance monitoring period, Santa Rosa County will monitor the recreational use activity of the site. Santa Rosa County will visit the site twice a year to count the number of users at the boardwalks and the canoe/kayak launching facility. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

Walkover Complex

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational beach use opportunities by improving beach access. Performance monitoring will evaluate: 1) the construction of an entrance, driveway, and parking area; 2) the construction of a restroom facility; 3) the construction of pavilions with boardwalk connections; 4) construction of a lifeguard tower; and 5) the construction a dune walkover that will provide access to the beach. Specific success criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the walkover complex and associated facilities are open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by Santa Rosa County as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the project cost and will be provided by Santa Rosa County.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, Santa Rosa County will monitor the recreational use activity at the site. Santa Rosa County staff will visit the site twice a year to count the number of users at the park walkover complex. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

10.5.31 Gulf Breeze Wayside Park Boat Ramp

The Gulf Breeze Wayside Park Boat Ramp Improvements project will improve the existing boat ramp at Wayside Park in the City of Gulf Breeze, Santa Rosa County, FL. The improvements include repairing the existing boat ramp and seawall cap, constructing a public restroom facility, and repairing and enhancing the parking area to improve access. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Gulf Breeze Wayside Park Boat Ramp Improvements project is intended to enhance and/or increase recreational boating and fishing opportunities by improving the

boat ramp area. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational boating and fishing opportunities by improving the boat ramp area.

The Trustees evaluated the Gulf Breeze Wayside Park Boat Ramp Improvements Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection). Based on the cumulative impact analysis, the Gulf Breeze Wayside Park Boat Ramp Improvements Project will not substantially contribute to adverse cumulative effects to resources. The Gulf Breeze Wayside Park Boat Ramp Improvements Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.31.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.31.2 Mitigation Measures

Mitigation measures, including best management practices and conservation measures, required by consultations in adherence with applicable laws, regulations and executive orders listed above and developed during the NEPA process are listed below. These mitigation measures are categorized by whether they correspond to the physical environmental, biological resources, and human uses and socioeconomics. Note this list is not an exhaustive list of all existing policies, practices, and measures required by law, regulation, or agency policy that reduce the environmental impacts of designated activities, functions, or processes.

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to

implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.31.2.1 Measures to Mitigate Impacts to the Physical Environment

- All USACE permit conditions relating to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act will be adhered to during project construction.
- Soil, debris, vegetation, and old parking lot material will be removed from the site as a part of construction and repair activities. After completion of the project, soil surfaces will not be exposed, and planting of additional vegetation in the project area is not planned.
- Available BMPs will be employed to prevent, mitigate, and control potential air pollutants during project implementation.

10.5.31.2.2 Measures to Mitigate Impacts to Biological Resources

- During all in-water construction activity, the conditions and guidelines of the Sea Turtle and Smalltooth Sawfish Construction Conditions (NMFS, 2006) will be implemented and adhered to during project implementation.
- All construction conditions identified in the Standard Manatee Conditions for In-water Work (USFWS 2011) will be implemented and adhered to during project construction.
- Educational signage will be posted at all ramps reminding visitors of nearby trust resources and any protective measures that may be necessary to avoid and minimize impacts in their habitats either at the project site or when visiting nearby islands. This signage will be developed in coordination with FWC and the Panama City Ecological Services Field Office. The State of Florida Trustees and DOI recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient to evaluate the effectiveness of conservation measures, then, an in-person survey will be taken of a sample of recreational users at the project location at the same time as the planned twice annual performance monitoring of the project by the same party performing such monitoring.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the National Bald Eagle Management Guidelines will be followed (USFWS 2007).
- If project activities occur during shorebird nesting season (February 15 to August 31), the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds or rookeries and their recommendations will be implemented.
- During construction, all appropriate BMPs will be followed to minimize the potential impacts of construction activities on EFH and species in the area.

- Best Management Practices to control the spread of invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.31.2.3 Measure to Mitigate Impacts to Human Uses and Socioeconomics

- Project construction will require mechanical equipment that uses oil, lubricants, and fuels. The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction-related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids, and to avoid releases and spills.

10.5.31.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational boating and fishing opportunities by improving the boat ramp area. Performance monitoring will evaluate: 1) the repair of an existing boat ramp and seawall cap; 2) the construction of a public restroom facility; and 3) the repair and enhancement of the parking area to improve access. Specific performance criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the boat ramp facility is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by the City of Gulf Breeze as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by the City of Gulf Breeze.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, the City of Gulf Breeze will monitor the recreational use activity at the site. The City of Gulf Breeze staff will visit the site twice a year to count the number of users at the boat ramp. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

During construction, the following monitoring practices will be implemented:

a. Every day, before the start of construction activities, the turbidity screen is checked and repaired if necessary.

b. The foreman or other designated individual checks the area inside the screen and the screen itself to see if any protected species (manatees, dolphins, small tooth sawfish etc.) have gotten trapped within the work area or in the screen. If so then appropriate (FWC) personnel are notified to request removal. No work is begun until the animal, fish or bird is removed.

c. During the work day the work area and area adjacent to the work are is monitored to make sure protected species have not ventured into the area. If so then work is stopped until the animal moves out of the area.

d. At the end of the day the area is checked for debris, sediment and possible spillage and these are properly removed and disposed of before shutting down the site.

e. If a storm is anticipated that might damage the turbidity screen it is removed and stored until the storm event has passed and seas have resided.

10.5.32 Developing Enhanced Recreational Opportunities on the Escribano Point Portion of the Yellow River Wildlife Management Area

The Developing Enhanced Recreational Opportunities on the Escribano Point Portion of the Yellow River Wildlife Management Area project will improve public access and enjoyment of natural resources at the Escribano Point portion of the Yellow River Wildlife Management Area. The improvements include a one-time assessment and mapping activities necessary for developing the site for outdoor recreation purposes, hurricane debris removal and road repair, constructing an entrance kiosk, information facilities, parking facilities, interpretive facilities, fishing facilities, picnicking facilities, primitive camping sites, wildlife viewing areas, and bear-proof containers for trash and food storage. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Developing Enhanced Recreational Opportunities on the Escribano Point Portion of the Yellow River Wildlife Management Area project is intended to enhance and/or increase recreational use and wildlife viewing opportunities by improving the recreational use of the land. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase the recreational use and wildlife viewing opportunities by improving the recreational use of the land.

The Trustees evaluated the Developing Enhanced Recreational Opportunities on the Escribano Point Portion of the Yellow River Wildlife Management Area Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public

health and safety and shoreline protection). Based on the cumulative impact analysis, the Developing Enhanced Recreational Opportunities on the Escribano Point Portion of the Yellow River Wildlife Management Area Project will not substantially contribute to adverse cumulative effects to resources. The Developing Enhanced Recreational Opportunities on the Escribano Point Portion of the Yellow River Wildlife Management Area Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.32.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.32.2 Mitigation Measures

Mitigation measures, including best management practices and conservation measures, required by consultations in adherence with applicable laws, regulations and executive orders listed above and developed during the NEPA process are listed below. These mitigation measures are categorized by whether they correspond to the physical environmental, biological resources, and human uses and socioeconomics. Note this list is not an exhaustive list of all existing policies, practices, and measures required by law, regulation, or agency policy that reduce the environmental impacts of designated activities, functions, or processes.

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.32.2.1 Measures to Mitigate Impacts to the Physical Environment

- Construction equipment and materials staging will be located on previously disturbed sites or sites that will be disturbed as a result of construction.
- Specific mitigation measures will be implemented during construction to minimize erosion and overall soil impacts. These will include following established best management practices (BMPs) such as the implementation of an erosion control and stormwater management plan, the installation of sediment traps prior to commencement of construction activities, and on-going construction monitoring to ensure compliance.
- BMPs along with other avoidance and mitigation measures required by state and federal regulatory agencies will be employed to minimize any water quality and sedimentation impacts.

- Available BMPs will be employed to prevent, mitigate, and control potential air pollutants during project implementation.
- Available BMPs will be employed to reduce the release of GHGs during implementation.
- Mitigation measures that serve to limit noise during construction include: limiting activity at project sites to daytime hours; limiting truck traffic ingress/egress to the site to daytime hours; promoting awareness that producing prominent discrete tones and periodic noises (e.g., excessive dump truck gate banging) should be avoided as much as possible; and requiring that work crews seek pre-approval for any weekend activities, or activities outside of daytime hours.

10.5.32.2.2 Measures to Mitigate Impacts to Biological Resources

- If suitable habitat for red-cockaded woodpecker is discovered within the project area during site surveys, the suitable habitat will be avoided by all construction and management activities by an adequate buffer as determined by the USFWS Panama City Ecological Services Field Office (PCFO). If avoidance is not possible or management activities in suitable habitat are desired, standard surveys will be conducted to determine if the habitat is supporting any red-cockaded woodpeckers or presence can be assumed. If red-cockaded woodpeckers are present (or assumed to be), no habitat trees will be removed. In addition, PCFO will be contacted for other avoidance and minimization measures to ensure any potential effects are insignificant and discountable. If no such avoidance and minimization measures are practicable, Section 7 consultation will be reinitiated to address potential effects.
- If suitable habitat or other evidence of Eastern indigo snake is discovered within the project area during site surveys, the most recent version of the U.S. Fish and Wildlife Service's "Standard Protection Measures for the Eastern Indigo Snake" will be implemented. The current version is available at: http://www.fws.gov/verobeach/ReptilesPDFs/20130812_EIS%20Standard%20Protection%20Measures_final.pdf
- Suitable habitat for reticulated flatwoods salamander will be avoided during all construction activities. If suitable habitat may be impacted during hydrological restoration the following conservation measures will be implemented:
    - standardized surveys to determine if salamanders are actually present or presence can be assumed;
    - if the species is present (or assumed to be present) hydrologic restoration will occur after the breeding season has ended and salamanders have left breeding habitat; and
    - no currently connected wetland habitats will be isolated from each other due to changes in hydrological regimes or road maintenance.
- Surveys will identify any gopher tortoise burrows. If burrows are within the construction zone or area for hydrologic restoration and cannot be avoided through establishing a protective buffer (size determined by PCFO and Florida Fish and Wildlife Conservation Commission (FWC)), standard procedures (obtained from PCFO) will be implemented to relocate the tortoise within the project site but away from the areas of construction or restoration.
- Conduct species specific surveys to identify any occurrences of Panhandle lily and Gulf sweet pitcher plant on the project site. If found on site, contact PCFO and FWC to determine if avoidance or minimization measures may be appropriate.

- Survey for other at-risk species including, but not limited to: gopher frog, Florida pine snake, birds, and plant species. If found on site, contact PCFO and FWC to determine if avoidance or minimization measures may be appropriate.
- A land management plan detailing restoration and access-related activities will be developed for the area. This plan will be provided to PCFO for review. If PCFO determines that any species may be adversely affected the plan will be revised to minimize impacts to an insignificant and discountable level or Section 7 consultation will be reinitiated so that the potential effects from the plan can be evaluated and formal consultation completed if necessary.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the *National Bald Eagle Management Guidelines* will be followed (USFWS 2007).
- If trees or shrubbery must be removed, these areas will be cleared outside of migratory bird nesting season or inspected for active nests. If no active nests are found, vegetation may be removed. If active nests are found, vegetation can be removed after the nest successfully fledges.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. Outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.32.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- All hazardous materials handled during construction including paints, solvents, chemicals and petroleum products will be contained and appropriate barriers will be in place to ensure the protection of adjacent water resources from potential spills and leaks.
- In the event of a discharge of oil or release of hazardous substances all spills will be reported to the FDEP and all federal and state regulations will be followed during the cleanup.
- BMPs in accordance with the Occupational Safety and Health Administration (OSHA) and state and local requirements will be incorporated into construction activities to ensure proper handling, storage, transport and disposal of all hazardous materials.
- All waste generated during construction will be disposed of in the appropriate waste or recycling receptacles on-site will be taken off-site and disproved in an approved waste disposal site by the construction contractor.
- All occupational and safety regulations will be followed to ensure safety of all workers and the public.
- During construction soil and sediment stabilization measures will be incorporated into project design as needed in areas where the potential for erosion exists in order to protect resources and public health and safety.

10.5.32.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational use and wildlife viewing opportunities by improving the recreational use of the Escribano Point portion of the Yellow River Wildlife Management Area. Performance monitoring will evaluate: 1) the hurricane debris removal and road repair; 2) the construction of an entrance kiosk, information, parking and facilities; 3) the improvements of the north beach hammock parking;4) the construction of the interpretive, fishing and picnicking facilities; 5) the construction of the primitive camping sites; 6) the construction of the wildlife viewing facilities; 7) the construction of the Escribano Point parking, interpretive, fishing and picnicking facilities; and 8) the installation of the bear-proof containers for trash and storing food at campsites. Specific success criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the visitor area of the wildlife management area is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by FWC as part of its regular public facilities maintenance activities. The project cost includes $500,000 for five years of management costs.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, FWC will monitor the recreational use activity at the site. FWC staff will visit the site twice a year to count the number of users at the wildlife management area. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

10.5.33 Norriego Point Restoration and Recreation Project

The Norriego Point Restoration and Recreation project will involve stabilizing, enhancing and re-establishing recreational activities available at Norriego Point. Improvements will include constructing erosion control structures and new park amenities including a picnic pavilion with restrooms, showers, and drinking fountains; educational signage; a multi-use trail; bike racks; and vehicle parking along the access road adjacent to the park land. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Norriego Point Restoration and Recreation project is intended to enhance and/or increase recreational boating and beach use opportunities by stabilizing and re-establishing Norriego Point. The project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational boating and beach use opportunities by stabilizing and re-establishing Norriego Point.

The Trustees evaluated the Norriego Point Restoration and Recreation Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection). Based on the cumulative impact analysis, the Norriego Point Restoration and Recreation Project will not substantially contribute to adverse cumulative effects to resources. The Norriego Point Restoration and Recreation Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.33.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.33.2 Mitigation Measures

Mitigation measures, including best management practices and conservation measures, required by consultations in adherence with applicable laws, regulations and executive orders listed above and developed during the NEPA process are listed below. These mitigation measures are categorized by whether they correspond to the physical environmental, biological resources, and human uses and socioeconomics. Note this list is not an exhaustive list of all existing policies, practices, and measures required by law, regulation, or agency policy that reduce the environmental impacts of designated activities, functions, or processes.

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.33.2.1 Measures to Mitigate Impacts to the Physical Environment

- All permit conditions will be strictly adhered to, including mitigation measures for siltation, erosion, turbidity, and release of chemicals. During construction, BMPs and boom placement along with other avoidance and mitigation measures required by state and federal regulatory agencies will be employed to minimize any water quality and sedimentation impacts. FDEP

permit conditions require erosion and turbidity mitigation measures, which include the following:

  - Installation of floating turbidity barriers;
  - Installation of erosion control measures along the perimeter of all work areas;
  - Stabilization of all filled areas with sod, mats, barriers, or a combination; and
  - Stoppage of work if turbidity thresholds are exceeded. The soils will then be stabilized, work procedures will be modified, and the FDEP will be notified.

- The project will comply with state water quality standards and other aquatic resource protection requirements.
- FDEP permit conditions require spill containment protection and mitigation measures as follows:
  - Boat repair or fueling facilities over the water will be prohibited.
  - Prohibited activities include hull cleaning and painting, and discharges or release of oils, greases, and related metal-based bottom paints associated with hull scraping, cleaning, and painting.
- A wetlands permit is required for the project and will stipulate appropriate BMPs and mitigation requirements.
- Available BMPs will be employed to prevent, mitigate, and control potential air pollutants during project implementation.

10.5.33.2.2 Measures to Mitigate Impacts to Biological Resources

- No lighting is currently proposed for this project. If lighting were to become necessary, the most recent edition of FWC's Lighting Technical Plan will be followed.
- During all in-water construction activity, the conditions and guidelines of the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NMFS, 2006) will be implemented and adhered to during project implementation.
- All construction conditions identified in the Standard Manatee Conditions for In-water Work (USFWS 2011) will be implemented and adhered to during project construction.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the *National Bald Eagle Management Guidelines* will be followed (USFWS 2007).
- Creation of least tern habitat.
- Care will be taken to minimize noise and physical disruptions near areas where foraging or resting birds are encountered. Work will occur during daylight hours only.
- If project activities occur during shorebird nesting season (February 15 to August 31), the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds or rookeries and their recommendations will be implemented.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection,

pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. Outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.33.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- The construction process will also limit recreational activities near construction areas for a short time to protect public safety.
- Project construction will require mechanical equipment that uses oil, lubricants, and fuels. The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction-related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids, and to avoid releases and spills.

10.5.33.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational boating and beach use opportunities by improving by stabilizing and re-establishing Norriego Point. Performance monitoring will evaluate: 1) the construction of erosion control structures; 2) the construction of a picnic pavilion with restrooms, showers, and drinking fountains; 3) the construction of educational signage and a multi-use trail; 4) the construction of bike racks; and 5) the addition of vehicle parking areas along the access road the construction. Specific performance criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the point is open and available.

Long-term monitoring and maintenance will be completed by the City of Destin as part of their regular public facilities maintenance activities. Funding for this post construction maintenance is not included in the previously provided value for the project cost and will be accomplished by the City of Destin.

During the construction performance monitoring period, the Florida Trustees' Project Manager will go out twice a year to the site to record the number of users. Following the construction performance monitoring period, the City of Destin will monitor the recreational use activity at the site. The City of Destin will visit the site twice a year to count the number of users. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

10.5.34 Deer Lake State Park Development

The Deer Lake State Park Development project will improve the existing visitor areas at Deer Lake State Park in Walton County. The improvements will include adding a paved access road, parking, picnic shelters, restroom facilities, plantings (trees, grass, shrubs), and necessary utilities (water, sewer, and electrical). As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Deer Lake State Park Recreation Areas project is intended to enhance and/or increase recreational beach use opportunities by improving the park's visitor area. The project will enhance and/or increase

opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational beach use opportunities by improving the park's visitor area.

The Trustees evaluated the Deer Lake State Park Development Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection). Based on the cumulative impact analysis, the Deer Lake State Park Development Project will not substantially contribute to adverse cumulative effects to resources. The Deer Lake State Park Development Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.34.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.34.2 Mitigation Measures

Mitigation measures, including best management practices and conservation measures, required by consultations in adherence with applicable laws, regulations and executive orders listed above and developed during the NEPA process are listed below. These mitigation measures are categorized by whether they correspond to the physical environmental, biological resources, and human uses and socioeconomics. Note this list is not an exhaustive list of all existing policies, practices, and measures required by law, regulation, or agency policy that reduce the environmental impacts of designated activities, functions, or processes.

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.34.2.1 Measures to Mitigate Impacts to the Physical Environment

- All construction will be performed in accordance with all local, state, and federal requirements and all permit requirements to protect the surrounding vegetation and natural condition.
- The contractor will submit a plan for control of surface water runoff in accordance with all local, state, and federal requirements and all permit requirements to protect the surrounding vegetation and natural condition.
- Upon completion of construction, the site will be cleared of all construction materials and restored to its natural state as shown on the plan drawings.
- The contractor will implement BMPs for adequate erosion control. Erosion control is necessary to prevent damage to adjacent property, natural features, site property, and work in progress. Erosion control measures will be in place prior to any land alteration and will be used throughout the construction process until soils are stabilized. Erosion control BMPs are as follows:
    - To protect against wind and stormwater runoff erosion, the contactor will place, as appropriate, hay bales and silt fencing with wire fence reinforcement, with sediment to be removed when it reaches approximately one-half the height of the barrier.
    - Silt fences will be of optimal design and materials for adequate sediment control.
    - Side slopes created during construction will be stabilized at the earliest possible date to avoid erosion with adequate use of compacted soil and staked hay bales.
    - Any disturbed area that will not be paved, sodded, or built upon will have a minimum vegetative cover of 80% and be mature enough to control soil erosion and survive severe weather conditions prior to final inspection.
    - Sod will be sufficiently grown and maintained to secure a dense stand of live grass.
    - The road surface at the entrance will maintain a condition of slope that will prevent tracking or flow of mud onto the existing public roadway (County Road 30A).
- All permit conditions, including mitigation measures for erosion and release of chemicals, will be strictly adhered to.
- The project will comply with state water quality standards and other aquatic resource protection requirements.
- Required spill containment measures will be implemented for applicable construction activities.
- The following mitigation measures have been identified to reduce or eliminate GHG emissions from the project:
    - Shut down idling construction equipment, if feasible.
    - Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
    - Encourage the use of the proper equipment size for the job to maximize energy efficiency.
    - Encourage the use of alternative fuels for generators at construction sites, such as propane or solar, or use electrical power where practicable.

10.5.34.2.2 Measures to Mitigate Impacts to Biological Resources

- No lighting will be installed on the boardwalks. Any other lighting used (in parking areas, sidewalks, signage, etc.) will be required to comply with Walton County's Wildlife Conservation Zone lighting ordinance using the best available technology. Any parking lot lighting should be fully shielded, wildlife-friendly parking lot lighting.
- Should work be undertaken between May 1 and October 31 the following conservation measures will be followed:
    - The existing, local, sea turtle nesting surveyor will conduct daily sea turtle nesting surveys and will assess the need for the relocation of sea turtle nests that could be affected by the project construction prior to project implementation each day.
    - If a sea turtle (either adult or hatchling) is observed, maintain at least 200 feet between the turtle and personnel.
    - All actions shall observe a 10-foot buffer from marked sea turtle nests. Between May 1 and August 31, actions with mechanized equipment or vehicles shall not begin prior to 9:00 am to ensure sea turtle monitoring surveys are completed for the day.
    - If altered, beach topography shall be restored in all areas to the natural beach profile by 20:00 hours each day. Restoring beach topography includes raking of tire ruts, filling pits or holes.
- All construction conditions identified in the Standard Manatee Conditions for In-water Work (USFWS 2011) will be implemented and adhered to during project construction.
- If construction occurs within the period from August to May:
    - Shorebird surveys (including piping plover and red knot) will be conducted in the project area;
    - Within the project area, a 300-foot wide buffer zone where piping plover or red knot congregate in significant numbers will be established.
    - Any and all construction will be prohibited in the buffer zone.
- All construction personnel will be notified of the potential presence of Choctawhatchee Beach Mice and reminded of the criminal and civil penalties associated with harassing, injuring, or killing these mice.
- To minimize impacts to Choctawhatchee beach mice in burrows, a qualified, permitted, biologist will survey the project site before work commences and flag potential burrows and tracks so that they can be avoided.
- Only hand tools will be used within a five-foot radius of a burrow opening or any observed mice tracks.
- Equipment and vehicles will avoid the dune by 10 foot of the toe of the dune.
- Construction noise will be kept to the minimum feasible.
- Construction will occur during the day to minimize disturbance to nocturnal patterns.
- Equipment, vehicles, and project debris will not be stored in a manner or location where it could be colonized by mice.
    - Prior to bringing any equipment (including personal gear, machinery, vehicles or vessels) to the work site, inspect each item for mud or soil, seeds, and vegetation. If present,

the equipment, vehicles, or personal gear shall be cleaned until they are free from mud, soil, seeds, and vegetation. This inspection will occur each time equipment, vehicles, and personal gear are being prepared to go to a site or prior to transferring between sites to avoid spreading exotic, nuisance species.
    - Inspect sites periodically to identify and control new colonies/individuals of an invasive species not previously observed prior to construction.
    - Remove trash or anything that will attract nuisance wildlife to work areas daily.
- Project related trash or debris shall not be allowed to blow into open water, onto beaches or in the dunes.
- Appropriate waste/trash receptacles will be installed and maintained at boardwalks so that predators are not attracted to the area.
- All walkover construction will follow the recent guidance for such work issued by the USFWS Panama City field office (USFWS, 2013).
- If native plants are destroyed during the project, appropriate native plants will be planted in the same location to minimize effects to the vegetative composition of the area.
- If necessary (due to food source removal during construction and growing periods for replacement plants), supplemental beach mouse food sources will be provided.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the National Bald Eagle Management Guidelines will be followed (USFWS 2007).
- If project activities occur during shorebird nesting season (February 15 to August 31), the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds or rookeries and their recommendations will be implemented
- Care will be taken to minimize noise and physical disruptions near areas where foraging or resting birds are encountered. Work will occur during daylight hours only.
- Trees will not be removed during songbird nesting season at Deer Lake.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. Outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.34.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction-related hazardous materials and to avoid releases and spills.
- If a release should occur, it will be handled promptly in accordance with all applicable regulations. The period of time during which a release could occur from construction activities will be short term, and any release will be expected to be minor.

- If hazardous materials are encountered in the project area during construction activities, appropriate measures for handling the materials will be used in accordance with applicable regulations. All occupational safety regulations and laws will be followed to ensure the safety of all workers and monitors. The project is not anticipated to affect the existing Park RCRA activities.

10.5.34.3 Performance Criteria, Monitoring and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational beach use opportunities by improving the visitor use areas at Dear Lake State Park. The improvements will include adding a paved access road, parking, picnic shelters, restroom facilities, plantings (trees, grass, shrubs), and necessary utilities (water, sewer, and electrical). Performance monitoring will evaluate: 1) the addition of a paved access road and parking; 2) construction of picnic shelters; 3) construction of restroom facilities; and 4) installation of planting and necessary utilities. Specific success criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the visitor use area is open and available.

Long term maintenance of the improved facilities will be completed by Deer Lake State Park staff as part of their regular public facilities maintenance activities. Corrective actions necessary after completion and signoff of the project will also be undertaken by park staff. Funding for this post-construction maintenance is not included in the project cost estimate and will be assumed by Deer Lake State Park.

During and following the post construction performance monitoring period, the State of Florida park staff will monitor the recreational use activity at the site. Park staff keeps track of visitation and usage at the park and will provide visitation numbers by the month. This use information is kept by the Florida Department of Environmental Protection.

10.5.35 City of Parker- Oak Shore Drive Pier

The City of Parker Oak Shore Drive Pier project will construct a fishing pier at Oak Shore Drive in the City of Parker, Bay County Florida. The work includes construction of a 500 foot long fishing pier. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The City of Parker Oak Shore Drive Pier project is intended to enhance and/or increase recreational fishing opportunities by constructing a fishing pier. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational fishing opportunities by constructing a fishing pier.

The Trustees evaluated the City of Parker Oak Shore Drive Pier Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection). Based on the cumulative impact analysis, the City of Parker Oak Shore Drive Pier Project will not substantially contribute to adverse cumulative effects to resources. The City of Parker Oak Shore Drive Pier Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.35.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, USFWS Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the NMFS Endangered Species Act, Marine Mammal Protection Act, National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.35.2 Mitigation Measures

Mitigation measures, including best management practices and conservation measures, required by consultations in adherence with applicable laws, regulations and executive orders listed above and developed during the NEPA process are listed below. These mitigation measures are categorized by whether they correspond to the physical environmental, biological resources, and human uses and socioeconomics. Note this list is not an exhaustive list of all existing policies, practices, and measures required by law, regulation, or agency policy that reduce the environmental impacts of designated activities, functions, or processes.

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.35.2.1 Measures to Mitigate Impacts to the Physical Environment

- Orientation options for the fishing pier will also consider site specific features such as the generation of the shallow sand bars off the point and the Intracoastal Waterway which runs offshore of the point.
- During construction BMPs for erosion control will also be implemented and maintained at all times during upland activity to prevent siltation and turbid discharges into surface waters.

Methods could include, but are not limited to, the use of staked hay bales, staked filter cloth, sodding, seeding, and mulching; staged construction; and installation of turbidity screens around the immediate project site.

- Staging of most construction materials will occur in the parking area.
- Best management practices, such as the use of sediment curtains, will be used to minimize the dispersal of sediments during the installation of the pilings.
- On land, if any soils are disturbed, erosion and sedimentation into the bay will be minimized through the use of erosion control measures resulting in short-term negligible impacts.
- Best management practices to avoid, minimize, and control spills will be employed to minimize the risk of adverse impacts.
- Additionally, appropriate permits will be obtained prior to beginning construction and all conditions set forth, such as erosion control measures and a spill, prevention, control, and countermeasure plan, will be followed.

10.5.35.2.2 Measures to Mitigate Impacts to Biological Resources

- As part of this engineering and orientation assessment, a survey of submerged aquatic vegetation (SAV) in the area will be completed. Existing information suggests SAV is in the area around the point where the pier will be constructed. Should the site assessment for the project identify SAV in the project area, the conditions in the Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat (U.S. Army Corps of Engineers/National Marine Fisheries Service, 2001) will be implemented.
    - The SAV coverage at the point is not complete as the combination of current and other conditions leave an area off of the South of the point going out into deeper water where there is effectively a “path” that is free of SAV. The current plan is to construct the pier in this path to avoid impacts to SAV habitat at the site.
- Final construction plans will also consider and account for options that will minimize disruption to the aquatic environment including available BMPs (e.g., use of bubble curtains).
- The exact mix of equipment will be developed with the final construction plans and project bids but will take into account and be reviewed for critical considerations such as the depth of the site to avoid grounding in sensitive habitats (e.g., seagrass beds).
- The conditions and guidelines of the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NOAA, 2006) will be implemented and adhered to during all in-water construction activity.
- All construction conditions identified in the Standard Manatee Conditions for In-water Work (USFWS 2011) will be implemented and adhered to during project construction.
- Prior to the opening of the pier to the public, fixed signs that are consistent with National Oceanic and Atmospheric Administration (NOAA) and State of Florida guidelines with instructions on what to do in the event of hooking a listed species (e.g., sea turtle) will be placed at the entrance to the fishing pier and strategically at fixed intervals along its length.
- Additionally, a kiosk/booth will be placed at the entrance to the pier with additional information for best practices on catch and release and other fishing practices (e.g., placing cut line and hooks for disposal in trash cans, not feeding dolphins) designed to limit potential adverse

impacts to species. The signage in this kiosk will include the NMFS "Dolphin Friendly Fishing and Viewing Tips" sign with NMFS' "Protect Dolphin" signs along the pier.

- Trash receptacles will also be placed on the pier to help reposted on the fishing pier to help anglers comply with the recommendations as well as keep other trash out of the water that could otherwise cause adverse impacts on species.
- Monofilament recycling bins will be installed at regular intervals along the pier. These will be emptied regularly by city/county staff as part of the project maintenance activities, and fishing line recycled.
- Any lighting installed as part of the project will be wildlife friendly and comply with the guidance provided in the current edition of the FWC's *Lighting Technical Manual*.
- No fish cleaning stations will be included in the design and construction of these piers to help mitigate/avoid issues of species attraction to the pier.
- At the project site, there is an area with shallow sandbars off the point where shorebirds commonly feed. Design of this pier will be coordinated with FWC to minimize impacts and changes to the point and sand bars to the maximum extent practicable.
- Care will be taken to minimize noise and physical disruptions near areas where foraging or resting seabirds are encountered. Work will occur during daylight hours only.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the *National Bald Eagle Management Guidelines* will be followed (USFWS 2007).
- Potentially impacted seagrass plants may be required to be transplanted to other areas.
- Educational signage will be posted at all ramps reminding visitors of nearby trust resources and any protective measures that may be necessary to avoid and minimize impacts in their habitats either at the project site or when visiting nearby islands. This signage will be developed in coordination with FWC and the Panama City Ecological Services Field Office. The State of Florida Trustees and DOI recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient to evaluate the effectiveness of conservation measures, then, an in-person survey will be taken of a sample of recreational users at the project location at the same time as the planned twice annual performance monitoring of the project by the same party performing such monitoring.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for

integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.35.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- To minimize impacts on the use of the boat ramp and parking, construction activities on the fishing pier will occur outside of the fishing season which occurs from April through September.
- For the fishing pier, in-water construction will occur outside of the Intracoastal Waterway and therefore will not impact boat movement within this waterway.
- During construction activities, staging and construction areas will be fenced off, and BMPs will be employed to ensure public safety both on land and on the water, as well as the safety of the construction workers.

10.5.35.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational fishing opportunities by constructing a fishing pier at Oakshore Drive in the City of Parker. Performance monitoring will evaluate the construction of the fishing pier. Specific performance criteria include: 1) completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the fishing pier is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by the City of Parker as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by the City of Parker.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, the City of Parker will monitor the recreational use activity at the site. City of Parker staff will visit the site twice a year to count the number of users at the fishing pier. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

10.5.36 Panama City Marina Fishing Pier, Boat Ramp, and Staging Docks

The Panama City Marina Fishing Pier, Boat Ramp, and Staging Docks project will provide additional recreational fishing opportunities for the public in Panama City in Bay County. The improvements include constructing a 400-foot long pier, replacing a poorly functioning boat ramp, and constructing new staging docks associated with the boat ramp at the Panama City Marina. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Panama City Marina Fishing Pier, Boat Ramp, and Staging Docks project is intended to enhance and/or increase recreational boating and fishing opportunities by improving the city's marina. This project will enhance and/or

increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational boating and fishing opportunities by improving the city's marina.

The Trustees evaluated the Panama City Marina Fishing Pier, Boat Ramp, and Staging Docks Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection). Based on the cumulative impact analysis, the Panama City Marina Fishing Pier, Boat Ramp, and Staging Docks Project will not substantially contribute to adverse cumulative effects to resources. The Panama City Marina Fishing Pier, Boat Ramp, and Staging Docks Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.36.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, USFWS Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the NMFS Endangered Species Act, Marine Mammal Protection Act, National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.36.2 Mitigation Measures

Mitigation measures, including best management practices and conservation measures, required by consultations in adherence with applicable laws, regulations and executive orders listed above and developed during the NEPA process are listed below. These mitigation measures are categorized by whether they correspond to the physical environmental, biological resources, and human uses and socioeconomics. Note this list is not an exhaustive list of all existing policies, practices, and measures required by law, regulation, or agency policy that reduce the environmental impacts of designated activities, functions, or processes.

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific

resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.36.2.1 Measures to Mitigate Impacts to the Physical Environment

- Appropriate permits will be obtained prior to beginning construction and all conditions set forth, such as erosion control measures and spill prevention, control, and countermeasure plan, will be followed.
- All USACE permit conditions relating to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act will be adhered to during project construction.
- During construction BMPs for erosion control will also be implemented and maintained at all times during upland activity to prevent siltation and turbid discharges into surface waters. Methods could include, but are not limited to, the use of staked hay bales.
- BMPs, such as the use of sediment curtains to contain resuspended sediments and erosion control measures will be employed to minimize impacts to the surrounding area.
- BMPs to avoid, minimize, and control spills will be employed to minimize the risk of adverse impacts.

10.5.36.2.2 Measures to Mitigate Impacts to Biological Resources

- Prior to the opening of the pier to the public, fixed signs that are consistent with National Oceanic and Atmospheric Administration (NOAA) and State of Florida guidelines with instructions on what to do in the event of hooking a listed species (e.g., sea turtle) will be placed at the entrance to the fishing pier and strategically at fixed intervals along its length.
- Additionally, a kiosk/booth will be placed at the entrance to the pier with additional information for best practices on catch and release and other fishing practices (e.g., placing cut line and hooks for disposal in trash cans, not feeding dolphins) designed to limit potential adverse impacts to species.
    - The signage in this kiosk will include the NMFS “Dolphin Friendly Fishing and Viewing Tips” sign with NMFS’ “Protect Dolphin” signs along the pier.
- Monofilament recycling bins will be installed at regular intervals along the pier. These will be emptied regularly by city/county staff as part of the project maintenance activities, and fishing line recycled.
- Any lighting installed on the pier or addressed as part of the project will be wildlife friendly and comply with the guidance provided in the current edition of the FWC’s *Lighting Technical Manual*.
- No fish cleaning stations will be included in the design and construction of these piers to help mitigate/avoid issues of species attraction to the pier.
- Final construction plans will also consider and account for options will minimize disruption to the aquatic environment including available BMPs (e.g., use of bubble curtains).
- The conditions and guidelines of the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NOAA, 2006) will be implemented and adhered to during all in-water construction activity.
- All construction conditions identified in the Standard Manatee Conditions for In-water Work (USFWS 2011) will be implemented and adhered to during project construction.

- Final dimensions of the docks will be determined during the final project design based on, among other information, the results of the SAV survey and the corresponding need to comply with any conditions in the *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat* (U.S. Army Corps of Engineers/National Marine Fisheries Service, 2001 – See Appendix A).
- As with the pier, pilings will need to be placed for the staging dock. Options to minimize disruption to the aquatic environment, including available BMPs (e.g., use of bubble curtains), will be evaluated as final engineering plans are determined.
    - Following placement of the pilings and cross pieces from the water, work to construct the docks will generally proceed from shore and will not require additional in-water work unless pre-formed or pre-constructed sections are used and placed from workboats.
- Educational signage will be posted at all ramps reminding visitors of nearby trust resources and any protective measures that may be necessary to avoid and minimize impacts in their habitats either at the project site or when visiting nearby islands. This signage will be developed in coordination with FWC and the Panama City Ecological Services Field Office. The State of Florida Trustees and DOI recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient to evaluate the effectiveness of conservation measures, then, an in-person survey will be taken of a sample of recreational users at the project location at the same time as the planned twice annual performance monitoring of the project by the same party performing such monitoring.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the *National Bald Eagle Management Guidelines* will be followed (USFWS 2007).
- Care will be taken to minimize noise and physical disruptions near areas where foraging or resting birds are encountered. Work will occur during daylight hours only.
- Protective measures will also be implemented in the design phase and include the use of pointy, white, piling caps and containers for waste fishing gear.
- Trash receptacles will also be placed on the pier to help reposted on the fishing pier to help anglers comply with the recommendations as well as keep other trash out of the water that could otherwise cause adverse impacts on species.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/

vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.36.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- To minimize impacts on the use of the boat ramp, construction activities on the boat ramp will occur outside of the fishing season which occurs from April through September.
- For the fishing pier, in-water construction will occur outside of the Intracoastal Waterway and therefore will not impact boat movement within this waterway.
- Design of the fishing pier will include necessary lighting and handrails ensuring the safety of those that use it.
- During construction activities, staging and construction areas will be fenced off, BMPs will be employed to ensure public safety both on land and on the water, as well as the safety of the construction workers.

10.5.36.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational boating and fishing opportunities by improving the marina. Performance monitoring will evaluate: 1) the construction of a 400-foot long pier; 2) the replacement of a poorly functioning boat ramp, and 3) the construction of new staging docks at the Panama City Marina. Specific performance criteria include: 1) completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the marina and fishing pier are open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by Panama City as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by Panama City.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, Panama City will monitor the recreational use activity at the site. Panama City staff will visit the site twice a year to count the number of users at the marina. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

The State of Florida Trustees and the Department of Interior recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed

via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient, concurrent with the twice annual performance monitoring, and performed by the same party, a survey will be taken of a sample of recreational users at the project location.

10.5.37 Wakulla Mashes Sands Park Improvements

The Wakulla County Mashes Sands Park Improvements project will improve recreation areas at the Wakulla County Mashes Sands Park. The improvements include constructing observation platforms, boardwalks, and walking paths, improving the boat ramp area, and picnic areas, renovating the parking area, and the restroom facility, and constructing a canoe/kayak launch site. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Wakulla County Mashes Sands Park Improvements project is intended to enhance and/or increase recreational boating and beach use opportunities by improving the recreational opportunities at the park. This project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational boating and beach use opportunities by improving the recreational opportunities at the park.

The Trustees evaluated the Wakulla County Mashes Sands Park Improvements Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection). Based on the cumulative impact analysis, the Wakulla County Mashes Sands Park Improvements Project will not substantially contribute to adverse cumulative effects to resources. The Wakulla County Mashes Sands Park Improvements Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.37.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance

with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.37.2 Mitigation Measures

Mitigation measures, including best management practices and conservation measures, required by consultations in adherence with applicable laws, regulations and executive orders listed above and developed during the NEPA process are listed below. These mitigation measures are categorized by whether they correspond to the physical environmental, biological resources, and human uses and socioeconomics. Note this list is not an exhaustive list of all existing policies, practices, and measures required by law, regulation, or agency policy that reduce the environmental impacts of designated activities, functions, or processes.

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.37.2.1 Measures to Mitigate Impacts to the Physical Environment

- Construction materials will be staged in existing disturbed areas (e.g., parking lot areas).
- Construction Best Management Practices (BMPs) are as follows:
    - The contractor will submit plan for control of surface water runoff in accordance with all local, state, and federal requirements and all requirements of permits obtained so as to protect the surrounding vegetation and natural condition (discussed in greater detail below).
    - All construction adjacent to open water will be separated and confined by appropriate siltation screens and turbidity barriers so as to protect the quality of such open water.
    - Upon completion of construction, the site will be cleared of all construction materials and restored to its natural state as shown on the drawings.
    - All construction will be performed in accordance with all local, state, and federal requirements and all requirements of permits obtained so as to protect the surrounding vegetation and natural condition.
    - The contractor will be responsible for assuring compliance with all permit requirements.
- Implementation of stormwater management controls for the project.
- All permit conditions, including mitigation measures for siltation, erosion, turbidity, and release of chemicals, will be strictly adhered to.
- During construction, BMPs and boom placement along with other avoidance and mitigation measures required by state and federal regulatory agencies will be employed to minimize any water quality and sedimentation impacts. Florida Department of Environmental Protection (FDEP) permit conditions require erosion and turbidity mitigation measures, which include the following:
    - Installation of floating turbidity barriers.

    - Installation of erosion control measures along the perimeter of all work areas.
    - Stabilization of all filled areas with sod, mats, barriers, or a combination.
    - Stoppage of work if turbidity thresholds are exceeded. The soils will then be stabilized, work procedures modified, and the FDEP will be notified.
- The project will comply with state water quality standards and other aquatic resource protection requirements.
- Impacts from chemicals that could be released from sources such as construction equipment and boats are expected to be negligible. Required spill containment measures will be implemented for applicable construction activities. FDEP permit conditions require spill containment protection and mitigation measures as follows:
    - Prohibiting boat repair or fueling facilities over the water.
    - Prohibited activities include hull cleaning and painting, discharges or release of oils or greases, and related metal-based bottom paints associated with hull scraping, cleaning, and painting.

10.5.37.2.2 Measures to Mitigate Impacts to Biological Resources

- While any dock renovations should be constructed within the existing footprint, as part of final design effort, a survey of submerged aquatic vegetation (SAV) in the area will be completed. Should the site assessment for the project identify SAV in the project area, the conditions in the *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat* (U.S. Army Corps of Engineers/National Marine Fisheries Service, 2001) will be implemented.
- During all in-water construction activity the conditions and guidelines of the *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NOAA, 2006) and the *Standard Manatee Conditions for In-Water Work* (USFWS, 2011) will be implemented and adhered to.
- Educational signage will be posted at all ramps reminding visitors of nearby trust resources and any protective measures that may be necessary to avoid and minimize impacts in their habitats either at the project site or when visiting nearby islands. This signage will be developed in coordination with FWC and the Panama City Ecological Services Field Office. The State of Florida Trustees and DOI recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient to evaluate the effectiveness of conservation measures, then, an in-person survey will be taken of a sample of recreational users at the project location at the same time as the planned twice annual performance monitoring of the project by the same party performing such monitoring.
- Predator-proof waste receptacles will be placed and maintained in strategic locations at each of the new facilities in this project.

- All construction conditions identified in the Standard Manatee Conditions for In-water Work (USFWS 2011) will be implemented and adhered to during project construction.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the *National Bald Eagle Management Guidelines* will be followed (USFWS 2007).
- Care will be taken to minimize noise and physical disruptions near areas where foraging or resting birds are encountered. Work will occur during daylight hours only.
- If necessary, breeding areas may need to be posted (during breeding season) to further identify sensitive areas that visitors must avoid (Oystercatchers and Wilson's plovers).
- If project activities occur during shorebird nesting season (February 15 to August 31), the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds/marsh birds or rookeries and their recommendations will be implemented.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.37.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- Project construction will require mechanical equipment that uses oil, lubricants, and fuels. The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction-related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids.
- If a release should occur, it will be contained and cleaned up promptly in accordance with all applicable regulations, and the incident will be reported to appropriate agencies.

10.5.37.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational boating and beach use opportunities by improving the recreational opportunities at the park. Performance monitoring will evaluate: 1) the construction of the observation platforms; 2) the construction of the boardwalks; 3) the construction of the walking paths; 4) the improvements to the boat ramp area; 5) the improvements to the picnic areas, 6) the renovation of the parking area; 7) the renovation of the restroom facility; and 8) the construction of a canoe/kayak launch site. Specific performance criteria include: 1) completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the park is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by Wakulla County as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by Wakulla County.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the one year construction performance monitoring period, Wakulla County will monitor the recreational use activity at the site. Wakulla County staff will visit the site twice a year to count the number of users at the park. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

The State of Florida Trustees and the Department of Interior recognize the need to evaluate the effectiveness of conservation measures designed to avoid or minimize impacts to sensitive species or their habitats. To assess the public's awareness of the educational signage intended to minimize impacts of use associated with the improved facilities, readers will be invited to take an online survey accessed via a QR code on the sign. The Florida Trustees and DOI will determine the adequacy of this method of assessing public awareness six months after the completion of construction. If the online surveying is insufficient, concurrent with the twice annual performance monitoring, and performed by the same party, a survey will be taken of a sample of recreational users at the project location.

10.5.38 Northwest Florida Estuarine Habitat Restoration, Protection and Education-Fort Walton Beach

The Northwest Florida Fort Walton Beach Educational Boardwalk project will construct new boardwalks and connect them to existing boardwalks as well as conducting several small natural resource and habitat enhancement projects in Fort Walton Beach. The improvements include constructing a new educational and interactive boardwalk, expansion of an existing intertidal oyster reef, and restoration of a degraded salt marsh. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of the natural resources along Florida's Panhandle was denied or severely restricted. The Northwest Florida Fort Walton Beach Educational Boardwalk project is intended to enhance and/or increase recreational use opportunities by improving the boardwalks and enhancing adjoining natural resources and habitat. The project will enhance and/or increase opportunities for the public's use and enjoyment of the natural resources, helping to offset adverse impacts to such uses that resulted from the Spill. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

NEPA analysis of the environmental consequences suggests that while minor adverse impacts to some resource categories, no moderate to major adverse impacts are anticipated to result. The project will enhance and/or increase recreational use opportunities by improving the boardwalks and enhancing adjoining natural resources and habitat.

The Trustees evaluated the Northwest Florida Fort Walton Beach Educational Boardwalk Project in combination with other present and reasonably foreseeable future actions on Geology and Substrates, Hydrology and Water Quality, Air Quality and Greenhouse Gas Emissions, Noise, Living Coastal and

Marine Resources, and Human Uses and Socioeconomics (i.e. socioeconomics and environmental justice, cultural resources, infrastructure, land and marine management, aesthetics and visual resources, tourism and recreational use, and public health and safety and shoreline protection). Based on the cumulative impact analysis, the Northwest Florida Fort Walton Beach Educational Boardwalk Project will not substantially contribute to adverse cumulative effects to resources. The Northwest Florida Fort Walton Beach Educational Boardwalk Project, carried out in conjunction with other actions, have the potential to provide long-term beneficial cumulative impacts.

10.5.38.1 Compliance with Relevant Federal Environmental Laws, Regulations, and Executive Orders

The Trustees have completed consultations and reviews under the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Marine Mammal Protection Act. Consistency reviews of the Phase III Early Restoration projects in Florida were initiated by the Federal Trustees under the Coastal Zone Management Act and have been completed for purposes of finalizing this Early Restoration Plan. Additional reviews may occur during permitting processes required for implementation. Compliance with the National Historic Preservation Act, Clean Water Act, and Rivers and Harbors Act has been initiated.

10.5.38.2 Mitigation Measures

Mitigation measures, including best management practices and conservation measures, required by consultations in adherence with applicable laws, regulations and executive orders listed above and developed during the NEPA process are listed below. These mitigation measures are categorized by whether they correspond to the physical environmental, biological resources, and human uses and socioeconomics. Note this list is not an exhaustive list of all existing policies, practices, and measures required by law, regulation, or agency policy that reduce the environmental impacts of designated activities, functions, or processes.

Throughout the design and implementation of this project, every practical attempt will be made to avoid and minimize potentially adverse environmental, social, and cultural impacts. The Trustees agree to implement the following conservation measures and BMPs, which include measures identified during the consultations noted above. Although conservation measures and BMPs are listed under specific resources that they are intended to benefit, they could also result in reduced impacts to other resources.

10.5.38.2.1 Measures to Mitigate Impacts to the Physical Environment

- The final oyster reef elevation and design will be selected to maximize shoreline protection and meet state regulatory requirements.
- As part of the final design the risk for creating a structure that poses an entrapment risk will be evaluated and addressed by ensuring gaps are left between constructed units – both new and existing. These gaps will be a minimum of 3 feet wide.
- All permit conditions will be strictly adhered to, including mitigation measures for siltation, erosion, turbidity, and release of chemicals. During construction, BMPs and boom placement

along with other avoidance and mitigation measures required by state and federal regulatory agencies will be employed to minimize any water quality and sedimentation impacts.

- FDEP permit conditions require erosion and turbidity mitigation measures, which include the following:
    - Installation of floating turbidity barriers.
    - Installation of erosion control measures along the perimeter of all work areas.
    - Stabilization of all filled areas with sod, mats, barriers, or a combination.
    - Stoppage of work if turbidity thresholds are exceeded. The soils will then be stabilized, work procedures modified, and the FDEP will be notified.
- The project will comply with state water quality standards and other aquatic resource protection requirements.
- Required spill containment measures will be implemented for applicable construction activities. FDEP permit conditions require spill containment protection and mitigation measures as follows:
    - Prohibiting boat repair or fueling facilities over the water.
    - Prohibiting vessels from being removed from the water for the purposes of maintenance or repair.
    - Prohibited activities include hull cleaning and painting, discharges or release of oils or greases, and related metal-based bottom paints associated with hull scraping, cleaning, and painting.
- Available BMPs will be employed to prevent, mitigate, and control potential air pollutants during project implementation.

10.5.38.2.2 Measures to Mitigate Impacts to Biological Resources

- All planting work (salt marsh restoration) will be conducted from the shoreline.
- The created marsh areas will be monitored for natural revegetation and to determine success and identify any corrective action needed.
- Potential impacts from construction operations may also be avoided by requiring compliance during all in-water activities with the *Sea turtle and Smalltooth Sawfish Construction Conditions* (NMFS, 2006) and *Standard Manatee Conditions for In-water Work* (USFWS, 2011).
- Project installation activities will use BMPs, including impact avoidance of existing seagrass habitat through the use of small vessels for construction of oyster reefs. Every effort will be made to access the oyster reef placement sites during periods of high tide using shallow draft vessels to minimize potential adverse impacts to seagrass habitat as a result of navigation.
- If bald eagles are found nesting within 660 feet of a construction area, then activities will need to occur outside of nesting season or the *National Bald Eagle Management Guidelines* will be followed (USFWS 2007).
- If project activities occur during shorebird nesting season (February 15 to August31), the FWC will be contacted to obtain the most recent guidance to protect nesting shorebirds or rookeries and their recommendations will be implemented.
- Care will be taken to minimize noise and physical disruptions near areas where foraging or resting seabirds are encountered. Work will occur during daylight hours only.

- Implement best management practices to mitigate any potential impacts to any EFH and species using the habitat in areas adjacent to project locations.
- Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices will primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors to assist with adherence to required or recommended practices.

10.5.38.2.3 Measures to Mitigate Impacts to Human Uses and Socioeconomics

- Project construction will require mechanical equipment that uses oil, lubricants, and fuels. The contractor will be required to take appropriate actions to prevent, minimize, and control the spill of construction-related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids.
- In addition, as work proceeds, the project area may be isolated by construction fencing to prevent incidental access.

10.5.38.3 Performance Criteria, Monitoring, and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented and to evaluate project performance. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase recreational use opportunities by improving the boardwalks and enhancing the adjoining natural resources and habitat. Performance monitoring will evaluate: 1) the construction of new boardwalk sections along the Santa Rosa sound shoreline; 2) the expansion of an existing oyster reef by ~0.1 acre; and 3) the enhancement of approximately 0.4 acres of salt marsh. Specific success criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the boardwalks are open and available,

Long term monitoring and maintenance of the boardwalk facilities will be completed by the City of Ft. Walton Beach as part of their regular public facilities maintenance activities. No long-term monitoring activities are envisioned for the habitat enhancement components beyond compliance of design and performance standards. Funding for this post-construction maintenance is not included in the project cost estimate and the expense for these activities will be assumed by the City of ft. Walton Beach.

During the construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the post construction performance monitoring period, the City of Ft. Walton Beach will monitor the recreational use activity at the site. The City of Ft. Walton Beach will visit the site twice a year to count the number of users at the boardwalk. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

11 CONCLUSION

Through the Phase III ERP/PEIS, and documented in this ROD, the Trustees have analyzed alternatives, associated impacts, the extent to which the impacts could be mitigated, and have considered the objectives of the action. The Trustees have also considered public and agency comments received during the public review periods. In balancing the analysis and public interest, the Trustees have decided to select and implement their preferred alternative (Alternative 4) for the Programmatic Early Restoration Plan and to implement 44 projects as the Phase III Early Restoration Plan. The Trustees also conclude that all practical means to avoid, minimize, or compensate for environmental harm from the action have been adopted.

12 POINT OF CONTACT

Further information concerning this Record of Decision and associated Phase III ERP/PEIS authorized under this decision may be obtained by contacting:

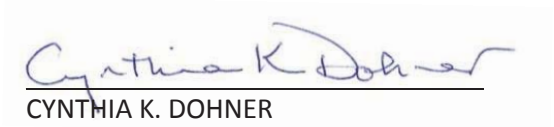
Nanciann Regalado
U.S. Fish and Wildlife Service
1875 Atlanta, GA 20245
(678) 296-6805
nanciann_regalado@fws.gov

13 EFFECTIVE DATE

This Record of Decision for the Final Phase III ERP/PEIS will be effective for all Trustees when each listed signatory has signed.

FOR THE DEPARTMENT OF THE INTERIOR:

10/2/2014
Date



CYNTHIA K. DOHNER
Authorized Official, Department of the Interior

FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY:

10/2/2014
Date

KENNETH J. KOPOCIS
U.S. Environmental Protection Agency
Principal Representative

FOR THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION:

OCT 0 2 2014

Date

DAVID G. WESTERHOLM
Director
Office of Response and Restoration
National Ocean Service
National Oceanic and Atmospheric Administration

OCT 0 2 2014

Date

EILEEN SOBECK
Assistant Administrator for Fisheries
National Oceanic and Atmospheric Administration

OCT 0 2 2014

Date

CRAIG O'CONNOR
Natural Resource Damage Trustee
Chief
Natural Resources Section
Office of General Counsel
National Oceanic and Atmospheric Administration

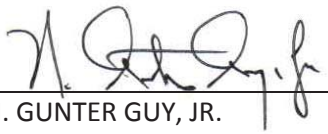
FOR THE U.S. DEPARTMENT OF AGRICULTURE:

10/2/2014
Date

ANN C. MILLS
Principal Representative for the
U.S. Department of Agriculture

FOR THE STATE OF ALABAMA:

10/2/2014
Date



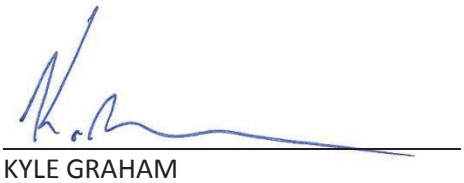
N. GUNTER GUY, JR.
Principal Representative for Alabama Trustees

FOR THE STATE OF FLORIDA:

10/2/2014
Date

LARRY MORGAN
Senior Deputy General Counsel
Florida Department of Environmental Protection

FOR THE STATE OF LOUISIANA:



10/2/2014
Date

KYLE GRAHAM
Principal Representative for Louisiana Trustees

FOR THE STATE OF MISSISSIPPI:

10/2/2014
Date

GARY C. RIKARD
Principal Representative for Mississippi

FOR THE STATE OF TEXAS:

10/2/2014
Date

CARTER SMITH
Executive Director
Texas Parks and Wildlife Department

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RECORD OF DECISION
APPENDIX A: PROGRAMMATIC MITIGATION MEASURES

Consistent with NEPA's implementing regulations, Appendix A lists those mitigation measures (i.e., Best Management Practices and Conservation Measures) that will be considered for implementation on site-specific projects (40 C.F.R. § 1505.2). For future projects, Trustees will review these mitigation measures and identify applicable measures that will be implemented in order to avoid, reduce, or minimize impacts to one or more resources. In addition, Trustees and consulting resource agencies will identify any additional mitigation measures appropriate for future Early Restoration projects. Trustees are required to fulfill all federal, state and local compliance consultation requirements prior to project implementation, and are required to ensure that all project-specific mitigation measures are implemented.

The potential environmental consequences described in Phase III ERP/PEIS were presented largely without factoring in the types of specific project actions and requirements that could avoid or minimize potential adverse effects. An exception was the analysis of impacts to protected biological resources and their habitats. For these resources, project types were specifically analyzed with the incorporation of mitigation measures that would be typically required by consulting resource agencies, as these project types would generally not be able to move forward through agency review without incorporation of mitigation measures. Best management practices have been identified for protected species including certain birds, beach mice, marine mammals, tortoises and turtles, other reptiles, fish, plants; invasive species; and general construction measures.

The list of mitigation measures is organized by resource and includes a section on general construction measures. Three tables are included in a later portion to provide information on the natural resources and the human environment that could be protected by these mitigation measures. Several of the mitigation measures are described in larger documents and only the titles are included here. As regulatory agencies periodically update their guidance documents, future restoration proponents and practitioners are expected to be familiar with such updated guidance and BMPs and apply as required or as agreed to by the Trustees. Appropriate websites should be checked during project planning to see if updated guidance is available.

Applicable mitigation measures for the specific 44 projects for the Phase III Early Restoration Plan are discussed in further detail in Section 10—Phase III Early Restoration Plan Mitigation and Monitoring. Future projects tiered from the Phase III ERP/PEIS will consider the mitigation measures below. If changes to the mitigation measures below are warranted for specific future projects, those changes would be analyzed in the future NEPA/OPA documentation.

The general organization of this list of mitigation measures is as follows:

Birds
- Bald Eagle
- Migratory Birds
- Piping Plover and Red Knot
- Red-cockaded woodpecker

Mammals
- Beach Mice
- Manatee
- Bottlenose Dolphin
- Marine Mammals

Reptiles
- Reticulated flatwoods salamander
- Eastern Indigo Snake

Tortoises/Turtles
- Gopher tortoise
- Sea turtles – in water
- Sea turtles – nesting beaches

Fish
- Gulf sturgeon

Plants
- Protected Plants

Invasive Species

General Construction Measures

Birds

Bald Eagles

If bald eagle breeding or nesting behaviors are observed or a nest is discovered or known, have all activities avoid the nest by a minimum of 660 feet. If the nest is protected by a vegetated buffer where there is *no* line of sight to the nest, then the minimum avoidance distance is 330 feet. Maintain this avoidance distance from the onset of breeding/courtship behaviors until any eggs have hatched and eaglets have fledged (approximately 6 months).

If a similar activity (like driving on a roadway) is closer than 660 feet to a nest, maintain a distance buffer as close to the nest as the existing tolerated activity. If a vegetated buffer is present and there is no line of sight to the nest and a similar activity is closer than 330 feet to a nest, then maintain a distance buffer as close to the nest as the existing tolerated activity.

In some instances activities conducted within 660 feet of a nest may result in disturbance, particularly for the eagles occupying the Mississippi barrier islands. If an activity appears to cause initial

disturbance, stop the activity and move all individuals and equipment away until the eagles are no longer displaying disturbance behaviors. Contact the U.S. Fish and Wildlife Service's (USFWS) Migratory Bird Permit Office to determine how to avoid impacts or if a permit may be needed.

Migratory Birds

Use care to avoid birds when operating machinery or vehicles near birds.

During the project design phase, coordinate with the U.S. Fish and Wildlife Service and the State trust resource agency to site and design projects to avoid or minimize impacts to migratory bird nesting habitats or important feeding/loafing areas.

Avoid working in migratory bird nesting habitats during breeding, nesting, and fledging (approximately Mid February to late August). If project activities must occur during this timeframe and breeding, nesting, or fledging birds are present, contact the State trust resource agency to obtain the most recent guidance to protect nesting birds or rookeries and their recommendations will be implemented.

Conservation areas may already be marked to protect bird nesting areas. Stay out of existing marked areas.

If vegetation clearing is necessary, clear vegetation outside of migratory bird nesting season (approximately Mid February to late August) or have a qualified biologist inspect for active nests. If no active nests are found, vegetation may be removed. If active nests are found, vegetation can be removed after the nest successfully fledges.

Avoid driving over the wrack line or areas of dense seaweed, as these habitats may contain hatchlings and chicks that are difficult to see.

Install pointy, white, piling caps on exposed pilings to prevent bird roosting on piers, docks, and marinas.

Piping Plover and Red Knot

Provide all individuals working on a project with information in support of general awareness of piping plover or red knot presence and means to avoid birds and their critical or otherwise important habitats.

Avoid working in designated critical habitat when piping plover are present (approximately late July through mid-May) or important wintering sites for red knots when they are present (contact U.S. Fish and Wildlife Service for red knot time frames and habitats) to the maximum extent practicable. If work must be conducted when individuals are present, avoid working near concentrations of individuals or post avoidance areas to minimize disturbance.

For projects that result in large scale habitat changes, coordinate early with the U.S. Fish and Wildlife Service to enhance or protect habitat features preferred by the species (inlet shoals, lagoons, washover fans, ephemeral pools, baysides and mud flats). Do not remove sand from intertidal, sand, or mud flats.

Use dredged material to enhance adjacent emerged and submerged shoals and bayside habitats within and adjacent to project areas.

Minimize vegetation planting in preferred habitats and avoid removal of natural organic material ("wrack") year-around along the shoreline.

During recreational use, enforce leash or "no pet" policies in critical or important habitats.

Red-cockaded woodpecker
Avoid working within active red-cockaded woodpecker clusters (minimum convex polygon containing the aggregation of cavity trees used by a group of red-cockaded woodpeckers and a 200-foot wide buffer surrounding the polygon).

If avoidance is not possible or management activities in red-cockaded woodpecker suitable habitat are desired, conduct standard surveys to determine if the habitat is supporting any individuals or presence can be assumed. If red-cockaded woodpeckers are present (or assumed to be), avoid cavity trees and use mechanized equipment during the non-nesting season (approximately April 1 – July 31).

If tree removal is necessary, survey pine trees approximately 60 or more years old for active cavities within one year of the proposed removal. Extend surveys from the project site out to no less than ½ mile. Replace any cavities affected by the project via drilled cavity construction.

If impacts to suitable foraging habitat (pines approximately 30 or more years old and within ½ mile of an active cavity tree) are proposed, conduct a foraging habitat analysis. Foraging habitat may need to be replanted post-project.

Design projects within red-cockaded woodpecker suitable habitat such that prescribed fire needs are not impeded.

Mammals

Beach Mice
Avoid using vehicles and mechanical equipment within the dune system, including primary, secondary, and tertiary dunes.

Avoid storing or staging equipment, vehicles, and project debris in a manner or location where it could be colonized by mice.

If work must occur within the dune system, have a qualified, permitted, biologist survey the project site before work commences and flag potential burrows and tracks so that they can be avoided.

Where possible replace footpaths or low-lying dune walkovers with improved walkovers that do not fragment the dune system. For dune walkover construction in Florida and Alabama, *follow the Conservation Measures for Dune Walkover Construction* (USFWS 2013).

Avoid vegetation removal, including scrub vegetation. If vegetation is damaged or removed during project implementation, plant appropriate native plants in the same location to minimize erosion and provide a food source for beach mice. If forage plants are reduced or limited in the project area, supplemental beach mouse food sources may be necessary.

Manatee
In Florida, follow the most current version of the *Standard Manatee Conditions for In-water Work* and the *Additional Conditions for Project In-water Activities in Manatee Habitat* (USFWS, 2011).

For in-water work in Alabama, Mississippi, and Texas where manatees could be present, follow conditions a, b, c, and d of the Standard Manatee Conditions for In-water Work. Report any collisions to the U.S. Fish and Wildlife Service or State trust resource agency. Temporary signs, if necessary, can be modified from the Florida Fish and Wildlife Conservation Commission's template to reflect local conditions. In Louisiana, follow the most recent version of the *Standard Conditions for In-Water Work in the Presence of Manatees* (USFWS n.d.a).

Bottlenose Dolphin
Follow the most current version of the Measures for Reducing Entrapment Risk to Protected Species, Revised: May 22, 2012

Marine Mammals
Follow the most current version of the Vessel Strike Avoidance Measures and Reporting for Mariners NOAA Fisheries Service, Southeast Region, Revised February 2008.

Reptiles

Reticulated flatwoods salamander
Avoid suitable habitat during all construction activities and do not permanently alter hydrology of the area. Avoid eliminating connectivity between suitable ponds.

Use silt fencing to prevent sedimentation or erosion of the project site into ponds.

If suitable habitat (including the approximately 1,500 buffer zone around breeding ponds) may be impacted, perform pre-project surveys within 2 miles of known breeding sites or assume the presence of reticulated flatwoods salamanders. Schedule work during the non-breeding season (summer) and maintain the natural contour of the ponds.

Eastern Indigo Snake
If suitable habitat or other evidence of Eastern indigo snake is discovered within the project area during site surveys, implement the most recent version of the U.S. Fish and Wildlife Service's *Standard Protection Measures for the Eastern Indigo Snake*.

Tortoises/Turtles

Gopher tortoise
If suitable habitat is present, have a qualified biologist conduct surveys to identify any gopher tortoise burrows. If burrows are within the project area and cannot be avoided through establishing a protective buffer (size determined by U.S. Fish and Wildlife Service and the State trust resource agency), implement standard procedures to relocate the tortoise within the project site but away from the areas of construction or restoration or consider conservation banks. A Candidate Conservation Agreement with Assurances may be appropriate for project sites within the non-listed range of the species.

Sea turtles – in water
Implement the following guidelines: Sea Turtle and Smalltooth Sawfish Construction Conditions, Revised: March 23, 2006; Measures for Reducing Entrapment Risk to Protected Species, Revised: May

22, 2012; and Vessel Strike Avoidance Measures and Reporting for Mariners NOAA Fisheries Service, Southeast Region, Revised February 2008.

Sea turtles – nesting beaches
If a sea turtle (either adult or hatchling) is observed, maintain at least 200 feet between the turtle and personnel, equipment, or machinery and notify the sea turtle monitoring program. Allow the turtle to leave the area of its own volition.

During nourishment activities, use beach quality sand that is suitable for successful sea turtle nesting and hatchling emergence. Emulate the natural shoreline slope and dune system (including configuration and shape) to the maximum extent practicable.

In Florida and Alabama, avoid the use of vehicles and heavy machinery on nesting beaches during sea turtle nesting and hatching season (Approximately May through October).

- If work must occur on nesting beaches during sea turtle nesting season (May through August), begin work with vehicles or machinery after 9:00 am local time to allow the sea turtle monitoring program to detect and mark new nests and assess the need to relocate sea turtle nests that could be affected by the project construction. Avoid marked nests by at least 10 feet.
- If beach topography is altered, restore all areas to the natural beach profile by 8:00 pm local time each day during nesting and hatching season. Restore beach topography by raking tire ruts and filling pits or holes.
- Avoid driving over the wrack line or areas of dense seaweed, as these habitats may contain sea turtle hatchlings that are difficult to see.

In Texas, all observed sea turtle nests will be excavated and the eggs relocated for incubation, in coordination with the National Park Service's Sea Turtle Recovery Project. Construction in Texas should be scheduled to avoid Kemps nesting season, which extends from April 1 until October 1.

Fish

Gulf sturgeon
Avoid work in riverine critical habitats when Gulf sturgeon are likely to be present (April to October). Do not dredge in spawning areas when Gulf sturgeon are likely to be present.

During project implementation, maintain riparian buffers of at least 100 feet around critical habitat. Install silt fencing to prevent sedimentation or erosion into streams and rivers.

Operate dredge equipment in a manner to avoid risks to Gulf sturgeon (e.g., disengage pumps when the cutter head is not in the substrate; avoid pumping water from the bottom of the water column).

Implement the Sea Turtle and Smalltooth Construction Conditions, Revised: March 23, 2006 (NOAA, 2006) and Measures for Reducing Entrapment Risk to Protected Species, Revised: May 22, 2012 as they are protective of Gulf sturgeon as well.

Plants

Protected Plants

Perform surveys to determine if protected plants (or suitable habitat) are on or adjacent to the project site. Have a qualified individual perform the surveys and follow suitable survey protocols. Conduct plant surveys during appropriate survey periods (usually flowering season).

Design projects to avoid known locations and associated habitat to the extent possible. Use “temporary" removal of plants and soil profile plugs (which include the A and B horizons) with the intent to replace to original location post construction as a last resort. Consider transplanting and seed banking only after all other options are exhausted.

Enhance and protect plants on-site and adjacent habitats to the maximum extent possible.

Use only native plants for post project restoration efforts.

Invasive Species

Develop and implement a Hazard Analysis and Critical Control Points (HACCP) plan to prevent and control invasive species. Use (ASTM E2590 - 08) or other version of HACCP or other similar planning tool.

Implement an Integrated Pest Management (IPM) approach to facility design, sanitation, and maintenance to prevent and control invasive and pest species.

Inspect sites, staging, and buffer areas for common invasive species prior to the onset of work. Map any invasive species detected and note qualitative or quantitative measures regarding abundance. Implement a control plan, if necessary, to ensure these species do not increase in distribution or abundance at a site due to project implementation. Inspect sites periodically to identify and control new colonies/individuals of an invasive species not previously observed prior to construction.

Prior to bringing any equipment (including personal gear, machinery, vehicles or vessels) to the work site, inspect each item for mud or soil, seeds, and vegetation. If present, clean the equipment, vehicles, or personal gear until they are free from mud, soil, seeds, and vegetation. Inspect the equipment, vehicles, and personal gear each time they are being prepared to go to a site or prior to transferring between sites to avoid spreading exotic, nuisance species.

Place and maintain predator-proof waste receptacles in strategic locations during project implementation to prevent an increase in predator abundance. For projects designed to enhance or increase visitor use, maintain predator-proof waste receptacles for the life of the project.

Have the appropriate state agency inspect any equipment or construction materials for invasive species prior to use.

Inspect and certify propagated or transplanted vegetation as pest and disease free prior to planting in restoration project areas.

General Construction Measures

Guidelines:

Dock Construction Guidelines in Florida for Docks or Other Minor Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat. U.S. Army Corps of Engineers/National Marine Fisheries Service August 2001

Key for Construction Conditions for Docks or Other Minor Structures Constructed in or Over Johnson's Seagrass (*Halophila johnsonii*). National Marine Fisheries Service/U.S. Army Corps of Engineers October 2002

National Artificial Reef Plan (as Amended): Guidelines for siting, construction, development, and assessment of artificial reefs, Revised February 2007

Guidelines for Marine Artificial Reef Materials 1997 GSMFC Number 121

Bubble Curtain Specifications for Pile Driving

Assessment and Mitigation of Marine Explosives: Guidance for Protected Species in the Southeast U.S.

Piling Installation

Push pilings into soft, bottom substrate to reduce noise from installation; do not drive and hammer pilings into bottom substrate unless necessary for proper construction.

Protected species

Provide all individuals working on a project with information in support of general awareness of and means to avoid impacts to protected species and their habitats present at the specific project site.

Survey for other at-risk or imperilled species. If found on site, contact the U.S. Fish and Wildlife Service and State trust resource agency to determine if avoidance or minimization measures or a Candidate Conservation Agreement with Assurances may be appropriate.

Site maintenance and conduct

Use the nearest, existing staging, access and egress areas, travel corridors, pathways, and roadways (including those provided by the State, local governments, land managers, trustee, or private property owner, with proper permissions) and do not create new staging areas, access (except dune walk overs) or egress, or travel corridors through dune habitats.

Limit driving on the beach for construction to the minimum necessary within the designated travel corridor–established just above or just below the primary "wrack" line. Avoid driving on the upper beach whenever possible, and never drive over any dunes or beach vegetation. Check with the U.S. Fish

and Wildlife Service and State trust resource agency for additional specific beach driving recommendations in Florida and Alabama.

Minimize construction noise to the maximum extent practicable when working near protected species and their habitats.

Maintain or improve all lighting regimes. Methods include: working during daylight hours only, prohibiting lighting on dune walkovers, and using wildlife-friendly lighting where lighting is necessary for human safety.

Post signs at kiosks, ramps, and piers to provide visitors with information to avoid and minimize impacts to protected species and their habitats while recreating. Develop signs in coordination with National Marine Fisheries Service, U.S. Fish and Wildlife Service and the local State trust resource agency.

Supply and maintain containers for waste fishing gear to avoid fish and wildlife entanglement.

Land and vegetation protection

Develop and implement an erosion control plan to minimize erosion during and after construction and where possible: use vegetative buffers (100 feet or greater), revegetate with native species or annual grasses, and conduct work during dry seasons.

Develop and implement a spill prevention and response plan, including: conducting daily inspections of all construction and related equipment to assure there are no leaks of antifreeze, hydraulic fluid, or other substances and cleaning and sealing all equipment that would be used in the water to rid it of chemical residue. Develop a contract stipulation to disallow use of any leaking equipment or vehicles.

Prohibit use of hazardous materials, such as: lead paint, creosote, pentachlorophenol, and other wood preservatives during construction in, over or adjacent to, sensitive sites during construction and routine maintenance.

Where landscaping is necessary or desired, use native plants from local sources. If non-native species must be used, ensure they are non-invasive and use them in container plantings.

Wetland and aquatic resource protection

Complete an engineering design and post-construction inspection for projects where geomorphic elevations would be restored in wetlands, marshes, and shallow water habitats to ensure the success of the restoration project. Manage elevation of fill material to ensure projected consolidation rates were accomplished and that habitat suitable for wetland and marsh vegetation is developed.

Perform an engineering design and post-construction inspection for projects where geomorphic elevations are restored within wetlands, marshes, and shallow water habitats to ensure the success of the restoration project.

Avoid and minimize, to the maximum extent practicable, placement of dredged or fill material in wetlands and other aquatic resources.

Design construction equipment corridors to avoid and minimize impacts to wetlands and other aquatic resources to the maximum extent practicable.

To the maximum extent possible, implement the placement of sediment to minimize impacts to existing vegetation or burrowing organisms.

Place protective warning signs and buoys around at-risk habitats for infrastructure projects that could increase recreational uses in SAV or oyster areas.

Apply herbicide in accordance with the direction and guidance provided on the appropriate Environmental Protection Agency (EPA) labels and State statutes during land-based activities.

Only use suitable borrow sites (that do not contain *Sargassum,* SAV, or oysters) as dredging sites for sediment. Obtain sediments by beneficially using dredged material from navigation channels or by accessing material from approved offshore borrow areas. Sediments must closely match the chemical and physical characteristics of sediment at the restoration site. Additionally, use target borrow areas within reasonable proximity to suitable sites for sediment placement.

When local conditions indicate the likely presence of contaminated soils and sediments, test soil samples for contaminant levels, and take precautions to avoid disturbance of -or to provide for proper disposal of - contaminated soils and sediments. Evaluate methods prior to dredging to reduce the potential for impacts from turbidity or tarballs.

Perform maintenance of generators, cranes, and any other stationary equipment operated within 150 feet of any natural or wetland area, as necessary, to prevent leaks and spills from entering the water.

Designate a vehicle staging area removed from any natural surface water resource or wetland to perform fueling, maintenance, and storage of construction vehicles and equipment. Inspect vehicles and equipment daily prior to leaving the storage area to ensure that no petroleum or oil products are leaking.

Upon completion of construction activities, restore all disturbed areas as necessary to allow habitat functions to return. Create and manage public access developments to enhance recreational experience and educational awareness to minimize effects to habitat within wetland and shallow water areas and to the long-term health of related biological communities.

Incorporate containment levees for fill cells for projects using marsh creation or other barrier island restoration. Remove these containment levees after construction to allow for the restoration of nature tidal exchange.

Use silt fencing where appropriate to reduce increased turbidity and siltation in the project vicinity. This would apply to both on land and in water work.

Continue oyster and clam shell recycling programs to provide natural material for creating additional oyster reefs.

Ensure shells to be introduced for reef creation are subjected to depuration in a secure open air area for a period of not less than 6 months.

Make all efforts to reduce the peak sound level and exposure levels of fish to reduce the potential impact of sound on fish present in the project areas.

Use a vibratory hammer whenever possible to reduce peak sound pressure levels in the aquatic environment.

Use sound attenuation devices where practicable for pulse-noise (impact hammers) to reduce peak sound pressure levels in the aquatic environment.

Stipulate the timing of activities to avoid impacts to spawning fish and eggs/larvae.

Use BMPs to reduce turbidity, such as turbidity blankets, to reduce the potential impact of turbidity on finfish.

Screen water withdrawal pipes to minimize potential entrainment of fish from the withdrawal area. Have project proponents coordinate with NMFS to create an intake screen that would minimize potential impingement of fish.

Aquaculture facilities

Treat effluent from aquaculture facilities to avoid dispersal of potential pathogens into receiving waters.

Make sure that all aquaculture facilities and fish raised in those facilities meet fish health standards and are screened for pathogens prior to release into receiving waters.

Implement a genetics management plan that ensures maintenance of genetic diversity of native stocks of finfish in the Gulf of Mexico.

Develop and implement a stocking management plan prior to the release of hatchery-reared finfish.

BMPs and Mitigation Measures – Benefits to Resources and the Human Environment

Potential BMPs and Mitigation Measures, including those described above, as well as additional measures have been organized into three tables to provide information on the potential benefits to natural resources and the human environment associated with implementing the measures:

1. Table A-1: *Potential Site-Specific and Construction Mitigation Measures and BMPs: Benefits to Natural Resources.* This table presents the benefits to natural resources associated with implementation of a broad range of standard BMPs and Mitigation Measures;
2. Table A-2: *Potential Site-Specific and Construction Mitigation Measures and BMPs. Benefits to the Human Environment*: This table presents the benefits to the human environment associated with implementation of a broad range of standard BMPs and Mitigation Measures; and
3. Table A-3: *Potential Site, Habitat and Species-Specific Construction Mitigation Measures and BMPs.* This table presents BMPs and Mitigation Measures that may be implemented on case-by-case basis when sensitive habitats or protected species may be present. These measures would not preclude implementation of BMPs or Mitigation Measures listed in Table A-1 or A-2, but

may be implemented in addition to those deemed appropriate in Table A-1 or A-2 to further reduce potential for adverse effects to natural resources.

Table A-1. Potential Site-Specific and Construction Mitigation Measures and BMPs: Benefits to Natural Resources

Potential Mitigation Measures	Geology and Substrates		Hydrology and Water Quality				Habitats					Living Coastal and Marine Resources										
			Freshwater Environments		Saltwater Environment Fish Resources											Finfish						
	Upland Geology and Substrates	Nearshore Geology and Substrates	Groundwater	Surface Water	Nearshore Coastal Environment	Offshore Marine Environment	Wetlands	Barrier Islands	Beaches	Submerged Aquatic Vegetation (SAV)	Terrestrial, Coastal, and Riparian Habitat	Nearshore Benthic Communities	Oysters	Pelagic Microfaunal Communities	Sargassum	Demersal Fish	Pelagic Fish	Diadromous and Freshwater Fish	Sea Turtles	Marine Mammals	Birds	Terrestrial Wildlife
Tilling of compacted soil areas to reduce hardening.	X	X						X	X		X								X			X
Use of existing access ways whenever possible. Temporary access roads would not be built in locations that would suggest a likelihood of excessive erosion (e.g., large slopes, erosive soils, proximity to water body). All temporary access roads would be restored when the action is completed, the soil would be stabilized, and the site would be re-vegetated. Temporary roads in wet or flooded areas would be restored shortly after the work period was complete.	X	X		X	X		X	X	X	X	X		X	X		X	X	X	X	X	X	X
Selection and operation of heavy equipment to minimize adverse effects to the environment (e.g., minimally-sized, low-pressure tires, minimal hard turn paths for tracked vehicles, temporary mats or plates within wet areas or sensitive soils).	X	X		X	X		X	X	X	X	X					X	X	X	X	X	X	X
To the extent feasible, heavy equipment would work from the top of the bank, unless work from another location would result in less habitat disturbance.	X	X		X	X		X	X	X	X	X			X		X	X	X	X	X	X	X
Temporary stabilization of areas of upland soil disturbance by sediment and erosion control practices during construction and re-vegetation with appropriate native species following construction.	X			X			X	X	X	X	X		X	X		X	X	X	X		X	X
When local conditions indicate the presence of contaminated soils/sediments is likely, soil samples would be tested for contaminant levels, and precautions would be taken to avoid disturbance of or provide for proper disposal of contaminated soils/sediments.	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Prior to dredging, methods will be evaluated to reduce the potential for impacts from turbidity.				X	X		X	X	X	X	X	X	X	X		X	X	X	X	X		
Seasonal rainfall will be factored into the construction timeline to reduce ground disturbance during raining or flood seasons.	X	X		X	X		X	X	X	X	X		X	X		X	X	X	X	X	X	X
Employment of standard BMPs for construction to reduce erosion, stormwater	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X

Table A-1. Potential Site-Specific and Construction Mitigation Measures and BMPs: Benefits to Natural Resources

Potential Mitigation Measures	Geology and Substrates		Hydrology and Water Quality				Habitats					Living Coastal and Marine Resources										
			Freshwater Environments		Saltwater Environment Fish Resources											Finfish						
	Upland Geology and Substrates	Nearshore Geology and Substrates	Groundwater	Surface Water	Nearshore Coastal Environment	Offshore Marine Environment	Wetlands	Barrier Islands	Beaches	Submerged Aquatic Vegetation (SAV)	Terrestrial, Coastal, and Riparian Habitat	Nearshore Benthic Communities	Oysters	Pelagic Microfaunal Communities	Sargassum	Demersal Fish	Pelagic Fish	Diadromous and Freshwater Fish	Sea Turtles	Marine Mammals	Birds	Terrestrial Wildlife
runoff, transport of soil into receiving waters, or disturbance of sediment.																						
Employment of temporary erosion controls prior to any land clearing or land disturbance on the project site, which would be monitored during construction to ensure proper function. Turbidity curtains, hay bales, and erosion mats would be used where appropriate.	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X
Confinement of vegetation removal and soil disturbance would be to the minimum area and the minimum length of time necessary to complete the action.	X	X	X	X	X	X	X	X	X	X	X			X		X	X	X	X	X	X	X
Site work stoppage under high flows or seasonal conditions that threaten to damage erosion and sediment control measures, except where efforts are aimed at avoiding or minimizing resource damage.	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X
Maintenance of generators, cranes, and any other stationary equipment operated within 150 feet of any natural or wetland area as necessary to prevent leaks and spills from entering the water.			X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Development and implementation of spill prevention and control plans to minimize the risk of releasing petroleum and oil products to receiving waters.			X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Management of hazardous material generated, used, or stored onsite in accordance with Federal and State regulations, including notification of proper authorities.	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Application of herbicide during land-based activities would be in accordance with the direction and guidance provided on the appropriate Environmental Protection Agency (EPA) labels.			X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X
Cleaning of construction equipment before moving between sites to prevent spread of invasive species							X	X	X	X	X	X		X					X	X	X	X
Identification of mooring locations for restoration-related barges and other boats to best avoid EFH and minimize damage to existing healthy reefs or							X	X	X	X	X		X	X		X	X	X	X	X		

Table A-1. Potential Site-Specific and Construction Mitigation Measures and BMPs: Benefits to Natural Resources

Potential Mitigation Measures	Geology and Substrates		Hydrology and Water Quality				Habitats					Living Coastal and Marine Resources										
			Freshwater Environments		Saltwater Environment Fish Resources											Finfish						
	Upland Geology and Substrates	Nearshore Geology and Substrates	Groundwater	Surface Water	Nearshore Coastal Environment	Offshore Marine Environment	Wetlands	Barrier Islands	Beaches	Submerged Aquatic Vegetation (SAV)	Terrestrial, Coastal, and Riparian Habitat	Nearshore Benthic Communities	Oysters	Pelagic Microfaunal Communities	Sargassum	Demersal Fish	Pelagic Fish	Diadromous and Freshwater Fish	Sea Turtles	Marine Mammals	Birds	Terrestrial Wildlife
adjacent SAV beds.																						
Creation, as feasible, of a stockpile of topsoil; native channel material; and large, mature native trees and shrubs for reuse in the restoration process.	X	X						X	X		X								X		X	X
Upon completion of construction activities, all disturbed areas would be restored as necessary to allow habitat functions to return.	X	X	X	X	X		X	X	X	X	X	X		X		X	X	X	X	X	X	X
Temporal (e.g., time-of-year, seasonal) restrictions for construction activities applicable to protection of Federally listed threatened and endangered species, EFH, diadromous fish species, SAV, or other natural resources could be employed to avoid impacts.							X	X	X	X	X		X			X	X	X	X	X	X	X
Fueling, maintenance, and storage of construction vehicles and equipment within a designated vehicle staging area removed from any natural surface water resource or wetland. Vehicles and equipment would be inspected daily prior to leaving the storage area to ensure that no petroleum or oil products are leaking.			X	X	X		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Conducting preconstruction surveys for the presence of sensitive natural and cultural resources.							X	X	X	X	X				X	X	X	X	X	X	X	X
Installation of protective buffers around sensitive wetlands, surface waters, and wildlife habitat. At a minimum, flagging or fencing sensitive resource areas adjacent to the action area would be employed to avoid accidental impacts.				X	X		X	X	X	X	X			X		X	X	X	X	X	X	X
The use of an appropriate assemblage of species native to the action area or region, including trees, shrubs, and herbaceous species, would be used in the re-vegetation and restoration processes.							X	X	X	X	X					X	X	X	X	X	X	X
During all phases of the project, keeping equipment and vehicles within the limits of the initially disturbed areas. In addition, use existing roads to the maximum extent feasible to avoid additional surface disturbance.							X			X						X	X	X				

Table A-2. Potential Site-Specific and Construction Mitigation Measures and BMPs: Benefits to the Human Environment.

Potential Mitigation Measures	Socio-economics		Cultural Resources	Infrastructure	Land and Marine Management	Tourism and Recreation Use						Fisheries		Marine Transportation	Aesthetics and Visual	Public Health and Safety	Noise	Air Quality and Greenhouse Gases
	Demographics	Regional Economy				Wildlife Observation	Hunting	Beach and Waterfront	Boating	Recreational Fishing and Stock Enhancement	Tourism	Commercial Fisheries, Processing, and Sales	Aquaculture, Processing, and Sales (and Shellfish Leases)					
Tilling of compacted soil areas to reduce hardening.																		
Use of existing access ways whenever possible. Temporary access roads would not be built in locations that would suggest a likelihood of excessive erosion (e.g., large slopes, erosive soils, proximity to water body). All temporary access roads would be restored when the action is completed, the soil would be stabilized, and the site would be re-vegetated. Temporary roads in wet or flooded areas would be restored shortly after the work period was complete.			X												X	X		X
Selection and operation of heavy equipment to minimize adverse effects to the environment (e.g., minimally-sized, low-pressure tires, minimal hard turn paths for tracked vehicles, temporary mats or plates within wet areas or sensitive soils).															X			X
To the extent feasible, heavy equipment would work from the top of the bank, unless work from another location would result in less habitat disturbance.						X	X	X										
Temporary stabilization of areas of upland soil disturbance by sediment and erosion control practices during construction, and re-vegetation with appropriate native species following construction.						X	X	X							X	X		X
When local conditions indicate the presence of contaminated soils/sediments is likely, soil samples would be tested for contaminant levels, and precautions would be taken to avoid disturbance of or provide for proper disposal of contaminated soils/sediments.	X															X		
Prior to dredging, methods will be evaluated to reduce the potential for impacts from turbidity.	X									X		X	X					
Seasonal rainfall will be factored into the construction timeline to reduce ground disturbance during raining or flood seasons.	X									X		X	X			X		
Employment of standard BMPs for construction to reduce erosion, stormwater runoff, transport of soil into receiving waters, or disturbance of sediment.	X		X			X	X	X		X		X	X		X	X		
Employment of temporary erosion controls prior to any land clearing or land disturbance on the project site, which would be monitored during construction to ensure proper function. Turbidity curtains, hay bales, and erosion mats would be	X		X			X	X	X		X		X	X		X	X		

Table A-2. Potential Site-Specific and Construction Mitigation Measures and BMPs: Benefits to the Human Environment.

Potential Mitigation Measures	Socio-economics		Cultural Resources	Infrastructure	Land and Marine Management	Tourism and Recreation Use						Fisheries		Marine Transportation	Aesthetics and Visual	Public Health and Safety	Noise	Air Quality and Greenhouse Gases
	Demographics	Regional Economy				Wildlife Observation	Hunting	Beach and Waterfront	Boating	Recreational Fishing and Stock Enhancement	Tourism	Commercial Fisheries, Processing, and Sales	Aquaculture, Processing, and Sales (and Shellfish Leases)					
used where appropriate.																		
Confinement of vegetation removal and soil disturbance would be to the minimum area and the minimum length of time necessary to complete the action.			X	X		X	X	X							X	X		
Site work stoppage under high flows or seasonal conditions that threaten to damage erosion and sediment control measures, except where efforts are aimed at avoiding or minimizing resource damage.				X		X	X	X							X	X		
Maintenance of generators, cranes, and any other stationary equipment operated within 150 feet of any natural or wetland area as necessary to prevent leaks and spills from entering the water.						X	X	X				X	X		X	X		X
Development and implementation of spill prevention and control plans to minimize the risk of releasing petroleum and oil products to receiving waters.						X	X	X		X		X	X		X	X		
Management of hazardous material generated, used, or stored onsite in accordance with Federal and State regulations, including notification of proper authorities.																X		X
Application of herbicide during land-based activities would be in accordance with the direction and guidance provided on the appropriate Environmental Protection Agency (EPA) labels.																X		
Cleaning of construction equipment before moving between sites to prevent spread of invasive species						X	X	X							X			
Identification of mooring locations for restoration-related barges and other boats to best avoid EFH and minimize damage to existing healthy reefs or adjacent SAV beds.						X	X	X		X		X	X					
Creation, as feasible, of a stockpile of topsoil; native channel material; and large, mature native trees and shrubs for reuse in the restoration process.																		
Upon completion of construction activities, all disturbed areas would be restored as necessary to allow habitat functions to return.						X	X	X							X	X		
Temporal (e.g., time-of-year, seasonal) restrictions for construction activities applicable to protection of Federally listed threatened and endangered species, EFH, diadromous fish species, SAV, or other natural resources could be employed to avoid impacts.						X	X	X		X		X	X					

Table A-2. Potential Site-Specific and Construction Mitigation Measures and BMPs: Benefits to the Human Environment.

Potential Mitigation Measures	Socio-economics		Cultural Resources	Infrastructure	Land and Marine Management	Tourism and Recreation Use						Fisheries		Marine Transportation	Aesthetics and Visual	Public Health and Safety	Noise	Air Quality and Greenhouse Gases
	Demographics	Regional Economy				Wildlife Observation	Hunting	Beach and Waterfront	Boating	Recreational Fishing and Stock Enhancement	Tourism	Commercial Fisheries, Processing, and Sales	Aquaculture, Processing, and Sales (and Shellfish Leases)					
Fueling, maintenance, and storage of construction vehicles and equipment within a designated vehicle staging area removed from any natural surface water resource or wetland. Vehicles and equipment would be inspected daily prior to leaving the storage area to ensure that no petroleum or oil products are leaking.																X		
Conducting preconstruction surveys for the presence of sensitive natural and cultural resources.			X			X									X			
Installation of protective buffers around sensitive wetlands, surface waters, and wildlife habitat. At a minimum, flagging or fencing sensitive resource areas adjacent to the action area would be employed to avoid accidental impacts.						X	X	X		X		X	X			X		
The use of an appropriate assemblage of species native to the action area or region, including trees, shrubs, and herbaceous species, would be used in the re-vegetation and restoration processes.						X	X								X			
Cultural resource monitoring of construction in the vicinity of the development			X													X	X	X
Conducting records searches to determine the presence of known archaeological sites and historic structures within the area of potential effect. Identify the need for an archaeological and/or architectural survey. Conduct a survey, if needed.			X	X														
During all phases of the project, keeping equipment and vehicles within the limits of the initially disturbed areas. In addition, use existing roads to the maximum extent feasible to avoid additional surface disturbance.			X			X	X	X							X	X		
Restoration activities could utilize the Secretary of the Interior's Standards for the Treatment of Historic Properties. Archeological deposits should be avoided or excavated, analyzed, and curated with the proper State or Federal repository.			X															
Construction workers and volunteers employed in the projects associated with restoration techniques would be adequately trained to ensure that impacts are minimized. Training may include but may not be limited to: understanding impacts to transportation and energy infrastructure.			X	X	X	X	X	X		X		X	X	X		X	X	X
Local companies should try to work with project leads to establish construction work times that overlap with off season tourism schedules.		X									X							

Table A-2. Potential Site-Specific and Construction Mitigation Measures and BMPs: Benefits to the Human Environment.

Potential Mitigation Measures	Socio-economics		Cultural Resources	Infrastructure	Land and Marine Management	Tourism and Recreation Use						Fisheries		Marine Transportation	Aesthetics and Visual	Public Health and Safety	Noise	Air Quality and Greenhouse Gases
	Demographics	Regional Economy				Wildlife Observation	Hunting	Beach and Waterfront	Boating	Recreational Fishing and Stock Enhancement	Tourism	Commercial Fisheries, Processing, and Sales	Aquaculture, Processing, and Sales (and Shellfish Leases)					
Local companies and workforces should be used for construction or implementation the project if possible to support local economic benefits.		X																
Vocational training for out-of-work fisheries workers.		X										X	X					
Performing exploratory trenching			X															

Table A-3: Potential Site, Habitat and Species-Specific Construction Mitigation Measures and BMPs

Category	Potential Mitigation Measures	Geology and Substrates		Hydrology and Water Quality				Habitats					Living Coastal and Marine Resources										
				Freshwater Environments		Saltwater Environment Fish Resources											Finfish						
		Upland Geology and Substrates	Nearshore Geology and Substrates	Groundwater	Surface Water	Nearshore Coastal Environment	Offshore Marine Environment	Wetlands	Barrier Islands	Beaches	Submerged Aquatic Vegetation (SAV)	Terrestrial, Coastal, and Riparian Habitat	Nearshore Benthic Communities	Oysters	Pelagic Microfaunal Communities	Sargassum	Demersal Fish	Pelagic Fish	Diadromous and Freshwater Fish	Sea Turtles	Marine Mammals	Birds	Terrestrial Wildlife
BIRDS																							
Bald Eagle	If bald eagle breeding or nesting behaviors are observed or a nest is discovered or known, have all activities avoid the nest by a minimum of 660 feet. If the nest is protected by a vegetated buffer where there is *no* line of sight to the nest, then the minimum avoidance distance is 330 feet. Maintain this avoidance distance from the onset of breeding/courtship behaviors until any eggs have hatched and eaglets have fledged (approximately 6 months).																					X	
	If a similar activity (like driving on a roadway) is closer than 660 feet to a nest, maintain a distance buffer as close to the nest as the existing tolerated activity. If a vegetated buffer is present and there is no line of sight to the nest and a similar activity is closer than 330 feet to a nest, then maintain a distance buffer as close to the nest as the existing tolerated activity.																					X	
	In some instances activities conducted within 660 feet of a nest may result in disturbance, particularly for the eagles occupying the Mississippi barrier islands. If an activity appears to cause initial disturbance, stop the activity and move all individuals and equipment away until the eagles are no longer displaying disturbance behaviors. Contact the USFWS's Migratory Bird Permit Office to determine how to avoid impacts or if a permit may be needed.																					X	
Migratory Birds	Use care to avoid birds when operating machinery or vehicles near birds.																					X	
	During the project design phase, coordinate with the U.S. Fish and Wildlife and the State trust resource agency to site and design projects to avoid or minimize impacts to migratory bird nesting habitats or important feeding/loafing areas.																					X	
	Avoid working in migratory bird nesting habitats during breeding, nesting, and fledging (approximately Mid February to late August). If project activities must occur during this timeframe and breeding, nesting, or fledging birds are present, contact the State trust resource agency to obtain the most recent guidance to protect nesting birds or rookeries and their recommendations will be implemented.																					X	
	Conservation areas may already be marked to protect bird nesting areas. Stay out of existing marked																					X	

Table A-3: Potential Site, Habitat and Species-Specific Construction Mitigation Measures and BMPs

Category	Potential Mitigation Measures	Geology and Substrates		Hydrology and Water Quality				Habitats					Living Coastal and Marine Resources										
				Freshwater Environments		Saltwater Environment Fish Resources											Finfish						
		Upland Geology and Substrates	Nearshore Geology and Substrates	Groundwater	Surface Water	Nearshore Coastal Environment	Offshore Marine Environment	Wetlands	Barrier Islands	Beaches	Submerged Aquatic Vegetation (SAV)	Terrestrial, Coastal, and Riparian Habitat	Nearshore Benthic Communities	Oysters	Pelagic Microfaunal Communities	Sargassum	Demersal Fish	Pelagic Fish	Diadromous and Freshwater Fish	Sea Turtles	Marine Mammals	Birds	Terrestrial Wildlife
	areas.																						
	If vegetation clearing is necessary, clear vegetation outside of migratory bird nesting season (approximately Mid February to late August) or have a qualified biologist inspect for active nests. If no active nests are found, vegetation may be removed. If active nests are found, vegetation can be removed after the nest successfully fledges.																					X	
	Avoid driving over the wrack line or areas of dense seaweed, as these habitats may contain hatchlings and chicks that are difficult to see.																					X	
	Install pointy, white, piling caps on exposed pilings to prevent bird roosting on piers, docks, and marinas.																					X	
Piping Plover and Red Knot	Provide all individuals working on a project with information in support of general awareness of piping plover or red knot presence and means to avoid birds and their critical or otherwise important habitats.																					X	
	Avoid working in designated critical habitat when piping plover are present (approximately late July through mid-May) or important wintering sites for red knots when they are present(contact U.S. Fish and Wildlife Service for red knot time frames and habitats) to the maximum extent practicable. If work must be conducted when individuals are present, avoid working near concentrations of individuals or post avoidance areas to minimize disturbance.																					X	
	For projects that result in large scale habitat changes, coordinate early with the U.S. Fish and Wildlife Service to enhance or protect habitat features preferred by the species (inlet shoals, lagoons, washover fans, ephemeral pools, baysides and mud flats). Do not remove sand from intertidal, sand, or mud flats. Use dredged material to enhance adjacent emerged and submerged shoals and bayside habitats within and adjacent to project areas.																					X	
	Minimize vegetation planting in preferred habitats and avoid removal of natural organic material ("wrack") year-around along the shoreline.																					X	

Table A-3: Potential Site, Habitat and Species-Specific Construction Mitigation Measures and BMPs

Category	Potential Mitigation Measures	Geology and Substrates		Hydrology and Water Quality				Habitats					Living Coastal and Marine Resources										
				Freshwater Environments		Saltwater Environment Fish Resources											Finfish						
		Upland Geology and Substrates	Nearshore Geology and Substrates	Groundwater	Surface Water	Nearshore Coastal Environment	Offshore Marine Environment	Wetlands	Barrier Islands	Beaches	Submerged Aquatic Vegetation (SAV)	Terrestrial, Coastal, and Riparian Habitat	Nearshore Benthic Communities	Oysters	Pelagic Microfaunal Communities	Sargassum	Demersal Fish	Pelagic Fish	Diadromous and Freshwater Fish	Sea Turtles	Marine Mammals	Birds	Terrestrial Wildlife
	During recreational use, enforce leash or “no pet” policies in critical or important habitats.																					X	
Red-cockaded woodpecker	Avoid working within active red-cockaded woodpecker clusters (minimum convex polygon containing the aggregation of cavity trees used by a group of red-cockaded woodpeckers and a 200-foot wide buffer surrounding the polygon).																					X	
	If avoidance is not possible or management activities in red-cockaded woodpecker suitable habitat are desired, conduct standard surveys to determine if the habitat is supporting any individuals or presence can be assumed. If red-cockaded woodpeckers are present (or assumed to be), avoid cavity trees and use mechanized equipment during the non-nesting season (approximately April 1 – July 31).																					X	
	If tree removal is necessary, survey pine trees approximately 60 or more years old for active cavities within one year of the proposed removal. Extend surveys from the project site out to no less than ½ mile. Replace any cavities affected by the project via drilled cavity construction.																					X	
	If impacts to suitable foraging habitat (pines approximately 30 or more years old and within ½ mile of an active cavity tree) are proposed, conduct a foraging habitat analysis. Foraging habitat may need to be replanted post-project.																						
	Design projects within red-cockaded woodpecker suitable habitat such that prescribed fire needs are not impeded.																						
MAMMALS																							
Beach Mice	Avoid using vehicles and mechanical equipment within the dune system, including primary, secondary, and tertiary dunes.																						X
	Avoid storing or staging equipment, vehicles, and project debris in a manner or location where it could be colonized by mice.																						X
	If work must occur within the dune system, have a qualified, permitted, biologist survey the project site before work commences and flag potential burrows and tracks so that they can be avoided.																						X

Table A-3: Potential Site, Habitat and Species-Specific Construction Mitigation Measures and BMPs

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	Where possible replace footpaths or low-lying dune walkovers with improved walkovers that do not fragment the dune system. For dune walkover construction in Florida and Alabama, *follow the Conservation Measures for Dune Walkover Construction* (USFWS 2013).																						X
	Avoid vegetation removal, including scrub vegetation. If vegetation is damaged or removed during project implementation, plant appropriate native plants in the same location to minimize erosion and provide a food source for beach mice. If forage plants are reduced or limited in the project area, supplemental beach mouse food sources may be necessary.																						X
Manatee	In Florida, follow the most current version of the *Standard Manatee Conditions for In-water Work* available and the *Additional Conditions for Project In-water Activities in Manatee Habitat* (USFWS, 2011).																				X		
	For in-water work in other states (Alabama, Mississippi, Louisiana, and Texas) where manatees could be present, follow conditions b, c, and d of the *Standard Manatee Conditions for In-water Work*. Report any collisions to the U.S. Fish and Wildlife Service or State trust resource agency. Temporary signs, if necessary, can be modified from the Florida Fish and Wildlife Conservation Commission's template to reflect local conditions.																				X		
Bottleneck Dolphin	Follow the most current version of the *Measures for Reducing Entrapment Risk to Protected Species, Revised: May 22, 2012*																				X		
Marine Mammals	Follow the most current version of the *Vessel Strike Avoidance Measures and Reporting for Mariners NOAA Fisheries Service, Southeast Region, Revised February 2008.*																				X		
REPTILES																							
Reticulated Flatwoods Salamander	Avoid suitable habitat during all construction activities and do not permanently alter hydrology of the area. Avoid eliminating connectivity between suitable ponds.																						X
	Use silt fencing to prevent sedimentation or erosion of the project site into ponds.																						X
	If suitable habitat (including the approximately 1,500 buffer zone around breeding ponds) may be																						X

Table A-3: Potential Site, Habitat and Species-Specific Construction Mitigation Measures and BMPs

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		Upland Geology and Substrates	Nearshore Geology and Substrates	Groundwater	Surface Water	Nearshore Coastal Environment	Offshore Marine Environment	Wetlands	Barrier Islands	Beaches	Submerged Aquatic Vegetation (SAV)	Terrestrial, Coastal, and Riparian Habitat	Nearshore Benthic Communities	Oysters	Pelagic Microfaunal Communities	Sargassum	Demersal Fish	Pelagic Fish	Diadromous and Freshwater Fish	Sea Turtles	Marine Mammals	Birds	Terrestrial Wildlife
	impacted, perform pre-project surveys within 2 miles of known breeding sites or assume the presence of reticulated flatwoods salamanders. Schedule work during the non-breeding season (summer) and maintain the natural contour of the ponds.																						
Eastern Indigo Snake	If suitable habitat or other evidence of Eastern indigo snake is discovered within the project area during site surveys, implement the most recent version of the U.S. Fish and Wildlife Service's *Standard Protection Measures for the Eastern Indigo Snake*.																						X
TORTOISES/TURTLES																							
Gopher tortoise	If suitable habitat is present, have a qualified biologist conduct surveys to identify any gopher tortoise burrows. If burrows are within the project area and cannot be avoided through establishing a protective buffer (size determined by U.S. Fish and Wildlife Service and the State trust resource agency), implement standard procedures to relocate the tortoise within the project site but away from the areas of construction or restoration or consider conservation banks. A Candidate Conservation Agreement with Assurances may be appropriate for project sites within the non-listed range of the species.																						X
Sea turtles – in water	Implement the following guidelines: *Sea Turtle and Smalltooth Sawfish Construction Conditions, Revised: March 23, 2006* and *Measures for Reducing Entrapment Risk to Protected Species, Revised: May 22, 2012* and *Vessel Strike Avoidance Measures and Reporting for Mariners NOAA Fisheries Service, Southeast Region, Revised February 2008*.																			X			
Sea turtles – nesting beaches	In Florida and Alabama, avoid the use of vehicles and heavy machinery on nesting beaches during sea turtle nesting and hatching season (Approximately May through October).																			X			
	If work must occur on nesting beaches during sea turtle nesting season (May through August), begin work with vehicles or machinery after 9:00 am local time to allow the sea turtle monitoring program to detect and mark new nests and assess the need to relocate sea turtle nests that could be affected by the project construction. Avoid marked nests by at least 10 feet.																			X			
	If a sea turtle (either adult or hatchling) is observed, maintain at least 200 feet between the turtle																			X			

Table A-3: Potential Site, Habitat and Species-Specific Construction Mitigation Measures and BMPs

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	and personnel, equipment, or machinery. Allow the turtle to leave the area of its own volition.																						
	If beach topography is altered, restore all areas to the natural beach profile by 20:00 hours each day during nesting and hatching season. Restore beach topography by raking tire ruts and filling pits or holes.																			X			
	Avoid driving over the wrack line or areas of dense seaweed, as these habitats may contain sea turtle hatchlings that are difficult to see.																			X			
	During nourishment activities, use beach quality sand that is suitable for successful sea turtle nesting and hatchling emergence. Emulate the natural shoreline slope and dune system (including configuration and shape) to the maximum extent practicable.																			X			
FISH																							
Gulf sturgeon	Avoid work in riverine critical habitats when Gulf sturgeon are likely to be present (April to October). Do not dredge in spawning areas when Gulf sturgeon are likely to be present.																		X				
	During project implementation, maintain riparian buffers of at least 100 feet around critical habitat. Install silt fencing to prevent sedimentation or erosion into streams and rivers.																		X				
	Operate dredge equipment in a manner to avoid risks to Gulf sturgeon (e.g., disengage pumps when the cutter head is not in the substrate; avoid pumping water from the bottom of the water column).																		X				
	Implement the Sea Turtle and Smalltooth Construction Conditions, Revised: March 23, 2006 *(*NOAA, 2006) and *Measures for Reducing Entrapment Risk to Protected Species, Revised: May 22, 2012* as they are protective of Gulf sturgeon as well.																		X				
PLANTS																							
Protected plants	Perform surveys to determine if protected plants (or suitable habitat) are on or adjacent to the project site. Have a qualified individual perform the surveys and follow suitable survey protocols. Conduct plant surveys during appropriate survey periods (usually flowering season).					X		X	X	X	X	X											
	Design projects to avoid known locations and associated habitat to the extent possible. Use					X		X	X	X	X	X											

Table A-3: Potential Site, Habitat and Species-Specific Construction Mitigation Measures and BMPs

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	"temporary" removal of plants and soil profile plugs (which include the A and B horizons) with the intent to replace to original location post construction as a last resort. Consider transplanting and seed banking only after all other options are exhausted.																						
	Enhance and protect plants on-site and adjacent habitats to the maximum extent possible.					X		X	X	X	X	X											
	Use only native plants for post project restoration efforts.					X		X	X	X	X	X											
Invasive species	Develop and implement a HACCP plan to prevent and control invasive species. Use (ASTM E2590 - 08) or other version of HACCP or other similar planning tool.					X	X	X	X	X	X	X											
	Implement an Integrated Pest Management (IPM) approach to facility design, sanitation, and maintenance to prevent and control invasive and pest species.					X	?	X	X	X	X	X											
	Inspect sites, staging, and buffer areas for common invasive species prior to the onset of work. Map any invasive species detected and note qualitative or quantitative measures regarding abundance. Implement a control plan, if necessary, to ensure these species do not increase in distribution or abundance at a site due to project implementation. Inspect sites periodically to identify and control new colonies/individuals of an invasive species not previously observed prior to construction.					X	X	X	X	X	X	X											
	Prior to bringing any equipment (including personal gear, machinery, vehicles or vessels) to the work site, inspect each item for mud or soil, seeds, and vegetation. If present, clean the equipment, vehicles, or personal gear until they are free from mud, soil, seeds, and vegetation. Inspect the equipment, vehicles, and personal gear each time they are being prepared to go to a site or prior to transferring between sites to avoid spreading exotic, nuisance species.					X	X	X	X	X	X	X											
	Place and maintain predator-proof waste receptacles in strategic locations during project implementation to prevent an increase in predator abundance. For projects designed to enhance or increase visitor use, maintain predator-proof waste receptacles for the life of the project.					X	X	X	X	X	X	X											
	Have the appropriate state agency inspect any equipment or construction materials for invasive species prior to use.					X	X	X	X	X	X	X											

Table A-3: Potential Site, Habitat and Species-Specific Construction Mitigation Measures and BMPs

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	Inspect and certify propagated or transplanted vegetation as pest and disease free prior to planting in restoration project areas.					X		X	X	X	X	X											
GENERAL CONSTRUCTION MEASURES																						
	Guidelines: - *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat.* U.S. Army Corps of Engineers/National Marine Fisheries Service August 2001 - *Key for Construction Conditions for Docks or Other Minor Structures Constructed in or Over Johnson's Seagrass (Halophila johnsonii).* National Marine Fisheries Service/U.S. Army Corps of Engineers October 2002 - *National Artificial Reef Plan (as Amended): Guidelines for siting, construction, development, and assessment of artificial reefs*, Revised February 2007 - *Guidelines for Marine Artificial Reef Materials* 1997 GSMFC Number 121 - *Bubble Curtain Specifications for Pile Driving* - *Assessment and Mitigation of Marine Explosives: Guidance for Protected Species in the Southeast U.S.*					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Piling installation	Push pilings into soft, bottom substrate to reduce noise from installation; do not drive and hammer pilings into bottom substrate unless necessary for proper construction.																X	X	X	X	X	X	
Protected species	Provide all individuals working on a project with information in support of general awareness of and means to avoid impacts to protected species and their habitats present at the specific project site.																		X	X	X	X	X
	Survey for other at-risk or imperilled species. If found on site, contact the U.S. Fish and Wildlife Service and State trust resource agency to determine if avoidance or minimization measures or a Candidate Conservation Agreement with Assurances may be appropriate.					X	X	X	X	X	X	X										
Site maintenanc	Use the nearest, existing staging, access and egress areas, travel corridors, pathways, and roadways (including those provided by the State, local governments, land managers, trustee, or private					X	X	X	X	X	X	X								X		X	X

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e and conduct	property owner, with proper permissions) and do not create new staging areas, access (except dune walk overs) or egress, or travel corridors through dune habitats.																					
	Limit driving on the beach for construction to the minimum necessary within the designated travel corridor–established just above or just below the primary “wrack” line. Avoid driving on the upper beach whenever possible, and never drive over any dunes or beach vegetation. Check with the U.S. Fish and Wildlife Service and State trust resource agency for additional specific beach driving recommendations in Florida and Alabama.					X			X	X										X		X	X
	Minimize construction noise to the maximum extent practicable when working near protected species and their habitats.																			X	X	X	X
	Maintain or improve all lighting regimes. Methods include: working during daylight hours only, prohibiting lighting on dune walkovers, and using wildlife-friendly lighting where lighting is necessary for human safety.					X			X	X		X								X	X	X	X
	Post signs at kiosks, ramps, and piers to provide visitors with information to avoid and minimize impacts to protected species and their habitats while recreating. Develop signs in coordination with National Marine Fisheries Service, U.S. Fish and Wildlife Service and the local State trust resource agency.					X		X	X	X	X	X							X	X	X	X	X
	Supply and maintain containers for waste fishing gear to avoid fish and wildlife entanglement.																X	X	X	X	X	X	X
Land and vegetation protection	Develop and implement an erosion control plan to minimize erosion during and after construction and where possible: use vegetative buffers (100 feet or greater), revegetate with native species or annual grasses, and conduct work during dry seasons.				X	X		X	X	X	X	X											
	Develop and implement a spill prevention and response plan, including: conducting daily inspections of all construction and related equipment to assure there are no leaks of antifreeze, hydraulic fluid, or other substances and cleaning and sealing all equipment that would be used in the water to rid it of chemical residue. Develop a contract stipulation to disallow use of any leaking equipment or vehicles.			X	X	X	X	X	X	X	X	X											

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	Prohibit use of hazardous materials, such as: lead paint, creosote, pentachlorophenol, and other wood preservatives during construction in, over, or adjacent to, sensitive sites during construction and routine maintenance.			X	X	X	X	X	X	X	X	X											
	Where landscaping is necessary or desired, use native plants from local sources. If non-native species must be used, ensure they are non-invasive and use them in container plantings.					X		X	X	X		X											
Wetland and aquatic protection	Complete an engineering design and post-construction inspection for projects where geomorphic elevations would be restored in wetlands, marshes, and shallow water habitats to ensure the success of the restoration project. Manage elevation of fill material to ensure projected consolidation rates were accomplished and that habitat suitable for wetland and marsh vegetation is developed.		X			X		X															
	Perform an engineering design and post-construction inspection for projects where geomorphic elevations are restored within wetlands, marshes, and shallow water habitats to ensure the success of the restoration project.		X			X		X															
	Avoid and minimize, to the maximum extent practicable, placement of dredged or fill material in wetlands.							X															
	Design construction equipment corridors to avoid and minimize impacts to wetlands to the maximum extent practicable.							X															
	To the maximum extent possible, implement the placement of sediment to minimize impacts to existing vegetation or burrowing organisms.					X		X					X										
	Place protective warning signs and buoys around at-risk habitats for infrastructure projects that could increase recreational uses in SAV or oyster areas.					X					X			X									
	Apply herbicide in accordance with the direction and guidance provided on the appropriate Environmental Protection Agency (EPA) labels and State statutes during land-based activities.				X	X		X	X	X	X	X											
	Only use suitable borrow sites (that do not contain *Sargassum,* SAV, or oysters) as dredging sites for sediment. Obtain sediments by beneficially using dredged material from navigation channels or by					X	X	X	X	X		X	X	X		X				X		X	X

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	accessing material from approved offshore borrow areas. Sediments must closely match the chemical and physical characteristics of sediment at the restoration site. Additionally, use target borrow areas within reasonable proximity to suitable sites for sediment placement.																						
	When local conditions indicate the likely presence of contaminated soils and sediments, test soil samples for contaminant levels, and take precautions to avoid disturbance of -or to provide for proper disposal of - contaminated soils and sediments. Evaluate methods prior to dredging to reduce the potential for impacts from turbidity or tarballs.				X	X	X	X	X	X	X	X											
	Perform maintenance of generators, cranes, and any other stationary equipment operated within 150 feet of any natural or wetland area, as necessary, to prevent leaks and spills from entering the water.				X	X		X	X	X		X											
	Designate a vehicle staging area removed from any natural surface water resource or wetland to perform fueling, maintenance, and storage of construction vehicles and equipment. Inspect vehicles and equipment daily prior to leaving the storage area to ensure that no petroleum or oil products are leaking.				X	X		X	X	X													
	Upon completion of construction activities, restore all disturbed areas as necessary to allow habitat functions to return. Create and manage public access developments to enhance recreational experience and educational awareness to minimize effects to habitat within wetland and shallow water areas and to the long-term health of related biological communities.				X	X		X	X	X		X											
	Incorporate containment levees for fill cells for projects using marsh creation or other barrier island restoration. Remove these containment levees after construction to allow for the restoration of nature tidal exchange.				X	X		X	X														
	Use silt fencing where appropriate to reduce increased turbidity and siltation in the project vicinity. This would apply to both on land and in water work.				X	X		X	X	X	X	X											
	Continue oyster and clam shell recycling programs to provide natural material for creating additional oyster reefs.					X								X									

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	Ensure shells to be introduced for reef creation are subjected to depuration in a secure open air area for a period of not less than 6 months.					X								X									
	Make all efforts to reduce the peak sound level and exposure levels of fish to reduce the potential impact of sound on fish present in the project areas.																X	X	X				
	Implement monitoring of restored oyster beds to evaluate success.					X									X								
	Use a vibratory hammer whenever possible to reduce peak sound pressure levels in the aquatic environment.																X	X	X	X	X		
	Use sound attenuation devices where practicable for pulse-noise (impact hammers) to reduce peak sound pressure levels in the aquatic environment.																X	X	X	X	X		
	Stipulate the timing of activities to avoid impacts to spawning fish and eggs/larvae.																X	X	X				
	Use BMPs to reduce turbidity, such as turbidity blankets, to reduce the potential impact of turbidity on finfish.				X	X	X										X	X	X				
	Screen water withdrawal pipes to minimize potential entrainment of fish from the withdrawal area. Have project proponents coordinate with NMFS to create an intake screen that would minimize potential impingement of fish.																X	X	X				
Aquaculture facilities	Treat effluent from aquaculture facilities to avoid dispersal of potential pathogens into receiving waters.				X	X																	
	Make sure that all aquaculture facilities and fish raised in those facilities meet fish health standards and are screened for pathogens prior to release into receiving waters.																X	X	X	X	X	X	
	Implement a genetics management plan that ensures maintenance of genetic diversity of native stocks of finfish in the Gulf of Mexico.																X	X	X				
	Develop and implement a stocking management plan prior to the release of hatchery-reared finfish.																X	X	X				

APPENDIX J

Permit Certification Letter

APPENDIX J

CERTIFICATION LETTER ACKNOWLEDGING ALL PERMITS ARE ON FILE

I, _____, have a copy of all permits and consultations (Specification Section 01 35 43 – Environmental Protection and Appendices A – I) for the Hancock County Marsh Living Shoreline Project and have read and understand the conditions in the permits and consultations.

_____

Signature

_____

Title

_____

Date

APPENDIX K

Soil Borings/Soil Probing Data

Soil Tech Consultants

Geotechnical Investigation
Living Shoreline Breakwater Hancock County, Mississippi
Geotechnical Borings

June 5, 2013

SOIL BORING LOG

No. B-1F

SHEET 1 OF 1

PROJECT: Geotechnical Investigation
Living Shoreline Breakwater
Hancock County, Mississippi

CLIENT: Neel-Schaffer, Inc.
Jackson, Mississippi

PROJECT NO.: ST.02078.000.001
DATE: 4/20/13
DRILLER: Contract
TECHNICIAN: P. Ray
ENGINEER: M. Volk

Location: 30°11'17.46" -89°29'18.56"

Depth (ft)	Symbol	Samples	DESCRIPTION OF MATERIAL	FIELD DATA: SPT	FIELD DATA: Vane Shear (psf)	LAB: Moisture Content (%)	LAB: Unit Weight (pcf) Moist	LAB: Unit Weight (pcf) Dry	LAB: Plasticity Index PI
			Surface Elevation: 0.0 ft						
			Very soft dark gray clay (CH)		193				
			- with organics to 2'		129				
			- gray below 2'		180				
					152				
5					168	71			53
					186				
					180				
			- with silt and fine sand pockets from 8' to 16'		186				
					201				
10					361				
					387				
					271				
					358	49			40
					348				
15					232				
					335				
					374				
					387+				
						105	91.0	44.4	90
20									
						116			
25			Terminal Depth at 25.0 ft						
30									
35									

○ Cohesion / △ Triaxial (ksf)
1 2 3 4
PL MC% LL
20 40 60 80

Groundwater Observations	Advancement Method	Notes
	0 - 25 ft: Machine Auger	Boring in 5.1' of Water
	Abandonment Method	
		SoilTech Consultants

SOIL BORING LOG WITH VANE SHEAR 2078.000.001.GPJ GEOTECHNICAL TEMPLATE.GDT 5/31/13

Heron Bay
Bottom Samples
Site "D"

Data Collected By:
DIMCO, Inc
601-634-0298

Scale: 1" = 400'

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D A9	251949.673	778373.282
Water Depth. Ft	Tide Adjusted Depth to MLLW	
5.5	3.2	Bottom Character
0.1	Material:	Fluff
0.3	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D A8	251828.932	778213.84
Water Depth. Ft	Tide Adjusted Depth to MLLW	
5.5	3.2	Bottom Character
0.2	Material:	Fluff
0.4	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D A7	251708.191	778054.399
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D A6	251587.45	777894.957
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.4	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D A5	251466.71	777735.515
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.3	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D A4	251345.969	777576.074
Water Depth. Ft	Tide Adjusted Depth to MLLW	
5.5	3.2	Bottom Character
0.2	Material:	Fluff
0.4	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D A3	251225.228	777416.632
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.3	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D A2	251104.487	777257.19
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.2	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D B1	250824.305	777218.489
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.2	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D B2	250945.045	777377.931
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D B3	251065.786	777537.373
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D B4	251186.527	777696.814
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D B5	251307.268	777856.256
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D B6	251428.009	778015.698
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D B7	251548.749	778175.14
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D B8	251669.49	778334.581
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D B9	251790.231	778494.023
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D B10	251910.972	778653.465
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D B11	252031.713	778812.906
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D B12	252152.454	778972.348
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D C13	252113.753	779252.531
Water Depth. Ft	Tide Adjusted Depth to MLLW	
5.5	3.2	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D C12	251993.012	779093.089
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D C11	251872.271	778933.647
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D C10	251751.53	778774.205
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D C9	251630.789	778614.764
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D C8	251510.049	778455.322
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D C7	251389.308	778295.88
Water Depth. Ft	Tide Adjusted Depth to MLLW	
7	4.7	Bottom Character
0.1	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D C6	251268.567	778136.439
Water Depth. Ft	Tide Adjusted Depth to MLLW	
7	4.7	Bottom Character
0.1	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D C5	251147.826	777976.997
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D C4	251027.085	777817.555
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D C3	250906.345	777658.114
Water Depth. Ft	Tide Adjusted Depth to MLLW	
7	4.7	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D C2	250785.604	777498.672
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D C1	250664.863	777339.23
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D D1	250505.421	777459.971
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D D2	250626.162	777619.413
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.4	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D D3	250746.903	777778.854
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D D4	250867.644	777938.296
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.3	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D D5	250988.384	778097.738
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.3	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D D6	251109.125	778257.179
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.2	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D D7	251229.866	778416.621
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D D8	251350.607	778576.063
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D D9	251471.348	778735.505
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D D10	251592.089	778894.946
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D D11	251712.829	779054.388
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D D12	251833.57	779213.83
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D D13	251954.311	779373.271
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D F12	251514.687	779455.311
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D F11	251393.946	779295.87
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D E13	251794.869	779494.012
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D E12	251674.128	779334.57
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6	3.7	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D E11	251553.388	779175.129
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D E10	251432.647	779015.687
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.5	4.2	Bottom Character
0.1	Material:	Fluff
0.4	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D E9	251311.906	778856.245
Water Depth. Ft	Tide Adjusted Depth to MLLW	
7	4.7	Bottom Character
0.1	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D E8	251191.165	778696.804
Water Depth. Ft	Tide Adjusted Depth to MLLW	
7	4.7	Bottom Character
0.2	Material:	Fluff
0.6	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D E7	251070.424	778537.362
Water Depth. Ft	Tide Adjusted Depth to MLLW	
7	4.7	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

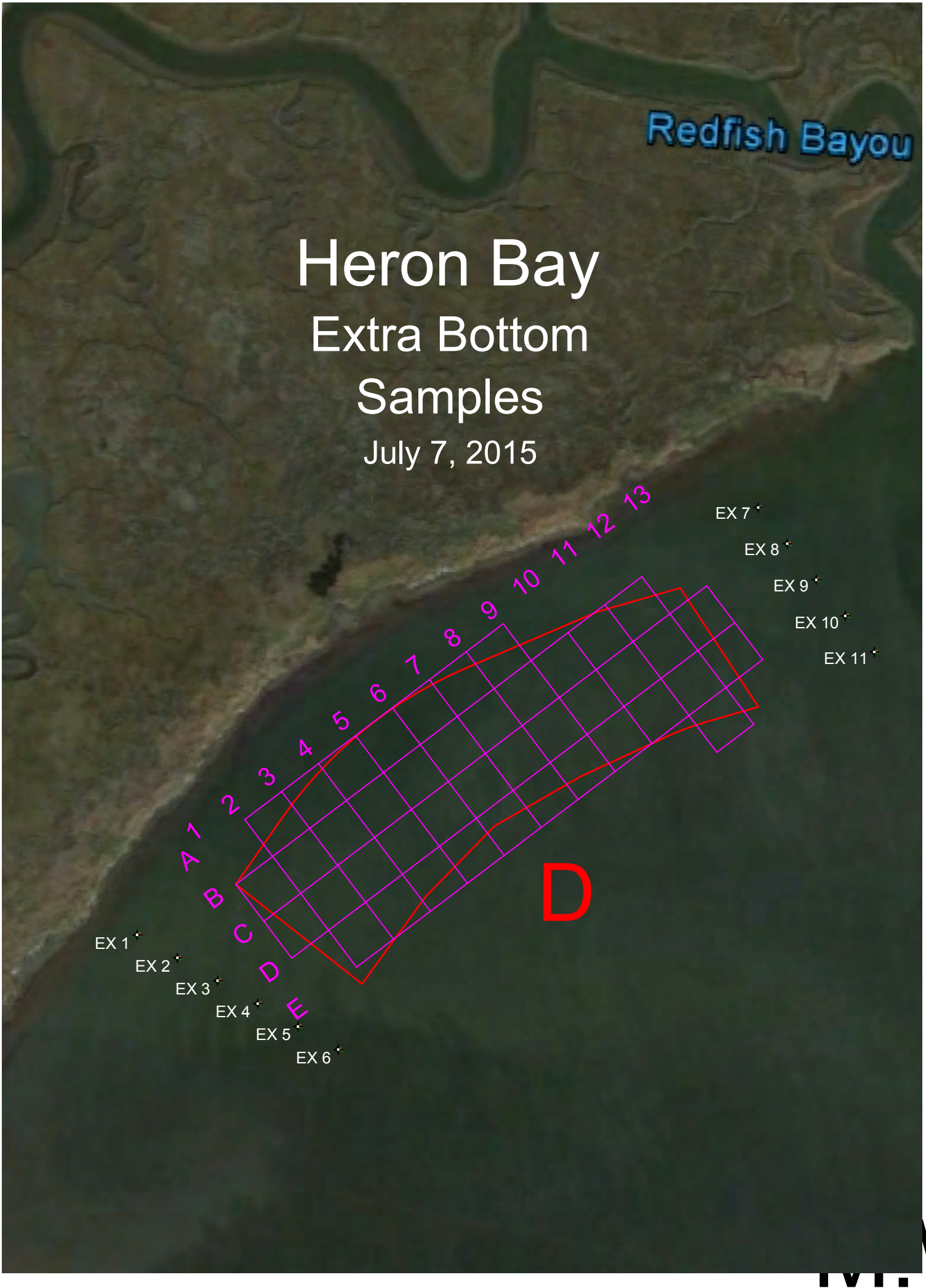
Date: 2 June 2015	Project Name: Heron Bay	
Coordant System:	Horizontal: NAD83 Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D E6	250949.684	778377.92
Water Depth. Ft	Tide Adjusted Depth to MLLW	
7	4.7	Bottom Character
0.1	Material:	Fluff
0.3	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D E5	250828.943	778218.479
Water Depth. Ft	Tide Adjusted Depth to MLLW	
7	4.7	Bottom Character
0.1	Material:	Fluff
0.5	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D E4	250708.202	778059.037
Water Depth. Ft	Tide Adjusted Depth to MLLW	
7	4.7	Bottom Character
0.1	Material:	Fluff
0.3	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D E3	250587.461	777899.595
Water Depth. Ft	Tide Adjusted Depth to MLLW	
7	4.7	Bottom Character
0.1	Material:	Fluff
0.2	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	

Date: 2 June 2015	Project Name: Heron Bay	
Coordant System: Horizontal: NAD83 Depth: Corrected to MLLW		
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
D E2	250466.72	777740.153
Water Depth. Ft	Tide Adjusted Depth to MLLW	
7	4.7	Bottom Character
0.1	Material:	Fluff
0.7	Material:	Soft Mud
	Material:	Refusal in Hard Mud
	Material:	


Redfish Bayou
Heron Bay
Extra Bottom
Samples
July 7, 2015
1
2
3
4
5
6
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8
9
10
11
12
13
A
B
C
D
E
D
EX 1
EX 2
EX 3
EX 4
EX 5
EX 6
EX 7
EX 8
EX 9
EX 10
EX 11

Date: 7 July 2015	Project Name: Heron Bay	
Coordinant System:	Horizontal: NAD83 - MS East Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
EX 1	776791.973	250606.355
Water Depth. Ft	Tide Adjusted Depth to MLLW	
6.0	4.8	Bottom Character
0.1	Material:	Fluff
1.0	Material:	Soft Mud
0.1	Material:	Refusal in Hard Mud
	Material:	

Date: 7 July 2015	Project Name: Heron Bay	
Coordinant System:	Horizontal: NAD83 - MS East Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
EX 2	776965.7201	250507.3005
Water Depth. Ft	Tide Adjusted Depth to MLLW	
5.0	3.8	Bottom Character
0.2	Material:	Fluff
0.4	Material:	Soft Mud
0.1	Material:	Refusal in Hard Mud
	Material:	

Date: 7 July 2015	Project Name: Heron Bay	
Coordinant System:	Horizontal: NAD83 - MS East Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
EX 3	777139.4671	250408.2452
Water Depth. Ft	Tide Adjusted Depth to MLLW	
5.0	3.8	Bottom Character
0.2	Material:	Fluff
0.2	Material:	Soft Mud
0.1	Material:	Refusal in Hard Mud
	Material:	

Date: 7 July 2015	Project Name: Heron Bay	
Coordinant System:	Horizontal: NAD83 - MS East Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
EX 4	777313.2142	250309.1899
Water Depth. Ft	Tide Adjusted Depth to MLLW	
5.5	4.3	Bottom Character
0.2	Material:	Fluff
0.4	Material:	Soft Mud
0.1	Material:	Refusal in Hard Mud
	Material:	

Date: 7 July 2015	Project Name: Heron Bay	
Coordinant System:	Horizontal: NAD83 - MS East Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
EX 5	777486.9613	250210.1345
Water Depth. Ft	Tide Adjusted Depth to MLLW	
5.0	3.8	Bottom Character
0.2	Material:	Fluff
0.6	Material:	Soft Mud
0.1	Material:	Refusal in Hard Mud
	Material:	

Date: 7 July 2015	Project Name: Heron Bay	
Coordinant System:	Horizontal: NAD83 - MS East Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
EX 6	777660.71	250111.08
Water Depth. Ft	Tide Adjusted Depth to MLLW	
5.5	4.3	Bottom Character
0.2	Material:	Fluff
0.5	Material:	Soft Mud
0.1	Material:	Refusal in Hard Mud
	Material:	

Date: 7 July 2015	Project Name: Heron Bay	
Coordinant System:	Horizontal: NAD83 - MS East Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
EX 7	779474.6721	252451.3028
Water Depth. Ft	Tide Adjusted Depth to MLLW	
4.0	2.8	Bottom Character
0.2	Material:	Fluff
0.4	Material:	Soft Mud
0.1	Material:	Refusal in Hard Mud
	Material:	

Date: 7 July 2015	Project Name: Heron Bay	
Coordinant System:	Horizontal: NAD83 - MS East Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
EX 8	779600.034	252295.4684
Water Depth. Ft	Tide Adjusted Depth to MLLW	
4.5	3.3	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
0.1	Material:	Refusal in Hard Mud
	Material:	

Date: 7 July 2015	Project Name: Heron Bay	
Coordinant System:	Horizontal: NAD83 - MS East Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
EX 9	779725.396	252139.6339
Water Depth. Ft	Tide Adjusted Depth to MLLW	
4.5	3.3	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Refusal in Hard Mud
	Material:	
	Material:	

Date: 7 July 2015	Project Name: Heron Bay	
Coordinant System:	Horizontal: NAD83 - MS East Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
EX 10	779850.758	251983.80
Water Depth. Ft	Tide Adjusted Depth to MLLW	
5.0	3.8	Bottom Character
0.1	Material:	Fluff
0.1	Material:	Soft Mud
0.1	Material:	Refusal in Hard Mud
	Material:	

Date: 7 July 2015	Project Name: Heron Bay	
Coordinant System:	Horizontal: NAD83 - MS East Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
EX 11	779976.1199	251827.965
Water Depth. Ft	Tide Adjusted Depth to MLLW	
5.0	3.8	Bottom Character
0.2	Material:	Fluff
0.4	Material:	Soft Mud
0.1	Material:	Refusal in Hard Mud
	Material:	

Date: 7 July 2015	Project Name: Heron Bay	
Coordinant System:	Horizontal: NAD83 - MS East Depth: Corrected to MLLW	
Tide Gage Location	Waveland, MS Yacht Club	
Station	Northing	Easting
Water Depth. Ft	Tide Adjusted Depth to MLLW	
		Bottom Character
	Material:	
	Material:	
	Material:	
	Material:	

APPENDIX L

Request to Subcontract

APPENDIX L

Request to Subcontract
for MDEQ Contractors that Subcontract

In accordance with the Anti-Assignment/Subcontracts Section of the below referenced Contract, we request approval to subcontract the following portion or duties under the Contract.

MDEQ Contractor:_____

MDEQ Contract Number:_____

Proposed Subcontractor's name and DUNS #:_____

Is the proposed subcontractor a certified MBE firm? Yes_____ No_____

Is the proposed subcontractor a certified WBE firm? Yes_____ No_____

Reason for subcontracting:_____

_____

Define tasks/work to be subcontracted:_____

_____

_____

Proposed subcontract amount: $_____

REQUESTED BY:

_____ _____
Contractor – Printed Name Title

_____ _____
Contractor - Signature Date

APPROVAL:

_____ _____
MDEQ Program Manager – Signature Date
Office of Restoration

APPENDIX M

Final Release of Claims

APPENDIX M

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

FINAL RELEASE OF CLAIMS

Project Name: Hancock County Marsh Living Shoreline Project
PHASE 4 – Heron Bay Subtidal Reef

WHEREAS, by the terms of the MDEQ Standard Terms and Conditions stated in the section entitled Release Prior to Final Payment, entered into by the Mississippi Department of Environmental Quality and the Contractor, _____, for the above-named Project, it is provided that after completion of all Work or settlement upon termination of the Contract, and prior to final payment, the Contractor will furnish the Mississippi Department of Environmental Quality with a full and final release of all claims.

NOW, THEREFORE, in consideration of the above premises and upon the payment by the Mississippi Department of Environmental Quality to the Contractor pursuant to the above referenced terms in the sum of $_____, the Contractor hereby remises, releases, and forever discharges the Mississippi Department of Environmental Quality, its officers, agents, and employees, of and from all manner of debts, liabilities, obligations, accounts, claims, and demands whatsoever, in law and equity, for any and all Work performed and materials provided by the Contractor on the above-named Project.

_____ _____
Authorized Signature Date

_____
Typed/Printed Name Title