BID PACKAGE
FOR
WHISKEY ISLAND BACK BARRIER MARSH CREATION PROJECT
(TE-50)
TERREBONNE PARISH, LOUISIANA

LOUISIANA
DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION
SEPTEMBER, 2008
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# SCHEDULE OF BID ITEMS-BASE BID

**WHISKEY ISLAND BACK BARRIER MARSH CREATION PROJECT (TE-50)**

<table>
<thead>
<tr>
<th>ITEM No.</th>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
<th>UNIT PRICE 1</th>
<th>EXTENDED PRICE 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mobilization &amp; Demobilization</td>
<td>Lump Sum</td>
<td>1</td>
<td>$_________ . _____</td>
<td>$_________ . _____</td>
</tr>
<tr>
<td>2.</td>
<td>Pre- &amp; Post-Construction Surveys</td>
<td>Lump Sum</td>
<td>1</td>
<td>$_________ . _____</td>
<td>$_________ . _____</td>
</tr>
<tr>
<td>3.</td>
<td>Hydraulic Dredging (In place)/(Marsh Fill)</td>
<td>Cubic Yard</td>
<td>2,300,000</td>
<td>$_________ . _____</td>
<td>$_________ . _____</td>
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<tr>
<td>4a.</td>
<td>Primary Containment Dikes (20’ Crest)</td>
<td>Linear Foot</td>
<td>5,000</td>
<td>$_________ . _____</td>
<td>$_________ . _____</td>
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<tr>
<td>4b.</td>
<td>Secondary Containment Dikes (10’ Crest)</td>
<td>Linear Foot</td>
<td>12,000</td>
<td>$_________ . _____</td>
<td>$_________ . _____</td>
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<tr>
<td>5.</td>
<td>Creek &amp; Pond Excavation</td>
<td>Cubic Yard</td>
<td>49,000</td>
<td>$_________ . _____</td>
<td>$_________ . _____</td>
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<tr>
<td>6.</td>
<td>Settlement Plates</td>
<td>Each</td>
<td>8</td>
<td>$_________ . _____</td>
<td>$_________ . _____</td>
</tr>
</tbody>
</table>

**TOTAL AMOUNT OF BASE BID:** _______________ Dollars _______________ Cents

---

1. Where the quantity of Work with respect to any item is covered by a unit price, such quantities are estimated quantities to be used when comparing bids and the right is reserved by the Owner to increase/decrease such quantities as may be necessary to complete the Work or remain within any funding limits. In the event of material underruns/overruns, the unit costs will be used to determine payment to the Contractor.

2. Items must be completed by the bidder. The completed sheet must be attached to the bid submitted to the Office of State Purchasing in order for the bid to be considered. Determination of the low bidder shall be made on the basis of the sum of the base bid and any alternates accepted.
## SCHEDULE OF BID ITEMS - ADDITIVE ALTERNATE

**WHISKEY ISLAND BACK BARRIER MARSH CREATION PROJECT (TE-50)**

<table>
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<tr>
<th>ITEM No.</th>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
<th>UNIT PRICE</th>
<th>EXTENDED PRICE</th>
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<tr>
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<td></td>
<td>USING WORDS</td>
<td>USING NUMBERS</td>
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<td>USING WORDS</td>
<td>USING NUMBERS</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>USING WORDS</td>
<td>USING NUMBERS</td>
</tr>
<tr>
<td>7.</td>
<td>Pre- &amp; Post-Construction Surveys</td>
<td>Lump Sum</td>
<td>1</td>
<td>Dollars</td>
<td>$ _____ . ___</td>
</tr>
<tr>
<td>8.</td>
<td>Hydraulic Dredging (In place)(Dune Fill)</td>
<td>Cubic Yard</td>
<td>225,000</td>
<td>Dollars</td>
<td>$ _____ . ___</td>
</tr>
<tr>
<td>9.</td>
<td>Sand Fencing</td>
<td>Linear Foot</td>
<td>13,000</td>
<td>Dollars</td>
<td>$ _____ . ___</td>
</tr>
<tr>
<td>10.</td>
<td>Seeding</td>
<td>Acre</td>
<td>95</td>
<td>Dollars</td>
<td>$ _____ . ___</td>
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**TOTAL AMOUNT OF ADDITIVE ALTERNATE BID:**

1. Where the quantity of Work with respect to any item is covered by a unit price, such quantities are estimated quantities to be used when comparing bids and the right is reserved by the Owner to increase/decrease such quantities as may be necessary to complete the Work or remain within any funding limits. In the event of material underruns/overruns, the unit costs will be used to determine payment to the Contractor.

2. Items must be completed by the bidder. The completed sheet must be attached to the bid submitted to the Office of State Purchasing in order for the bid to be considered. Determination of the low bidder shall be made on the basis of the sum of the base bid and any alternates accepted.
PART I  GENERAL PROVISIONS

GP-1  DEFINITION OF TERMS

Whenever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to the singular or plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

1.1 Acceptance: A written approval from the Engineer which certifies that specific items of Work in the Contract have been completed and/or obligations have been fulfilled by the Contractor.

1.2 Addenda: Those written or graphic documents which are issued prior to opening of Bids in accordance with the Bidding Requirements and clarify or change the bidding requirements or the proposed Contract Documents.

1.3 Agreement: The written and signed agreement between the Owner and Contractor specifying the Work to be performed and includes the Contract Documents, all addenda pertaining to the Bid, Notice of Award, Bonds, Plans, General Provisions, Special Provisions, and Technical Specifications.

1.4 Application of Payment: That form which is used by the Contractor to request partial and final payment and is deemed acceptable to the Owner. It shall be accompanied by any supporting documentation required by the Contract Documents.


1.6 Bid: An offer or proposal submitted on the prescribed form setting forth the prices for the Work.

1.7 Bidder: The person, association of persons, firm or corporation submitting a proposal for the Work.

1.8 Bidding Requirements: The Advertisement or Invitation to Bid, Instruction to Bidders, Form of Bid Security, if any, and Bid Form with any supplements.

1.9 Change Order: A written order which is submitted to the Contractor, signed by the Owner, and authorizes an addition, deletion or revision in the Work, or an adjustment in the contract price or the contract time issued after the effective date of the Agreement.

1.10 Claim: A written demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both or other relief with respect to the terms of the Contract.

1.11 Contract: The written Agreement between the Owner and the Contractor which defines the Work to be completed and shall be understood to include the Plans, Specifications, Information for Bidders, Agreement, Advertisement For Bidders, Affidavit, Bid Form, Bid Bond, Contract Bond, Notice of Award, Notice to Proceed, and Change Orders, and Claims.

1.12 Contract Bond: The approved form of security furnished by the Contractor and Surety for the faithful performance of the Work, and the payment for all labor, materials, and/ or obligations incurred by the Contractor in the prosecution thereof.

1.13 Contract Documents: The Agreement, all addenda which pertains to the Contract Documents, Bid Documents and specified Attachments accompanying the Bid and any post-bid documentation submitted prior to the Notice of Award, Contractor’s Bid when attached as an exhibit to the Agreement, the Bonds (Bid and Performance/Payment), General Provisions, Special Provisions, Technical Specifications, Plans, and all Field or Change Orders issued after the execution of the Agreement. Shop Drawings and other submittals by the Contractor are not Contract Documents.

1.14 Contract Price: The moneys payable by the Owner to the Contractor for the Work in accordance with the Contract Documents as stated in the Agreement.
1.15 **Contract Time**: The number of calendar days specified in the Agreement for completion of the Work, together with any extensions authorized through change orders.

1.16 **Contractor**: The person, association of persons, firm or corporation entering into the duly awarded Contract.

1.17 **Contracting Agency**: The Louisiana Department of Natural Resources (DNR) acting through the Division of Administration.

1.18 **Day**: When any period of time is referred to in the Contract Documents using days, it will be computed to exclude the first day and include the last day of such period. If the last day of any such period falls on a Saturday, Sunday or a legal holiday, that day will be omitted from the computation. A calendar day is measured as twenty-four (24) hour period starting at midnight and ending the following midnight.

1.19 **Design Report**: A written report by the Engineer which provides the design methodology for the Work.

1.20 **Effective Date of the Agreement**: The date indicated in the Agreement on which it becomes effective.

1.21 **Engineer**: The Louisiana Department of Natural Resources, Coastal Engineering Division, or its designee.

1.22 **Equipment**: All machinery, implements, and power-tools, in conjunction with the necessary supplies for the operation, upkeep, maintenance, and all other tools and apparatuses necessary for the proper construction and acceptable completion of the Work.

1.23 **Extension of Contract**: Any extension of time for completion of the Work beyond the Contract Time which is granted by the Owner and recommended by the Engineer.

1.24 **Federal Sponsor**: The federal agency responsible for sponsoring the project.

1.25 **Field Order**: A written order issued by the Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or Contract Time.

1.26 **Inspector**: An authorized representative of the Engineer who is responsible to inspect the Work and materials furnished by the Contractor.

1.27 **Laboratory**: The firm, company or corporation which is used to test materials and is approved for use by the Engineer.

1.28 **Laws and Regulations; Laws or Regulations**: Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

1.29 **Materials**: Any substance used in the Work to build structures, but does not include material used in false Work or other temporary structures not incorporated in the Work.

1.30 **Milestone**: A principal event specified in the Contract Documents relating to an intermediated completion date or time prior to the Contract Times.

1.31 **Notice of Award**: A written notice to the successful Bidder stating that the Bid has been accepted by the Owner and that the successful Bidder is required to execute the Contract and furnish the Contract Bond.

1.32 **Notice to Proceed**: The written notice to the Contractor by the Owner which provides the starting date for the Contract Time.

1.33 **Owner**: The Owner is the State of Louisiana (State) which acts through the Contracting Agency.

1.34 **Plans**: That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, intent, and character of the Work to be completed by the Contractor.

1.35 **Project Site**: The location where the Work is to be performed as stated in the Agreement.

1.36 **Right-of-way**: That entire area reserved for constructing, maintaining and protecting the proposed improvement, structures, and appurtenances of the Work.
1.37 **Samples**: Physical examples of materials, equipment, or Workmanship that are representative of some portion of the Work and which establish the standards by which such portions of the Work will be judged.

1.38 **Shop Drawings**: All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for the Contractor and submitted by the Contractor to illustrate some portion of the Work to be performed.

1.39 **Specifications**: That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards and Workmanship as applied to the Work to be performed and certain administrative details applicable thereto.

1.40 **State**: The State of Louisiana.

1.41 **Structures**: Bridges, plugs, weirs, berms, dams, levees, and other miscellaneous construction encountered during the Work and not otherwise classified herein.

1.42 **Subcontractor**: Any person, association of persons, firm, or corporation who contracts with the Contractor to perform any part of the project covered by the Contract.

1.43 **Submittals**: Certificates, samples, shop drawings and all other project data which are submitted to the Engineer in order to verify that the correct products will be installed on the project.

1.44 **Successful Bidder**: The lowest responsible Bidder whom the Owner makes an award.

1.45 **Special Provisions**: That part of the Contract Documents which amends or supplements these General Provisions.

1.46 **Surety**: The corporate body, licensed to do business in Louisiana, bound with and for the Contractor’s primary liability, and engages to be responsible for payment of all obligations pertaining to acceptable performance of the Work contracted.

1.47 **Temporary Structures**: Any non-permanent structure required while engaged in the prosecution of the Contract.

1.48 **Written Amendment**: A written statement modifying the Contract Documents which is signed by the Owner and the Contractor on or after the Effective Date of the Agreement.

1.49 **Work**: All Work specified herein or indicated on the Plans.

1.50 **Work Plan**: A written plan by the Contractor that details how the Work will be provided including layout drawings, projected schedule (Initial Progress Schedule), and a list of labor hours and materials.

**GP-2 BID REQUIREMENTS**

The Contract and Bonds which govern the Work shall be performed in accordance with the Plans and Specifications. The Bidder understands that all quantities for performing the Work have been estimated by the Engineer, and that the Bid shall be the sum of the quantities multiplied by their respective unit rates. The Contract shall be awarded by the Owner through a comparison of all bids. It is the responsibility of each Bidder before submitting a Bid to:

2.1 Examine the Bidding Documents including the Plans and Specifications and any Addenda or related data identified in the Bidding Documents;

2.2 Visit the Project Site to become familiar with the local conditions if they are believed to affect cost, progress or the completion of the Work;

2.3 Become familiar and satisfied with all federal, state, and local Laws and Regulations that may affect cost, progress, or the completion of the Work;
2.4 Study and correlate all information known to the Bidder including observations obtained from Bidder’s visits, if any, to the Project Site, with the Bidding Documents;

2.5 Submit a written notice to the Engineer within three (3) calendar days regarding any conflicts, errors, ambiguities, or discrepancies discovered in the Bidding Documents and confirm that the written resolution thereof by the Engineer is acceptable to the Bidder; and

2.6 Determine that the Bidding Documents are generally sufficient to convey an understanding of all terms and conditions for completing the required Work.

The submission of a Bid will constitute an incontrovertible representation that the Bidder has complied with every requirement of Bid Documents. The Bidder shall comply with all other requirements specified in the Notice to Bidders.

GP-3 AVAILABILITY OF PLANS AND SPECIFICATIONS

One (1) set of Plans and Specifications shall be furnished to each Bidder. Three (3) sets of the Plans and Specifications shall be furnished to the Contractor upon award of the Contract. Additional sets may be furnished upon request from the Coastal Engineering Division of the Louisiana Department of Natural Resources, 617 North 3rd Street, 10th Floor, Baton Rouge, Louisiana 70804.

GP-4 LAWS, REGULATIONS, STANDARDS, SPECIFICATIONS AND CODES

Bidders are required to become familiar and remain in compliance with all Federal, State, and local laws, ordinances, permits, and regulations which may affect all employees and execution of the Work. The filing of a bid will be presumptive evidence that the Bidder has complied with this requirement. The Owner will not be responsible for any inaccurate interpretations or conclusions drawn by the Contractor from information and documentation provided by the Owner.

References to standards, Specifications, manuals, or codes of any technical society, organization, or association, or to Laws and Regulations, whether such reference be specific or by implication, shall mean the standard, Specification, manual, code, or Laws and Regulations, in effect at the time of opening the Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents. No provision of any such standard, specification, manual or code, or any instruction of a supplier shall be effective to change the duties or responsibilities of the Owner or Engineer, or any of their Subcontractors, consultants, agents, or employees from those set forth in the Bid Documents. No such provision shall be effective to assign to the Owner or Engineer, or any of their consultants, agents, or employees any duty or authority to supervise or direct the performance of the Contractor’s obligations or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

The Contractor shall indemnify the Owner and its representatives against any claim or liability arising from all violations of any laws, bylaws, ordinances, codes, regulations, orders or decrees. The obligations imposed by these Specifications are in addition to and are not to be construed in any way as a limitation of any rights available to the Engineer or Owner which are otherwise imposed by any laws or regulations, or other provisions within the Contract Documents.

GP-5 PRE-BID CONFERENCE AND SITE VISIT

A pre-bid conference will be held at the location and on the date provided in the Bid solicitation. A site visit may also be held at the Project Site as specified in the Bid Solicitation. Bidders will be required to furnish their own transportation to the Project Site. Representatives of the Owner and Engineer will attend the pre-bid conference and site visit, if held, to discuss the Work. Bidders are required to attend the pre-bid conference and site visit, if held. Failure to attend will result in a null or void Bid.

All questions shall be faxed to the recipient listed in SP-5 after the pre-bid conference and by the date provided in SP-3. No additional questions shall be received after this date. Oral statements will not be binding or legally effective. The Engineer will submit addenda in response to all questions arising at the Pre-Bid Conference and site visit to all prospective Bidders on record. All prospective bidders on record may contact the Engineer for any additional information.
GP-6  NOTICE OF AWARD

The Owner shall provide written notice to the Successful Bidder stating that the Owner will sign and deliver the Agreement upon compliance with the conditions enumerated therein and within the time specified.

GP-7  NOTICE TO PROCEED AND CONTRACT TIME

The Contractor shall start the Work and begin the Contract Time on the dates provided in the Notice to Proceed. The Work shall be conducted using sufficient labor, materials and equipment as necessary to insure completion within the Contract Time. The Contract Time for completion of the Base Bid for the Work and Additive Alternate (if accepted) is provided in SP-3, unless an extension is granted to the Contract Time as specified in GP-44.

GP-8  WORK PLAN

The Contractor shall develop a written Work Plan which accounts for all of the construction activities required by the Contract Documents. The Work Plan shall include a list of the individual construction tasks to be completed and the estimated dates for beginning and completing the tasks. It shall also include all other items which are applicable to completing the Work such as, but not limited to, the following:

8.1 Typical report form for the Progress Meetings;
8.2 Typical form for Daily Progress Report;
8.3 Hurricane and Severe Storm Plan;
8.4 Site-specific Health and Safety Plan;
8.5 The delivery method and source (s) of all construction materials (company or producer name, mailing and physical address, phone number, and name of contact person).
8.6 The personnel, material, subcontractors, fabricators, suppliers, and types of equipment the Contractor proposes to use for construction;
8.7 Shop drawings, test results and sample submittals;
8.8 Survey layout and stakeout;
8.9 All supplemental items specified in 0.

The Work Plan shall be submitted to the Engineer at the Pre-Construction Conference by the date provided in SP-3. The Engineer shall review the Work Plan and have the Contractor make any necessary revisions prior to acceptance of the plan.

GP-9  PROGRESS SCHEDULE

The Contractor shall develop a written Progress Schedule which provides for an orderly progression of the Work, submittals, tests, and deliveries in order to complete the Work within the specified Milestones and Contract Time. All of the items listed in the Work Plan shall be integrated into the Progress Schedule. The format of the schedule shall be composed using Microsoft Project®, or any other software or methods deemed acceptable by the Engineer. It shall be updated weekly by the Contractor, at a minimum. The Progress Schedule shall also include, but not be limited to the following:

9.1 All of the elements in the Work Plan, including updates;
9.2 A Work order issued from Louisiana One Call ordering all their subscribers in the project area to mark their utilities;
9.3 A telephone log verifying that all property owners and utilities have been contacted. This log should list the time, date, and names of the personnel representing the property owners, utilities and Contractor;
The following table defines the monthly anticipated adverse weather days that are expected to occur during the Contract Time and will constitute the baseline monthly weather time for evaluations. The schedule is based upon National Oceanic and Atmospheric Administration (NOAA) or similar data for the regional geographic area.

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The Progress schedule must reflect these anticipated adverse weather delays on all weather dependent activities. Adverse weather days must prevent Work for fifty percent (50%) or more of the Work day and delay Work critical to the timely completion of the project. The number of actual adverse weather days shall be calculated chronologically from the first to the last day of each month.

The Progress Schedule shall be submitted to the Engineer at the Pre-Construction Conference by the date provided in SP-3. The Engineer shall perform a review and have the Contractor make any necessary revisions prior to acceptance of the schedule. Acceptance will not impose responsibility on the Owner or Engineer for the sequencing, scheduling, or progression of the Work. The Contractor is fully responsible for progression of the Work in order to maintain compliance with the Progress Schedule.

**GP-10 DAILY PROGRESS REPORTS**

The Contractor shall record the following daily information on Daily Progress Reports:

10.1 Date and signature of the author of the report;

10.2 Dollar amount of all bid items that are fabricated, installed, backfilled, pumped, constructed, damaged, replaced, etc. The amount of material shall be expressed in the units stated in the bid;

10.3 Field notes of all surveys;

10.4 Notes on all inspections;

10.5 Details of Health and Safety meetings;

10.6 A brief description of any Change Orders, Field Orders, Claims, Clarifications or Amendments;

10.7 Condition of all navigation aides (I.E., warning signs, lighted marker buoys) and any repairs performed on them;

10.8 Weather conditions (adverse weather day, wind speed and direction, temperature, wave height, precipitation, etc.);

10.9 The amount of time lost to severe weather or personnel injury, etc;

10.10 Notes regarding compliance with the Progress Schedule;

10.11 Visitor log (Instructions for format will be furnished by the Field Engineer)

The daily progress reports shall be submitted to Engineer at the Weekly Progress Meetings specified in GP-13 in both hard copy and digital format (Adobe Acrobat® Format, or approved equal). The typical form for Daily Progress Reports shall be developed by the Contractor and incorporated into the Work Plan.

**GP-11 HURRICANE AND SEVERE STORM PLAN**

The Contractor shall develop and maintain a written Hurricane and Severe Storm Plan. The Plan shall include, but not be limited to, the following:

11.1 What type of actions will be taken before storm strikes at the Project Site? The plan should specify what weather conditions or wave heights will require shutdown of the Work and removal of equipment, personnel, etc.
11.2 Notes from continuous monitoring of NOAA marine weather broadcasts and other local commercial weather forecasts.

11.3 Equipment list with details on their ability to handle adverse weather and wave conditions.

11.4 List of safe harbors or ports and the distance and travel time required to transfer equipment from the Project Site.

11.5 Hard copies of any written approvals or operations schedules associated with the use of the safe harbors or ports.

11.6 Method of securing equipment at the safe harbors or ports.

11.7 List of tug boats and Work boats and their respective length, horsepower, etc. which will adequately transfer the equipment to safe harbor or port under adverse weather conditions.

11.8 Methods which will be used to secure equipment left onsite during adverse weather conditions.

11.9 Evacuation or immediate reaction Plans to be taken by personnel for sudden storm occurrences.

11.10 Operations procedures which will be used to secure critical dredging equipment such as spuds, swing wires, anchor wires, or tugs during adverse weather conditions.

11.11 Communications protocol with local law enforcement and fire and rescue agencies.

The Contractor shall incorporate the Hurricane and Severe Storm Plan into the Work Plan. The Owner and Engineer are not responsible for the adequacy of this plan.

**GP-12 HEALTH AND SAFETY PLAN AND INSPECTIONS**

The Contractor shall develop and maintain a written Health and Safety Plan which is specific to the Project Site and allows the Work to be performed in compliance with all applicable laws, ordinances, rules, and regulations of any government agency having jurisdiction over the safety of personnel or property. This includes maintaining compliance with the Code of Federal Regulations, Title 29, Occupational Safety and Health Administration (OSHA) and all applicable Health and Safety Provisions of the State of Louisiana.

The Contractor shall institute a daily inspection program to assure that the requirements of the Health and Safety Plan are being fulfilled. Inspections shall include the nature of deficiencies observed, corrective action taken or to be taken, location of inspection, date, and signature of the person responsible for its contents. The results of the inspections shall be recorded on Daily Progress Reports and kept at the Project Site during the Work.

The Contractor shall incorporate the Health and Safety Plan into the Work Plan. The Owner and Engineer are not responsible for the adequacy of this plan.

**GP-13 PROGRESS MEETINGS AND REPORTS**

The Engineer shall schedule meetings to review the progress of the Work, coordinate future efforts, discuss compliance with the Progress Schedule and resolve miscellaneous problems. The Engineer or Inspector, Contractor and all Subcontractors actively working at the Project Site shall attend each meeting. Representatives of suppliers, manufacturers and other Subcontractors may also attend at the discretion of the Contractor. The Contractor shall record the details of each meeting in a Progress Report. The format of this report shall be developed by the Contractor, approved by the Engineer and included in the Work Plan. The progress meetings and reports shall be scheduled according to SP-3.

**GP-14 PRE-CONSTRUCTION CONFERENCE**

A Pre-Construction Conference shall held by the Contractor, Subcontractors, Owner, Engineer, local stakeholders and other appropriate personnel prior to starting construction on the date specified in SP-3. This conference shall serve to establish a mutual understanding of the Work to be performed, the elements of the Progress Schedule and Work Plan, expectations for weekly progress meetings, the Plans and Specifications, processing Applications for Payment, and any other items of concern. If any subcontractors are not present, another pre-construction conference will be required.
GP-15 CONTRACT INTENT

The Bid Documents are complementary; what is called for by one is as binding as if called for by all. Clarifications and interpretations or notifications of minor variations and deviations of the Contract Documents will be issued by Engineer as provided in GP-16. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Bid Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided at no additional cost to the Owner.

GP-16 ENGINEER AND AUTHORITY OF ENGINEER

The Engineer will be the designated representative of the Owner, the initial interpreter of the Contract Documents and the judge over acceptability of all the Work. Claims, disputes, and other matters relating to the acceptability of the Work, performance by the Contractor or the interpretation of the requirements of the Contract Documents must be submitted to the Engineer in writing. Upon written request from the Contractor, the Engineer shall issue written clarifications or interpretations which are consistent with the overall intent of the Contract Documents. Such written clarifications and interpretations will be binding on the Owner and the Contractor. Either the Owner or the Contractor may make a Claim if a written clarification or interpretation justifies an adjustment in the Contract Price or Contract Times.

The Engineer has the authority to suspend the Work in whole or in part due to failure of the Contractor to correct conditions unsafe for Workmen or the general public, carry out provisions of the Contract, perform conformance Work, or to carry out orders. The Engineer shall submit a written order to the Contractor for Work which must be suspended or resumed. Nothing in this provision shall be construed as establishing responsibility on the part of the Engineer for safety which is the responsibility of the Contractor.

The Engineer or Inspector shall keep a daily record of weather and flood conditions and may suspend the Work as deemed necessary due to periods of unsuitable weather, conditions considered unsuitable for execution of the Work, or for any other condition or reason deemed to be in the public interest.

GP-17 CONFORMITY WITH PLANS AND SPECIFICATIONS

All Work and materials involved with the Work shall conform with the lines, grades, cross sections, dimensions, and other requirements shown on the Plans or indicated in the Specifications unless otherwise approved by the Engineer.

GP-18 CLARIFICATIONS AND AMENDMENTS TO CONTRACT DOCUMENTS

The Contract Documents may be clarified or amended by the Engineer to account for additions, deletions, and revisions to the Work after the Effective Date of the Agreement. The clarifications and amendments shall be addressed by either a Change Order or a written clarification by the Engineer. The Contractor shall not proceed with the Work until the Change Order or clarification has been issued by the Engineer. The Contractor shall not be liable to the Owner or Engineer for failure to report any such discrepancy unless the Contractor had reasonable knowledge.

The Contractor may request a clarification or amendment for the following:

18.1 Any conflict, error, ambiguity, or discrepancy within the Contract Documents; or

18.2 Any conflict, error, ambiguity, or discrepancy between the Bid Documents and the provision of any Law or Regulation applicable to the performance of the Bid; or

18.3 Any standard, specification, manual or code (whether or not specifically incorporated by reference in the Bid Documents); or

18.4 Instructions by a supplier.

The official form for a written clarification is provided in Appendix A. This form shall be filled out appropriately by the Contractor and submitted to the Engineer. The Engineer shall clarify the issue in writing on either the clarification form or a Change Order and submit it to the Contractor.
GP-19 SUBCONTRACTS

The Contractor shall provide the names of all Subcontractors to the Engineer in writing before awarding any Subcontracts. The Contractor shall be responsible for the coordination of the trades and Subcontractors engaged in the Work. The Contractor is fully responsible to the Owner for the acts and omissions of all of the Subcontractors. The Owner and Engineer will not settle any differences between the Contractor and Subcontractors, or between Subcontractors. The Contractor shall have appropriate provisions in all Subcontracts to bind Subcontractors to the Contractor by the terms of the General Conditions and other Contract Documents, as applicable to the Work of Subcontractors. The provisions should provide the Contractor the same power regarding termination of Subcontracts that the Owner may exercise over the Contractor under any provisions of the Contract Documents.

GP-20 WORKERS, METHODS AND EQUIPMENT

The Contractor shall provide competent, qualified and trained personnel to perform the Work. The Contractor shall provide the names of the Subcontractors to the Engineer in writing before awarding any Subcontracts. The Contractor shall not employ any person found objectionable by the Engineer. Any person employed by the Contractor or any Subcontractor who, in the opinion of the Engineer does not perform the Work in a proper, skillful and orderly manner shall be immediately removed upon receiving a written order by the Engineer. The Engineer may also suspend the Work until the Contractor removes the employee or provides a suitable replacement. Such an employee shall not be re-employed in any portion of the Work without written approval from the Engineer.

The on-site superintendent for the Contractor shall be competent, English-speaking, and qualified to receive orders, supervise, and coordinate all Work for the Contractor and any Subcontractors. The qualifications of the superintendent must be established and approved by the Engineer prior to commencement of the Work. The superintendent shall be furnished by the Contractor regardless of how much Work may be sublet. In the performance of the Work under this Contract, the Contractor shall conduct operations to avoid interference with any other Contractors.

All equipment, products and material incorporated into the Work shall be as specified, or if not specified, shall be new, of good quality and protected, assembled, used, connected, applied, cleaned and conditioned in accordance with the manufacturer’s instructions, except as otherwise may be provided in the Bid Documents. All equipment shall be of sufficient size and mechanical condition to meet the requirements of the Work and produce a satisfactory quality of Work. Equipment shall not damage adjacent property throughout the performance of the Work.

The Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures used to complete the Work in conformance with the Contract Documents.

The Contractor shall obtain permission from the Engineer if a method or type of equipment other than specified in the Contract is desired. The request shall be in writing and shall include a full description of the methods, equipment proposed, and reasons for the modification. A proposed item of material or equipment may be considered by the Engineer to be functionally equal to an item specified in the Contract if:

20.1 It is at least equal in quality, durability, appearance, strength, and design characteristics;

20.2 There is no increase in any cost including capital, installation or operating to the Owner;

20.3 The proposed item will conform substantially, even with deviations, to the detailed requirements of the item named in the Bid Documents.

If, after trial use of the substituted methods or equipment, the Engineer determines that the Work produced does not meet Contract requirements, the Contractor shall discontinue use of the substituted methods or equipment and shall complete the Work with the specified methods and equipment. The Contractor shall remove the deficient Work and replace it with Work of specified quality or take other corrective action as directed. No change will be made in basis of payment for construction items involved or in Contract Time as a result of authorizing a change in methods or equipment.

GP-21 ACCIDENT PREVENTION, INVESTIGATIONS AND REPORTING

The Contractor shall be responsible to develop and maintain all safeguards and safety precautions necessary to prevent damage, injury, or loss throughout the performance of the Work. All accidents at the Project Site shall be investigated by the
immediate supervisor of employee(s) involved and reported to the Engineer or Inspector within one (1) calendar day and/or immediately. A complete and accurate written report of the accident including estimated lost time days shall be submitted to the Engineer within four (4) calendar days. A follow-up report shall be submitted to the Engineer if the estimated lost time days differ from the actual lost time days.

GP-22 PRESERVATION AND RESTORATION OF PROPERTY, MONUMENTS, ETC.

The Contractor is responsible to comply with all applicable laws, ordinances, rules, and regulations of any government agency having jurisdiction over the preservation and protection of public and private property. The Contractor shall install and maintain suitable safeguards and safety precautions during the Work as necessary to prevent damage, injury, or loss to property. This responsibility shall remain with the Contractor until the Work has been completed and accepted. Any damage, injury or loss to property which is caused by the Contractor or Subcontractors shall be repaired or replaced at the expense of the Contractor.

The Contractor shall protect all land monuments, State and United States bench marks, geodetic and geological survey monuments, and property markers from disturbance or damage until an authorized agent has witnessed or otherwise referenced their location. The Contractor shall also provide protection for all public and private property including trees, utilities, pipes, conduits, structures, etc. These items shall not be removed unless directed by the Engineer.

The Contractor shall be responsible to completely repair all damages to public or private property due to any act, omission, neglect or misconduct in the execution of the Work unless it is due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God, public enemies or governmental authorities. The damage must be repaired at the expense of the Contractor before final acceptance of the Work can be granted by the Engineer. If the Contractor fails to repair the damage within forty-eight (48) hours, the Owner may independently proceed with the repairs at the expense of the Contractor by deducting the cost from the Contract. If the Contractor cannot provide for the cost of repairs, the Surety of the Contractor shall be held until all damages, suits, or claims have been settled.

GP-23 PROTECTION OF THE WORK, MATERIALS AND EQUIPMENT

It shall be the responsibility of the Contractor to protect the Work, materials and equipment from damages or delays due to inflows, tidal rise, and storm water runoff which may occur at the Project Site. The Owner shall not be held liable or responsible for these types of delays or damages.

GP-24 LAND RIGHTS

The Owner has been granted all of the temporary easements, servitudes and right-of-way agreements from public and private landowners in order to perform the Work. A land rights memorandum which lists all known responsible contacts and required stipulations is provided in Appendix B. The Contractor is responsible to notify all of the contacts and abide by stipulations listed in that memorandum.

GP-25 UTILITIES

The Owner has been granted all of the temporary easements, servitudes and right-of-way agreements from public and private utilities in order to perform the Work. The utilities include, but are not limited to telephone, telegraph, power poles or lines, water or fire hydrants, water or gas mains and pipelines, sewers, conduits and other accessories or appurtenances of a similar nature which are fixed or controlled by a city, public utility company or corporation. A land rights memorandum is provided in Appendix B which lists all responsible contacts and required stipulations.

The Contractor shall conduct the Work in such a manner as to cooperate and minimize inconveniences with utilities. Prior to commencement of the Work, the Contractor is responsible to notify all of the utilities, abide by stipulations listed in the land rights memorandum, and make any necessary adjustments. The Contractor shall also call Louisiana One Call® at 1-800-272-3020 a minimum of 5 Working days prior to construction to locate existing utilities at the Project Site.

Any damage to utilities that is caused by the Contractor within the Project Site shall be repaired at the expense of the Contractor. The Owner will not be responsible for any delay or damage incurred by the Contractor due to Working around or joining the Work to utilities left in place or for making adjustments.
Any unidentified pipes or structures which may be discovered within the limits of the Project Site shall not be disturbed and reported to the Engineer as soon as possible. Construction or excavation shall not be performed around unidentified utilities without prior approval from the Engineer.

GP-26 PERMITS

All Federal and State permits that are required to perform the Work, such as the COE 404 Permit, Coastal Use Permit, and LDEQ Clean Water Permit, have been secured by the Owner. Copies of these permits are provided in Appendix C. These permits will not relieve the responsibility of the Contractor from obtaining any additional permits which may be needed to complete the Work. Copies of any special permits that are obtained by the Contractor must be submitted to the Owner. The Contractor shall conform to the requirements therein and display copies of the permits in a public setting at the Project Site at all times.

GP-27 PROJECT SITE CLEAN-UP

The Contractor shall keep the Project Site free from accumulations of waste material or trash at all times. All trash and waste materials shall be removed by the Contractor and disposed off-site in an approved waste disposal facility. In addition, all equipment, tools and non-conforming Work shall also be removed prior to the Work being accepted. No materials shall be placed outside of the Project Site.

GP-28 OWNER INSPECTION

The Owner, Inspector and Federal Sponsor shall have the right to perform reasonable inspections and testing of the Work at the Project Site. Access shall be granted to the entire Project Site including all materials intended for use in the Work. The Contractor shall allow reasonable time for these inspections and tests to be performed. The inspections shall not relieve the Contractor from any obligation in accordance with the requirements of the Contract.

The Owner shall notify the Contractor prior to all tests, inspections and approvals of the Work which are to be conducted at the Project Site. The Owner shall also provide the Contractor with the written results of all inspections and tests. Inspections, tests or Payments made by the Owner shall not constitute acceptance of non-conforming Work or prejudice the Owner’s rights under the Contract.

GP-29 DUTIES OF INSPECTOR

An Inspector shall be assigned by the Engineer to the Project Site to observe the Contractor and monitor the progress and manner in which the Work is being performed. The Inspector will also report to the Engineer and Contractor whenever materials or Work fail to comply with the Contract. The Inspector is authorized to reject any materials or suspend Work which does not comply with the Contract until the issue is resolved by the Engineer.

However, the Inspector is not authorized to revoke, alter, enlarge, relax or release any requirements of the Contract, or to approve or accept any portion of the Work, or to issue instructions contrary to the Plans and Specifications. The Inspector shall not manage or perform duties for the Contractor.

GP-30 CONSTRUCTION STAKES, LINES, AND GRADES

The Engineer shall direct the Contractor to all control points necessary for setting stakes and establishing lines and grades as shown on the Plan Drawings. The Contractor shall be responsible for laying out all of the Work. All layouts shall be witnessed and verified by the Engineer or Inspector prior to beginning the Work. The Contractor shall be responsible for proper execution of the Work according to the layouts after receiving verification from the Engineer.

The Contractor shall be responsible for furnishing and maintaining the stakes such that the Work can be verified for acceptance. The Engineer may suspend the Work at any time if it can not be adequately verified due to the number, quality or condition of the stakes.
GP-31 CONTRACTOR’S RESPONSIBILITY FOR WORK

The Contractor shall execute all items covered by the Contract, and shall furnish, unless otherwise definitely provided in the Contract, all materials, implements, machinery, equipment, tools, supplies, transportation and labor necessary to complete the Work. The Contractor shall pay constant attention to the progress of the Work and shall cooperate with the Engineer in every way possible. The Contractor shall maintain a complete copy of the Contract at all times, including the Plans, Specifications, and any authorized modifications.

GP-32 CONTROL OF SILTATION AND WATER POLLUTION

The Contractor shall comply with all applicable Federal and State regulations and statutes relating to the prevention and abatement of pollution in the performance of the Contract. The Contractor shall conduct the Work in a manner that will not cause damaging concentrations of silt or pollution to water. The Contractor shall prevent fuels, oils, bituminous materials, chemicals, sewage or other harmful contaminants from entering the land or water.

GP-33 SANITARY PROVISION

The Contractor shall provide and maintain sanitary accommodations for use by all employees and Subcontractors. Facilities shall comply with the requirements of the Louisiana State Board of Health and Hospitals and other authorities having jurisdiction. Committing public nuisance on the Project Site is prohibited.

GP-34 PAYMENT OF TAXES

The Contractor shall be responsible for all taxes and duties that maybe levied under existing State, Federal and local laws during the completion of the Work. The Owner will presume that the amount of such taxes is included in the unit prices bid by the Contractor and will not provide additional reimbursement.

GP-35 RADIO TELEPHONES

The Contractor shall furnish and maintain radio and telephone equipment throughout the Contract Time which will allow communication between the Contractor and the Engineer or Inspector.

GP-36 NAVIGATION

All marine vessels shall comply with the following Federal Laws and Regulations:

36.1 The International Navigational Rules Act of 1977 (Public Law 95-75, 91 Stat. 308, or 33 U.S.C. 1601-1608); and


These rules can be found on the Internet at http://www.nvccen.uscg.gov/mhv/navrules/navrules.htm. All marine vessels shall display the lights and day shapes required by Part C - Lights and Shapes of the Inland Navigation Rules. The location, type, color, and size of the lights and day shape shall be in accordance with Annex I - Positioning and Technical Details of Lights and Shapes. Any vessel engaged in dredging is considered a “Vessel restricted in her ability to maneuver” and shall display all the lights and shapes required in Rule 27, “Vessel Not Under Control.”

GP-37 OBSTRUCTION TO NAVIGATION

The Contractor shall minimize all obstructions to navigation in compliance with pertinent U. S. Coast Guard regulations while conducting the Work. The Contractor shall promptly move any floating equipment or marine vessels which obstruct safe passage of other marine vessels. Upon completion of the Work, the Contractor shall remove all marine vessels and other floating equipment such as temporary ranges, buoys, piles, and other marks or objects that are not permanent features of the Work.
GP-38 MARINE VESSELS AND MARINE ACTIVITIES

All marine vessels operated by the Contractor shall possess a valid United State Cost Guard (USCG) inspection certificate and current American Bureau of Shipping (ABS) Classification. All officers and crew shall possess valid USCG licenses as required by USCG regulations. These certificates, classifications and licenses shall be posted in a public area on board each vessel.

All marine vessels not subject to USGS certification or American Bureau of Shipping (ABS) Classification shall be inspected annually by a marine surveyor accredited by the National Association of Marine Surveyors (NAMS) or the Society of Accredited Marine Surveyors (SAMS). All inspections shall be documented using an appropriate report format. At a minimum, the inspections shall evaluate the structural integrity of the vessel and comply with the National Fire Protection Association Code No. 302 - Pleasure and Commercial Motor Craft. The most recent inspection report shall be posted in a public area on board each vessel.

GP-39 RECORDKEEPING

The Contractor shall maintain orderly records of the Progress Schedule, Daily Progress Report, Weekly Progress Meetings, correspondence, submittals, reproductions of original Contract Documents, Change Orders, Field Orders, certificates, additional drawings issued subsequent to the executed Contract, clarifications and interpretations of the Contract Documents by the Engineer, Work Plan and other related documents at the Project Site until all of the Work is accepted by the Engineer. The Contractor shall maintain a project site visitor’s log.

GP-40 CERTIFICATES OF COMPLIANCE

Any certificates required for demonstrating proof of compliance of materials with specification requirements shall be executed in three (3) copies. Each certificate shall be certified by an authorized agent of the supplying company and shall contain the name and address of the Contractor, the project name and location, and the quantity and date of shipment. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the testing date. The Contractor shall also certify that all materials and test reports conform to the requirements of the Contract. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material if the material is tested and determined to be in nonconformance.

GP-41 SUBMITTALS

The contractor shall review all Submittals for compliance with the requirements of the Contract prior to delivery to the Engineer. Each Submittal shall contain a signed statement by the Contractor that it complies with the Contract requirements with any exceptions explicitly listed. The Contractor shall comply with these requirements for Submittals from Subcontractors, manufacturers and suppliers

All Submittals shall include sufficient data to demonstrate that the requirements of the Contract are met or exceeded. All submittals shall be legible and marked with the project title and clearly identify the item submitted. Each submittal package shall include an itemized list of the items submitted.

All submittals shall be reviewed within fourteen (14) days after being received by the Engineer. The Contractor shall allow the Engineer sufficient time for review, corrections and resubmission of all submittals prior to beginning the associated Work. The Contract Time shall not be extended based on incorrect or incomplete Submittals.

GP-42 MODIFICATIONS TO THE WORK

The Engineer may authorize modifications, additions or deductions to the Work using Change Orders, Field Orders or Written Amendments. The requirements and stipulations of these documents shall be binding on the Owner and Contractor throughout the remainder of the Contract.

GP-43 INCREASES TO CONTRACT PRICE

The Contractor shall complete the Work according to the Contract Price specified in the Bidding Documents. Under certain circumstances, the Contractor may request for a legitimate increase to the Contract Price using a Claim. The Claim shall
justify the request for an increase in Contract Price by providing supporting data and calculations. The Claim must be submitted to the Engineer in writing within fourteen (14) days after the event occurs which necessitates the increase in contract price. If an increase in Contract Price involves an extension of Contract Time, both claims shall be submitted together. The Engineer reserves the right to accept, deny, or negotiate the Claim. If the Claim is accepted, the Engineer shall issue a Change Order. Where a change order is negotiated, the Contractor shall fully document and itemize costs, including material quantities, material costs, taxes, insurance, employee benefits, other related costs, profit and overhead. The requirements and stipulations of Change Order shall be binding on the Owner and Contractor throughout the remainder of the Contract.

The increase in Contract Price shall be determined by the following:

43.1 By application of the unit prices in the Contract to the quantities of the items involved; or
43.2 By mutual acceptance between the Owner and Contractor of a lump sum.

If the Contractor is prevented from completing the Work according to the Contract Price due to the Owner, the Contractor may be entitled to any reasonable and necessary addition of cost as determined by the Engineer. Neither the Owner nor the Contractor shall be entitled to any damages arising from events or occurrences which are beyond their control, including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God, acts of war, and other like matters. The provisions of this section exclude recovery for damages caused by the Contractor and compensation for additional professional services by either party.

GP-44 EXTENSION OF CONTRACT TIME

The Contractor is expected to complete the Work within the Contract Time specified in the Bidding Documents. A legitimate increase of the Contract time may be requested by the Contractor throughout the course of the Work. This Claim must be submitted to the Engineer in writing within fourteen (14) days of the event which caused the time delay to the Contractor. If an extension of Contract Time involves an increase in Contract Price, both claims shall be submitted together. The Contractor shall justify the increase of the Contract Time in the Claim using supporting data and calculations. The Engineer may deny the claim if there is insufficient information to make a determination. If the Claim is approved, the Engineer shall issue a Change Order within thirty (30) days of the Claim. The Contract Time shall be increased on a basis that is commensurate with the amount of additional or remaining Work. For example, the Contract Time can be increased where the number of actual adverse weather days exceeds the number of days estimated in the Contract.

GP-45 DEFAULT AND TERMINATION OF CONTRACT

The Owner shall submit a written notice to the Contractor and Surety which justifies placement of the Contractor in default if:

45.1 The Work is not begun within the time specified in the Notice to Proceed; or
45.2 The Work is performed with insufficient Workmen, equipment, or materials to assure prompt completion; or
45.3 The Contractor performs unsuitable, neglected or rejected Work, refuses to remove materials; or
45.4 The Work is discontinued; or
45.5 The Work is not completed within the Contract Time or time extension; or
45.6 Work is not resumed within a reasonable time after receiving a notice to continue; or
45.7 The Contractor becomes insolvent, or is declared bankrupt, or commits any act of bankruptcy or insolvency; or
45.8 The Contractor allows any final judgment to stand unsatisfied for a period of ten (10) days; or
45.9 The Contractor makes an assignment for the benefit of creditors; or
45.10 The Work is not performed in an acceptable manner.
If the Contractor or Surety does not remedy all conditions cited in the written notice within ten (10) days after receiving such a notice, the Contractor will be in default and the Owner shall remove the Contractor from the Work. If the Contractor is placed into default, the Owner may obtain the necessary labor, materials and equipment or enter into a new Agreement and Contract in order to complete the Work. All costs incurred by the Owner for completing the Work under the new Contract will be deducted from the payment due the Contractor. If the expense exceeds the sum payable under the Contract, the Contractor and Surety shall be liable to pay the Owner the difference.

GP-46 TEMPORARY SUSPENSION OF WORK

The Engineer shall have the authority to temporarily suspend the Work in whole or in part. A Field Order shall be issued to the Contractor for any of the Work that is suspended for periods exceeding one (1) calendar day. The Field Order shall include the specific reasons and details for the suspension. The Contract Time shall not be extended if the Work is suspended due to failure by the Contractor to comply with a Field Order or with the Plans and Specifications. If the Work is suspended in the interest of the Owner, the Contractor shall make due allowances for the lost time.

GP-47 NON-CONFORMING AND UNAUTHORIZED WORK

Work not conforming to the Plans, Specifications, Field Orders or Change Orders shall not be accepted or compensated. Unacceptable or unauthorized Work shall be removed and replaced in an acceptable manner at the expense of the Contractor in order to obtain final acceptance of the Work.

GP-48 CONTRACTOR’S RIGHT TO TERMINATE CONTRACT

The Contractor may terminate the Contract or Work and recover payment from the Owner for labor and materials if the Work is stopped through no act or fault of the Contractor for more than three (3) months. For example, such an occurrence could be caused by a court order or other public authority. In any case, the Contractor shall submit a written notice to the Engineer at the beginning of the occurrence, and a written Claim to the Owner at the end of the occurrence.

GP-49 BREACH OF CONTRACT

The Owner shall submit a written Claim to the Contractor regarding any breach of the Contract. The Contractor must provide a written response to the Owner regarding the breach of Contract within 10 days after the Claim. This response must provide either an admission to the Claim or a detailed denial based on relevant data and calculations. The failure of the Contractor to provide a proper response within 10 days shall result in justification of the Claim by default.

GP-50 NO WAIVER OF LEGAL RIGHTS

The Owner shall not be prevented from recovering costs from the Contractor, Surety or both due to failure of the Contractor to fulfill all of the obligations under the Contract. If a waiver is provided to the Contractor for a breach of Contract by the Owner, it shall not apply to any other breach of Contract. Final acceptance of the Work shall not prevent the Owner from correcting any measurement, estimate, or certificate. The Contractor shall be liable to the Owner without prejudice to the terms of the Contract or any warranty for latent defects, fraud or gross negligence.

GP-51 LIABILITY FOR DAMAGES AND INJURIES

To the fullest extent permitted by Laws and Regulations, the Contractor shall indemnify and hold harmless the Owner, Engineer and their affiliates from claims, costs, losses, demands and judgments (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) caused by negligence of the Contractor or the Contractor’s affiliates under this Contract, provided that it:

51.1 Is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property including the loss of use resulting there from; or

51.2 Is caused by negligence or omission of the Contractor or Subcontractors to furnish any of the Work in accordance with all Laws and Regulations.
The indemnification obligations of the Contractor shall not extend to the liability of the Owner, Engineer and their affiliates arising out of the preparation or approval of the Plans, Specifications, maps, opinions, reports, surveys, Change Orders, or for providing directions or instructions which are the primary cause of the injury or damage.

Should the Owner or Contractor suffer from any injury or damage due to an error, omission, or act of the other party or their legally liable affiliates, a written Claim shall be submitted to the other party within 10 days. The Claim shall provide all details regarding the injury or damage, the results of any investigations, and the action to be taken to prevent any reoccurrence.

**GP-52 LIABILITY FOR LOSSES BY ACTS OF THE GOVERNMENT**

The Owner shall not be liable for any loss or damage suffered by the Contractor arising out of a cessation of Work under this Contract due to any act or order of any local, state or federal government agency. If this cessation occurs, the Contractor may request an extension of the Contract Time according to the provisions in GP-44.

**GP-53 FINAL INSPECTION AND ACCEPTANCE**

The Engineer, Owner and Contractor shall perform a final inspection after receiving written notice from the Contractor that all of the Work is complete. If the Work is determined to be unsatisfactory, the Engineer shall notify the Contractor in writing of the deficiencies and recommended corrective actions.

Unfulfilled Work or damages caused by the negligence of the Contractor or Subcontractors shall be repaired or corrected at the expense of the Contractor. All other damages to the Work which received previous acceptance by the Engineer shall be repaired at the expense of the Owner. Upon completion of the repairs or corrections, the Engineer, Owner and Contractor shall perform another inspection. The Engineer shall submit a written notice of acceptance to the Owner after the Work has been determined to be satisfactorily completed according to the Contract.

**GP-54 AS-BUILT DRAWINGS**

The Contractor shall submit all originals and copies of the As-Built Drawings to the Engineer for review and acceptance in accordance with SP-3 and SP-4. The As-Built Drawings shall provide complete data for quantities, dimensions, specified performance and design criteria, and similar items which clearly represent the services, materials, and equipment the Contractor has provided. All revision sheets shall be clearly stamped with the words “As-Built”.

**GP-55 COMPLETION OF CONTRACT**

Completion of the Contract requires all of the Work to be complete, inspected by the Engineer, accepted by the Owner as recommended by the Engineer and after final payment is made. After the Contract is complete, the Contractor will then be released from further obligation except as set forth in the Contract Bond and Contractor’s Guarantee.

**GP-56 CONTRACTOR’S GUARANTEE**

The Contractor is obligated to provide a written guarantee to the Owner that all of the Work conforms to the Contract Documents. The Work shall be guaranteed to survive for a minimum period of 1 year after final acceptance, unless otherwise specified in the Technical Specifications.

56.1 The guarantee shall include:

56.1.1 A written warranty by the manufacturer for each piece of installed project equipment or apparatus furnished under the Contract.

56.1.2 Any necessary repair or replacement of the warranted equipment during the guarantee period at no cost to the Owner.

56.1.3 Satisfactory operation of installed equipment including, but not limited to, any mechanical and electrical systems furnished and constructed under the Contract during the guarantee period. The Contractor shall repair all
equipment which fails due to defective materials or faulty Workmanship during the guarantee period. The Contractor shall also be liable for all other ancillary expenses incurred by the Owner due to the failure.

56.2 The guarantee shall exclude defects or damage caused by:

56.2.1 Abuse or improper modification, maintenance or operation by anyone other than the Contractor; or

56.2.2 Wear and tear under normal usage.

56.3 This obligation by the Contractor shall be absolute. The following actions will not constitute acceptance of non-conformance Work or release the Contractor from obligation to furnish the Work in accordance with the Contract Documents:

56.3.1 Observations by the Owner or Engineer; or

56.3.2 Recommendations by the Engineer or payment by the Owner; or

56.3.3 Use of the Work by the Owner; or

56.3.4 Issuance of a notice of acceptance by the Owner pursuant to the provisions of GP-53, or failure to do so; or

56.3.5 Any inspection, test or approval by others; or

56.3.6 Any correction to non-conforming Work by the Owner.
PART II   SPECIAL PROVISIONS

SP-1   LOCATION OF WORK

The Project Site is located in Terrebonne Parish, Louisiana, on Whiskey Island. The Project site is approximately 17.5 miles southwest from Cocodrie, Louisiana. Whiskey Island is bounded by Coupe Colin and Raccoon Island to the west, Whiskey Pass and Trinity Island to the east, Lake Pelto to the Northeast, Caillou Boca to the North, Caillou Bay to the Northwest, and the Gulf of Mexico to the south.

The Project Site is accessible only by boat via the Houma Navigational Canal and Lake Pelto. The nearest boat launch is CoCo Marina in Cocodrie, Louisiana. See Appendix D – Location of Coco Marina for directions to the launch.

SP-2   WORK TO BE DONE

2.1 Scope: The CONTRACTOR shall provide all labor, materials, and equipment necessary to perform the Work. The Work shall include mobilization and demobilization at the Project Site and the dredging of material from an offshore borrow source to create the design fill templates. Additionally, the Work consists of containment dike construction, tidal creek and pond excavation, sand fence installation, surveying, and grading and shaping. The Work shall be performed in accordance with these Specifications and in conformity to lines, grades, and elevations shown on the Plans or as directed by ENGINEER. Quantity calculations, layouts, shop drawings, and construction sequencing of these items shall be provided in the Work Plan. The major tasks associated with the Base Bid and the Additive Alternate follow.

2.2 Base Bid Major Tasks

2.2.1 Pre- and Post-Construction Surveys: Prior to construction of the marsh platform, the transects in the marsh fill area that were established in the Plans shall be resurveyed for bathymetry and topography. The existing control points established in the Plans shall be verified or reinstalled if damaged. All of the access routes to the Project Site and the fill and borrow areas shall be surveyed by magnetometer. During construction, surveys for partial payment and quality control shall be performed as deemed necessary by the CONTRACTOR and as requested by the ENGINEER. After construction is complete, the CONTRACTOR shall perform an As-Built Survey which shall be reviewed by the ENGINEER for acceptance of the Work. See TS-2 for the requirements of this item.

2.2.2 Access and Flotation Channels: Access channels shall be dredged to the Project Site to allow for delivery of construction materials by marine vessels. All dredging shall be performed using a mechanical dredge. The channels shall be backfilled with the spoil material after construction of the project is complete. All access and flotation channels shall be maintained until the Work is accepted by the Engineer.

2.2.3 Tidal Creeks and Ponds: Tidal creeks and ponds shall be constructed to provide hydraulic exchange and circulation within the marsh. Tidal creeks and ponds shall be dredged prior to placing marsh fill. These pre-dredged tidal creeks and ponds will encourage settlement of marsh fill after construction thereby promoting tidal exchange in these areas during the life of the project. Dredging shall consist of removing and satisfactorily placing all material required to construct the tidal creeks and ponds. See TS-5 for the requirements of this item.

2.2.4 Hydraulic Dredging for Marsh Fill: Spoil material shall be dredged from Borrow Area 2a as shown in the Plans within the elevation tolerances stated in the Plans and these Specifications. Dredging shall be performed using a cutter head dredge. The CONTRACTOR shall specify the size of the dredge (s) to be used to perform the Work in the Dredge Data Sheet and Work Plan. See TS-3 for the requirements of this item.

2.2.5 Containment Dikes: Containment dikes shall be constructed from in-situ soils in order to create full perimeter and cellular containment. The CONTRACTOR may construct internal training dikes as necessary to improve containment or dewatering of the fill containment cells, but at no cost to the OWNER. See TS-4 for the requirements of this item.

2.2.6 Settlement Plates: Settlement plates shall be installed in the marsh platform at locations specified in the Plans or these Specifications.
2.3 Additive Alternate Major Tasks

2.3.1 Pre- and Post-Construction Surveys: Prior to construction of the dune feature, the transects in the dune fill area that were established in the Plans shall be resurveyed for topography. The existing control points established in the Plans shall be verified or reinstalled if damaged. During construction, surveys for partial payment and quality control shall be performed as deemed necessary by the CONTRACTOR and as requested by the ENGINEER. After construction is complete, the CONTRACTOR shall perform an As-Built Survey which shall be reviewed by the ENGINEER for acceptance of the Work. See TS-2 for the requirements of this item.

2.3.2 Hydraulic Dredging for Dune Fill: Spoil material shall be dredged from Borrow Area 2a as shown in the Plans within the elevation tolerances stated in the Plans and these Specifications. Dredging shall be performed using a cutter head dredge. The CONTRACTOR shall specify the size of the dredge(s) to be used to perform the Work in the Dredge Data Sheet and Work Plan. See TS-3 for the requirements of this item.

2.3.3 Sand Fencing: Sand fencing shall be installed along the alignment shown in the Plans. See TS-6 for the requirements of this item.

2.3.4 Seeding: Vegetative seeding shall be placed at the location shown on the Plans. See TS-11 for the requirements of this item.

2.4 Use of Equipment: The equipment used for the Work shall be operated within the boundaries of the Project Site and away from existing vegetated wetlands, the gulf shoreline, or any other sensitive areas. Wheeled and tracked vehicles are only allowed within the project areas which require end-on-construction as shown in the Plans. The CONTRACTOR shall be responsible for returning all disturbed wetlands to pre-existing conditions at no expense to the OWNER.

SP-3 BID AND CONTRACT DATES

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Location or Recipient</th>
<th>Date Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bid Advertisement Publications</td>
<td>As advertised</td>
<td></td>
</tr>
<tr>
<td>Pre-bid Conference</td>
<td>Provided in Notice to Bidders</td>
<td></td>
</tr>
<tr>
<td>Questions on Bid Documents</td>
<td>Deliver to the Office State Purchasing (OSP)</td>
<td>3 calendar days after Pre-bid Conference or Site Visit (if held).</td>
</tr>
<tr>
<td>Site Visit</td>
<td>Provided in Notice to Bidders</td>
<td></td>
</tr>
<tr>
<td>Effective Date of Agreement</td>
<td>Stated in Notice of Award</td>
<td></td>
</tr>
<tr>
<td>Start of Contract Time</td>
<td>As stated in Notice to Proceed</td>
<td></td>
</tr>
<tr>
<td>Work Plan</td>
<td>Submit to Engineer</td>
<td>At least 14 days prior to Pre-Construction Conference</td>
</tr>
<tr>
<td>Progress Schedule</td>
<td>Submit to Engineer</td>
<td>At least 14 days prior to the Pre-Construction Conference, monthly thereafter</td>
</tr>
<tr>
<td>Pre-Construction Conference</td>
<td>Contractor and Engineer</td>
<td>As determined by the Engineer after the Notice to Proceed is issued</td>
</tr>
<tr>
<td>Progress Meetings and Reports</td>
<td>At Project Site</td>
<td>As determined at Pre-Construction Conference</td>
</tr>
<tr>
<td>As-Built Drawings</td>
<td>Deliver to Engineer</td>
<td>Prior to Final Inspection as scheduled by the Engineer</td>
</tr>
<tr>
<td>End of Contract Time</td>
<td>At Project Site</td>
<td>270 calendar days after Notice to Proceed</td>
</tr>
</tbody>
</table>

SP-4 DELIVERABLES

8.1 Prior to Construction:

4.1.1 The Contractor shall submit the following documents to the Engineer prior to the Pre-Construction Conference specified in GP-14:

4.1.1.1 Work Plan as specified in GP-8;
4.1.1.2 Progress Schedule as specified in GP-9;
4.1.1.3 Copy of typical Daily Progress Report as specified in GP-10;
4.1.1.4 Hurricane and Severe Storm Plan as specified in GP-11;
4.1.1.5 Health and Safety Plan as specified in GP-12.

4.1.2 The Contractor shall provide the following information to the Engineer at the Pre-Construction Conference specified in GP-14:

4.1.2.1 Updates to all Plans and schedules based on comments from the Engineer;
4.1.2.2 Potential access corridors which may be approved on an as needed basis.

8.2 During Construction: The Contractor shall deliver copies of the following documents upon request by the Engineer, or as specified in these provisions:

4.2.1 The results of all surveys and calculations as specified in the Survey Technical Specification;
4.2.2 Progress Schedule as specified in GP-9;
4.2.3 Daily Progress Report as specified in GP-10;
4.2.4 Copies of all inspection reports;
4.2.5 All Change Orders, Field Orders, Claims, Clarifications and Amendments;
4.2.6 Results of any materials testing.

8.3 Post Construction: The Contractor shall contact the Engineer by phone, a minimum of five (5) Working days prior to the anticipated completion of the Work in order to schedule the final inspection and gain Acceptance by the Engineer. The following documents shall also be submitted to the Engineer:

4.3.1 Copies of all delivery slips, which shall include the source of construction materials, date of delivery, exact quantity, and size of materials delivered with each shipment to the Project Site;
4.3.2 The Contractor shall furnish the Engineer with the As-Built Drawings as specified in the Survey Technical Specification.

SP-5 ADDRESSES FOR DOCUMENT DELIVERY

Prior to Bid opening date, the Contractor shall send all Bid Documentation to the attention of Debbie Kimball of the Office of State Purchasing. The address and contact information is as follows:

State Purchasing Officer
Office of State Purchasing
Post Office Box 94095
Baton Rouge, LA 70804-9095
Phone: 225-219-7839
Fax: 225-342-8688

After award, the successful Contractor shall contact the Engineers concerning bid documentation or questions. The addresses and contact information for the Engineers are listed as follows:
SP-6 WORK PLAN SUPPLEMENTAL

The following items shall be included in the Work Plan in addition to those required by GP-8:

6.1 Layout and schedule for temporary access and flotation channels if deemed necessary by the CONTRACTOR;

6.2 Dredge Data Sheet as specified in 0.

6.3 Layout and construction schedule for containment dikes and training containment dikes, if deemed necessary by the CONTRACTOR;

6.4 Layout and schedule for dredge disposal pipes;

6.5 Layout and schedule for dewatering and discharge of marsh creation areas including the Contractor’s proposed plan for turbidity control.

SP-7 FAILURE TO COMPLETE ON TIME

For each day the Work remains incomplete beyond the Contract Time, as specified in SP-3, or Extension of Contract Time, as specified in GP-44, the sum of two thousand four hundred fifty dollars ($2,450) per calendar day will be deducted from any money due to the Contractor as liquidated damages. The Contractor and Surety shall be liable for any liquidated damages that are in excess of the amount due the Contractor.

SP-8 TRANSPORTATION

The Contractor shall provide a safe and reasonable means of transportation to and from the dock, staging area and Project Site for personnel from LDNR and the Federal Sponsor throughout the Work. The schedule and pickup location shall be arranged by LDNR and the Contractor prior to mobilization. Upon request, overnight room and board shall be provided to these personnel by the Contractor if adequate facilities are available. The Contractor shall provide a boat for the exclusive use of the Engineer and/or Inspector to tour the Project Site during the Work. The boat shall have the following features:

8.1 An enclosed cabin space;

8.2 Capable of maintaining 25 knots (29 mph);

8.3 Six (6) passenger capacity;

8.4 Coast Guard certified;

8.5 Operable marine radio;

8.6 All safety equipment required by the Coast Guard for the size and type of that boat;

8.7 Draft of two feet (2’) or less.
The Contractor shall also provide the Inspector daily access to an airboat with qualified operator, and/or all-terrain vehicle, as necessary to properly inspect the marsh and dune fill areas for the duration of the dredging activity. The Contractor shall supply the fuel and maintain the boat. All mechanical malfunctions of the boat shall be repaired within twelve (12) hours. In the event that the Contractor refuses, neglects, or delays compliance with the requirements of this provision, the Owner may obtain and use other necessary boats at the expense of the Contractor. The costs associated with providing the boats shall be included in the lump sum price for Bid Item No. 1.

SP-9 DREDGE DATA SHEET

The Contractor shall complete the data sheet in Appendix G for each dredge that is proposed to be used to perform the Work and include it in the Bid. Submittal of a dredge data sheet shall constitute a certification that the described equipment is available to, and under control of, the Contractor. The Dredge Data Sheet is for informational purposes only and will not be used as a basis for Award. The data is pertinent to the evaluation of the proposed dredges and their capability to perform the Work. The bidder may only omit data or information that is considered to be proprietary.

SP-10 (RESERVED)

SP-11 OYSTER LEASE RESTRICTIONS

Oyster leases are known to exist near the boundaries of the Project Site. The locations for the leases are provided in the Plans. It is not anticipated that the Work will affect any oyster leases in the area.

SP-12 THREATENED AND ENDANGERED SPECIES

The environmental assessment (EA) for this project has identified the piping plover and the brown pelican as threatened and endangered species which have the potential for existing within the project site. No construction activities will be allowed within 1500 feet of nesting birds unless approved by LDNR and LDWF representatives. The contractor shall review and comply with any other restrictions of the EA regarding nesting birds. A copy of the EA is provided in Appendix H.

SP-13 SPECIAL PERMIT CONDITIONS

The Contractor shall notify the commander of the Eighth United States Coast Guard District as specified by the USACE Permit in Appendix C. A copy of the Plans and that permit shall also be provided to the commander as specified in the permit.

SP-14 OFFICE FOR OWNER

The Contractor shall provide an office for the Engineer and Inspector at the Project Site. This office shall be for the sole use of the Engineer or Inspector, suitably sized, provided with lighting, heat, and air conditioning. The office furnishings shall include a Work table, drafting table, stool, and two chairs.

In the event that the Contractor refuses, neglects, or delay compliance with the requirements of this provision, the Owner may obtain and use another necessary office at the expense of the Contractor. The cost for providing and furnishing this office shall be included in the contract lump sum price for Bid Item No. 1.
PART III  TECHNICAL SPECIFICATIONS

TS-1 MOBILIZATION (60%) AND DEMOBILIZATION (40%)

1.1 **Description**: The CONTRACTOR shall provide all labor and equipment costs necessary to move personnel, equipment, supplies and incidentals to and from the Project Site, establish offices, buildings, and other facilities necessary for the Work, obtain bonds, required insurance and any other pre-construction expenses necessary to perform the Work. This section shall exclude the cost of construction materials.

1.2 **Arbitrary Mobilization by CONTRACTOR**: The OWNER shall pay for only one mobilization and demobilization effort. Should the CONTRACTOR demobilize prior to completing the Work, subsequent remobilization shall be performed at no cost to the OWNER.

1.3 **Ratio of Mobilization and Demobilization Effort**: Sixty percent (60%) of the mobilization/demobilization lump sum price will be paid to the CONTRACTOR upon complete mobilization to the Project Site and the commencement of dredging operations. The remaining forty percent (40%) will be paid to the CONTRACTOR upon final acceptance of the Work.

1.4 **Justification of Costs**: The CONTRACTOR will be required to submit a written Claim to the ENGINEER if the ratio of mobilization and demobilization effort is in unreasonable relation to the cost of the Work. The ENGINEER shall make a determination on the justification of the Claim. Failure to adequately justify this relation in the Claim shall result in payment of actual mobilization and demobilization costs in the ratio stated in this section. The determination by the ENGINEER is not subject to appeal.

1.5 **Measurement and Payment**: The CONTRACTOR shall submit an Application for Payment for the costs incurred to mobilize and demobilize all equipment, personnel, and other such costs as denoted in the Contract Documents. Upon approval by the ENGINEER, invoices shall be paid for at the contract lump sum price for Bid Item No. 1. No invoice will be paid for demobilization until the As-Built surveys have been accepted by the ENGINEER as required in TS-2.
TS-2 PRE AND POST CONSTRUCTION SURVEYS

2.1 **Scope:** The CONTRACTOR shall furnish all of the materials, labor and equipment necessary to perform pre-construction, process and as-built surveys of the baselines, transects and borrow areas shown in the Plans. All surveys shall be performed by personnel who are approved by the ENGINEER and under the direct supervision of a professional surveyor licensed in the state of Louisiana. Survey data shall reference the North American Datum of 1983, Louisiana South Zone, U. S. Survey Feet, and the North American Vertical Datum of 1988, U. S. Survey Feet. Horizontal and vertical control shall be established by using the LDNR secondary monument specified in Appendix E.

2.2 **Temporary Bench Marks (TBMs):** Temporary Benchmarks shall be installed at locations necessary to stakeout the project baselines as well as other project features. Horizontal and vertical coordinates shall be determined for all TBMs installed. All TBM’s shall reference the secondary monument. The CONTRACTOR shall maintain the TBMs for the duration of construction at the CONTRACTOR’s expense. In the event that a single TBM is disturbed and/or destroyed, the TBM may be reinstalled by a qualified CONTRACTOR employee approved by the OWNER. If multiple TBMs are destroyed, the OWNER may require the TBMs to be reinstalled by a professional surveyor licensed in the State of Louisiana.

2.3 **Deliverables to the ENGINEER:** Deliverables to the ENGINEER shall be as described in Section 2.13 of TS-2.

2.4 **Control Baselines:** The marsh and dune control baselines shall be surveyed and staked at all points of inflection, at intersections with the marsh pay profile lines, and at intersection with the dune survey pay transects, as shown in the Plans.

2.5 **Grade Stakes:** Grade stakes for marsh fill construction shall be as described in TS-10, Grade Stakes.

2.6 **Pre-construction Fill Area Surveys:** The baseline, transects and temporary benchmarks shall be surveyed after the Pre-Construction Conference and prior to construction. This survey shall be used to verify the alignment of the various project features and make modifications or adjustments as deemed necessary by the Engineer. Drawings of the plan views and cross sections and calculations of the projected quantities of materials shall be developed by the Contractor from this survey.

2.6.1 **Pre-construction Survey Dune Fill Area:** A pre-construction survey will be conducted by the CONTRACTOR. It shall consist of transects spaced 250 foot apart and oriented perpendicular to the survey baseline. Elevations shall be recorded at points every 25 feet along each transect line in the dune fill area. The maximum elevation difference between adjacent points shall be less than 1 foot. The surveys will be used by the ENGINEER to update the Plans and prepare the final cross-sections for the Plans. The CONTRACTOR shall not commence construction until all cross-sections, based upon the CONTRACTOR’s dune fill area pre-construction survey, have been incorporated into the Plans for the project, unless permission to proceed is provided in writing by the ENGINEER. A minimum of five (5) business days will be required to update the project Plans upon receipt of the pre-construction survey data.

2.6.2 **Pre-construction Survey Marsh Fill Area:** A pre-construction survey will be conducted by the CONTRACTOR. It shall consist of transects spaced 250 foot apart and oriented perpendicular to the survey baselines. Elevations shall be recorded at points every 100 feet along each transect line in the marsh fill area. The maximum elevation difference between adjacent points shall be less than 0.5 foot. The surveys will be used by the ENGINEER to update the Plans and prepare the final cross-sections for the Plans. The CONTRACTOR shall not commence construction until all cross-sections, based upon the CONTRACTOR’s marsh fill area pre-construction survey, have been incorporated into the Plans for the project, unless permission to proceed is provided in writing by the ENGINEER. A minimum of five (5) business days will be required to update the project Plans upon receipt of the pre-construction survey data.

2.7 **Borrow Area Surveys:** Borrow Area 2a shall be surveyed prior to dredging overburden for placement in the marsh template, prior to dredging sand for placement in the dune template, and after construction for as-built drawings. Bathymetric survey transects shall be spaced on a 200 foot grid with survey lines oriented north-south or east-west. The process surveys must be submitted to and approved by the ENGINEER prior to beginning excavation for dune fill. All bathymetric surveys must be corrected for tidal fluctuations and wave action to the referenced datums. The survey transects shall extend a minimum of 500 feet beyond the boundary of the borrow area. If the process survey shows that additional overburden material must be stripped and disposed of prior to dredging for dune fill, additional process surveys must be performed to verify that the material designated for dune fill has been exposed.
A magnetometer survey of the borrow area has been performed in preparation for this project in an effort to verify locations of pipelines and other underwater obstructions in the borrow area. The magnetometer survey is provided in the Plans. This does not relieve the CONTRACTOR of responsibilities set forth in GP-25. The CONTRACTOR shall perform a magnetometer survey of Borrow Area 2a prior to commencement of dredging. Magnetometer data shall be collected on transects spaced on a 200 foot grid with survey lines oriented north-south or east-west. The survey transects shall extend a minimum of 500 feet beyond the boundary of the borrow area. The magnetometer survey of the borrow area must be submitted to and approved by the ENGINEER prior to beginning excavation.

The CONTRACTOR shall also, at a minimum, perform a magnetometer survey at all access channels, flotation channels, and known well locations within the project site. The magnetometer survey shall be run along the centerline of the access and/or flotation channel. Magnetometer data shall be collected on a minimum of three circular routes around all known wellheads within 150 feet of any access channel and the Borrow Area 2a. The maximum spacing of these lines shall be 500 feet. The magnetometer surveys must be submitted to and approved by the ENGINEER prior to beginning the project.

2.8 **Containment Dikes:** The alignment of all containment dikes within the marsh fill area shall be surveyed and staked at 500 ft intervals and at all points of intersection as shown on the Plans. The elevation and coordinates for each stake shall be recorded. The CONTRACTOR shall create cross sections and plan views of the proposed containment dikes within the fill area. The required volume for the dikes within each area shall also be calculated based on the cross section specified in the Plans. The volume shall be determined using a method that is approved by the ENGINEER, such as the average end area or AutoCADD. After the containment dikes have been constructed, the toes and top centerline of the containment dikes shall be surveyed. The elevation and coordinates shall be recorded and used to create plan views and cross sections of the containment dikes.

2.9 **Tidal Creeks and Ponds:** The tidal creeks and ponds shall be surveyed prior to their construction and immediately after their excavation is completed. Transects shall be surveyed perpendicular to the tidal creek and pond centerlines every 200 feet. These surveys will be used for volume and payment calculations. The volume for each tidal creek and pond section shall be calculated by multiplying the average transect cross sectional area by the length of the segment (average end area method) or other method approved by the OWNER or ENGINEER. Volume calculations shall be submitted to the OWNER and ENGINEER for verification. The surveys will also be checked by the OWNER and ENGINEER to ensure that the design channel width, slopes, and minimum elevations, have been achieved within the specified tolerances. Construction of marsh fills will not be authorized to begin until the tidal creeks and ponds are approved.

2.10 **Access Channels:** All access channels shall be surveyed and staked prior to dredging the channel to establish existing conditions. Transects shall be surveyed perpendicular to the access channel centerline every 500 feet along the channel centerline. Elevations shall be recorded at points every 25 feet along each transect line. The transects shall extend a minimum of 50 feet beyond the limits of the side cast disposal areas.

The access channels shall also be surveyed after construction is completed. The same transects surveyed prior to construction shall be surveyed again when the access channel has been backfilled. Transects shall be surveyed perpendicular to the access channel centerline every 500 feet. The following points shall be surveyed for each transect: top and bottom of cut for both sides of the channel, the channel bottom mid point, and points every 25 feet along each transect from the top of the channel cut out to a minimum of 50 feet beyond the limits of the side cast disposal area. These surveys will be checked by the OWNER and ENGINEER for permit compliance and restoration of the channel and side cast disposal areas to original conditions.

2.11 **Sand Fencing:** Horizontal locations of approved sections of installed sand fencing shall be recorded at fencing end points and at locations every 1000 feet in between.

2.12 **Settlement Plates:** The elevation of the top of each settlement plate shall be recorded and reported to the nearest tenth of a foot (0.1’) NAVD 88. Elevations shall be recorded upon installation and again weekly throughout the duration of construction. The final elevation shall be listed on the as-built drawings.

2.13 **Post-construction Fill Area Surveys:** A post-construction survey of the fill elevations of the dune and marsh fill areas shall be made in order to calculate a fill volume. The post-construction surveys must be submitted to and approved by the ENGINEER prior to processing the pay request. The exact same transects surveyed prior to construction shall be surveyed again when the CONTRACTOR requests payment for filling operations. The area contained in each transect shall then be calculated if the post construction elevations are accepted by the ENGINEER. The volume for each fill section shall be calculated by multiplying the average transect cross sectional area by the length of the fill segment (average
end area method) or other method approved by the ENGINEER. Volume calculations shall be submitted to the ENGINEER for verification.

2.13.1 **As-built Surveys Dune Fill Area:** If determined by the ENGINEER to be an accurate representation of the post-construction fill placement, the CONTRACTOR’s as-built survey records will be used to compute the volume placed for payment purposes. The ENGINEER, at their discretion, may verify the as-built survey results of the CONTRACTOR. The ENGINEER’s survey will be used for payment purposes if, in the ENGINEER’s opinion, a significant difference is found between the CONTRACTOR’s as-built survey and the ENGINEER’s survey.

2.13.2 **As-built Survey Marsh fill Area:** The CONTRACTOR shall perform the as-built survey no earlier than thirty (30) days following completion of marsh fill placement within a fill section. The CONTRACTOR may perform the as-built survey in a similar manner as to the pre-construction survey. However, it is anticipated that the constructed marsh may be in a semi-liquid state and conventional surveying may be difficult. The ENGINEER may therefore allow the use of graduated grade stakes and visual measurement from the perimeter of the marsh to take the place of conventional topographic surveying.

2.14 **Submittals:**

2.14.1 **Drawings:** Five (5) copies of as-built drawings and all other survey drawings required by these Specifications shall be submitted to the OWNER and ENGINEER in digital AutoCAD format and 11” X 17” hard copies. As-built drawings shall incorporate all field changes, change orders, and show the actual quantities of fill material placed. All revisions shall be shown in red and be easily distinguishable from the original design. The drawings shall be stamped by a professional surveyor licensed in the State of Louisiana and submitted to the OWNER and ENGINEER for approval prior to final acceptance.

2.14.2 **Point Files:** Point files shall be submitted in electronic format to the OWNER and ENGINEER. The point files shall contain the following information:

- 2.14.2.1 Point number
- 2.14.2.2 Northing and Easting (Louisiana State Plane South NAD 83 US. FT.)
- 2.14.2.3 Elevation (reported to the nearest 0.1’ NAVD 88 FT.)
- 2.14.2.4 Point Description

2.14.3 **Survey Field Notes:** The CONTRACTOR shall submit survey field notes to the ENGINEER upon completion of each survey to expedite review of payment requests. All field notes, survey and volume computations, and the records used by the CONTRACTOR to compute the payment fill quantity shall be furnished to the ENGINEER with the Application for Progress Payment and Final Application for Progress Payment.

2.15 **Ratio of Pre- and Post-Construction Surveying Effort:** Sixty percent (60%) of the lump sum price will be paid to the CONTRACTOR upon completion of pre-construction surveys and the remaining forty percent (40%) will be paid to the CONTRACTOR upon approval of as-built drawings and electronic submittals.

2.16 **Justification of Surveying Costs:** In the event that the OWNER considers the amount in this item, sixty percent (60%) and forty percent (40%) which represents pre- and post-construction surveys, respectively, does not bear a reasonable relation to the cost of the Work in this Contract, the OWNER may require the CONTRACTOR to produce cost data to justify this portion of the bid. Failure to justify such price to the satisfaction of the OWNER will result in payment of actual surveying costs, as determined by the OWNER at the completion of each survey, and payment of the remainder of this item in the final payment under this Contract. The determination of the OWNER is not subject to appeal.

2.17 **Measurement and Payment:** All costs associated with pre- and post-construction surveys as may be denoted in the Contract Documents shall be paid for at the contract lump sum price for Bid Item No. 2 for the Base Bid and Bid Item No. 7 for the Additive Alternate Bid.
3.1 **Scope:** The CONTRACTOR shall furnish all of the materials, labor and equipment necessary to dredge Borrow Area 2a and place the approved material into the fill area in accordance with these Specifications and in conformity to the lines, grades, elevations, and tolerances shown on the Plans. The fill must be dredged, pumped and placed in such a manner to insure that negative impacts caused by the project are minimized.

3.2 **Equipment:** The dredge equipment used for the Work shall be cutterhead dredge type only. The use of any other type of dredge is prohibited. The CONTRACTOR shall determine and select the most appropriate size of the dredge with the highest priority being the integrity of the containment dikes. Other factors to be considered shall include safety, the environment, depth of draft, etc. The dredge shall be in satisfactory operating condition, capable of efficiently performing the Work as set forth in the Plans and these Specifications and it shall be subject to inspection by the ENGINEER or Inspector at all times. A Dredge Data Sheet which provides a complete description of the dredge (size, horsepower, production rate, draft, etc.) as specified in SP-9 shall be submitted in the Bid and included in the Work Plan.

Earth-moving equipment shall be operated only within the boundaries of the Project Site and away from existing vegetated wetlands, the shoreline, nesting birds or any other sensitive areas. See SP-12 and Appendix H for distance restrictions for work near nesting birds.

3.3 **Navigation Depths:** It is the responsibility of the CONTRACTOR to select equipment that can navigate from a maintained navigation channel to the Project Site within the limits of the access channel location and depths as shown on the Plans. The equipment shall remain floating at all times during the Work and transit to the Project Site. Areas containing navigable depths shall not be impaired except as allowed by applicable laws or regulations. The CONTRACTOR shall obtain NOAA Nautical Charts and/or other charts to become familiar with the depths in the vicinity of the Project Site.

3.4 **Materials:** Suitable materials to be dredged for marsh and dune fill have been identified in the designated borrow area and shall be used as per the Plans and Specifications. Vibratory core logs for the borrow areas are provided in Appendix F. Materials such as logs, stumps, snags, tires, scrap and other debris which are encountered shall be removed and properly disposed of by the CONTRACTOR.

3.5 **Hydraulic Placement Of Fill:**

3.5.1 **Fill Placement Requirements:** For this project marsh fill is part of the Base Bid and dune fill is part of the Additive Alternate. Dune fill will only be excavated and placed if the Additive Alternate is awarded by the OWNER. All marsh and dune fill excavated from the borrow areas shall be transported to, and hydraulically deposited on the marsh or dune within the lines, grades and cross sections shown in the Plans for the type of fill being placed (marsh or dune), unless otherwise provided for herein or directed by the ENGINEER. The topography of the fill area is subject to changes, and the elevations on the fill areas at the time the Work is done may vary from the elevations shown in the Plans. The CONTRACTOR is to place the hydraulic fill in the fill area in such a manner as to establish a uniform dune and marsh platform between adjacent pay profile lines. Sections located between pay profiles will not be underfilled, as defined in the Contract Documents. The CONTRACTOR shall maintain and protect the fill and all primary and secondary dikes in a satisfactory condition at all times until final completion and acceptance of the Work.

3.5.2 **Right to Vary the Filled Area:** The ENGINEER reserves the right to vary the width or grade of the dune from the lines and grades shown on the Plans or observed at the Project Site in order to establish a uniform fill area between adjacent pay profile lines or for the entire length of the project, as shown in the Plans for the project. The hydraulic fill cross sections shown in the Plans are the purpose of estimating the amount of hydraulic fill needed and will be used by the ENGINEER in making any change in the lines and grades.

3.5.3 **Control of Fill:** The CONTRACTOR shall retain placed fill within the fill template until acceptance of the fill section. The CONTRACTOR shall construct primary and secondary dikes along the landward limits of the marsh platform as shown on the Plans. Training dikes, and spreader and pocket pipe can be used as necessary to prevent gullying and erosion of the dune fill, to retain the hydraulic fill on the dune within the limits of the hydraulic fill template cross section, and to control water turbidity. The pipeline discharge will be located no closer than 25 feet from any structure to avoid potentially undermining the structure and at a minimum distance deemed safe by the CONTRACTOR. Training dikes shall be constructed along the Gulf of Mexico waterline as necessary to direct the pipeline discharge longitudinally along the beach to avoid transverse gullying direct from the discharge point to the
Gulf of Mexico, and to build the dune crest to the design grade of +6.0 feet (NAVD 88). Total containment, however, of dune fill is not required.

3.5.4 **Construction Elevations and Slopes:** The Plans and contract documents for the project delineate a construction dune crest elevation of +6.0 ft NAVD 88 and construction dune slopes of one (1) foot vertical to thirty (30) feet horizontal. The Plans and contract documents for the project delineate a marsh platform elevation of +2.5 feet NAVD 88. The marsh fill area will be inspected after a minimum of 30 days to evaluate initial settling, completeness, elevation, and width. If the inspected area has undergone considerable settlement, the ENGINEER will require the CONTRACTOR to place additional material prior to acceptance. An additional 30-day waiting period must pass before the areas are re-surveyed and considered for acceptance.

3.5.5 **Uniform Fill Areas:** The filled areas between the pay profiles will be graded, dressed and uniform in dimension. Segments between pay profiles shall be filled to a minimum of 95% of the volume based on the fill templates shown in the cross sections of the Plans, and to the minimum vertical tolerance everywhere, as specified in TS-3.11. The constructed grades between pay profiles, including the dune crest and primary dikes, will be uniform with parallel and straight contour lines, indicating that the CONTRACTOR has constructed a uniform (non-cuspate) cross section between the profile lines to the appropriate elevations (+6.0 feet NAVD 88 dune, +2.5 ft NAVD 88 marsh) and widths.

3.5.6 **Dressing Dune Fill:** Upon completion of all filling operations within an acceptance section, and prior to surveying for payment, the dune fill shall be graded and dressed so as to eliminate any undrained pockets, ridges, and depressions in the hydraulic fill surfaces. The CONTRACTOR is to grade and dress the dune fill in such a manner as to establish a uniform dune crest width and slopes between adjacent pay profile lines. The CONTRACTOR shall use a method of grading and dressing acceptable to the OWNER. Banks or scrapes caused by wave erosion shall be eliminated during this task. Grading and other construction equipment will not be permitted outside the project limit as shown in the Plans except for ingress or egress to and from the site.

3.5.7 **Removal of All Debris from the Fill Area:** Prior to placement of fill, the CONTRACTOR shall remove:

(a) All snags, driftwood, trash, and similar debris laying within the foundation limits of each and dune fill area.

(b) All trash and other items as directed by the ENGINEER from the marsh platform area. All materials shall be disposed of in an appropriate and legal manner and at the expense of the CONTRACTOR. No separate payment for removal and disposal of the materials shall be made. All costs shall be incorporated into the unit cost for dune and marsh fill.

3.6 **Dredge Location Control:**

3.6.1 **Horizontal Location Control:** The CONTRACTOR is required to have electronic positioning equipment that will locate the dredge when operating in the borrow area. The CONTRACTOR shall keep this equipment functioning on the dredge at all times during construction and when the dredge is within one (1) mile of the borrow area or the fills. The CONTRACTOR is required to calibrate the equipment as required by the manufacturer. Proof of calibration shall be submitted to the OWNER and ENGINEER. Continuous locations of the dredge shall be made at all times during dredging operations. The location is to be determined by computed coordinates in the Louisiana State Plane South Coordinate System, NAD 1983 (Lambert Conformal Conic) with a probable range error not to exceed 15 feet. Positions shall be recorded at least every five (5) minutes and furnished daily as part of the CONTRACTOR’s Daily Quality Control Reports, along with a drawing of the track of the dredge in relation to the dredge site. The CONTRACTOR’s method of locating the dredge shall be submitted to the OWNER and ENGINEER for review and approval with the Work Plan.

3.6.2 **Dredging Elevations:** The CONTRACTOR is also required to have a dredging depth indicator capable of gauging the depth being dredged at all times for each piece and type of dredging plant being utilized. The instrument may be a graph type paper or electronic recorder. The paper or depth record produced by this instrument shall be submitted daily with the Daily Quality Control Report. Flagging or marking the winch cables is not an acceptable option to fulfill this instrument requirement. The indicators shall be in plain view of operators and Inspector(s) and be adjusted to the reference datum, NAVD 88. The CONTRACTOR shall use measured tides to adjust dredging depth to the reference datum. Tide measurements must be taken on the gulf side of the project area away from tidal inlets and navigation channels. The tide measurement location must be submitted in the Work Plan for review and approval by the OWNER and ENGINEER. All tide measuring equipment and apparatus must be removed prior to demobilization.
3.7 Excavation:

3.7.1 Potential Differing Borrow Area Characteristics: The characteristics of the materials in the borrow area may be as generally indicated by the sediment vibratory logs and grain size distribution curves attached hereto as Appendix F. The material found in each of the borrow area sediment core borings (vibracores) is indicative only of the material at that discrete location. The CONTRACTOR should be aware that it is possible for material of differing characteristics to be present in the borrow area, including material differing from that contained in the vibracores.

3.7.2 Excavation: The borrow area to be used on this project is Borrow Area 2a shown on the Plans. This borrow area is located approximately 5 miles southeast of the fill area. Borrow Area 2a will be used as the fill source for the dune material and for the marsh material.

3.7.2.1 Borrow Area Cut Sequence: The Borrow Area has a layer of mud overburden material atop the fine sand dune material. This overburden shall be placed in the marsh fill area as shown on the Plans. Removal of the overburden is necessary before the fine sand dune material can be dredged. In the event that excess overlying sediment designated for marsh fill remains in the borrow area rendering underlying sediments designated for dune fill inaccessible, the CONTRACTOR will be allowed to remove the excess marsh sediments as described herein. Once the marsh fill area has been constructed and accepted, borrow area sediments designed for marsh fill may be stripped and pumped into approved previously dredged sections of the borrow area. Previously dredged sections will be approved upon review and acceptance of surveys outlined in TS-2.7 “Borrow Area Surveys.” In order to keep stripped marsh sediments separate from dune fill sediments, the CONTRACTOR must leave at least a 350 foot section of excess marsh sediments undredged in between the area being stripped and the previously dredged, surveyed, and accepted area being backfilled. The CONTRACTOR must submit a proposed borrow area cut sequence with the Initial Work Plan for approval by the OWNER and ENGINEER prior to dredging operations.

3.7.2.2 Borrow Area Excavation Limitation: All excavation shall be performed within the horizontal and vertical limits of the borrow area shown in the Plans. The borrow area has been further divided, based on the allowable dredge depth in each sub-area of the borrow areas. Under no circumstances will excavation occur below the designated limit of cut as shown in the Plans. No dredging is permitted in excess of the dredge depth shown in the Plans, referenced to NAVD 88. The material located below the indicated dredge depth, in many cases, may not be suitable for placement in the dune or marsh template. The CONTRACTOR will be required to certify in each Daily Quality Control Report that the excavation has occurred within the limits of the Plans. If excavation occurs outside of the permitted borrow area, or below the depth as shown in the Plans, the CONTRACTOR will pay any and all permit fines for the permit violation. If the CONTRACTOR does not pay any costs, fines or other expenses related to dredging outside of the borrow area limit and/or for permit violations, the ENGINEER will withhold retainage from payments due to the CONTRACTOR from the ENGINEER, or may be recovered from the CONTRACTOR’s bond to cover all costs, fines or expenses related to excavating outside of borrow area limits and/or deeper than allowed within the borrow area. The ENGINEER will deduct quantities of material dredged outside of and/or below the allowable dredge depths from pay quantities.

3.7.2.3 Uniform Excavation: To the greatest extent practicable, all excavation shall be performed in a uniform and continuous manner so as to avoid creating multiple holes, valleys, ridges within the borrow area. The borrow area shall be dredged to maximize the removal of suitable material from each sub-area of the borrow area.

3.7.3 Acceptable and Unacceptable Materials:

3.7.3.1 The project as depicted in the Plans features a marsh platform and a dune fill area. The locations of the marsh platform and the dune fill area appear in the Plans.

3.7.3.2 Dune Fill Area: The dune fill area is shown on the Plans. The CONTRACTOR will NOT be paid for any material placed in the dune fill area that comes from a source other than Borrow Area 2a. In order to minimize turbidity in the Gulf of Mexico and maximize project performance, dune fill shall not exceed a silt content of 20% with a minimum mean grain size of 0.075 mm, as measured on the dune following placement. Overburden materials shall not be used for dune fill. Unacceptable materials also include hard clays, debris, and rocks or rubble larger than 1.9 mm in diameter. If the ENGINEER has reason to believe that the material being placed in the dune fill area does not meet the above standards, the ENGINEER may require the CONTRACTOR to collect sand sample under the ENGINEER’s direction and supervision and at the CONTRACTOR’s expense. The ENGINEER may then conduct a sieve analysis to determine whether the material being placed in the dune fill area is acceptable.
3.7.3.3 **Marsh Platform:** The marsh platform boundaries are shown on the Plans. Any dune fill material incidentally dredged from Borrow Area 2a and placed within the marsh fill template may be left in place. The material will be accounted for as marsh fill and paid for at the unit price for marsh fill.

3.7.4 **Encountering Unacceptable Material in the Borrow Area:** Unacceptable material shall not be placed in the fill areas. The CONTRACTOR shall continuously monitor the fill material for unacceptable materials in the fill being placed. If unacceptable materials are encountered during dredging, the CONTRACTOR shall immediately cease operation and relocate to another portion of the borrow area to eliminate the unacceptable materials. The CONTRACTOR shall immediately notify the ENGINEER verbally, and report the encounter with the unacceptable materials in the Quality Control Report, providing location in the State Plane Coordinates of the area of the unacceptable materials. Unacceptable materials which are excavated and placed in the fill areas will be removed from the dune areas by the CONTRACTOR, at the CONTRACTOR’s own cost. If the CONTRACTOR fails to remove the unacceptable materials to the satisfaction of the ENGINEER, such materials may be removed by the ENGINEER and the cost of such removal may be deducted from any money due, or to become due, to the CONTRACTOR or may be recovered under their bond. The ENGINEER has the authority to determine if the quality of the material being placed in the areas is acceptable. If the ENGINEER makes a specific determination that material being placed is being placed is unacceptable, the CONTRACTOR will adjust their construction operation to avoid this material. This does not relieve the CONTRACTOR of responsibility for all placed material, including unacceptable material, rock, rubble, and debris.

3.7.5 **Character of Material within the Borrow Area:** The descriptions of the material are based on remote site investigations and site-specific core borings. The material descriptions are provided in the appendices of this section and only describe the materials obtained from those investigations. The CONTRACTOR is solely responsible for any interpretation or conclusions drawn there from. The CONTRACTOR may visually inspect the core samples prior to the start of construction. The cores may be viewed at the Louisiana Department of Natural Resources office in Baton Rouge, Louisiana during normal business hours. The CONTRACTOR shall provide a five business-day notice to the ENGINEER of the requested visit.

3.7.5.1 **Borrow Area 2a:** Based on limited information provided by the core borings, the materials found within Borrow Area 2a consist of fine sand overlain by a silt and clay overburden.

3.7.6 **Preservation of Historical, Archeological, and Cultural Resources:** A cultural resource study has been conducted within the borrow area. Those areas with magnetic anomalies that have been judged to possibly be of historical, archeological, and cultural value have been excluded from the borrow area. If, during construction activities, the CONTRACTOR observes items that may have historical, archeological, or cultural value, the CONTRACTOR shall immediately cease all activities that may result in the destruction of these resources and shall prevent their employees and SUBCONTRACTOR from trespassing on, removing, or otherwise damaging such resources. Such observations shall be reported immediately to the 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. The CONTRACTOR shall report any observed unauthorized removal or destruction of such resources by any person to the ENGINEER and appropriate State of Louisiana authorities. The CONTRACTOR will relocate the dredge to another area within the borrow area and resume construction of the project, and not return to the site in question until State authorities have rendered judgment concerning the artifacts of interest.

3.7.7 **Preservation of Existing Natural Resources:** Equipment operators shall be instructed by the CONTRACTOR with regards to avoiding damage to the water bottoms and existing vegetation outside the fill areas as marked on the Plans during all phases of the Work.

3.7.8 **Dredge Mobilization/Demobilization Notification:** The CONTRACTOR shall notify the ENGINEER at least three (3) days in advance of the date the dredge and other equipment will be mobilized and demobilized to and from the project area.

3.8 **Transport Of Excavated Materials:**

3.8.1 **Hydraulic Placement of Fill:** All fill will be placed hydraulically. The method of transport and hydraulic placement will be at the discretion of the CONTRACTOR. However, methods and equipment will have to comply with all permit, production, environmental, and contractual requirements.

3.8.2 **Scows and Vessels:** All scows and vessels must be kept in good condition, the coamings repaired, and the pockets provided with proper doors or appliances to prevent leakage of material.

3.8.3 **Pipeline Transport of Fill:** If a pipeline is used to transport material, the pipeline seaward of the beach landing shall be submerged except at the dredge, booster pumps (if required) and at oil and gas infrastructure crossings. In these instances, the pipeline shall be floated.
3.8.4 Pipeline Leaks: The CONTRACTOR shall maintain a tight discharge pipeline at all times. The joints shall be so constructed as to preclude spillage and leakage. Leaks shall be promptly repaired. The CONTRACTOR will transport the ENGINEER to the leak repair site for visual inspection if so requested by ENGINEER. Failure to repair leaks or change the method of operation that is resulting in leakage and wastes dune compatible material or exceeds turbidity and water quality standards during transport to discharge site will result in a requirement to suspend dredging operations and require immediate repair or change of operation to prevent leakage as a prerequisite to the resumption of dredging.

3.8.5 Submerged Line Approvals: Should the CONTRACTOR choose to use a submerged line from the borrow area to the placement area, the CONTRACTOR shall obtain all easement, permits and right-of-way required, including cultural resources surveys. The CONTRACTOR is required to conduct any field investigations or survey necessary to establish the pipeline corridor.

3.8.6 The CONTRACTOR will be allowed a maximum of three (3) corridors for discharge piping across the existing portions of Whiskey Island. The locations of these corridors shall be proposed by the CONTRACTOR and approved by the ENGINEER. The corridors shall have a maximum width of 100 feet each. The corridors shall be located so as to minimize impacts to the existing island environment. In no case shall the corridors be located through existing vegetated marsh or outside the project area.

3.9 Water Control Structures: The CONTRACTOR may use any number or design of water control structures for water discharge provided the structure is of sufficient size to discharge an appropriate volume of water. The rate of discharge must be manually controllable with the ability to completely shut off discharge through the structure. The Work Plan required by SP-6 should also describe the method and timing of removal of any proposed water control structures.

3.10 Deduction for Non-Conforming Work: No excavation shall occur below the permitted dredging depth or outside the permitted dredging limits defined in the Contract and Permits. This provision does not apply to the slopes of the dredge cut; that is, the CONTRACTOR will not be held responsible for material running from outside the dredging limits when excavating at an edge of a dredge site. Material that is obtained from unpermitted areas will not be paid for under this Contract. Excavation in any area not depicted on the Plans is a violation of Permits for the Work. If pre- and post-construction surveys in the dredge site and construction observations determine that excavation has been performed outside or below the permitted limits resulting in placement of non-compatible dune or marsh fill, the quantity of material dredged from these areas will be computed and subtracted from the pay quantity. Locations outside and below the permitted limits of the borrow area may contain material deposits that are undesirable for marsh fill. Further, the CONTRACTOR shall remediate the dune or marsh fills to remove and dispose in approved areas of non-compatible materials excavated from unpermitted areas as required by the permitting agencies and at no additional cost to the OWNER.

3.11 Fill Elevation Tolerance: Placement of hydraulic fill material in the marsh and dune shall be to the elevations and areas shown on the Plans. The target marsh fill elevation = +2.5’ NAVD 88 with a tolerance of + or – 0.5’. The target dune fill elevation = +6.0’ NAVD 88 with a tolerance of + or – 0.5’.

3.12 Measurement, Payment and Acceptance of Marsh Fill:

3.12.1 Payment for Marsh Fill: Price and payment shall constitute full compensation for furnishing all plant, labor, materials and equipment for dredging, satisfactory placement of specified material into the designated marsh fill, and performing all Work as specified herein. Payment for marsh fill will be made at the contract unit price per cubic yard for Bid Item No. 3. The price per cubic yard for marsh fill segments will be paid to the CONTRACTOR upon acceptance of surveys and volume calculations as specified in TS-2.

3.12.2 Payment for dredging per cubic yard placed within the marsh fill template shall be subject to the tolerances in this specification. The fill quantity will be the volume between the natural ground and the fill elevation as calculated under section 2.12.2. Marsh fill segments under consideration for payment must undergo a waiting period for 30 days without any additional placement of fill material before payment surveys will be made.

3.12.3 Acceptance of Marsh Fill: Segments of marsh fill with elevations below the minimum elevation of +2.0’ NAVD 88 will not be accepted. Additional marsh fill must be pumped into these areas and resurveyed before acceptance will be considered. Once payment surveys are accepted they will be considered post-construction surveys. Although the CONTRACTOR will be allowed to overfill marsh fill areas not to exceed the maximum elevation of +3.0’ NAVD 88, no payment will be made for material above the target elevation of +2.5’ NAVD 88. Any material placed above the maximum elevation may be subject to removal and disposal in approved areas by the CONTRACTOR if re-
quired by the OWNER or ENGINEER at no additional cost to the OWNER. The CONTRACTOR shall install grade stakes to monitor marsh fill elevations at no direct pay. Grade stakes shall be removed prior to demobilization.

3.12.4 Payment Requests for Marsh Fill: The CONTRACTOR may request payment for marsh fill placement on a monthly basis. Payments shall be based on completed and approved adjacent fill sections. The CONTRACTOR will be eligible for initial payment when a minimum of four (4) adjacent fill sections (1,000 feet) have been surveyed and accepted. Subsequent payments requests must also include a minimum of (4) adjacent fill sections.

3.13 Measurement, Payment and Acceptance Dune Fill:

3.13.1 Payment for Dune Fill: Payment shall be made for materials and Work specified for furnishing all plant, labor, materials and equipment for dredge site hydraulic excavation, signs, pipeline crossings, transportation and placement of dune fill; debris removal and disposal; dune profile construction and final grading; turbidity monitoring; environmental protection measures; and, all other appropriate costs in connection therewith or incidental thereto this Work, shall be included in the applicable Contract unit price per cubic yard for Bid Item No. 8. The price per cubic yard for dune fill segments will be paid to the CONTRACTOR upon acceptance of surveys and volume calculations as specified in TS-2.

3.13.2 Acceptance of Dune Fill: Segments of dune fill with elevations below the minimum elevation of +5.5’ NAVD 88 will not be accepted. Additional dune fill must be pumped into these areas and resurveyed before acceptance will be considered. Once payment surveys are accepted they will be considered post-construction surveys. Although the CONTRACTOR will be allowed to overfill dune fill areas not to exceed the maximum elevation of +6.5’ NAVD 88, no payment will be made for material above the target elevation of +6.0’ NAVD 88. Any material placed above the maximum elevation may be subject to removal and disposal in approved areas by the CONTRACTOR if required by the OWNER or ENGINEER at no additional cost to the OWNER. The CONTRACTOR shall install grade stakes to monitor dune fill elevations at no direct pay. Grade stakes shall be removed prior to demobilization.

3.13.3 Payment Requests for Dune Fill: The CONTRACTOR may request payment for dune fill placement on a monthly basis. Payments shall be based on completed and approved adjacent fill sections. The CONTRACTOR will be eligible for initial payment when a minimum of four (4) adjacent fill sections (1,000 feet) have been surveyed and accepted. Subsequent payments requests must also include a minimum of (4) adjacent fill sections.
4.1 **Scope**: The CONTRACTOR shall furnish all of the materials, labor and equipment necessary to construct and maintain approximately 17,000 linear feet of containment dikes in accordance with the Specifications and in conformity to the lines, grades, elevations, and tolerances shown on the Plans. The containment dikes shall be maintained by the CONTRACTOR until the fill area has been completed and accepted according to the Plans and these Specifications.

4.2 **Materials**: Dike material shall be taken from the in-situ material within the hydraulic fill placement areas and re-filled during hydraulic dredge and fill operations. Boring logs for the fill area are provided in Appendix F. The CONTRACTOR shall leave a twenty (20) foot long plug of undisturbed material in every 200 linear feet of borrow for dike construction.

4.3 **Construction**: The CONTRACTOR shall construct the containment dikes according to the alignment and cross section shown on the Plans. The boundaries of the containment dikes are based on the field conditions present at the time of the survey. The CONTRACTOR may request a change of alignment or an addition of linear footage if field conditions have changed significantly from those represented on the Plans. All requests must be submitted in the Work Plan for review and approval by the OWNER and ENGINEER. Any revision resulting in a change of length will be accomplished by a Change Order. Otherwise, the revision will be accomplished by a Field Order. A permit modification will be required if the length, width, or elevation of the proposed dikes is greater than shown in the Plans. No additional construction time will be granted to obtain permit modifications.

4.4 **Access**: The containment dikes shall be accessed through existing open water to the extent possible. The CONTRACTOR shall not use an access route that requires travel across existing marsh or outside the project area. Excavation of a floatation channel is not permitted outside the fill area or outside the project area.

4.5 **Post-Construction**: The crown section of all containment dikes will be degraded prior to demobilization. The CONTRACTOR shall lower the crest elevation of all dikes (primary and secondary) only and not disturb other portions of the dike. The secondary dikes, along the south, east, and west marsh platform perimeter, shall be degraded to match the elevations of the marsh platform at the time the Work is being performed. The ENGINEER and OWNER will evaluate the marsh platform elevation and stability prior to degrading the primary northern dike to recommend a finished elevation after degrading. The primary containment dike will be degraded to an elevation ranging between marsh platform elevation and an elevation 0.6 foot above marsh platform elevation. All material removed from dikes shall be spread evenly to match existing elevations inside of the marsh fill area. The primary dikes shall also be breached at two locations to a depth of +1.0 NAVD 88 for a width of 70 feet. These two breaches shall be centered where the two tidal creeks intersect with the primary containment dike.

4.6 **Payment**: Payment for containment dikes will be made at the contract unit price per linear foot for Bid Item No. 4a and 4b. All required maintenance of the dikes shall be performed by the CONTRACTOR at no direct pay. Price and payment shall constitute full compensation for furnishing all labor, materials and equipment for construction and maintenance of all required marsh fill containment dikes and performing all Work as specified herein. All associated costs with placing hydraulic fill in in-situ borrow channels for containment dike construction shall be at no direct pay.
TIDAL CREEKS AND PONDS

5.1 **General Description:** Channels shall be constructed to provide hydraulic exchange and circulation within the marsh. Tidal Creeks shall be dredged prior to placing marsh fill. These pre-dredged tidal creeks will encourage settlement of marsh fill after construction thereby promoting tidal exchange in these areas during the life of the project. Dredging shall consist of removing and satisfactorily placing all material required to construct the channels.

5.2 **Method:** No method of dredging will be specified. The CONTRACTOR may use any environmentally acceptable method that will complete the Work in accordance to that shown on the Plans. However, the CONTRACTOR shall submit to the OWNER and ENGINEER the method and equipment intended to be used to complete dredging of the tidal creeks as part of the Work Plan. The equipment to be used shall also be listed on the “PLANT AND EQUIPMENT SCHEDULE FORM.”

5.3 **Material Handling:** Dredged material shall be deposited within the marsh fill template as shown on the Plans or used for constructing and maintaining containment dikes. Some of these options may require double handling of material. If dredged material is placed adjacent to the creek and/or pond alignment as shown on the Plans, the CONTRACTOR shall leave a 20’ opening for every 200’ of dredged material in the sediment spoil placement. Spoil material from tidal creeks or ponds used to construct and maintain containment dikes shall conform to the elevations, grades, and lines specified in the Plans. Spoil material deposited within the marsh template shall conform to elevation tolerances specified in the Plans (+1.5’ NAVD 88 maximum). All associated costs with placing hydraulic marsh fill in pre-dredged tidal creeks shall be at no direct pay.

Any material that is deposited elsewhere than as indicated on the Plans or as authorized by the OWNER or ENGINEER shall be required to be removed and deposited in approved areas at the CONTRACTOR's expense. No material dredged for creek and pond construction shall be placed on existing vegetated marsh. Unauthorized disposal areas shall be restored to pre-construction conditions at the expense of the CONTRACTOR.

5.4 **Tolerances:** The limits of dredge Work shall conform to the lines and grades shown on the Plans. Tolerances outside these requirements must be approved by the OWNER and ENGINEER. Tidal creeks and ponds shall be dredged to the width shown on the Plans and to a depth of -6’ NAVD 88 with a tolerance of ±0.5’. Side slopes of the channels and ponds shall be excavated on a 3H:1V grade.

5.5 **Measurement, Payment, and Acceptance:** Tidal creeks and ponds shall be constructed to the lines and grades shown on the Plans and as specified herein and shall be paid for at the contract price per cubic yard for Bid Item No. 5. Price and payment shall constitute full compensation for all materials, labor, supplies and equipment required for dredging the tidal creeks and ponds and properly placing the material as specified herein. The price per cubic yard will be paid to the CONTRACTOR upon acceptance of surveys and volume calculations as specified in TS-2.
6.1 **General Description**: Sand fencing shall be installed on accepted segments of dune fill in accordance with the Plans to aid in the stabilization of sand and in the retention of wind blown sand within the project area. Sand fencing must be installed within seven (7) days following payment acceptance of a dune fill segment. A single row of fencing shall be constructed to obtain the maximum effectiveness for the location. Section lengths and configurations may vary. Gaps, as shown on the Plans will separate the beginning and end of each fence section to facilitate movement through the fencing. Sand fencing shall be fastened to wooden fence posts at the top, middle and bottom. The wire shall be corrosion resistant and affixed with no less than three (3) tie clips around the posts. At the end of fence sections, two wraps of wiring shall be used at each fence wire and at the top and bottom. Additional rows of fencing, or parts thereof, may be installed at various locations should site conditions warrant it. Tie clips or wire must be approved by the OWNER or ENGINEER prior to construction. Three (3) wraps of the wire shall be used at all tie locations on the fence.

6.2 **Materials**:

6.2.1 **Posts**: Fence posts shall be 4” x 4” or three inch (3”) diameter #2 Grade Timber, treated or untreated, eight (8) feet long driven four (4) feet into the ground and placed ten (10) feet on center. The posts shall be vertically plumb, the alignment shall be in straight lines.

6.2.2 **Fencing**: Sand fencing shall be standard, weather resistant snow fencing. Sand fence shall be furnished in rolls of 50 feet or 100 feet. The sand fence is to be composed of the following elements:

6.2.2.1 **Slats**: Slats shall be made of No. 1 aspen or spruce measuring 3/8 thick, 1-1/2 inch wide by 4 feet long. The maximum distance between slats shall not exceed 2-1/4 inches. It shall be weather proofed by an acceptable pressure treatment method.

6.2.2.2 **Fence Wire**: Wire for securing slats shall be good commercial quality steel that has been hot-dipped galvanized with a minimum gauge rating of 13. The wire shall be twisted around the slats sufficiently to penetrate the slat to hold it in place. Wire strands shall not exceed ten (10) inches and shall not be closer than four (4) inches from slat ends.

6.2.2.3 **Tie Wire**: The wire that is used to tie the fence to the post shall be galvanized and shall be at least one gauge larger than the individual wires used for the fencing.

6.2.2.4 **Overlaps**: Where sections of sand fence are joined, a minimum of six (6) inches of each section shall overlap. The overlaps shall be secured using three (3) wraps of wiring at four (4) places: top, bottom, middle top and middle bottom as specified.

6.2.3 **Installation**:

6.2.3.1 **Alignment**: Sand fence location and alignment shall be in conformance with the Plans unless otherwise required or approved by the OWNER or ENGINEER in order to accommodate site conditions that exist at the time of installation. The sand fence shall be installed on the Gulf of Mexico side of the post. Such location and alignment changes should not reduce the contract quantity of fencing materials.

6.2.3.2 **Equipment**: Equipment used for the installation of fence posts, the transportation of fencing materials, and movement of personnel shall be appropriate for the Work, listed on the Plant and Equipment Schedule form, and approved by the OWNER and ENGINEER. To be appropriate, CONTRACTOR’s equipment shall be of the type that shall not cause non-repairable damage to surface area of the beach and dune when properly used. All equipment proposed for use on the beach and dune shall be acceptable to the OWNER and ENGINEER prior to mobilization. Equipment operators shall be fully instructed with regards to avoiding damage to the beach and dune surfaces and vegetation. At the discretion of OWNER and ENGINEER, the CONTRACTOR may be required to restore beach surface elevations changed by 0.5 feet or more by the CONTRACTOR during mobilization, construction or demobilization.

6.2.3.3 **Vegetated Areas**: Fence installations shall be on the dune platform only. Fence installation may be in both vegetated and non-vegetated areas. In vegetated areas, ingress and egress of equipment and personnel and the movement and placement of fence materials shall be restricted and must be closely supervised by the
CONTRACTOR. In non-vegetated areas, these factors shall be less restrictive but must be controlled; access to and from any non-vegetated area shall not be through vegetated areas. Unwarranted damage to the beach and dune environment shall be justification for the immediate removal of those responsible from the Project Site.

6.3 **Storage:** Fencing materials stored within the Project Site shall be placed in an easily accessible location that has been approved by the OWNER or ENGINEER. Stored materials shall be placed and maintained in a neat, orderly, and safe manner. No material shall be stored on existing vegetated marsh.

6.4 **Measurement and Payment:** Sand fencing shall be measured for payment by the linear foot completely installed in accordance with the Plans and Specifications and such approved changes as made thereto. Splice overlaps mentioned shall not be measured for payment. Sand fencing shall be paid for at the contract price per linear foot for Bid Item No. 9.
7.1 Scope: The CONTRACTOR shall furnish all of the materials, labor and equipment necessary to construct the access and flotation channels through removal and temporary disposal of spoil materials. The channels shall be maintained in a useable configuration throughout the duration of the Work at the expense of the CONTRACTOR.

7.2 Method: The access and flotation channels shall be mechanically excavated using a bucket dredge, barge mounted track hoe or approved equal. The CONTRACTOR shall use any environmentally acceptable method that will complete the Work in accordance with the drawings. The proposed dredging method must be provided in the Work Plan.

7.3 Excavation Limits: Access and flotation channels shall not be excavated beyond the limits and coordinates shown on the Plans without written approval from the ENGINEER. The minimum bottom elevation of the channels shall be -5.0' NAVD 88 (i.e., the invert of the channel shall not be lower than -5.0' NAVD 88). The locations of the USACE permitted channels are shown in the Plans. It shall be the responsibility of the CONTRACTOR to obtain an USACE permit modification and prior approval from the ENGINEER in order to enlarge or relocate the channels. The CONTRACTOR shall also obtain and submit to the ENGINEER a letter of no objection from any pipeline company for the proposed excavation inside their right-of-way.

7.4 Spoil Disposal: Dredged material shall be temporarily deposited where shown on the Plans and conform to the elevations, grades, and lines specified in the Plans. It shall not be deposited outside of the limits shown on the Plans without written approval from the ENGINEER. The temporary spoil shall be backfilled into the flotation channel after the project has been accepted by the ENGINEER. The soils underneath the temporary spoil placement areas shall be reworked to ± 0.5’ of the original bottom. Any material that is deposited elsewhere than indicated on the Plans or as authorized by the ENGINEER shall be removed and deposited in an approved location at the expense of the CONTRACTOR.

7.5 Maintenance: The access and flotation channels shall be maintained according to the dimensions shown on the Plans in order to transport equipment and materials to the Project Site throughout construction. Maintenance excavation shall be performed at the expense of the CONTRACTOR.

7.6 Measurement and Payment: The CONTRACTOR shall submit an Application for Payment for the costs incurred to construct and maintain the flotation and access channels as denoted in the Contract Documents. The ENGINEER shall review the final elevation of the backfilled channels on the As-Built Survey in order to determine acceptance. No invoice will be paid for demobilization until the temporary spoil is successfully backfilled into the access and flotation channels and the bottom depth of the temporary disposal area is restored to within ± 0.5’ of the original bottom depth. Cost associated with the required access channel shall be paid for under Bid Item No 1.
TS-8 SETTLEMENT PLATES

8.1 **Scope:** The CONTRACTOR shall furnish all of the materials, labor and equipment necessary to construct, install, survey and maintain the settlement plates in accordance with the Plans and these Specifications. Settlement plates are intended for Louisiana Department of Natural Resources’ long term monitoring of the island.

8.2 **Materials:** Plates shall be fabricated with a four foot (4’) by four foot (4’) by one-fourth inch (1/4”) steel plate and a three inch (3”) diameter galvanized riser pipe welded to the center of the plate using a 3/16” continuous fillet. The pipe length shall be sufficient to facilitate placement in the areas as shown in the Plans, extending a minimum of 5 feet above finished grade. The pipe top will be closed with a threaded galvanized cap. After fabrication, the plates shall be hot dipped galvanized. CONTRACTOR shall place a permanent label and/or write in black marker on the settlement plate pipes an identification number and survey coordinates in order to easily correlate the plans with future site visits.

8.3 **Zinc Coating:** A zinc coating shall be applied in a manner and thickness quality conforming to ASTM A 123. In any case where the zinc coating becomes damaged, the damaged area shall be re-galvanized with a suitable low-melting zinc base alloy as recommended by the American Hot-Dip Galvanizers Association. All painting shall conform to the latest edition of the LA DOTD Standard Specification Section 811 and 1008, or approved equivalent.

8.4 **Installation:** Settlement plates shall be installed inside the fill area at the locations shown on the Plans prior to placement of fill material. Leveling of the plate bed shall be accomplished by removing the minimum amount of earth necessary to produce a level foundation and in a manner such that the densities of the plate bed and undisturbed adjacent ground remain the same. Leveling of the plate bed by the addition of any material will not be permitted. The CONTRACTOR shall exercise care when placing fill on the settlement plates.

8.5 **Maintenance:** The Contractor shall maintain all settlement plates until the Work is accepted. Settlement plates must be maintained in order to accurately locate the existing natural ground elevation under the marsh platform or the dune. Damaged settlement plates shall be repaired or replaced by the CONTRACTOR at no expense to the OWNER.

8.6 **Measurement and Payment:** The CONTRACTOR shall submit an Application for Payment for the costs incurred to provide all labor, material, and equipment necessary to construct, install, survey and maintain the settlement plates as denoted in the Contract Documents. Upon installation and final acceptance by the ENGINEER, an invoice shall be paid at the contract unit price for Bid Item No. 6. No payment shall be made for settlement plates that are rejected or damaged due to fault or negligence by the CONTRACTOR.
9.1 General Description: Lighted aids to navigation are required to maintain safe working conditions for construction in navigable waters. The CONTRACTOR shall provide, install, maintain, and remove lighted aids as specified herein.

9.2 Installation: Lighted dredging aids to navigation shall be installed prior to any dredging equipment entering the borrow area or laying any pipeline from the borrow area to the fill areas. The aids to navigation shall be lighted for 24-hour operation. Light characteristics for the aids shall be flashing yellow. If buoys are used they shall be yellow with reflective international orange square patches or stripes. The aids may be lettered. The CONTRACTOR shall notify the U.S. Coast Guard in accordance with subparagraph "Notice of Intent to Dredge" as specified in SUBMITTALS. The notification shall contain maps and descriptions of lighted aids for inclusion in the Notice to Mariners.

9.3 Operation and Maintenance: The CONTRACTOR shall operate and maintain all the lighted aids. Should lighted dredging aids to navigation leave positioned locations, the CONTRACTOR shall reposition within 24 hours.

9.4 Removal: The CONTRACTOR shall remove all lighted dredging aids to navigation, chains, anchors, etc. from the project area upon completion of this project.

9.5 Location for Installation: Lighted dredging aids to navigation shall be installed at the tabulated points-of-intersection and at 500 feet minimum spacing that define Work limits in the borrow area, access corridors and the Project Site at the gulf side of the dune fill and bay side of the marsh fill. The aid shall be installed with the above marking and lighting scheme.

9.6 Measurement and Payment: No direct payment will be made for Lighted Aids to Navigation. Include the cost of supplying, installing, maintaining, and removing the navigation aids in the contract lump sum price for Bid Item No. 1, Mobilization and Demobilization.
10.1 **Scope:** The Contractor shall furnish all of the materials, labor and equipment necessary to construct, install, survey, maintain and inspect all grade stakes until the fill area is completed and accepted according to the Plans and these Specifications.

10.2 **Materials:** Each stake shall be composed of a gauge sign attached to 2” x 4” x 12’ (Minimum length) untreated timber. The gauge sign shall consist of reflective sheeting applied to a rigid substrate of 4” x 0.120” x 3’ fiberglass reinforced thermoset polyester laminate using a pressure sensitive urethane adhesive. The sheeting shall be engineer grade, white in color, and reflective as manufactured by Avery Dennison (T1500), or approved equal. The substrate shall be gray in color, dielectric, non-conductive, acrylic modified, UV stabilized for outdoor weatherability, and possess a tensile strength which exceeds 0.005” aluminum. The gauge sign shall be fastened to each stake using three 2” galvanized #8 wood screws and washers.

The background colors, border lines and elevation numbers on the gauge shall be applied to the sheeting using Avery 7TS ink, or approved equal. Background colors representing tolerance ranges shall be applied to the sheeting using transparent ink. Border lines shall be 1/8” thick applied in black ink. Elevation numbers shall be 2.5” high and placed immediately above each border line in black ink. The following elevations and background colors shall be shown on the gauge sign.

10.2.1 The minimum, target, and maximum elevations for the marsh fill material shall consist of the background colors between the elevation ranges indicated on the plans.

10.2.2 The baseline station and transect station numbers shall be placed vertically between the top of the stake and top of the sign using a black permanent marker. The baseline station number shall be preceded by the letter “B” and the transect station numbers shall be preceded by the letter “T”.

10.3 **Installation:** Grade stakes shall be installed in the marsh fill area at the intersection of the fill area boundary and the survey transects shown in the Plans. Grade stakes shall also be installed within the marsh fill area at 500 foot intervals along each survey transect shown in the Plans. The stakes shall be embedded at least six feet into the soil. The elevation of the top of each stake and the distance from the top of the stake to the existing ground (tape down distance), the stake identification number, Northing coordinate in NAD 83 U.S. FT., and Easting coordinate in NAD 83 U.S. FT shall be recorded upon completion of installation.

10.4 **Inspections:** An initial inspection must be performed no more than 30 days prior to placement of fill and be witnessed by the Inspector. An inspection must also be performed prior to placement of additional fill due to settlement of the marsh platform prior to final acceptance and be witnessed by the inspector. All inspections shall include measurement of a minimum of 10% of the stakes for tape down distance, plumb, and distance from transect. The stakes’ tape down distance may not vary more than one inch from the initial tape down distance. The stakes’ plumb angle may not vary by more than 15 degrees from the vertical. The stakes may not be located more than 5 feet out of line with transects. If these stakes are found to be beyond these required tolerances, all stakes in that respective fill area shall be surveyed and reset. The Contractor has the option of relocating damaged stakes by no more than 5 feet from their original locations, provided they are resurveyed. The Contractor shall provide the Engineer with an electronic file containing the following information:

10.4.1 Stake identification number (Baseline station number and transect station number);

10.4.2 Northing Coordinate, NAD 83 U.S. Ft.;

10.4.3 Easting Coordinate, NAD 83 U.S. Ft.;

10.4.4 Elevation of the top of stake, NAVD 88 Ft.;

10.4.5 Tape down distance, Ft/Inches.
10.5 **Measurement and Payment:** No direct payment will be made for Grade Stakes. Include the cost of furnishing all labor, materials and equipment for construction, surveying, and maintenance of all required stakes and performing all Work specified within this specification in Bid Item 2, Pre- & Post-Construction Surveys (Base Bid) and Bid Item 6, Pre- & Post-Construction Surveys (Additive Alternate).
TS-11 SEEDING

11.1 **Scope:** The seeding shall consist of placing seeds on the dune feature, if the additive alternate is awarded, in the project areas that are depicted on the plans or as directed by the Engineer.

11.2 **Method:** Gulf Annual Rye (*Lolium multiflorum*) and Bermuda (*Cynodon* sp.) seed is to be dispersed onto the dune immediately after all construction, including dredging/grading activities and sand fence installation, is completed.

A total of 4,750 lbs of Gulf Annual rye (*Lolium multiflorum*) and 1,425 lbs of Bermuda (*Cynodon* sp.) pure live seed shall be evenly dispersed onto the dune platform of the Project Area. Fifty (50) lbs of rye and fifteen (15) lbs of Bermuda grass seed are required per acre. Approximately 95 acres of the dune platform is to be seeded. Seed dispersal shall be uniform across the entire dune platform.

11.3 **Measurement and Payment:** Measurement shall be based on the placement area that the seeds are spread upon for the project sites and ticket weights for the seeds. Payment for seeding shall be made at the contract unit price per acre for Bid Items No. 10, Seeding (Additive Alternate Bid).
APPENDIX A: INTERPRETATION OR CLARIFICATION BY ENGINEER FORM
Received From:
DAN S. COLLINS CPL & ASSOCIATES INC
545 ST TAMMANY ST
BATON ROUGE, LA 70806

First VENDOR
LOUISIANA DEPT OF NATURAL RESOURCES

First VENDEE
LOUISIANA DEPT OF WILDLIFE AND FISHERIES

Index Type: Conveyances
Type of Document: Agreement
Recording Pages: 11

File #: 1226545
Book: 1949 Page: 202

Recorded Information
I hereby certify that the attached document was filed for registry and recorded in the Clerk of Court's office for Terrebonne Parish, Louisiana

On (Recorded Date): 12/22/2005
At (Recorded Time): 12:53:30:000 PM

Doc ID - 004472120011

Return To:
DAN S. COLLINS CPL & ASSOCIATES INC
545 ST TAMMANY ST
BATON ROUGE, LA 70806

Do not Detach this Recording Page from Original Document
October 12, 2005

Mr. Dwight Landreneau, Secretary
Department of Wildlife and Fisheries
Post Office Box 98000
Baton Rouge, La. 70898-9000

RE: Letter Agreement
Whiskey Island Back Barrier Marsh Creation Project TE-50
Isles Dernieres Barrier Islands Refuge
Terrebonne Parish, Louisiana

Dear Mr. Landreneau:

When executed by you, this letter shall constitute an agreement (the Agreement) by and between the Louisiana Department of Natural Resources (DNR) and the Louisiana Department of Wildlife and Fisheries (DWF) whereby DWF authorizes DNR to conduct construction and monitoring operations for the Whiskey Island Back Barrier Marsh Creation Project TE-50 (the Project) being a portion of the Isles Dernieres Barrier Islands Refuge (IDBIR).

DWF has no objection to DNR, or its assigns, proceeding with the proposed Project for the purposes authorized by Federal (16 U.S.C. 3951, et seq.) and State (R.S. 49:213-214) law within the Project area shown on Exhibit A and pursuant to the Project Activity Summary on Exhibit C, both attached hereto and made a part hereof, provided however, that DNR complies with the following stipulations:

1. This Agreement pertains to the IDBIR as shown on Exhibit A.

2. Prior to any activities on the IDBIR, DNR shall contact Mr. Greg Linscombe, or his assignee (Programs Manager), at (337) 373-0032 to coordinate Project details.

3. DNR shall abide by the IDBIR regulations as set forth in Exhibit C, attached hereto and made a part hereof, unless otherwise agreed to by DWF.

4. All equipment and routes shall be approved by the Programs Manager.

5. No activities will be allowed within 1500 feet of nesting bird colonies unless approved by the Programs Manager.
6. It shall be the responsibility of DNR to repair any damages which may occur as a result of the Project.

7. DNR agrees to defend, indemnify and hold DWF harmless from and against any and all claims, demands, expense and liability arising out of injury or death to any person or the damage, loss or destruction of any property which may occur or in any way grow out of the proposed Project.

8. This agreement allows DNR to make minor modifications to the Project, but only insofar as changes pertain to materials for project features and minor changes to project features locations, as may be deemed necessary to fully and properly implement and maintain the Project. Further, DNR will notify DWF of such modifications and allow DWF to comment on the modifications prior to the implementation of such modifications, and shall, when practicable, consider and include any comments by DWF.

9. DNR is responsible for all maintenance and repair of all project features. In the event DWF notifies DNR that project features require maintenance or repair, DNR will provide such maintenance or repair in a time frame that ensures that the objectives of the Project are not compromised.

10. DNR agrees that any use of mechanized equipment must be pre-approved by the DWF Programs Manager referenced above.

11. DNR will provide a fulltime, onsite construction inspector to ensure compliance with the project plans, specs, and the terms and conditions of this Agreement. If, in the opinion of DWF, DNR’s operations conflict with the plans, specs and/or the terms of this Agreement, DWF shall contact DNR fully describing what is in conflict. DNR will immediately contact the contractor to remedy said conflict. If the conflict is not remedied to DWF’s satisfaction within 2 days, DWF may suspend DNR’s operations until such time that conflict can be appropriately addressed and remedied.

12. In the event any change or condition should develop that affects IDBIR and that would affect DNR’s ability to perform the activities granted under this Agreement, DWF agrees to notify DNR at the following address:

   Department of Natural Resources
   Coastal Restoration Division
   P. O. Box 44027
   Baton Rouge, LA 70804-4027
   Phone: 225-342-7308
   Fax: 225-342-9417
13. The final plans will require approval by DWF and DNR, prior to construction.

The terms of this Agreement, where applicable, and except for Paragraph 7 above, are subject to the availability of funds as stated in the CWPPRA Task Force Standard Operation Procedures. Should funds not be available to comply with the terms of this Agreement, DNR agrees to use its best efforts to secure funding to meet the terms stated herein.

This Agreement shall become effective upon the signature of DWF and shall remain in effect for twenty (20) years from the date hereof unless sooner terminated by the mutual consent of DNR and DWF.

DNR may assign or transfer, in whole or in part, any or all of its rights hereunder, but only to the extent necessary to implement the purposes of the Project on the said Lands.

This Agreement shall be binding upon, and inure to the benefit of, the parties hereto, their successors in interest, transferees and assigns.

If the foregoing accurately reflects your understanding of the agreement between DNR and DWF relative to the referenced Project activities on the IDBIR, please evidence your approval by signing the three (3) originals and returning the executed originals to this office. The documents will be recorded in the public records of Terrebonne Parish, and a certified duplicate will be returned to your office upon completion. Thank you for your cooperation in this matter.

WITNESSES:

Very truly yours,

LOUISIANA DEPARTMENT OF NATURAL RESOURCES

By: ____________________________

SCOTT A. ANGELLE
Title: Secretary

ACCEPTED AND APPROVED THIS 21st DAY OF November 2005
DWF Letter Agreement
Whiskey Island Back Barrier Marsh Creation Project TE-50
July 08, 2004
Page 4

WITNESSES:

Cathy S. Greeson
Print Name: Cathy S. Greeson

Susan C. Falcon
Print Name: Susan C. Falcon

LOUISIANA DEPARTMENT OF WILDLIFE
AND FISHERIES

By: Dwight Landreneau
Title: Secretary

ACKNOWLEDGMENTS

STATE OF LOUISIANA
PARISH OF EAST BATON ROUGE

BEFORE ME, the undersigned authority, duly commissioned and qualified in and for said Parish and State aforesaid, on this 1st day of November, 2005, personally came and appeared Scott A. Angelle, to me known, who declared that he is the Secretary of the Department of Natural Resources, State of Louisiana, that he executed the foregoing instrument on behalf of said State Agency and that the instrument was signed pursuant to the authority granted to him by said State Agency and that he acknowledged the instrument to be the free act and deed of said State Agency.

Print Name: John F. Parker
NOTARY PUBLIC

Bar Number: 01117
My commission expires: with life
(SEAL)
DWF Letter Agreement
Whiskey Island Back Barrier Marsh Creation Project TE-50
July 08, 2004
Page 5

STATE OF LOUISIANA
PARISH OF EAST BATON ROUGE

BEFORE ME, the undersigned authority, duly commissioned and qualified in and for said Parish/County and State aforesaid, on this ___ day of __________, 2005, personally came and appeared Dwight Landreneau, to me known, who declared that he is the Secretary of the Department of Wildlife and Fisheries, State of Louisiana, that he executed the foregoing instrument on behalf of said State Agency and that the instrument was signed pursuant to the authority granted to him by said State Agency and that he acknowledged the instrument to be the free act and deed of said State Agency.

[Signature]

Print Name: __________________________
NOTARY PUBLIC

FREDERICK C. WHITROCK
Notary Public
State of Louisiana
State Bar Roll #19042
My Commission Expires At Death

[Seal]
List of Exhibits

Exhibit A  Project Area
Exhibit B  Regulations for Isles Dernieres Barrier Islands Refuge
Exhibit C  Project Summary

c:  Chris Williams, CRD Project Manager
    Eric Roth, Land Section Project File TE-50

F:\USERS\LAND\Projects\TE\TE50 Whiskey Island Back Barrier Marsh\Agreements\DWF letter agreementTE 50.doc
Exhibit A
Whiskey Island Back Barrier Marsh Creation (TE-50)
Terrebonne Parish, Louisiana

Legend
- Project Boundary
- Township/Range Line
- Section Line
- Pipeline (CMD)
- Flowline (CMD)
- Oyster lease (current 04/04)
- Inactive Well
- Shut-In Well
- Active Well
- Other Well
- SWD Well
- Orphan Well
- Well without status code (Tobin data)

All features are graphical representations only and may not reflect true location or dimension.

Data Source:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Field Station
Louisiana Department of Natural Resources
Coastal Restoration Division
Baton Rouge, Louisiana
SPOT 2000 Imagery
Map Date: June 3, 2004
Map ID: USGS-NWR C 2004-04-0165
EXHIBIT B

Louisiana Register Vol. 25, No. 5 May 20, 1999 (PAGE )

DECLARATION OF EMERGENCY
Department of Wildlife and Fisheries
Wildlife and Fisheries Commission

Isles Dernieres Barrier Islands Refuge
(LAC 76:III.321 and 331)

The Wildlife and Fisheries Commission does hereby establish emergency regulations for the management of the Isles Dernieres Barrier Islands Refuge which includes Wine Island, East Island, Trinity Island, Whiskey Island, and Raccoon Island. Formerly, three of these islands, i.e., Wine, Whiskey, and Raccoon Islands, were included within the Terrebonne Barrier Islands Refuge and were regulated under provisions of LAC 76:III.321. By promulgation of this declaration of emergency, the Terrebonne Barrier Islands Refuge regulations found at LAC 76:III.321 are hereby repealed.

A declaration of emergency is necessary to regulate public access to the Isles Dernieres Barrier Islands Refuge in order to ensure that those members of the public utilizing the public use area on Trinity Island enjoy a clean and healthful environment and in order to minimize contact with the numerous species of colonial seabirds that utilize the islands as nesting habitat in the spring and summer months. This declaration of emergency will become effective on May 6, 1999 and shall remain in effect for the maximum period allowed under the Administrative Procedure Act or until adoption of the final rule.

Title 76
WILDLIFE AND FISHERIES
Part III. State Game and Fish Preserves and Sanctuaries
Chapter 3. Particular Game and Fish Preserves and Commission

§321. Terrebonne Barrier Islands Refuge
Repealed.


HISTORICAL NOTE: Promulgated by the Department of Wildlife and Fisheries, Wildlife and Fisheries Commission, LR 19:910 (July 1993), repealed LR 25:

§331. Isles Dernieres Barrier Islands Refuge

A. Regulations for Isles Dernieres Barrier Islands Refuge

1. Regulations for Wine Island, East Island, Whiskey Island, and Raccoon Island
a. Public access by any means to the exposed land areas, wetlands and interior waterways of these islands is prohibited.

b. Disturbing, injuring, collecting, or attempting to access exposed land areas, wetlands and interior waterways shall be considered on a case-by-case basis and may be permitted by the Secretary or his designee in the interest of conducting research on fauna and flora, of advancing educational pursuits related to barrier islands, or of planning and implementing island restoration projects.

d. Fishing from boats along the shore and wade fishing in the surf areas of the islands is allowed.

e. Littering on the islands or in Louisiana waters or wetlands is prohibited.
f. Proposals to conduct oil and gas activities, including seismic exploration, shall be considered on a case-by-case basis and may be permitted by the Secretary or his designee, consistent with provisions of the Act of Donation executed by the Louisiana Land and Exploration Company on July 24, 1997.

2. Regulations for Trinity Island

a. Public access is allowed in a designated public use area. An area approximately 3,000 linear feet by 500 linear feet is designated as a public use area, the boundaries of which will be marked and maintained by the Department. The designated public use area shall extend westward from the western boundary of the servitude area reserved by Louisiana Land and Exploration Company in the Act of Donation a distance of approximately 3,000 linear feet and northward from the southern shoreline within this area by a distance of approximately 500 linear feet. Public recreation such as bird-watching, picnicking, fishing and overnight camping is allowed in this area. Travel on or across this area shall be limited to foot or bicycle traffic only. No use of all-terrain vehicles or other vehicles powered by internal combustion engines or electric motors shall be allowed.
b. Public access to all exposed land areas of Trinity Island, other than the public use area, is prohibited. Requests to access these exposed land areas shall be considered on a case-by-case basis and may be permitted by the Secretary or his designee in the interest of conducting research on fauna and flora, of advancing educational pursuits related to barrier islands or of planning and implementing island restoration projects.
c. Disturbing, injuring, collecting, or attempting to collect any flora, fauna, or other property is prohibited, unless expressly permitted in
writing by the Secretary or his designee for the uses provided for in Paragraph 2.b. above.
d. Any member of the public utilizing the designated public use area shall be required to have a portable waste disposal container to collect all human wastes and to remove same upon leaving the island. Discharge of human wastes, including that within the disposal container, onto the island or into Louisiana waters or wetlands is prohibited.
e. Littering on the island or in Louisiana waters or wetlands is prohibited.
f. Carrying, possessing, or discharging firearms, fireworks, or explosives in the designated public use area is prohibited.
g. Boat traffic is allowed adjacent to the island in open waters of the Gulf and bays and within the man-made canal commonly known as California Canal for its entire length to its terminus at the bulkhead on the western end of the canal. No boat traffic is allowed in other man-made or natural waterways extending into the interior of the island or in any land-locked open waters or wetlands of the island.
h. Fishing from boats or wade fishing in the surf areas of the island is allowed.
i. Houseboats may be moored in designated areas along the California Canal. An annual permit shall be required to moor a houseboat in the canal. The required permit may be obtained from the Department of Wildlife and Fisheries New Iberia Office.
j. Proposals to conduct oil and gas activities, including seismic exploration, shall be considered on a case-by-case basis and may be permitted by the Secretary or his designee, consistent with provisions of the Act of Donation executed by the Louisiana Land and Exploration Company on July 24, 1997.

B. Violation of any provision of these regulations shall be considered a Class Two Violation, as described in R.S. 56:115(D), 56:764, and 56:787.


HISTORICAL NOTE: Promulgated by the Department of Wildlife and Fisheries, Wildlife and Fisheries Commission, LR 25:

Bill A. Busbice, Jr.
Chairman

9905#041
EXHIBIT “C”

Project Summary

Whiskey Island Back Barrier Marsh Creation Project TE-50
Terrebonne Parish, Louisiana

Coast 2050 Strategy
Regional Strategy #14: Restore and maintain the barrier islands and gulf shoreline such as Isle Dernieres, Timbalier barrier island chains, Marsh Island, Point au Fer, and Chenier Au Tigre (including back barrier beaches).

Project Location
The proposed project would be in Region 3, Terrebonne Basin, Terrebonne Parish, Lake Pelto Mapping Unit. The project would be located north of the previous restoration project, TE-27.

Problem
Gulfside and bayside erosion combined has resulted in Whiskey Island (and the entire Isles Dernieres) narrowing as the two shorelines migrate towards each other, resulting in a 68% decrease in average width for the Isles Dernieres (McBride and Byrnes 1997). Within 100 years, the entire subaerial portion of the Isles Dernieres barrier island system is projected to disappear except small land fragments associated with the western end of Whiskey Island and the eastern end of East Island. However, if the area change extrapolation method is used, the Isles Dernieres are projected to disappear much earlier, in 2017 (McBride and Byrnes 1997). Other predictions suggest that without restoration, the island would become subaqueous sand shoals between 2007 (McBride et al. 1991) and 2019 (Penland et al. 1988). In June, 2000 a CWPPRA restoration project (TE-27) was completed here, including dredging/placement (February, 1998), vegetative planting (July, 1998 and June, 1999), sand fencing (June 2000).

Goals
1) To create approximately 300 acres of back barrier, intertidal marsh; 2) To create a minimum of six 1-acre tidal ponds and 10,000 ft of tidal creeks; 3) To increase the longevity of the previously-restored and natural portions of the island by increasing the island width; 4) To maintain the longevity of the island by conserving sand volume and elevation by increasing the island width.

Proposed Solution
Approximately 300 acres of intertidal, back barrier marsh would be created by semi-confined disposal and placement of dredged material to +2 ft NAVD 88 (1 0.5ft). A minimum of six 1-acre tidal ponds and 10,000 ft of tidal creeks would be constructed. The area would be planted with smooth cordgrass (Spartina alterniflora). The boundary of the disposal area generally would follow the -3.5' contour. Because the project only involves marsh creation, high quality sand is not needed. This will allow sediment to be mined from a sediment source nearer the island than Ship Shoal, for example. A large area of silty sand lies directly to the south of the island, at a distance of three or four kilometers at a depth of two to four meters.

Project Benefits
The project would benefit about 1,038 acres of barrier island habitat. Approximately 272 acres of intertidal saltmarsh would be created/protected over the 20-year project life.

Construction Costs
The estimated total fully funded cost is $21,786,300.

Risk/Uncertainty and Longevity/Sustainability
There is a high degree of risk associated with this project because barrier islands have high loss rates due to their role in absorbing/dissipating energy from the Gulf. The project should continue providing benefits 20 – 30 years after construction.

Preparers of Fact Sheet
DEPARTMENT OF THE ARMY PERMIT

Permittee: Louisiana Department of Wildlife and Fisheries

Permit No. MVN 2008-226-CY

Issuing Office: New Orleans District

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

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

Project Description: Dredge to construct a temporary access channel and excavate and deposit material to reconstruct the dune complex, install containment dikes and a sand fence, and build a marsh platform with tidal creeks and ponds, all for the purpose of implementing the Whiskey Island Back Barrier Marsh Creation Project (CWPPRA TE-50), in accordance with drawings attached in 13 sheets, dated December 10, 2007 with no revisions.

Project Location: In the Isles Dernieres Island chain, Whiskey Island, approximately 17 miles southwesterly from Cocodrie, Louisiana, and the dredge area located in the Gulf of Mexico approximately 2.4 miles southeasterly from Whiskey Island, in Terrebonne Parish.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on MAY 31, 2013. 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
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: Page 4

Further Information:

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

   (X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
   (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

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.

X
(PERMITTEE)  X  6/2/08

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

Michael V. Farabee, Chief Eastern Evaluation Section  5-June-2008

for Alvin B. Lee, District Commander

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.

X
(TRANSFEREE)  X

3
SPECIAL CONDITIONS: MVN 2008-226-CY

7. The permitted activity must not interfere with the public's right to free navigation on all navigable waters of the United States.

8. The permittee must install and maintain, at the permittee's expense, any safety lights, signs, and signals prescribed by the US Coast Guard, through regulations or otherwise, on the permittee's authorized facilities.

9. If the proposed project, or future maintenance work, involves the use of floating construction equipment (barge mounted cranes, barge mounted pile driving equipment, floating dredge equipment, dredge discharge pipelines, etc.,) in the waterway, you are advised to notify the US Coast Guard so that a Notice to Mariners, if required, may be prepared. Notification, with a copy of your permit approval and drawings, should be mailed to the US Coast Guard, Sector New Orleans Command Center, 201 Hammond Highway, Metairie, Louisiana 70005, about 1 month before you plan to start work. Telephone inquiries can be directed to (504) 846-5923.

10. 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.

11. The permittee shall limit dredge and fill activities to areas essential to the project. If the proposed project requires any additional work not expressly permitted herein, the permittee must apply for an amendment to this authorization prior to commencement of work.

12. Maintenance dredging, including dredging for material to maintain project features authorized herein, is approved for a period of ten (10) years from the date of permit issuance. Maintenance operations shall not exceed specifications as shown on the permit drawings without prior approval from the US Army Corps of Engineers, New Orleans District (CEMVN) Regulatory Branch.

13. The Chitimacha Tribe of Louisiana has stated that the project area is part of the aboriginal Chitimacha homelands. If during the course of work at the site, prehistoric and/or historic aboriginal cultural materials are discovered, the permittee will contact the Chitimacha Tribe of Louisiana at P.O. Box 661, Charenton, LA 70523, and the CEMVN Regulatory Branch. CEMVN will initiate the required federal, state, and Tribal coordination to determine the significance of the cultural materials and the need, if applicable, for additional cultural resource investigations.
NOTES:
1) COORDINATES REFERENCE NAD83, LA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, U.S. SURVEY FEET. ALL ELEVATIONS REFERENCE NAVD88, U.S. SURVEY FEET.
2) APPROXIMATELY 225,000 CY (IN-PLACE VOLUME) OF MATERIAL TO BE PLACED ON THE DUNE ALIGNMENT. MATERIAL TO BE DREDGED FROM BORROW AREA 2A. FILL AREA FOOTPRINT - 65.7 ACRES.
3) APPROXIMATELY 2,000,000 CY (IN-PLACE VOLUME) OF MATERIAL TO BE PLACED IN MARSH FILL AREA FOR MARSH CREATION. MATERIAL TO BE DREDGED FROM BORROW AREA 2A. FILL AREA FOOTPRINT - 310.3 ACRES.
4) APPROXIMATELY 4,000 CY TO BE EXCAVATED BY BUCKET DREDGING FOR PROJECT ACCESS. EXCAVATION FOOTPRINT - 1.6 ACRES. TEMPORARY SPoil PLACEMENT FOOTPRINT - 1.8 ACRES.
5) APPROXIMATELY 4,200,000 CY OF MATERIAL TO BE EXCAVATED FROM BORROW AREA 2A BY HYDRAULIC CUTTER HEAD DREDGE FOR CONSTRUCTION OF MARSH PLATFORM AND DUNE. BORROW AREA FOOTPRINT 229.2 ACRES.

T. BAKER SMITH, INC.
412 SOUTH VAN AVE.
HOUMA, LA 70363

M.L.W. = 0.0' NAVD88
M.S.L. = 88' NAVD88
M.W.W. = 1.8' NAVD88

APPLICATION BY:
LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES
2000 GOUL DRIVE
BATON ROUGE, LOUISIANA 70803

WHISKEY ISLAND BACK BARRIER MARSH CREATION (TE-50)

WHISKEY ISLAND BACK BARRIER MARSH CREATION (TE-50)

STATE PROJECT NUMBER: 2511-05-09
DATE: 12/10/07

LOCATION MAP

FEDERAL PROJECT NUMBER: TE-50

SHEET 2 OF 13
NOTES:
1) COORDINATES REFERENCE NAD83, LA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, U.S. SURVEY FEET. ALL ELEVATIONS REFERENCE NAVD88, U.S. SURVEY FEET.
2) DIKES TO BE DEGRADABLE TO MARSH ELEVATION PRIOR TO DEMOBILIZATION.
3) SEE SHEET 5 AND 6 FOR TYPICAL MARSH AND DUNE FILL TEMPLATES.
4) SEE SHEET 9 FOR PRIMARY AND SECONDARY Dike AND CREEK/POND COORDINATES.
5) APPROXIMATELY 2,300,000 CY (IN-PLACE VOLUME) OF MATERIAL TO BE PLACED IN MARSH FILL AREA FOR MARSH CREATION. MATERIAL TO BE DREDGED FROM BORROW AREA 2a. FILL AREA FOOTPRINT - 310.0 ACRES.
NOTE: THE CONTRACTOR SHALL LEAVE A 20' LONG PLUG OF UNDISTURBED MATERIAL IN EVERY 500 LF. OF BORROW FOR DIKE CONSTRUCTION

TYPICAL PRIMARY CONTAINMENT DIKE SECTION

NOTE: APPROXIMATELY 167,000 CY. OF MATERIAL TO BE EXCAVATED BY BUCKET DREDGE FOR CONSTRUCTION OF PRIMARY AND SECONDARY CONTAINMENT DIKES. EXCAVATION FOOTPRINT - 35.0 ACRES. CONTAINMENT DIKE FOOTPRINT - 31.0 ACRES. BORROW AREA FOR CONTAINMENT DIKES WILL BE REFILLED WITH HYdraulically PLACED MATERIAL FROM BORROW AREA 2a. CONTAINMENT DIKES TO BE DEGRADED TO MARSH PLATFORM ELEVATION PRIOR TO DEMOBILIZATION.

TYPICAL SECONDARY CONTAINMENT DIKE SECTION

NOTE: APPROXIMATELY 2,300,000 CY. (IN-PLACE VOLUME) OF MATERIAL TO BE PLACED IN MARSH FILL AREA FOR MARSH CREATION. MATERIAL TO BE DREDGED FROM BORROW AREA 2a. FILL AREA FOOTPRINT - 315.0 ACRES.

TYPICAL MARSH FILL SECTION

NOTE: CONTRACTOR TO BREACH AN APPROXIMATE 70' WIDE SECTION OF THE CONTAINMENT DIKE CENTERING THE BREACH ON EACH CREEK OPENING. ONLY THE CROWN SECTION OF THE CONTAINMENT DIKE SHALL BE BREACHED. REMOVE MATERIAL FROM THE CROWN OF THE DIKE TO ELEVATION OF -1.0 NAVD 88. PLACE THE REMOVED MATERIAL WITHIN THE MARSH PLATFORM TEMPLATE AND SPREAD OUTSIDE OF THE FOOTPRINT OF THE CREEK EXCAVATION.

TYPICAL ACCESS CHANNEL

NOTE: APPROXIMATELY 4,000 CY. EXCAVATED BY BUCKET DREDGING FOR PROJECT ACCESS. EXCAVATION FOOTPRINT - 1.6 ACRES. TEMPORARY SPoil PLACEMENT FOOTPRINT - 1.6 ACRES.
**TYPICAL PLANTING**

SEA OATS
GALLON CONTAINER

FERTILIZER TABLET TO BE PLACED WITHIN 2'-4' OF ROOTBALL EDGE, 3' BELOW NORMAL GROUND AS SPECIFIED

TYPICAL PLANTING

SMOOTH CORDGRASS PLUG

BASE OF PLANT 2'-4' BELOW NORMAL GROUND

TYPICAL PLANTING

BLACK MANGROVE TUBE CONTAINER

BASE OF PLANT LESS THAN 1' BELOW NORMAL GROUND

TYPICAL PLANTING

BITTER PANICUM, SEACOAST BLUESTEM
4' CONTAINER

FERTILIZER TABLET TO BE PLACED WITHIN 2'-4' OF ROOTBALL EDGE, 3' BELOW NORMAL GROUND AS SPECIFIED

**NOTES:**

1. EXACT LOCATION OF ALL PLANTS SHALL BE DETERMINED ON SITE BY SURVEY DURING PRE-CONSTRUCTION LAYOUT.
2. THE TOP OF THE BLACK MANGROVE AND SMOOTH CORDGRASS ROOT MEDIA SHALL BE PLACED ONE INCH BELOW NORMAL GROUND. THE SEA OATS, SEACOAST BLUESTEM AND BITTER PANICUM ROOT MEDIA SHALL BE PLANTED A MINIMUM OF 4' BELOW NORMAL GROUND.
3. ONE FERTILIZER TABLET SHALL BE PLACED WITHIN TWO (2) TO FOUR (4) INCHES OF THE SIDE OF EACH PLANT SPECIFIED.
4. ALL DISTANCE MEASUREMENTS SHOWN ON THE PLANS ARE APPROXIMATE.
5. NO EQUIPMENT MAY ALTER THE EXISTING CONDITIONS OF THE ISLAND OR DISTURB EXISTING VEGETATION.
6. CONTAINMENT DIKE NOT MAINTAINED AND IS SUBJECT TO DEGRADATION.
### Borrow Area 2a Excavation

<table>
<thead>
<tr>
<th>VOLUME (CY)</th>
<th>ACREAGE (Acres)</th>
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<tbody>
<tr>
<td>4,200,000</td>
<td>228.2</td>
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<tr>
<td>167,000</td>
<td>35.0</td>
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<td>10.3</td>
</tr>
<tr>
<td>4,000</td>
<td>1.6</td>
</tr>
</tbody>
</table>

**Note:** Volumes are calculated to the maximum depth of equipment.

### Marsh Fill (In-Place)

<table>
<thead>
<tr>
<th>VOLUME (CY)</th>
<th>ACREAGE (Acres)</th>
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<tbody>
<tr>
<td>2,300,000</td>
<td>316.0</td>
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<tr>
<td>225,000</td>
<td>65.7</td>
</tr>
</tbody>
</table>

**Notes:**

1. Temporary spoil for access channels shall be backfilled into the flotation channel prior to demobilization.

2. Excavated areas for containment dike construction and tidal creeks and ponds will be refilled with hydraulically placed material from borrow area 2a during construction of the marsh platform.

3. The borrow area 2a volume exceeds the fill volume to account for the following:
   
   a. When fine-grained material is dredged, losses typically occur during transport, placement, and dewatering. Assumed cut-to-fill ratio for the marsh fill is 1.2:1; assumed cut-to-fill ratio for the dune fill is 1.6:1. Available borrow area volumes considers variations in the cut-to-fill ratios.

   b. Potential differing site conditions prior to construction that would result in minor variations in fill volume needs.

---

**Application By:**
Louisiana Department of Natural Resources
Coastal Engineering Division
517 North 3rd Street
Baton Rouge, Louisiana 70802

**Designed By:**
KPR

**Drawn By:**
KSP

**State Project Number:** 2511-05-09
**Federal Project Number:** TE-50
**Date:** 12/10/07

**General Notes**
APPENDIX D: DIRECTIONS TO BOAT LAUNCH
DIRECTIONS TO THE COCO MARINA BOAT LAUNCH AND LODGE

COCO MARINA
106 PIER 38
CHAUVIN LA 70344
(985) 498-2476 (DIRECT)
(985) 498-8678

1. FROM THE INTERSECTION OF US-90 AND LA-24
2. SOUTH ON LA-24 TO THE INTERSECTION OF LA-56
3. SOUTH ON LA-56
4. CONTINUE ON LA-56 TO THE DEAD END OF LA-56 THE LAUNCH IS ON THE RIGHT.

30,000' 15,000' 0' 30,000' 60,000'
Station Name: "TE14-SM-01"

Location: Located on the south side of Whiskey Island in Isles Dernieres, approximately 23 miles southwest of Cocodrie, Louisiana.

Monument Description: NGS style floating sleeve monument; datum point set on 9/16" stainless steel sectional rods driven 108 feet to refusal, set in sand filled 6" PVC pipe with access cover set in concrete.

Stamping: TE14-SM-01

Installation Date: August 2003  Date of Survey: September 2003

Monument Established By: Morris P. Hebert, Inc.

For: Louisiana Department of Natural Resources, CRD

Adjusted NAD 83 Geodetic Position
Lat.  29°02'49.70646" N
Long.  90°50'22.54562" W

Adjusted NAD 83 Datum LSZ (1702) Feet
N =  198,323.20
E =  3,438,809.45

Adjusted NAVD88 Height
Elevation = 2.29 feet (0.698 Mtrs)
Ellipsoid Height = -23.542 Mtrs.
Geoid99 Height = -24.239 Mtrs.

Adjusted Position Established for Louisiana Department of Natural Resources, Coastal Restoration Division by Morris P. Hebert Inc.
LEGEND AND NOTES FOR
LOG OF BORING AND TEST RESULTS

PP
Pocket penetrometer resistance in tons per square foot

SPT
Standard Penetration Test: Number of blows of a 140-lb. hammer dropped 30 inches required to drive 2-in. O.D., 1.4-in. I.D. sampler a distance of 1 foot into the soil after first seating it 6 inches

SPLR
Type of Sampling
- Shelby
- SPT
- Auger
- No sample

SYMBOL
<table>
<thead>
<tr>
<th>Clay</th>
<th>Silt</th>
<th>Sand</th>
<th>Peat/Humus</th>
<th>Shells</th>
<th>Stone/Gravel</th>
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</table>

Predominant type shown heavy; Modifying type shown light

USC
Unified Soil Classification

DENSITY
Unit weight in pounds per cubic foot

SHEAR TESTS

TYPE
- UC Unconfined compression shear
- OB Unconsolidated undrained triaxial compression shear on one specimen confined at the approximate overburden pressure
- UU Unconsolidated undrained triaxial compression shear
- CU Consolidated undrained triaxial compression shear
- DS Direct shear
- $\theta$ Angle of internal friction in degrees
- c Cohesion in pounds per square foot

ATTERBERG LIMITS
- LL Liquid Limit
- PL Plastic Limit
- PI Plasticity Index

OTHER TESTS
- CON Consolidation
- PD Particle-size distribution (sieve and/or hydrometer)
- k Coefficient of permeability in centimeters per second
- SP Swelling pressure in pounds per square foot

Other laboratory test results reported on separate figures

GENERAL NOTES
(1) If a ground water depth is shown on the boring log, these observations were made at the time of drilling and were measured below the existing ground surface. These observations are shown on the boring logs. However, ground water levels may vary due to seasonal fluctuations and other factors. It is important to construction, the depth to ground water should be determined by those persons responsible for construction immediately prior to beginning work.

(2) While the individual logs of borings are considered to be representative of subsurface conditions at their respective locations on the dates shown, it is not warranted that they are representative of subsurface conditions at other locations and times.
<table>
<thead>
<tr>
<th>Scale in Feet</th>
<th>PP</th>
<th>SPT</th>
<th>Symbol</th>
<th>Visual Classification</th>
<th>USC</th>
<th>Sample Number</th>
<th>Depth in Feet</th>
<th>Water Content Percent</th>
<th>Density</th>
<th>Shear Tests</th>
<th>Alterberg Limits</th>
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**Ground Elev.: Datum:**

**Water Depth:** 6'

**Job No.: 19186 Date Drilled:** 5/02/06

**Boring:** 1

Refer to "Legends & Notes"

**Comments:**

Latitude: 29° 03.145' N
Longitude: 90° 50.009' W
# Log of Boring and Test Results

**State of Louisiana**  
**Whiskey Island Back Barrier Marsh Creation**  
**Terrebonne Parish, Louisiana**

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**Comments:**  
Latitude: 29° 03.183'  
Longitude: 90° 49.831' W  
5 - inch diameter boring
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**Job No.: 19186 Date Drilled: 5/04-09/06 Boring: 2**  
Refer to "Legends & Notes"

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**Comments:**  
Latitude: 29° 03.183'  
Longitude: 90° 49.831' W  
5 - inch diameter boring
## Log of Boring and Test Results

**State of Louisiana**

**Whiskey Island Back Barrier Marsh Creation**

**Terrebonne Parish, Louisiana**

**Sheet 3 of 3**

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**Comments:**

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Longitude: 90° 49.031' W
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**Ground Elev.:** 

**Water Depth:** 3.8'

**Job No.:** 19186  **Date Drilled:** 4/25/06  **Boring:** 3

**Comments:** Latitude: 29° 03.198' N  Longitude: 90° 49.641' W

Refer to "Legends & Notes"
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**Comments:** Latitude: 29° 03.234' N  
Longitude: 90° 49.453' W
# Log of Boring and Test Results

**State of Louisiana**  
**Whiskey Island Back Barrier Marsh Creation**  
**Terrebonne Parish, Louisiana**

**Ground Elev.:**  
**Datum:**  
**Water Depth:** 4'

**Job No.:** 19186  
**Date Drilled:** 4/25/06  
**Boring:** 5

Refer to "Legends & Notes"

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**Comments:**  
Latitude: 29° 03.289' N  
Longitude: 90° 49.273' W

**Notations:**  
- **CH:** Extremely soft gray organic clay
- **CL:** Extremely soft clay w/silt pockets
- **Wood:** w/wood
- **C:** w/rotten sand lenses
- **SH:** Very soft gray sandy clay
- **CV:** Very soft to very soft gray clay w/silt pockets
- **SO:** Very soft to soft gray clay w/sand lenses & shell fragments
- **OB:** 0 23 0
- **LL:** 143 37 106
- **PL:** 0 64
- **PI:** 0 161
- **SH:** 0 133

**Legend & Notes:**
- **Dry & Wet Density:**
- **Type & σ:**
- **C:**
- **LL, PL, PI:**
## Log of Boring and Test Results

**State of Louisiana**  
**Whiskey Island Back Barrier Marsh Creation**  
**Terrebonne Parish, Louisiana**

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**Comments:**  
Latitude: 29° 03.002' N  
Longitude: 90° 49.979' W
# LOG OF BORING AND TEST RESULTS

STATE OF LOUISIANA
WHISKEY ISLAND BACK BARRIER MARSH CREATION
TERREBONNE PARISH, LOUISIANA

**Ground Elev.:**

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**Refer to "Legends & Notes"**

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**Visual Classification:**

- Extremely soft to very soft gray sandy clay
- Extremely soft to very soft gray clay w/soft lenses 
- Very soft to soft gray clay w/soft lenses

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Longitude: 90° 49.688' W
## LOG OF BORING AND TEST RESULTS

**Location:** Whiskey Island Back Barrier Marsh Creation, Terrebonne Parish, Louisiana

**Job No.:** 19186  **Date Drilled:** 4/28/06  **Boring:** 9

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## LOG OF BORING AND TEST RESULTS

**STATE OF LOUISIANA**

**WHISKEY ISLAND BACK BARRIER MARSH CREATION**

**TERREBONNE PARISH, LOUISIANA**

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**Comments:** Latitude: 29° 03.121' N  
Longitude: 90° 49.238' W
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|-------------|-----------------------|-----|---------------|--------------|-----------------------|-------------|-------------|-------------|------------------|----------------|------------|-------------|
| 0-10        | Loose gray silty sand w/organic matter | SM  | 1             | 1-2          |                       |             |             |             |                  |                |            |             |
|             | Loose gray clayey sand w/silt & trace of shell fragments | SC  | 2             | 3-4          |                       |             |             |             |                  |                |            |             |
|             | Loose gray fine sand w/shell fragments | SP  | 3             | 6-7          |                       |             |             |             |                  |                |            |             |
|             | Extremely soft to very soft gray silty clay | CL  | 4             | 8-9          | 24                    |             |             |             |                  |                |            |             |
|             | Very soft to soft gray clay w/sand & silt lenses, & shell fragments | CH  | 5             | 11-12        | 54                    | 67          | 103        | OB          | 0               | 28             | 44 18 20   | PD          |
|             |                                                      |    | 6             | 13-14         |                       |             |             |             |                  |                |            |             |
|             |                                                      |    | 7             | 16-17         | 76                    | 55          | 97         | OB          | 0               | 210            |             |             |
|             |                                                      |    | 8             | 18-19         |                       |             |             |             |                  |                |            |             |
|             |                                                      |    | 9             | 23-24         | 68                    | 59          | 99         | OB          | 0               | 181            |             |             |
|             |                                                      |    | 10            | 26-29         |                       |             |             |             |                  |                |            |             |

Comments: Latitude: 29° 02.866' N  
Longitude: 90° 49.944' W
### LOG OF BORING AND TEST RESULTS
STATE OF LOUISIANA
WHISKEY ISLAND BACK BARRIER MARSH CREATION
TERREBONNE PARISH, LOUISIANA

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**Comments:**
Latitude: 29° 02.868' N
Longitude: 90° 49.767' W
## LOG OF BORING AND TEST RESULTS

STATE OF LOUISIANA
WHISKEY ISLAND BACK BARRIER MARSH CREATION
TERREBONNE PARISH, LOUISIANA

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- **Datum:**
- **Water Depth:** 2'
- **Job No.:** 19186  **Date Drilled:** 5/01/06  **Boring:** 13

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**Comments:** Latitude: 29° 02.906' N
Longitude: 90° 49.585' W
## Log of Boring and Test Results

**State of Louisiana**  
**Whiskey Island Back Barrier Marsh Creation**  
**Terrebonne Parish, Louisiana**  

**Job No.: 19186**  
**Date Drilled: 4/28/06**  
**Boring: 14**

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**Comments:**  
Latitude: 29° 02.936' N  
Longitude: 90° 49.400' W
# LOG OF BORING AND TEST RESULTS

**STATE OF LOUISIANA**  
**WHISKEY ISLAND BACK BARRIER MARSH CREATION**  
**TERREBONNE PARISH, LOUISIANA**

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**Comments:**  
Latitude: 29° 02.968' N  
Longitude: 90° 49.218' W
## LOG OF BORING AND TEST RESULTS

**STATE OF LOUISIANA**  
**WHISKEY ISLAND BACK BARRIER MARSH CREATION**  
**TERREBONNE PARISH, LOUISIANA**

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**Comments:** Latitude: 29° 02.888' N
Longitude: 90° 50.249' W
| Scale in Feet | PP | SPT | SPL | LR | Symbol | Visual Classification                        | USC | Sample Number | Depth In Feet | Water Content Percent | Density Dry | Density Wet | Shear Tests Type | Shear Tests σ | Shear Tests C | Atterberg Limits LL | Atterberg Limits PL | Atterberg Limits PI | Specific Gravity | Other Tests |
|--------------|----|-----|-----|----|--------|---------------------------------------------|-----|---------------|---------------|----------------------|-------------|-------------|-----------------|--------------|-------------|-------------------|------------------|----------------|-----------------|----------------|-------------|
|              |    |     |     |    |        | Loose grey fine sand w/coarse & trace of shell fragments |     | 1             | 0-1           | 15                   |             |             |                 |              |             |                   |                  |                |                 | PD             |            |
|              |    |     |     |    |        | w/shell fragments & roots                     |     | 2             | 1-2           |                      |             |             |                 |              |             |                   |                  |                |                 | PD             |            |
|              |    |     |     |    |        | w/shell fragments & decayed wood               |     | 3             | 2-3           | 24                   |             |             |                 |              |             |                   |                  |                |                 | PD             |            |
|              |    |     |     |    |        | w/shell fragments                              |     | 4             | 3-4           |                      |             |             |                 |              |             |                   |                  |                |                 | PD             |            |

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**Comments:**
## LOG OF BORING AND TEST RESULTS

**STATE OF LOUISIANA**
**WHISKEY ISLAND BACK BARRIER MARSH CREATION**
**TERREBONNE PARISH, LOUISIANA**

**Job No.:** 19186 **Date Drilled:** 5/04/06

**Boring:** A-3

### Ground Elev.:  Datum:  Gr. Water Depth:  Scale in Feet: PP  SPT  SPLR  Symbol  Visual Classification  USC  Sample Number  Depth in Feet  Water Content Percent  Density  Shear Tests  Atterberg Limits  Specific Gravity  Other Tests

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**Comments:**
**Core Log**

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Final Report - Hydrographic, Geophysical and Geotechnical Survey Program, Whiskey Island Back-Barrier Marsh Creation Project

Appendix 6-25
### Core Log

**Project:** Whiskey Island Back-Barrier Marsh Creation, Project No. TE-50  
**Location:** Whiskey Island, Louisiana  
**Client:** Louisiana Department of Natural Resources

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#### Core Details

- **Core Operator:** D.K.  
- **Model of Corer:** OSI-1500  
- **Core Diameter:** 2.5"  
- **Water Depth:** Time of core 16.0'  
- **Total Recovery:** 10.0'  

#### Depth and Description

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<th>DESCRIPTION</th>
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<td>1.90-2.10'</td>
<td>Clean fine silty sand. A small amount of organic material present with some fine roots penetrating the sand. Final contact is sharp.</td>
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<td>3.30-4.10'</td>
<td>Fine silty sand. A small amount of organic material present with some fine roots penetrating the sand. Final contact is sharp.</td>
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<td>4.90-6.10'</td>
<td>Fine silty sand. A small amount of organic material present with some fine roots penetrating the sand. Final contact is sharp.</td>
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<td>9.35-9.10'</td>
<td>Clean fine silty sand. No organic material present. Small amounts of organic material present throughout. Final contact is sharp.</td>
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*Final Report - Hydrographic, Geophysical and Geotechnical Survey Program, Whiskey Island Back-Barrier Marsh Creation Project*  
*Appendix 6-27*
Final Report - Hydrographic, Geophysical and Geotechnical Survey Program,
Whiskey Island Back-Barrier Marsh Creation Project  Appendix 6-30
### CORE LOG

**Core No. VC-32**

**Collection Date:** 7-17-06

**Project:** Whiskey Island Back-Barrier Marsh Creation, Project No. TE-50

**Location:** Whiskey Island, Louisiana

**Client:** Louisiana Department of Natural Resources

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<td>0.0-0.20'</td>
<td>Clean Clay</td>
<td>Very fine sand mixed with clay. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>1.10-1.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>3.30-4.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>5.00-6.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>7.90-8.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>9.50-9.70'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>11.50-11.70'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>13.60-13.70'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>14.30-14.60'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>15.00-15.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>16.00-16.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>17.00-17.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>18.00-18.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>19.00-19.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>20.00-20.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>21.00-21.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>22.00-22.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>23.00-23.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>24.00-24.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>25.00-25.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>26.00-26.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>27.00-27.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>28.00-28.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
<tr>
<td>29.00-29.10'</td>
<td>Clean Clay</td>
<td>Very fine sand. Slight organic material noted throughout.</td>
</tr>
</tbody>
</table>
APPENDIX G: DREDGE DATA SHEET
DREDGE DATA SHEET

DREDGE INFORMATION:

Owned: _____ Leased: _____ Leased From: ____________________________________________
Dredge name: _________________________________________________________________
Minimum width of channel in which dredge can successfully operate and make a 180 degree turn:

_____________________________________________________________________________

Maximum draft of dredge: _______________________________________________________
Loaded freeboard: _______________________________________________________________
Minimum depth in which the dredge can successfully operate: _______________________
Depth range to which dredge will dig:
Maximum: ____________________ Minimum: ___________________

Maximum effective dredge swing, in degrees: _______________________________________
Length of dredge spuds: _________________________________________________________
Length of dredge hull: __________________________________________________________
Length of dredge ladder: _________________________________________________________
Length of suction and boat lines: _________________________________________________
Inside diameter of pump discharge: _______________________________________________
Inside diameter of pump suction inlet: _____________________________________________
Suction lift (Elevation of main dredge pump relative to the water surface level):

_____________________________________________________________________________

Diameter of pump impeller eye: _________________________________________________
Outside diameter of pump impeller: ______________________________________________
Brake horsepower and corresponding engine RPMs (during dredging operations) applied to pump impeller at rated drive of the prime mover, during dredging operations:

_____________________________________________________________________________

Cutter head type and diameter: _________________________________________________
Brake horsepower applied to cutter head during dredging operations:

_____________________________________________________________________________
Pump engine(s) horsepower and corresponding RPM:

_____________________________________________________________________________

Completion date of each dredge pump engine re-build: _________________________________

_____________________________________________________________________________
DREDGE DATA SHEET

Type(s) of production rate monitoring equipment on-board the dredge (measuring cy/hr of material dredged):

THE DREDGE MAY BE INSPECTED AT (List location of equipment):

DREDGE OWNER INFORMATION:

Firm name__________________________________________
Point of contact_____________________________________
Title______________________________________________
Business address:
Street___________________________________________
City______________________________________________
Parish/County_____________________________________
State___________________________________________ Zip+4
Telephone no. (___)______________________________ Facsimile no. (___)_____________________

ENVIRONMENTAL ASSESSMENT
for the
ISLES DERNIERES BARRIER ISLAND
WHISKEY ISLAND BACK BARRIER MARSH CREATION PROJECT (TE-50)
TERREBONNE PARISH, LOUISIANA

SECTION 1.0 SUMMARY

SECTION 1.1 Summary of Environmental Assessment

Project Name: Whiskey Island Back Barrier Marsh Creation (TE-50)

Location: On Whiskey Island, within the Isles Dernieres Barrier Island chain, approximately 18 miles southwest of Cocodrie, Louisiana, in Terrebonne Parish. The project area is between Coupe Colin, Whiskey Pass, Lake Pelto, Caillou Boca, and Caillou Bay to the north, and the Gulf of Mexico to the south (See Appendix A, Figure 1). The proposed sand borrow site is located approximately 2.8 to 4.5 miles southeast of Whiskey Island and encompasses about 230 acres.

Sponsors: U.S. Environmental Protection Agency (EPA), Region 6; Louisiana Department of Natural Resources (LDNR).

Total estimated funding $ 27,914,086.00
Phase 1 (Engineering and Design) funding $ 2,754,889.00
Phase 2 (Construction¹) funding $ 25,159,197.00

Landrights: The Louisiana Department of Wildlife and Fisheries (LDWF) own the entire island.

Project Purpose: To increase the longevity of the previously restored and natural portions of the island by increasing the island’s width. The project as proposed is consistent with the 1998 Coast 2050 Plan, Region 3 ecosystem strategy to restore barrier islands and gulf shorelines, which includes restoring and maintaining the Isles Dernieres Barrier Island chain. The proposed project is not expected to cause adverse environmental impacts requiring compensatory mitigation.

Dredged Material: Approximately 4.2 million yd³

Wetlands: Saline Marsh

¹ Phase 2, construction of the project, includes project and contract management, supervision and inspection, post-construction biological monitoring, operation, maintenance, repair, replacement, and rehabilitation (OMRRR), and the purchase of real estate.
Threatened and Endangered Species: The Piping Plover (*Charadrius melodus*), Brown Pelican (*Pelecanus occidentalis*), West Indian Manatee (*Trichechus manatus*), and five species of threatened and endangered sea turtles may occur in the proposed project vicinity. The proposed project is not expected to adversely impact these species.

Cultural Resources: There are no known cultural or historic sites in the proposed Project area.

Permits and Compliance: Construction of the project is authorized to begin as soon as the applicable environmental laws and regulations are met, project plans finalized, necessary land rights acquired, U.S. Army Corps of Engineers 404 permit issued, and approval from the Louisiana Coastal Wetlands Conservation and Restoration Task Force established by Title III of Public Law 101-646, CWPPRA, and consisting of the Natural Resources Conservation Service (NRCS), the U.S. Army Corps of Engineers (USACE), National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service (USFWS), and the EPA. The Governor represents the State of Louisiana, with LDNR providing the primary source of the non-Federal portion of the funding.

SECTION 1.2 Background: The Isles Dernieres chain is considered one of the most rapidly deteriorating barrier shorelines in the U.S. and is losing its structural framework function as a storm buffer and protection of the inland bays, estuaries, wetlands, human populations and infrastructures. The deterioration is caused by tropical storms and cold fronts, and by the loss of nourishing sediments due to natural and human alterations. Whiskey Pass was formed around 1934 in the mid-portion of Isles Dernieres, possibly by major hurricanes. Continued widening of existing tidal inlets and further deterioration of interior marshes has resulted in significant land loss and landscape change. From 1978 to 1988, Whiskey Island lost an average of 31.1 acres (ac) per year; and the short spit located on the western end of Whiskey Island is experiencing landward rollover at about 65 feet (ft) per year.

The EPA prepared an Environmental Assessment (EA) in December 1993 for the restoration of Isles Derniers Barrier Island, which included Raccoon Island, Whiskey Island, Trinity Island and East Island. On September 4, 1997, EPA issued an addendum to the EA and a Finding of No Significant Impact (FNSI) for the Whiskey Island Barrier Island Restoration and Coastal Wetlands Creation project (TE-27) which restored approximately 355 acres of emergent marsh platform, and closed four major breaches, including the Coupe Nouvelle. This project, TE-50, is a continued effort to restore this island by creating additional back barrier marsh habitat north of the TE-27 project.
SECTION 1.3 Preferred Alternative: The preferred alternative consists of marsh and dune construction using material from borrow subarea 2a (Figures 2 & 3). It is anticipated that a hydraulic cutter-head dredge (Figure 4) will be used to excavate the sediment from the borrow site 2a. In selecting a borrow site, it is important to ensure there is enough material available for the proposed project. As explained in section 3.1, borrow area 2a contains more than enough available material of sufficient quality that may be dredged for marsh construction. The required in-place marsh fill volume for this project is approximately 2.3 million cy and the required in-place dune fill volume is approximately 225,000 cy. In the event that the sand resource proves to be smaller, thinner, or of worse quality than anticipated, the available sand could be used to construct at least part of the proposed dune template. Any increased risk of using borrow subarea 2a is arguably offset by cost savings.

The proposed action would create approximately 316 acres of intertidal, back barrier marsh, three 1-acre tidal ponds and 5,800 feet of tidal creeks by using pre-excavation techniques and semi-confined disposal and placement of dredged material. The proposed design of constructed tidal creeks and ponds is shown in Appendix A, Figure 5. As fully described in section 2.2.4, the creeks and ponds within the proposed marsh creation area would be excavated to a depth prior to constructing the marsh. Afterwards, the marsh fill would be placed over the entire proposed marsh creation area footprint, including the excavated creeks and ponds area. Because the thicker layer of fill placed over the excavated areas will undergo greater self-weight consolidation, the time rate of settlement along the creeks and ponds will be greater than over the marsh areas. The depth of pre-excavation can be estimated and optimized based on a settlement analysis to yield channels and ponds at a depth of -0.5 to -1.0 ft NAVD88, which is roughly within the range of depths along the existing creeks in the east and west marsh lobes. In the areas where excavation is not performed, the thinner marsh fill layers would settle to the desired intertidal elevation instead.

Survey data collected over both existing marsh lobes at Whiskey Island suggest that healthy marsh elevations are on the order of +1.2 to +1.6 ft NAVD88 under present sea level conditions. These elevations fall in the upper half of the tidal range, which is typically the case for healthy saltwater marshes in coastal Louisiana. Therefore, the goal of this project is to construct a back barrier marsh that will remain within this range of elevations over as long as period of time as possible within the project’s 20 year life. To achieve this objective, the marsh platform has to be initially built to an elevation such that after initial fill consolidation and foundation settlement, it will settle into the optimal range. After additional review and analysis, a target post-construction marsh fill elevation of +2.5 ft NAVD88 was selected as providing the optimum combination of suitable marsh elevation (Appendix B, Table 1). After construction and consolidation, the newly created marsh will be planted with smooth cordgrass (*Spartina alterniflora*), and black mangrove (*Avicennia nitida*).

Containment dikes will be constructed around the perimeter of the marsh creation area to an elevation of +4.5 ft NAVD88 with 1(V):5(H) side slopes (Appendix A, Figures 6 and 7). In order to reduce the impacts of waves and currents, the northern containment dike
will be constructed with a crest width of 20 ft. This dike will be breached at the location of the 3 tidal creeks to allow for increased tidal exchange. The east, west and south containment dikes will not be exposed to direct action from winds and waves and will be built with a 10 ft crest width. The east and west dikes will be constructed such that some of the existing tidal creeks on the east and west lobes of the island will remain connected to open water (Green 2007). All dikes will be degraded after sufficient consolidation has occurred to allow for more efficient and natural water exchange between the back bay and the new marsh. The fill from the degraded dikes will be spread evenly to match existing elevations outside of the marsh fill area to prevent swale formation. (TBS and M&N 2007)

When the project was originally authorized it did not include a dune feature. Dunes exist on either side of the island reach proposed for construction of backbarrier marsh, but not on the reach itself, leaving the proposed backbarrier marsh highly vulnerable to erosion and overwash without a dune feature. For this reason, a dune feature was added to the design. Along the front of the island, approximately 13,000 linear feet of dunes will be created to restore the relatively low barrier elevation (Appendix A, Figure 1). The overtopping analysis suggests a minimum dune elevation of +6.0 ft NAVD88. Additional analysis also suggests a crest width of 100 ft. A single row of sand fencing will be constructed approximately 20 ft back from the southern toe of the dune along the dune’s length. After construction, the newly created dune will be planted with bitter panicum (*Panicum amarum*), seacoast bluestem (*Schizachyrium scoparium*), seashore dropseed (*Sporobollus virginicus*), marshhay cordgrass (*Spartina patens*), and sea oats (*Uniola paniculata*).

### SECTION 1.4 Purpose and Need for Action:
As reported in the Ecological Review, Louisiana’s barrier islands have naturally decreased in land mass by approximately 40% over the last 100 years. The Isles Dernieres barrier island chain shoreline is one of the most rapidly deteriorating barrier shorelines in the United States. Future landloss estimates indicate that if no restoration occurs, the Isles Dernieres barrier island chain will become subaqueous by 2050. (Green 2007) The objectives of the proposed TE-50 project includes the creation of approximately 316 acres of intertidal, back barrier marsh, three 1-acre tidal ponds and 5,800 linear ft of tidal creeks and 13,000 linear ft of dunes with dredged material. By constructing the proposed project, the previously restored and natural portions of the island will be protected and enhanced. The proposed project will also serve to illustrate on a small scale the ability to, and importance of, creating a back barrier marsh platform on which a barrier island can migrate.

### SECTION 1.5 Potential Benefits and Adverse Impacts:
The bays, estuaries, and wetlands behind the island are habitat for one of the most productive commercial fisheries in the United States, and provide habitat of continental importance for North American waterfowl populations. Loss of Whiskey Island would expose large areas of the valuable estuary and associated inland wetlands to wave attack, saltwater intrusion and storm surges. The loss would result in the conversion of the bays to open gulf waters resulting in severe impact to important coastal infrastructure, fish and wildlife resources. After restoration of the proposed back barrier marsh platform of Whiskey Island, the
The project would benefit about 316 acres of barrier island habitat. At the end of 20 years, it is forecast that approximately 59% of the original habitat will remain (602 acres). Additional details can be found in the 30% Design Report, the 95% Design Report, the final plans and specification and the Wetland Value Assessment (WVA).

SECTION 2.0 ALTERNATIVES: Alternatives considered included structural alternatives (such as placement of rocks or other solid objects, groins, revetments or breakwaters on or around the island), and non-structural alternatives (sediment fill such as placement of overwash or dredged materials, vegetative plantings such as beach nourishment, beach restoration, dune restoration and marsh creation for stabilization and sand fences), as well as “massive”/numerous freshwater/sediment diversions from the Mississippi River. Mississippi River diversions were not considered feasible because the decades-to-centuries time scale of this approach. This approach would be based on the fact that the Louisiana barrier islands are the products of the natural destructive and constructive delta cycles. While there is an immediate need to enhance the entire Coastal Louisiana barrier island system, the scale is beyond the scope of present CWPPRA funding, and there are numerous socioeconomic issues that are obstacles to such a large-scale restoration approach.

Current planning concepts are influenced by actual experience at shoreline and island protection projects. These real-world experiences concerning structural and non-structural alternatives are important considerations in the discussion of alternatives. They are detailed in length in the December 1993 EA, and in the September 4, 1997 Addendum, and are incorporated into this EA by reference. EPA and LDNR have elected to use non-structural solutions to barrier island restoration; a structural alternative was not considered sustainable or feasible for this project.

SECTION 2.1 No-Action Alternative: The No-Action Alternative was retained throughout the study as a basis for comparing the relative benefits and impacts of the alternatives. The No-Action Alternative involves leaving Whiskey Island with no additional restoration effort. This alternative would allow the erosion of the island to continue, resulting in decreasing island area and height. As noted in the Ecological Review, the average rate of shoreline change for Whiskey Island from 1887-2002 was 56.0 ft per year and from 1988-2002 was 86.0 ft per year. According to the 95% Design Report, at the end of 20 years, it is forecast that without any additional restoration efforts, approximately 346 acres (42%) of the original habitat (826 ac) will remain.

SECTION 2.2 Design Alternatives: Three design alternatives were evaluated using similar criteria in the preliminary design in order to maintain a consistent comparison of the cost estimates. Additionally, two creeks and ponds construction techniques were considered. Although the initial restoration strategy did not include a dune, it was decided at the initiation of the engineering and design phase of this project that a dune should be considered to restore the relatively low barrier elevations along the Gulf side of Whiskey Island. Based on the design work and characteristics of the identified borrow locations (Section 3.1), the following alternatives are recommended for further evaluation:
2.2.1 Alternative 1: Marsh and Dune Construction Utilizing Subarea 3a: Under this alternative, both marsh and dune features are constructed and the use of Subarea 3a is assumed. As noted in the 95% Design, it is expected that the cost of the project could vary between $21,859,000 and $28,256,000. Subarea 3a is described in detail within the 95% Design and summarized in Section 3.1. The distance to Whiskey Island from subarea 3a ranges from 26,000 to 35,000 ft, meaning that a booster pump would very likely be required. The use of a booster pump not only increases a total daily plant cost approximately 20%, but also increases mobilization and demobilization costs. Therefore, the cost of dredging both marsh and dune material will be significantly higher for subarea 3a than subarea 2a. The increase in unit cost is estimated to be 24% for dune material and 15% for overburden.

2.2.2 Alternative 2: Marsh Only Construction Utilizing Subarea 2a: With this alternative, only the marsh feature is constructed and the use of Subarea 2a is assumed. The total project cost in the 95% Design is between $16,917,000 and $22,034,000. The estimated savings by constructing only the marsh and from removing the dune feature is approximately $2,137,700. By using subarea 2a, the proposed project would use most or all of the available overburden and sand resources so that future “contamination” of the available sand resource would not be a concern. Additionally, in comparison to subarea 3a, the cost of dredging is significantly reduced if subarea 2a is used. The approximate pumping distance from borrow area 2a is between 15,000 ft and 24,000 ft (2.8-4.5 miles) and a booster pump is not likely to be required.

2.2.3 Alternative 3: Marsh and Dune Construction Utilizing Subarea 2a (Preferred Alternative): Marsh and Dune feature construction are considered with this option; however, the use of Subarea 2a is assumed. It is expected that the cost of this alternative could vary between $17,313,000 and $24,461,000. The cost savings when constructing the dune and marsh feature from Subarea 2a as opposed to Subarea 3a is estimated to be over $2.6 million. When the project was originally authorized, it did not include a dune feature. However, at the engineering and design phase for this project, a decision was made to include a dune as an alternative in the design to increase the structural stability of the island as well as provide protection against overwash and breaching. Given that a robust dune system is a critical component of a healthy barrier island ecosystem and considering the cost savings of using subarea 2a, alternative 3 was selected as the preferred alternative.

2.2.4 Creek and Pond Construction Technique Alternatives: The 95% Design Report highlights the importance of including tidal creeks and ponds to allow the hydraulic exchange and circulation within the new back barrier marsh. Allowing for the natural formation of creeks and ponds would certainly result in a natural back barrier marsh morphology; however, the length of time over which this process would occur is unknown and would be expected to be a relatively slow process. In order to establish tidal connectivity as soon as possible, the design of this project includes demonstrating the construction of a network of tidal creeks and ponds. Two techniques were considered for the construction of tidal creeks and ponds in the back barrier marsh:
2.2.4.1 *Pre-excavation of creeks and ponds with controlled marsh fill placement*: Similar to the previous technique, this technique excavates tidal creeks and ponds prior to marsh construction. However, a buffer area is outlined around the excavated features in which direct placement of material would not be allowed. Establishing and controlling target marsh fill elevations along these creeks and buffer areas would be difficult and a wide elevation tolerance may be required for constructability. The relatively wide placement of buffers may result in creeks that are too wide compared to natural creeks.

2.2.4.2 *Pre-excavation of creeks and ponds (Preferred Technique)*: This technique involves the excavation of the tidal creeks and ponds before the marsh is constructed. As dredged material is placed, the thicker layer of sediment over the excavated areas will settle more quickly, creating creeks with a lower elevation than the surrounding marsh and allowing accelerated tidal exchange in the back barrier marsh. In addition, the northern containment dike will be breached at the confluence of each tidal creek after project construction is complete to allow tidal exchange to occur (Green 2007). After consideration of the two creek and pond construction techniques, it was decided that the first technique (Section 2.2.4.1) would be too complicated to construct and that the relatively simple approach of pre-excavating and subsequently filling the marsh to a flat elevation would be preferred. The proposed design of constructed tidal creeks utilizing the second technique (Section 2.2.4.2) is shown in Appendix A Figure 5. Approximately 5,800 ft of sinuous tidal creeks and three 1-ac round tidal ponds are proposed for construction over the eastern half of the marsh platform. This is less than the originally proposed quantities (10,000 linear ft of creeks and six 1-ac ponds) because the western half of the marsh platform will not include constructed features. Instead, over the western half, tidal features will be allowed to develop naturally for the purposes of assessing the relative benefits of including constructed tidal features in marsh habitat restoration projects.

**SECTION 3.0 AFFECTED ENVIRONMENT**

**SECTION 3.1 Soils**: The soil types present in the project area include Felicity loamy fine sand and Scatlake muck. Beach, dune and overwash soils are sand, while saline marshes are typically clays and mucky clays. To characterize the native material on Whiskey Island, sediment samples were collected along four transects across the island and at the east and west marshes by Eustis Engineering Company (Eustis 2007).

The proposed project restoration features include a dune and a back barrier marsh platform, where each component will require a different type of sediment for construction. Specifically, sediment with a relatively large percentage of sand will be required to create the dune feature while mixed sediment with a higher percentage of silts and clays may be used for the back barrier marsh. In fact, it may well be preferable ecologically, to construct the marsh using finer-grained sediment.

As illustrated in Appendix A Figure 3, Ocean Survey Inc. (OSI) completed a hydrographic, geophysical and geotechnical survey of the 23 statute square mile search
area. Three areas (Areas 1, 2, and 3) were identified as having the highest potential for containing sediments suitable for the restoration project. For the purposes of this report, a sand resource is defined as having greater than 70% sand content, a silt/clay resource as greater than 70% silt/clay content, and a mixed sediment assemblage as having sand and silt/clay contents that are both less than 70%. A volume estimate of the subsurface sands and the overburden was developed by OSI for one part of Area 2 (designated at 2a) and three subareas of Area 3 (designated as 3a, 3b, and 3c). Only limited resources of sand were identified in Area 1 and this it was not considered further. After additional investigations, subareas 3b and 3c appear to not contain sufficient suitable sediment volume.

The 95% Engineering Design Report summarizes the characteristics of Subareas 2a and 3a as follows:

**Subarea 2a**: Subarea 2a is 230 ac in size and the water depth throughout the area is between -16 ft and -20 ft NAVD88. Subsurface sand resource thickness ranges from 2.5 ft to 7.6 ft and is overlain by a varying thickness of overburden ranging from 8 ft to 9.5 ft. The subsurface sand resource averages more than 90% sand (<10% silt/clay) with an average grain size ranging from 0.105 to 0.135 mm. The percent of sand in the overburden varied between 6% and 47% while the percent of silt and clay in the fine overburden component between 13.5% to 66.5% and 20.7% to 83.4% respectively. After avoidance of ARS magnetic anomalies, the estimated volumes in Subarea 2a are 1.15 million cy of sand resource and 3.05 million cy of overburden (Figure 3 and Table 2).

**Subarea 3a**: Subarea 3a is 485 ac with water depths that range between -16ft and -22 ft NAVD88. Subsurface sand resource thickness ranges from 2.5 ft to 14.0 ft and is overlain by a varying thickness of overburden ranging from 3.5 ft to 17.4 ft. The subsurface sand resource averages more than 80% sand with an average grain size of 0.107 to 0.166 mm. In addition, the percent of sand in the overburden component ranges between 30.0% to 49.7% and 27.4% to 68.7% respectively. After avoidance of identified ARS magnetic anomalies, the estimated volumes in Subarea 3a are 4.72 million cy of sand resource and 7.97 million cy of overburden (Figure 3 and Table 2).

Additional consideration was also given to determining the need for testing of the borrow area sediment. According to the Evaluation of Dredged Material Proposed for Discharge in Waters of the US-Testing Manual (1998), the decision to forgo testing is based upon the belief that the preferred borrow area is not considered an area of possible contamination and would therefore not be considered a carrier of contaminants.

3.1.1 **No-Action Alternative**: The No-Action Alternative would continue to allow erosion of the island. As reported in the Ecological Review, future landloss estimates project that if no restoration occurs, the Isles Dernieres barrier island chain will become subaqueous by 2050 (Green 2007).

3.1.2 **Preferred Alternative: Alternative 3, Marsh and Dune Construction Utilizing Subarea 2a and pre-excavation of creeks and ponds**: Subarea 2a is recommended
because this area contains more than enough material of sufficient quality that may be
dredged effectively for marsh construction. In the event that the identified marsh fill
resource is not sufficient to construct the marsh, the remaining borrow area resource
could be utilized as necessary. With regards to the dune feature, in the event that the
sand resource proves to be smaller, thinner, or of worse quality than anticipated, the
available sand could be used to construct at least part of the proposed template.
Additional borrow area volume information is available in Appendix B Table 2.

SECTION 3.2 Water Quality: Whiskey Island is primarily a sand beach facing the
Gulf of Mexico with existing back barrier marsh habitat on the east and west lobes of the
island. The waters that impact the beach are from Terrebonne Basin, coastal bays, and
gulf waters (subsegment 120806). The backside of the island is marsh and faces Caillou
Bay (subsegment 120801). Subsegments are characterized by designated beneficial uses
such as primary contact recreation, drinking water supply, oyster propagation, etc. Both
subsegments have uses identical to the Timbalier Island subsegment (subsegment
120803). Subsegment 120801 currently has no water quality impairments and is meeting
all beneficial uses. Subsegment 120806 was listed for Mercury on the 2004 303(d) List
due to high concentrations of the metal in fish tissue. A Total Maximum Daily Load
(TMDL) was subsequently completed in June 2005 to address both point and nonpoint
sources of mercury effecting Louisiana coastal waters. (Stead 2007)

The fecal coliform standard that applies to this area is not currently exceeded, nor would
it be expected to be exceeded with or without the project since the island is 18 miles
removed from significant sources of inland freshwater pollution. There are no apparent
water quality problems. (Stead 2007)

3.2.1 No-Action Alternative: The No-Action Alternative could potentially contribute to
an increase in turbidity in the Terrebonne estuary due to increased wave actions causing
greater erosion and formation of erosive, high-energy tidal surges allowing higher salinity
waters of the Gulf of Mexico into interior bay waters.

3.2.2 Preferred Alternative: Alternative 3, Marsh and Dune Construction Utilizing
Subarea 2a and pre-excavation of creeks and ponds: This alternative would have no
long-term adverse impact on present conditions. However, short-term adverse temporary
impacts due to increased turbidity from placement of material on the island could occur
during project construction. The slurry discharge site for beach nourishment can contain
suspended silt, clay, organic matter, and nutrients, which could temporarily degrade the
water quality in a dredge plume. These impacts are minor and would be limited to the
construction phase of the project. It is expected that turbidity levels would return to
normal shortly after construction ended.

SECTION 3.3 Climate and Air Quality: The climate along the Louisiana coast is
humid, subtropical with a strong maritime character, and greatly influenced by the Gulf
of Mexico. Tropical storms and hurricanes can make landfall along the Louisiana coast
during the summer season. From November to April, extratropical, or mid-latitude,
meteorological systems dominate coastal Louisiana’s weather. Extra-tropical storms
(cold fronts) are considered very important meteorological forcing mechanisms in the northern Gulf of Mexico. These storms occur more frequently, roughly 20 to 30 times per year, with a maximum frequency in January. The increase in water levels during the passage of the storm produces an increase water level in the bays and the potential for large waves. This ongoing process is believed to be responsible for the chronic shoreline erosion behind the barrier island (TBS and M&N 2007).

3.3.1 **No-Action Alternative:** The No-Action Alternative would have no impact on present air quality conditions

3.3.2 **Preferred Alternative: Alternative 3. Marsh and Dune Construction Utilizing Subarea 2a and pre-excavation of creeks and ponds:** This alternative would have no long-term adverse impact on present conditions. Minor temporary impacts due to emissions from diesel engines powering the dredging activities, propulsion between the dredge site and mooring buoy, and pump-out operations could occur during project construction. Additional emissions would result from tugs and barges used in the placement and relocation of the mooring buoys. On the beach, air emissions would result from bulldozers, graders, and trucks. Emissions would occur over a period of about seven months with most of the emissions occurring at the dredge site and the mooring buoy just off the beach. Therefore, any emissions from the dredging activities would be minor, short-term emissions and would not have a long-term adverse impact on air quality conditions.

**SECTION 3.4 Wetland Loss:** According to the 1998 Coast 2050 Plan, this project lies within the Isles Dernieres Island Shorelines mapping unit of Region 3. The average loss of land in this unit for the period 1978-1990 was approximately 495 ac. Subsidence is occurring at an estimated rate of 2.1-3.5 ft per century for this mapping unit. Much of the land loss and erosion of the islands is attributable to the synergistic effects of global sea-level rise, subsidence, tropical and extra-tropical storm activity, inadequate sediment supply, and significant anthropogenic disturbances. For the Isles Dernieres Shorelines mapping unit, the area is comprised of approximately 78 % open water, nine percent saline marsh, eight percent barrier beach, and six percent hardwood forest. As of 2002, Whiskey Island was made up of 63.82 ac of beach, 187.84 ac of bare land, 270.08 ac of marsh and 7.68 ac of barrier vegetation (approximately 529.42 ac of land and 321.04 ac of intertidal). Within the project boundary, wetlands are classified as saline marsh.

3.4.1 **No-Action Alternative:** Without sand nourishment of the Whiskey Island area, marsh would continue to be lost. Area change rates for Whiskey Island between 1978 and 1988 have been documented at -31.1 ac per year. The spits on either end of Whiskey Island are rapidly migrating landward at about 20 m/yr. Based on research conducted prior to the restoration on East and Trinity Islands in 1999, it was expected that none of the Isles Dernieres would remain by 2050 if no actions are taken. These reports predicted that without remedial action, Whiskey Island might become sub-aqueous by 2007 (Green 2007).
3.4.2 **Preferred Alternative: Alternative 3, Marsh and Dune Construction Utilizing Subarea 2a and pre-excavation of creeks and ponds:** With implementation of the project, the life of the wetlands should be increased. Long-term benefit would result from re-establishing the marsh platform at an elevation conducive to the establishment of marsh vegetation. Establishing dune vegetation would increase the stability of the island. During construction, impacts to existing vegetation will be minimal with the requirement that 1) access to or movement across the island outside of the defined project area shall generally be prohibited within vegetated areas for all personnel and equipment, 2) vegetated areas shall not be used for equipment, personnel or material access or storage, and 3) the dredged fill shall be discharged within the contained areas in a manner that will minimize overflow of the dredged material from the bounds of its placement area.

SECTION 3.5 Wildlife and Fisheries: Marshes of the Coast 2050 Isle Dernieres Shorelines mapping unit support populations of marine fisheries resources. Characteristic species include but are not limited to red drum (*Sciaenops ocellatus*), black drum (*Pogonias cromis*), Spotted seatrout (*Cynoscion nebulosus*), Spanish mackerel (*Scomberomorus maculatus*), Gulf menhaden (*Brevoortia patronus*), southern flounder (*Paralichthys lethostigma*), white shrimp (*Litopenaeus setiferus*), brown shrimp (*Farfantepenaeus aztecus*), blue crab (*Callinectes sapidus*), and American oyster (*Crassostrea virginica*). These species utilize project area aquatic resources primarily as nursery, foraging, and predator refuge habitat. The emergent wetlands and associated open water habitat in the vicinity of the proposed project support generally decreasing populations of finfish, shellfish, birds, reptiles and mammals. Only the Spanish mackerel (*Scomberomorus maculatus*) is believed to be increasing.

These areas of open water and marsh are a valuable nursery and food source for many commercial and/or recreational species of finfish and shellfish. Project area wetlands also provide wildlife food, cover, nesting and resting habitat. It has been observed that bird habitats in and around the Isles Dernieres Island arc occur primarily on Wine Island and Raccoon Island. Birds that could be of concern are the piping plover, brown pelicans, nesting migratory birds, wading birds, anhingas, cormorants, gulls, terns, and black skimmers. Nesting seabirds have been documented on Whiskey Island, but those colonies are not known to be currently active. Additional information may be found in the BA.

3.5.1 **No-Action Alternative:** With continuing loss of saline marsh, shoreline, and shallow open water habitat, fish and wildlife populations, specifically southern flounder, black drum, brown shrimp, American oyster, seabirds, shorebirds, waterfowl, and raptors, in the area would likely decline. While loss of vegetation reduces the quality of marsh as habitat for terrestrial and semi-aquatic wildlife, a short-term increase in the value of the area as a nursery and associated food source for finfish and shellfish would result. However, continued land loss leads to increasing water depth and the value of the area as a food source and nursery declines further.

3.5.2 **Preferred Alternative: Alternative 3, Marsh and Dune Construction Utilizing Subarea 2a and pre-excavation of creeks and ponds:** This alternative would protect
existing marsh, create vegetated wetlands, and reduce future land loss. As project area marshes are protected and enhanced, the habitat value for associated fish and wildlife species will increase, and persist for a longer period of time. All project activities will be conducted in a manner to first avoid, and otherwise minimize, any potential effects to marine fisheries and active migratory, wading bird nesting colonies. Prior to construction, a qualified biologist in coordination with the LDWF and FWS will conduct a survey for bird nesting and wintering piping plover. If bird nesting or piping plover use is identified, LDWF and FWS will be notified for additional consultation. All on-site contract personnel will be informed of the need to identify colonial nesting birds and their nests, and, to the maximum extent possible avoid affecting them during the breeding season. Additional details can be found in the Biological Assessment (BA).

SECTION 3.6 Essential Fish Habitat (EFH): Project evaluation included an examination of habitat considered to be essential for fisheries as established under the provisions of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), intended to promote the protection, conservation, and enhancement of Essential Fish Habitat (EFH). The MSFCMA defines EFH as those waters and substrates necessary to federally managed fish species for spawning, breeding, feeding or growth to maturity of specific species depending upon life stage (Table 4). Categories of EFH that have been designated in the project include estuarine wetlands, water column, and mud, sand, and shell substrates, marine water column, non-vegetated bottoms, and continental shelf features.

In addition to being designated EFH for the species listed in Table 3, the barrier island wetlands, shallow water bottoms, and tidal flats provide nursery and foraging habitat for numerous marine and estuarine fishery organisms. Studies by the Louisiana State University, Coastal Fisheries Institute, have identified the barrier island wetlands as important habitat for shark assemblages dominated in frequency and abundance by neo-nate and juvenile blacktip and Atlantic sharpnose sharks. Estuarine-dependent species that utilize barrier islands serve as prey for other species managed under MSFCMA (e.g., red drum, mackerels, snappers, and groupers) and highly migratory species managed by the NMFS (e.g., billfish and sharks). Shallow water bottoms also provide habitat for benthic communities, including marine worms and crustaceans, which are important components of the aquatic food web that contribute to the fishery productivity of the Terrebonne Bay estuaries (NMFS 2004).

3.6.1 No-Action Alternative: The No-Action Alternative would continue the conversion of highly productive and declining categories of EFH to other categories, and potentially contribute to declines in federally managed species or their prey over time.

3.6.2 Preferred Alternative: Alternative 3, Marsh and Dune Construction Utilizing Subarea 2a and pre-excavation of creeks and ponds: Impacts on those fish or shellfish species with benthic lifestyles inhabiting featureless sandy bottoms and EFH would primarily result from mechanical disturbance of the sea bottom. Mobile fish and invertebrates would be able to swim clear of dredge operation areas and any potential impacts would be temporary in nature. However, this alternative would provide
protection of existing marsh and associated shallow open water habitat, and would reduce the land loss rate. Some impacts to EFH would be the temporary increase in the turbidity at the proposed disposal areas and adjacent water bodies. In addition, temporary adverse impacts to the estuarine and marine water column would result from the dredging and construction activities.

Other impacts would be permanent. For the Whiskey Back Barrier project area, the gulf intertidal component remains the same as computed for Ship Shoal: Whiskey Island West Flank Restoration (TE-47) TY5: 300 ac. The bay intertidal habitat was computed by measuring the east and west marsh lobe area (238 ac) and the area along the north portion of the center island between the 0 ft and +2 ft design contours (35 ac) totaling 273 ac of bay intertidal habitat (Figure 8). Based on recent aerial photographs completed for TE-47, the current marsh area is estimated to be 270 ac. The subtidal component (61 ac) was computed along the north bayside between the marsh lobes and the 0 ft and -1.5 ft contour. After construction (Figure 9), 48 ac of dunes will be added and the supratidal and Gulf intertidal habitat will not change. However, the bay intertidal habitat will gain 287 ac of marsh restoration. While 316 ac of marsh is planned to be constructed, 29 ac are supratidal at TY1. Additionally, after construction, 60 ac of subtidal habitat will have been lost as a result of project construction. (TBS and M&N 2007)

Protection and enhancement of the project intertidal and subtidal habitat areas will increase the habitat value for associated fisheries species and maintain it longer than without the project. The preliminary finding of this EA is that the proposed project will have no significant adverse impacts on EFH, and is submitted to initiate consultation requirements pertaining to EFH under the MSFCMA.

SECTION 3.7 Threatened and Endangered Species: Federally listed species and critical habitat currently known to occur in the proposed project area include the brown pelican (Pelecanus occidentalis), the West Indian manatees (Trichechus manatus), the piping plover (Charadrius melodus) and its designated critical habitat, and five species of threatened and endangered sea turtles. Additional details can be found in the Biological Assessment (BA).

3.7.1 Brown Pelicans: Brown pelicans are currently known to nest on Raccoon Point on Isles Dernieres, Queen Bess Island, Plover Island (near Baptiste Collette Bayou), Wine Island, Rabbit Island in Calcasieu Lake, and islands in the Chandeleur chain. Pelicans change nesting sites as habitat changes occur, and may be found nesting on mud lumps at the mouth of South Pass (Mississippi River Delta), and on small islands in St. Bernard Parish. In spring and summer, nests are built in mangrove trees or other shrubby vegetation, although occasional ground nesting may occur. Brown pelicans feed along the Louisiana coast in shallow estuarine waters, using sand spits and offshore sand bars as rest and roost areas. Major threats to this species include chemical pollutants, colony site erosion, disease, and human disturbance. The brown pelican population is expected to increase in the Isles Dernieres Shorelines mapping unit.
In June 2007, LDWF began a translocation project to move 100 to 150 brown pelican fledglings from Last (Raccoon) Island to Whiskey Island. The brown pelican translocation is the first year of a three-year translocation project that will introduce new nesting colonies in the vicinity of traditional brown pelican nesting areas. The hurricanes of 2005 reduced nesting potential on many remaining colony sites as a result of erosion and reduction in land elevation from wave scouring. LDWF biologists are targeting young birds that still have three weeks before taking to the air to hopefully increase the likelihood of their return to Whiskey Island for nesting in 3 to 4 years.

3.7.2 **West Indian Manatees:** West Indian manatees occasionally enter Lakes Pontchartrain and Maurepas, and associated coastal waters and streams during the months of June through September. Manatees have been regularly reported in the Amite, Blind, Tchefuncte, and Tickfaw Rivers, and in canals within the adjacent coastal marshes of Louisiana. Elsewhere along the Louisiana Gulf coast, manatee sightings are limited and have only been occasionally observed. The manatee has declined in numbers due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution. Cold weather and outbreaks of red tide may also adversely affect these animals.

3.7.3 **Piping Plover:** The piping plover winters in coastal Louisiana and occurs in the vicinity of the proposed project. Piping plovers may be present in Louisiana for 8 to 10 months, arriving from the breeding grounds as early as late July and remaining until late March or April. Piping plovers feed extensively on intertidal beaches, mudflats, sandflats, algal flats, and washover passes with no or very sparse emergent vegetation and require unvegetated or sparsely vegetated areas for roosting. Roosting areas may have debris, detritus, or microtopographic relief offering refuge to plovers from high winds and cold weather. In most areas, wintering piping plovers are dependant on a mosaic of sites distributed throughout the landscape, as the suitability of a particular site for foraging or roosting is dependent on local weather and tidal conditions. Plovers may move among sites as environmental conditions change (BA 2006).

On Whiskey Island, the piping plover observations have been predominately located on the western portion of the island. Important components (or primary constituent elements) of intertidal flats habitat include sand and/or mud flats with no or very sparse emergent vegetation. Adjacent un-vegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important, especially for roosting plovers. Major threats to this species include the loss and degradation of habitat due to development, disturbance by humans and pets, and predation. Additional information related to piping plovers and their critical habitat may be found in the Biological Assessment (BA).

3.7.4 **Sea turtles:** Sea turtles require three major habitats: nesting beaches, pelagic developmental habitats, and benthic feeding habitats for juveniles and adults. It is possible that any of these species of sea turtles - Kemp’s ridley, the loggerhead turtle, the

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4 Intertidal flats are a habitat type that exists on the Louisiana barrier islands, including Whiskey Island and is included in the Wetland Value Assessment (WVA) intertidal habitat category.
green turtle, the hawksbill turtle, and the leatherback turtle - could be found along the Louisiana coast, although occurrences of hawksbill and leatherback turtles would be extremely rare. The hawksbill is rare in the gulf and leatherbacks prefer offshore waters.

3.7.5 **No-Action Alternative:** Without implementation of the proposed project, existing potential brown pelican and piping plover habitat would continue to be lost.

3.7.6 **Preferred Alternative: Alternative 3, Marsh and Dune Construction Utilizing Subarea 2a and pre-excavation of creeks and ponds:** Implementation of the proposed project is not likely to adversely impact these threatened or endangered species and would likely enhance the quantity and quality and increase the longevity of the available habitat for these species. Construction will be done within the guidelines set forth by the FWS and the LDWF to insure protection of critical habitat necessary for the brown pelican and piping plover.

**Piping plover:** Although the proposed project will in fill the sandflat/overwash areas of Whiskey Island, only a relatively small amount of habitat will be affected when compared to the amount of critical habitat available. In addition, filling in any breaches along the island will create new suitable habitat (beach) for the piping plover on the gulf side of the island. Wintering plovers in Louisiana depart for the breeding grounds during late March and early April so that when construction is planned to begin in April or May, most birds will have left the wintering grounds. Because any plovers remaining in the project area during construction would be displaced to other suitable habitats in the vicinity, the proposed project will not adversely modify critical habitat and is not likely to adversely affect the wintering piping plovers. Additional details are provided in the BA.

**Brown pelican:** This alternative would extend the life of the island-protecting habitat from loss over the 20-year project life. Also, any pelicans utilizing the project area during the project construction could easily relocate. Therefore, the proposed project is not likely to adversely affect the brown pelican. LDNR will take all necessary precautions to avoid impacts to brown pelicans in the project area, both during construction and future operation and maintenance work. In addition, LDNR will conduct surveys to document any nesting birds and other avian activities in the area and coordinate all construction activities with LDWF, EPA and FWS. All contractors would be required to minimize habitat disturbance. In addition, FWS recommends that on-site contract personnel be informed of the need to identify nesting birds and their nests, and should avoid affecting them during the breeding season.

**West Indian Manatee:** The primary potential impacts to the West Indian manatees would include possible collision with service vessels and noise in the water from the dredge operation or service vessels. The West Indian manatee is extremely limited in Louisiana coastal waters (except Lake Pontchartrain/Maurepas and tributary streams), and sightings off the Louisiana coast or stranding on Louisiana shorelines are rare. The dredge and service vessels will be informed of the possible presence of be informed of the possible presence of manatees and the requirement to avoid affecting them. The proposed project is expected to have negligible effect on the West Indian manatee. No collision fatalities
are expected. The West Indian manatees are not likely to be adversely affected by the proposed project.

**Sea Turtles:** Suspended sediments from restoration activities could impact sea turtles. A discharge plume could potentially impact turtles by displacing or reducing the food sources, or by impairing their ability to locate prey. The increased turbidity and activities surrounding construction sites would not be considered favorable conditions for sea turtles and would likely cause sea turtles to avoid the construction area. Therefore, no adverse impacts to these species would be anticipated. Similar work has been recently conducted on adjacent and nearby islands, Timbalier Island and East/Trinity Islands and no turtles were encountered. Sea turtles have not been sighted in the vicinity of the proposed project. However, all personnel associated with the project will be notified of the potential presence of sea turtles and the need to avoid all collisions with these species. The project personnel will also be notified of the need to follow the Sea Turtle and Smalltooth Sawfish Construction Conditions as contained in the BA.

**SECTION 3.8 Recreation:** Whiskey Island has recreational value due to the unique location between the gulf and inland marshes. Recreational fishing on gulf beaches is often very productive, and is enjoyed by many recreational fishermen.

3.8.1 **No-Action Alternative:** Future recreational use will decrease as beach erosion continues to destroy habitat and as wetland deterioration is exacerbated, leading to declines in fisheries, nursery, and wildlife habitat.

3.8.2 **Preferred Alternative:** Alternative 3, Marsh and Dune Construction Utilizing Subarea 2a and pre-excavation of creeks and ponds: This alternative would beneficially affect recreational resources. Project components may provide for greater long-term productivity and viability of project area beach, dune, and marsh, thus contributing to the stability of fish and wildlife populations. Some temporary adverse short-term impacts to recreation would occur as a result of filling and construction activity. These include avoiding fill areas until compaction and re-vegetation are completed, increased turbidity of surface waters, and increased noise within the project area during construction.

**SECTION 4.0 PROPOSED MITIGATIONS**

**SECTION 4.1 Mitigation Criteria:** The following mitigation measures are considered necessary to ensure compliance with NEPA and 40 CFR 1500.2(f) regarding the requirement for Federal agencies to avoid or minimize adverse effects of their actions upon the quality of the human environment.

4.1.1 **“No-dredge” Setback:** An appropriate sized “no-dredge” buffer zone which would set borrow sites back away from either side of existing pipelines will be established.

4.1.2 **Dredge Limitations:** Dredging depth is anticipated to be limited to approximately 20 ft below the existing bottom and the discharge of dredged fill material within the
contained area will be in a manner that would minimize spillover; vegetated areas will be avoided to the greatest extent practicable.

4.1.3 Threatened and Endangered Species Conditions

- Planning project implementation to minimize the potential for any effects.
- A survey of bird nesting and wintering piping plover will be conducted by a qualified biologist, in coordination with the LDWF and the FWS, prior to project construction.
- If appropriate species are identified, buffer zones will be established to minimize habitat disturbance.
- On-site contract personnel will be informed of the possible presence of any threatened or endangered species and the requirement to avoid affecting them.
- As outlined in Appendix C, contractors will be notified of the need to follow the Sea Turtle and Smalltooth Sawfish Construction Conditions for the protection of those species.

SECTION 4.2 Marsh Platform: A bio-benchmark survey was conducted for the Timbalier Island (TE-40) restoration project to establish an optimum elevation range for the marsh platform. The target elevation of the marsh platform must be compatible with the flooding tolerance of the desired plant species. If the elevation of the platform is too high, it will not be inundated by normal tidal flow and will not serve as a nursery for marine organisms. In addition, the desired wetland plant species will be out-competed by non-wetland plant species. Conversely, if the elevation of the marsh platform is too low, the wetland plants will not survive due to water logging, and the marsh platform will erode. For the purpose of this project, the Timbalier bio-benchmark elevation will be applied because the two islands are located close to each other and are very similar ecologically.

Based on the Timbalier bio-benchmark, the target elevation range for the marsh platform should be about +1.3 to 1.9 ft NAVD 88, with an average elevation of about +1.4 ft NAVD 88. The backbarrier marsh platform for the Whiskey Island is designed with an elevation of +2 ft NAVD 88 at the back toe of the dune and sloping back to +1.0 ft NAVD 88 on the bay side. The marsh platform will be constructed so that the entire range of elevation is represented. This should speed the development of intertidal channels and ponds on the marsh platform and would allow ingress and egress of marine organisms and may also speed natural plant colonization by creating paths for seed and propagule dispersal.

SECTION 4.3 Vegetative Plantings: Vegetative plantings are an integral part of all barrier island post construction activities to help stabilize the dune and marsh platforms. Smooth cordgrass (Spartina alterniflora) and black mangrove (Avicennia germinans), which are common plant species on Whiskey Island will be planted in the newly created marsh area. After construction, the newly created dunes will be planted with bitter panicum (Panicum amarum), seacoast bluestem (Schizachyrium scoparium), seashore dropseed (Sporobollus virginicus), marshhay cordgrass (Spartina patens) and sea oats
The plantings of *Uniola paniculata*. These plantings are similar to those used for the Timbalier Island (TE-40) and New Cut (TE-37) restoration projects.

Access to or movement across the island outside of the defined project area shall generally be prohibited for all personnel and equipment for protection of existing vegetation. Vegetated areas shall not be used for equipment, personnel or material access or storage. The dredged fill shall be discharged within the contained areas in a manner that will minimize overflow of the dredged material from the bounds of its placement area.

**SECTION 4.4 Borrow Site:** The required in-place marsh fill volume for this project is approximately 2.3 million cy and the required in-place dune fill volume is approximately 225,000 cy. Considering the cost benefits and sediment quality and quantity available, subarea 2a was chosen as the preferred borrow site alternative. The guidelines in 40 CFR Part 230 Section 404(b)(1), Subpart G require the use of available information to make a preliminary determination concerning the need for testing of the material proposed for dredging. No testing is required when the material to be dredged is composed primarily of sand, gravel, or other inert material, is found in areas of high current or wave energy, and is likely to be free of contaminants. Knowledge of the proposed dredging site proximity to sources of contamination, gained from previous testing, or through experience, and knowledge of the area to be dredged, may be utilized to determine that there is no reason to believe that contaminants are present and, therefore, there is no need for testing. There is no reason to believe that the borrow area is a carrier of contaminants and therefore, testing is not required. The dredged or fill material is found in an area of high wave energy and there has been no recent source of sediment input into the system other than sediment provided from resuspension of bay bottom sediments and eroding marshes in the bays.

A geophysical survey report completed on April 20, 2007 summarized the volume of subsurface sand units and the volume of overburden developed for subareas 2a and 3a (Table 4). As detailed within Table 4, subarea 2a is estimated to contain 4.2 million yd$^3$ of material. OSI estimates that the available gross overburden volume is 3.05 million cy and the gross underlying sand resource volume is 1.15 million cy (after deducting the volume in the ARS avoidance areas) (TBS and M&N 2007).

**SECTION 4.5 Dredging Methods:** Dredges are grouped into two main classes: mechanically operated and hydraulically operated. For offshore dredging, hydraulic dredges are almost exclusively employed. Generally, if the borrow area is less than 5-6 km from the beach, then cutter suction and pipeline are used. If the distance is greater than 5-6 km, a hopper dredge is employed. It is anticipated that a cutter head suction and pipeline dredge will be utilized as shown in Appendix A Figure 7.

**SECTION 4.6 Sand Fences:** Sand fences are an integral part of dune restoration projects and will be placed on the dune where they are not susceptible to wave energy. Sand fences capture the aeolian transport of fine grain sand and will add elevation to the dune from sand accumulation. Sand fence was included in all alternative cost estimates.
SECTION 5.0 OTHER ENVIRONMENTAL CONSIDERATIONS

SECTION 5.1 Cumulative Impacts: Potential cumulative impacts would be the aggregate impacts to the environment resulting from the proposed action in combination with other ongoing actions, and actions being considered within the reasonably foreseeable future. No significant adverse cumulative impacts are expected. On the contrary, the value of barrier islands for protecting mainland shorelines, wetlands, and estuarine habitats has often been observed. It has been estimated that every 1 km (0.6 mi) of barrier island shoreline protects 30 square km (12 square mi) of wetland-estuarine habitat (Boesch, et. al 1994). There are approximately 3 million ac of marsh in Louisiana, or 40% of the nation’s coastal wetlands. The cumulative effect of barrier island restoration would be the protection of about 110 miles of approximately 384 miles of highly productive marshes, reduction of coastal land loss, protection of inland communities from storm surge and flooding, protection of unique fishery habitat, maintenance of nesting/resting sites for shore birds and migrating birds, and maintenance of shallow near-shore marine fisheries habitat.

The proposed action is part of an ongoing effort under CWPPRA to create, protect, restore and enhance wetlands in coastal Louisiana. Restoring the Isles Dernieres chain is a primary focus. CWPPRA has provided Federal funds for planning and implementing such restoration (Figure 1). EPA Region 6 has been the designated federal sponsor for five completed barrier island restoration projects in the Isles Dernieres: East Island (TE-20), Trinity Island, (TE-24), Whiskey Island (TE-27), Timbalier Island (TE-40), and New Cut (TE-37). EPA is also the federal sponsor for the Whiskey Island West Flank (TE-47) and Whiskey Island Back Barrier (TE-50) projects which have been designed and are awaiting construction approval from the CWPPRA Task Force. Other barrier island restoration projects are likely to be proposed and selected under CWPPRA that will conform to the strategies outlined by the Coast 2050 Plan.

SECTION 5.2 Coastal Zone Management (CZM): The CWPPRA Task Force approved the proposed project for funding in 2004. The EPA Region 6 and the LDNR are co-sponsors of the project. In order to comply with CZM requirements, the project will need a Coastal Use Permit (CUP) prior to construction, which is issued by the LDNR. Applications for the CUP and USACE 404 permits have been submitted. A Joint Public Notice for both permits will be issued upon completion of this EA.

SECTION 5.3 Hazardous, Toxic and Radioactive Waste (HTRW): Federal databases at the EPA and state databases at the LDEQ were reviewed to determine the location of any hazardous material sites and to identify any potential hazardous materials sites within the study area. None of the Federal or state databases searched located any potential hazardous materials sites near the project area or the borrow area.

SECTION 5.4 Infrastructure: According to the 1998 Coast 2050 plan for the Isles Dernieres Shorelines mapping unit, there is substantial oil and natural gas activity in the area, especially in Terrebonne Bay behind the islands, but also on the islands themselves.
Oil and natural gas access canals have negatively impacted Trinity Island. These canals serve as potential weak spots, or focal points, for breaches to form during severe storm and overwash events. This unit has 11 oil and/or natural gas wells and no roads or pipelines. There are no navigation channels nor any major port or terminal installations within this unit.

**SECTION 5.5 Additional Environmental Considerations:** Other environmental elements that were considered but determined not to be factors in the proposed action included floodplains, prime farmland soils, cultural resources, oyster leases, socio-economic and environmental justice issues. The Federal Emergency Management Agency Flood Insurance Rate Maps delineate the 100-year Flood Hazard Areas, designated “A” or “V” zones. Coastal zone areas are designated “V” zones in which structures are subject to damage from both flooding and significant wave action. Whiskey Island is designated to be in a “V” zone area. Coastal barriers are unique landforms that provide protection for diverse aquatic habitats and serve as the mainland’s first line of defense against the impacts of coastal storms and erosion. Implementation of the proposed project proposal will not result in the construction or introduction of any structure that would impede, displace, retard or cause flood waters to backup. The proposed project is intended to be located at the western end of Whiskey Island and enhance the structural integrity of the island.

The project is located in open water in the Terrebonne Basin and there are no oyster leases within the vicinity of Whiskey Island. No residential areas, cultivation or livestock grazing exist within the project area. The soils are not considered prime farmland and there is no potential for grazing once the project construction has been completed. A basic Environmental Justice analysis was not performed. According to the Louisiana Office of Cultural Development, Division of Archaeology, there are no archaeological sites or historic standing structures either listed on or determined eligible for listing on the National Register of Historic Places located within the project area. Additionally, there are no other known cultural resources within the project area.

**SECTION 5.6 Unavoidable Adverse Effects:** The primary unavoidable adverse effects are the immediate impacts from construction related sediment excavation and deposition on the non-mobile benthic organisms in the areas; and, minor and temporary disturbance to adjacent wetlands, water, and air quality. The effects on air, wetlands, and water quality and the noise generated by the proposed project will be of a temporary nature. Because the project is a restoration action, the social and environmental benefits of the proposed project are considerably greater than the environmental impacts and irretrievable commitment of resources identified in this document. The proposed project will reduce the identified risks of taking No-action and would create beneficial dune and marsh habitat with dredged material.

**SECTION 5.7 Relationship Between Local, Short-Term Use of the Environment and the Maintenance and Enhancement of Long-Term Beneficial Uses:** Whiskey Island is rapidly decreasing in size as the shorelines are eroding at rapid rates. All structural and non-structural alternatives have short-term localized impacts during
construction, but offer significant long-term environmental benefits. No long-term adverse impacts to adjacent islands, wetlands, water quality, threatened or endangered species, species managed by the Gulf of Mexico Fishery Management Council or their essential habitat, other fish and wildlife resources, recreational or socio-economic resources, or cultural resources, are expected.

SECTION 5.8 Irreversible and Irretrievable Commitment of Resources: The irreversible and irretrievable commitment of resources would be labor, materials, wear on machinery, monies spent, and energy expended for implementation of the restoration action.

SECTION 6.0 PUBLIC PARTICIPATION AND CONSULTATIONS

The public recognizes that the continued loss of coastal wetlands can ultimately result in the displacement of entire communities, the loss of occupational and recreational opportunities, and ultimately, the forfeiture of a unique culture and way of life. Passage of the Louisiana constitutional amendment establishing the Coastal Wetlands Conservation and Restoration Fund clearly demonstrated the public’s overwhelming support to effectively address the State’s coastal land loss problem. This statutorily dedicated fund has provided a State funding mechanism for cost sharing this project.

Coordination has been maintained with each of the CWPPRA Task Force agencies and the LDNR. Consultation with the FWS and LDWF has been conducted in accordance with the Endangered Species Act of 1973 and Fish and Wildlife Coordination Act. The EA has been prepared in coordination with the NMFS in determining categories of EFH and associated fisheries species within the project vicinity. Submittal of the EA is provided to initiate formal Federal consultation requirements pertaining to EFH under the MSFCMA. Federal, State, and local agencies, as well as other interested stakeholders, will receive a copy of this EA.

Consultation has also been conducted with the Louisiana Department of Culture, Recreation and Tourism in accordance with the National Historic Preservation Act of 1966, and Archaeological and Historic Preservation Act of 1974. Responses from the respective agencies with regard to the proposed action are included in Section 7.0.
SECTION 7.0 REFERENCES


DMJM+HARRIS, Inc. Dredging Alternatives Analysis, August 17, 2004

DMJM+HARRIS, Inc. Design Report Revised for 95% Submittal, April 8, 2005

DMJM+HARRIS, Inc. Design Report Revised for 95% Submittal, July, 2005


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Figure 2. Overview of vibratory cores acquired and the pipeline buffer zones. (TBS and M&N 2007)
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### Table 1. Marsh Height (ft, MLW) for Initial Fill Height for +2.5 ft NAVD88 (TBS and M&N 2007)

<table>
<thead>
<tr>
<th>Time in years</th>
<th>0.2</th>
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<tr>
<td>0.0</td>
<td>2.28</td>
<td>2.12</td>
<td>1.79</td>
<td>1.16</td>
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<tr>
<td>-1.0</td>
<td>2.27</td>
<td>2.01</td>
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<tr>
<td>-2.0</td>
<td>2.18</td>
<td>1.90</td>
<td>1.45</td>
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<td>-4.0</td>
<td>2.04</td>
<td>1.58</td>
<td>1.06</td>
<td>0.36</td>
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### Table 2. Summary of Borrow Area Volumes (TBS and M&N 2007)

<table>
<thead>
<tr>
<th>Description of area</th>
<th>Overburden volume (million yd³)</th>
<th>Sand volume (million yd³)</th>
<th>Total material volume (million yd³)</th>
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<tbody>
<tr>
<td>Subarea 2a</td>
<td>3.58</td>
<td>1.27</td>
<td>4.85</td>
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<tr>
<td>Combined ARS avoidance areas</td>
<td>0.53</td>
<td>0.12</td>
<td>0.65</td>
</tr>
<tr>
<td>Subarea 2a less volume included in the ARS avoidance areas</td>
<td>3.05</td>
<td>1.15</td>
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</tr>
<tr>
<td>Subarea 3a</td>
<td>8.38</td>
<td>4.83</td>
<td>13.21</td>
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<tr>
<td>Combined ARS avoidance areas</td>
<td>0.41</td>
<td>0.11</td>
<td>0.52</td>
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<tr>
<td>Subarea 3a less volume included in the ARS avoidance areas</td>
<td>7.97</td>
<td>4.72</td>
<td>12.69</td>
</tr>
</tbody>
</table>

### Table 3. List of categories of EFH for the various life stages of each federally-managed species potentially impacted by construction of either the Whiskey West Flank or Whiskey Island Back Barrier Marsh Creation projects. (NMFS 2004)

<table>
<thead>
<tr>
<th>Species</th>
<th>Life Stage</th>
<th>EFH</th>
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</thead>
<tbody>
<tr>
<td>brown shrimp</td>
<td>postlarval/juvenile</td>
<td>marsh edge, tidal creeks, mud bottoms, marsh edge silt and sand bottoms, muddy sand bottoms</td>
</tr>
<tr>
<td></td>
<td>sub-adults</td>
<td></td>
</tr>
<tr>
<td></td>
<td>adults</td>
<td></td>
</tr>
<tr>
<td>white shrimp</td>
<td>postlarval/juvenile</td>
<td>marsh edge, inner marsh, oyster reefs, marsh edge, inner marsh, oyster reefs less than 33 m depths, soft mud and sand bottoms</td>
</tr>
<tr>
<td></td>
<td>sub-adults</td>
<td></td>
</tr>
<tr>
<td></td>
<td>adults</td>
<td></td>
</tr>
<tr>
<td>red drum</td>
<td>postlarval/juvenile</td>
<td>estuarine mud bottoms, marsh/water interface mud bottoms, oyster reefs, Gulf and estuarine mud bottoms, oyster reefs</td>
</tr>
<tr>
<td></td>
<td>sub-adults</td>
<td></td>
</tr>
<tr>
<td></td>
<td>adults</td>
<td></td>
</tr>
<tr>
<td>red snapper</td>
<td>postlarval/juvenile</td>
<td>sand and mud bottoms</td>
</tr>
<tr>
<td>Spanish mackerel</td>
<td>juvenile</td>
<td>shallow offshore areas, beaches</td>
</tr>
<tr>
<td>bluefish</td>
<td>postlarval/juvenile</td>
<td>beaches, inlets</td>
</tr>
<tr>
<td>Species</td>
<td>Life Stage</td>
<td>EFH</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| brown shrimp  
*(Farfantepenaeus aztecus)* | Eggs/larvae           | Nearshore and offshore gulf waters (< 110 m, demersal)               |
|                                 | Post larval/juvenile  | Marsh edge, SAV, tidal creeks, inner marsh                          |
|                                 | Subadult              | Mud bottoms, marsh edge                                              |
|                                 | Adult                 | Neritic gulf waters, silt muddy sand, and sandy substrates          |
| white shrimp  
*(Litopenaeus setiferus)*     | Eggs/larvae           | Nearshore gulf waters < 40 m                                         |
|                                 | Post larval/juvenile  | Marsh edge and ponds, SAV, inner marsh, oyster reefs                 |
|                                 | Subadult              | Same as post larval/juvenile                                         |
|                                 | Adult                 | Nearshore gulf waters to 30 m                                        |
| red drum  
*(Sciaenops ocellatus)*       | Eggs/larvae           | Nearshore and offshore gulf waters                                   |
|                                 | Post larval/juvenile  | SAV, estuarine mud bottoms, marsh/water interface                    |
|                                 | Subadult              | Estuarine and marine mud and sand bottoms, oyster reefs, estuarine water column |
|                                 | Adult                 | Estuarine water column (Gulf shoreline to 50 m depth), shell substrate; estuarine and marine mud bottoms |
| Spanish mackerel  
*(Scombermorbus maculatus)*   | Larvae                | < 50 m                                                               |
| King mackerel  
(Pomatomus saltatrix)        | Juvenile and subadult | Gulf from shoreline to 75 m depth                                    |
| Bluefish  
(Rachycentron canadum)      | Juvenile, subadult    | Gulf from shoreline to 200 m depth                                   |
| Cobia  
(Rhizoprionodon terraenovae) | Eggs, larvae          | Top meter of water column; marine/estuarine                          |
| Bonnethead Shark  
(Sphyra tiburo)               | Post larval, juvenile, adult | Gulf, shore to 40 m water depth; larvae and juveniles common in 3 – 9 m of water |
| Atlantic Sharpnose Shark  
(Rhizoprionodon terraenovae)  | Juvenile              | Inlets, estuaries, and gulf waters < 25 m                            |
| Little tunny  
(Euthynnus alleteratus)      | Post larval, juvenile, adult | Gulf waters less than 40 m between the Mississippi and Atchafalaya Rivers |
|                                  |                       | Occupy depths < 200 m in gulf, common near shoals                   |

*Table 4.* EFH Requirements for Federally Managed Species that occur in the Study Area (TE-47 EA)
BIOLOGICAL ASSESSMENT

Potential Impacts of the Proposed
Whiskey Island Back Barrier Marsh Creation Project (TE-50) on the
Threatened Piping Plover (*Charadrius melodus*) and
Other Relevant Protected Species

January 10, 2008

This Biological Assessment is submitted to the U.S. Fish and Wildlife Service
by the U.S. Environmental Protection Agency, Region 6, to fulfill
requirements of Section 7 of the Endangered Species Act of 1978.
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<tr>
<td>PROJECT DESCRIPTION</td>
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<td>THREATENED AND ENDANGERED SPECIES</td>
<td>3</td>
</tr>
<tr>
<td><strong>Piping Plover</strong> <em>(Charadrius melodus)</em></td>
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<tr>
<td>Federal status</td>
<td>3</td>
</tr>
<tr>
<td>Description</td>
<td>3</td>
</tr>
<tr>
<td>Habitat</td>
<td>4</td>
</tr>
<tr>
<td><strong>Brown Pelican</strong> <em>(Pelecanus occidentalis)</em></td>
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</tr>
<tr>
<td>Federal status</td>
<td>4</td>
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<tr>
<td>Description</td>
<td>4</td>
</tr>
<tr>
<td>Habitat</td>
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<td><strong>Gulf Sturgeon</strong> <em>(Acipenser oxyrhyynchus desotoi)</em></td>
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<tr>
<td>Description</td>
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<td>Habitat</td>
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<tr>
<td><strong>Smalltooth Sawfish</strong> <em>(Pristis pectinata)</em></td>
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<tr>
<td>Description</td>
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<td>Habitat</td>
<td>6</td>
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<tr>
<td><strong>Sea Turtles</strong></td>
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<tr>
<td><strong>Kemp’s ridley</strong> <em>(Lepidochelys kempii)</em></td>
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<td>Federal status</td>
<td>6</td>
</tr>
<tr>
<td>Description</td>
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<tr>
<td>Habitat</td>
<td>7</td>
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<tr>
<td><strong>Green Turtle</strong> <em>(Chelonia mydas)</em></td>
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<td>Federal status</td>
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<tr>
<td>Description</td>
<td>7</td>
</tr>
<tr>
<td>Habitat</td>
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<tr>
<td><strong>Hawksbill</strong> <em>(Eretmochelys imbricata)</em></td>
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<td>Federal status</td>
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<tr>
<td>Description</td>
<td>7</td>
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<tr>
<td>Habitat</td>
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<tr>
<td><strong>Leatherback</strong> <em>(Dermochelys coriacea)</em></td>
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<td>Federal status</td>
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<tr>
<td>Description</td>
<td>8</td>
</tr>
<tr>
<td>Habitat</td>
<td>8</td>
</tr>
</tbody>
</table>
Loggerhead (*Caretta caretta*)

- Federal status
- Description
- Habitat

ASSESSMENT OF IMPACTS

Analysis of Potential Impacts on Species and Habitat
- Piping plover
- Brown pelican
- Gulf sturgeon
- Smalltooth sawfish
- Sea turtles

Barrier Island Degradation and Habitat

Potential Benefits

Unavoidable Adverse Effects

Minimization and Avoidance

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BIOLOGICAL ASSESSMENT

Potential Impacts of Proposed Whiskey Island Back Barrier Marsh Creation Project (TE-50) on the Threatened Piping Plover (Charadrius melodus) and Other Relevant Protected Species

INTRODUCTION
Whiskey Island is one of five islands comprising the Isles Dernieres Barrier Islands Refuge, which is owned and managed by the Louisiana Department of Wildlife and Fisheries (LDWF). The barrier chain is one of the most rapidly deteriorating barrier shorelines in the United States. Gulfside and bayside erosion has resulted in an estimated 68% decrease in the average width of the chain as the two shorelines migrate toward each other. Estimates project that, without intervention, Whiskey Island could be lost by 2019.

A series of major storms and human alterations have simultaneously contributed to severe erosion, fragmentation, and deprivation of nourishing sediment, severely compromising the islands' ability to provide a buffer against high-impact wind and wave energy. This has resulted in an increased vulnerability of human populations, critical inland infrastructure, and vital wetland areas to storm surge and saltwater intrusion. In efforts to address this problem, the U.S. Environmental Protection Agency (EPA) partnered with the Louisiana Department of Natural Resources (LDNR) to restore 3.2 miles of Whiskey Island using material dredged from the bay north of the island.

That work, the Whiskey Island Restoration project (TE-27), was completed in June 2000 under auspices of the Coastal Wetlands Planning, Protection, and Restoration Act (CWPRRA). TE-27 restored 657 acres of back island marsh, and included sand fencing and vegetative cover in the Coupe Nouvelle marsh restoration area and the restored back bay marsh areas. The proposed Whiskey Island Back Barrier Marsh Creation project (TE-50), approved by the CWPRRA Task Force in January 2004, has been designed to increase the longevity of the previously restored and natural sections of the island by conserving sand volume and elevation by increasing the width of the island.

PROJECT DESCRIPTION
Whiskey Island is in the Barataria/Terrebonne basin 18 miles southwest of Cocodrie in Terrebonne Parish, Louisiana. It is surrounded by Coupe Colin to the west, Whiskey Pass to the east, Lake Pelto, Caillou Boca, and Caillou Bay to the north, and the Gulf of Mexico to the south (Figure 1).

As illustrated in Figure 2, EPA and LDNR propose to create approximately 316 acres of back barrier intertidal habitat, three one-acre tidal ponds, approximately 5,800 feet of tidal creeks, and an estimated 13,000 feet of dune along the gulf side beach shore of the island, excluding the West Flank. The newly created intertidal habitat will be planted with smooth cordgrass (Spartina alterniflora) and black mangrove (Avicennia nitida), common plant species on Whiskey Island. The constructed sand dune will be planted with bitter panicum (Panicum amarum), sea coast bluestem (Schizachyrium scoparium),...
seashore dropseed (*Sporobollus virginicus*), marshhay cordgrass (*Spartina patens*), and sea oats (*Uniola paniculata*). A single row of sand fencing along the length of the dune will also be constructed approximately 20 feet back from the southern toe of the dune along the dune’s length.

The back barrier marsh will be created by confined disposal and placement of approximately 2.3 million cubic yards of dredged material that will come from a sediment source near the island. Containment dikes with an elevation of +4.5 ft NAVD88 and side slopes of 1:5 (V:H) will be constructed around the perimeter of the proposed marsh restoration area to contain the low-density fill during placement and to provide for containment of the fill material. All dikes will be degraded after sufficient consolidation has occurred to allow for more efficient and natural hydraulic exchange between the back bay and the new, proposed marsh.

Approximately 5,800 feet of sinuous tidal creeks and three one-acre round tidal ponds will be constructed over the eastern half of the marsh platform to allow hydraulic circulation and exchange within the new back barrier marsh. Creeks and ponds will be constructed by pre-excavating to a bottom depth of -6 ft NAVD88 prior to constructing the marsh. The marsh will subsequently be filled to a flat elevation. The excavated creek material will be spread in a thin layer in a discontinuous manner so as to allow the natural formation of tidal features. On the western half of the marsh platform, no features will be constructed. Instead, tidal features will be allowed to develop naturally to allow for assessment of the benefits of including constructed tidal features in future marsh habitat restoration projects.

The goal of the dune feature is to help increase the longevity of the marsh restoration and the island overall. As such, it has been designed to restore the relatively low barrier elevations through the placement of an estimated 225,000 cubic yards of fill along the front of the island to a “natural” elevation of +6 ft NAVD88. The dune feature is also intended to enhance the structural integrity of the island by reducing the frequency of overwashes and breaches and allowing for the establishment and growth of vegetation on the back barrier marsh.

Sediment with a relatively high percentage of sand will be required to create the dune feature, whereas mixed sediment containing a higher percentage of silts and clays will be used for the back barrier marsh platform. Subarea 2a shown in Figure 3 has been recommended as the source for the fill material. This area is located approximately 15,000 feet to 24,000 feet from Whiskey Island, depending on dredge and placement locations. Modelling conducted by LDNR’s contractor indicated that dredging Subarea 2a to the potentially required -30 ft NAVD88, will not produce a significant change to the local wave conditions and that simulated impacts tend to decrease closer to shore, which would reduce impacts to existing sediment transport processes.
Currently, it is anticipated that project construction will begin in Spring 2009. Project sponsors recognize that a short duration of construction will minimize potential adverse impacts to all protected species within the project boundaries. However, it is anticipated that dredging may occur over a period of approximately 120 days and that it will most likely require a total of approximately 240 days from project start to completion.

It is anticipated that a hydraulic pipeline cutterhead suction dredge will be utilized to move the fill material from the proposed borrow area to the contained areas on the island in a manner that will minimize overflow of the dredged material from the bounds of the placement area. Heavy equipment needed for construction activities on the island will be transported by barge to the east side of the island via an existing or dredged access channel on the bay side. Access to, or movement across, the island outside of the defined project area shall generally be prohibited for all personnel and equipment so as to protect existing vegetation. Moreover, vegetated areas shall not be used for equipment, personnel, or material access or storage.

THREATENED AND ENDANGERED SPECIES
Based on informal consultations with the U.S. Fish and Wildlife Service (USFWS), the Louisiana Department of Wildlife and Fisheries (LDWF), and the National Marine Fisheries Service (NMFS) in 2007, the wintering piping plover is the only threatened species and the brown pelican is the only endangered species found within the proposed project boundaries on Whiskey Island. Other protected species that may occur within the adjacent Gulf waters, include the Gulf sturgeon, the smalltooth sawfish, and sea turtles.

Piping Plover (Charadrius melodus)
Federal status – The piping plover was listed as endangered in the Great Lakes watershed and as threatened elsewhere within its range in December, 1985 (50 FR 50726). All piping plovers on their wintering grounds are listed as threatened under provisions of the Endangered Species Act (ESA) of 1973. The ESA also defines critical habitat as specific areas that possess habitat features essential to the conservation of the listed species and which may require special management and protection.

Erosion of wintering habitat has been noted as one of several factors that have contributed to the decline of the plover population. Consequently, in July 2001, the U.S. Fish and Wildlife Service (USFWS) published in the Federal Register the final rule designating critical habitat for the wintering population of the piping plover. The designation of the plover's wintering grounds covered 165,211 acres along 1,798 miles of coastline in eight southern states, including the entire islands comprising the Isles Dernieres Barrier Islands Refuge. This places the proposed Whiskey Island Back Barrier Marsh Creation project (TE-50) within Unit LA-4 designated by the rule.

Description – The piping plover is a small nearctic shorebird approximately 7 inches long with a wingspan of about 15 inches. Breeding females are slightly heavier than males (55.6 g vs 54.9 g), have slightly shorter tails, but have similar wing lengths. Breeding birds have white underparts, light beige back and crown, white rump, and black upper tail with a white edge. In flight, each wing shows a single, white wing stripe with black
highlights at the wrist joints and along the trailing edges. In winter, the birds lose the black bands, the legs fade from orange to pale yellow, and the bill becomes mostly black. Breeding plumage includes a single, often incomplete, black breastband, and a black bar across the forehead. The black breast band and brow bar are generally more pronounced in breeding males than females. The legs and bill are orange in summer, with a black tip on the bill. The piping plover’s song is a sweet, plaintive cry, sometimes described as a whistled peep-lo, with a higher pitch on the first syllable.

Habitat – Wintering piping plovers prefer bare or very sparsely vegetated intertidal beaches, tidal mudflats, sand flats, or algal flats—areas which are periodically covered with water and then exposed either by tides or wind. These areas serve as a source of their main diet, namely, marine worms, flies, beetles, spiders, crustaceans, mollusks, and other small marine animals and their eggs and larvae. When not feeding, they rest and preen, roosting on beaches, in washover passes, or on tidal flats, often near foraging areas.

Availability of quality foraging and roosting habitat in the wintering grounds is necessary to ensure that an adequate number of adults survive to migrate back to breeding sites and successfully nest. In most areas, wintering piping plovers are dependent on a mosaic of sites distributed throughout the landscape because the suitability of a particular site for foraging or roosting is dependant on local weather and tidal conditions. They also tend to move among sites with changes in environmental conditions.

Habitat alteration and destruction are the primary causes for the decline of the piping plover. Loss of sandy beaches has reduced available wintering habitat along the Gulf of Mexico. The proposed marsh restoration project would include creation of additional intertidal habitat, protection of existing marsh, and reduction of future land loss.

Brown Pelican (Pelecanus occidentalis)
Federal status – Federally listed as endangered, brown pelicans are currently known to nest on Raccoon Point on Isles Dernieres, Queen Bess Island, Plover Island, Wine Island, Rabbit Island in Calcasieu Lake, and islands in the Chandeleur chain. In June 2007, LDWF translocated approximately 100 to 150 endangered brown pelican fledglings from Raccoon Island to Whiskey Island in efforts to produce more nesting sites and a healthier pelican population in the future. According to LDWF, however, the fledglings’ return to the island to nest in the future is uncertain at this time.

Description – Brown pelicans are dark and bulky. The sexes are similar in plumage and both are 4.0 to 4.5 feet long. The head is white with a pale yellow wash on the crown; the long bill is grayish; back, rump, and tail are streaked with gray and dark brown; the breast and belly are a blackish-brown; eyes are pale yellow; and legs and feet are black. Immature birds have brownish-gray necks and white underparts. All pelicans have bills that are as long or longer than their heads. The huge naked skin pouch suspended from the lower half of the hooked bill holds two or three times more than the bird’s stomach—about three gallons of water and fish. Pelicans hold their catch and let the water drain from the corners of their mouths before they swallow. Fish are never carried in the
pouch, but in the gullet or esophagus. In addition to acting as a dip net, the pouch is also pulsated in extreme heat to allow cooling. Pelicaniformes are the only birds that share in common a totipalmate foot, that is, one in which all four toes, including the hind one, are united by a web of skin (Street, 1992).

**Habitat** - Brown pelicans build their nests in late winter, spring, and summer, primarily in mangrove trees and other shrubby vegetation, but may also occur on the ground. They change nesting sites as habitat changes occur, and may be found nesting on mud lumps in the Mississippi River delta and on small islands in St. Bernard Parish. They feed along the Louisiana coast in shallow estuarine waters and open Gulf, seldom venturing more than 20 miles out to sea, and use sand spits, beaches, and offshore sand bars to rest, roost, and loaf.

Major threats to this species include chemical pollutants, disease, human disturbance, and erosion of colony sites. For example, the hurricanes that hit the Gulf coast in 2005 reduced nesting potential on many remaining colony sites as a result of erosion and reduction in land elevation from wave scouring. Despite this setback, the brown pelican population is expected to increase in the Isles Dernieres area. As mentioned previously, LDWF translocated over 100 brown pelicans to Whiskey Island as part of ongoing efforts to produce more nesting sites and a healthier pelican population.

**Gulf Sturgeon** (*Acipenser oxyrhynchus desotoi*)

**Federal status** - Also known as the Gulf of Mexico sturgeon, the Gulf sturgeon was federally listed as threatened on September 30, 1991 (56 FR 49653). On March 19, 2003, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service published a final rule in the Federal Register (Vol. 68, No. 53) designating critical habitat for the Gulf sturgeon.

**Description** - The threatened Gulf sturgeon is an anadromous fish, returning to saltwater after breeding in freshwater. It has a sub-cylindrical body imbedded with bony plates or scutes. Its snout is greatly extended and blade-like with four fleshy chin barbells in front of the mouth. The upper lobe of its two-lobed tail is longer than the lower one. The Gulf sturgeon is light to dark brown in color, with a pale underside and has been known to grow up to eight feet in length, over 200 pounds in weight, and reaching ages up to 28 years.

**Habitat** – This species occurs in many rivers, streams, and estuarine waters along the northern Gulf coast between the Mississippi River and the Suwannee River, Florida. In Louisiana, Gulf sturgeon have been reported at Rigolets Pass, rivers and lakes of the Lake Pontchartrain basin, and adjacent estuarine areas. Seagrass beds with mud and sandy substrates are a primary marine habitat. Adult sturgeons begin migration into rivers from the Gulf of Mexico in early spring and continue through early May. In late September or October, sub-adult and adult sturgeon begin the downstream migration back to the Gulf.

This bottom-feeding species seems only to feed during its stay in marine and estuarine waters. Primary prey include insect larvae, crustaceans, mollusks, annelids, and small
fish. Habitat destruction and degradation, caused by dams, dredging, and other navigation maintenance, are the primary cause for decline of the species. Harvesting of adults for meat and eggs (caviar) is another reason for its decline.

**Smalltooth sawfish (Pristis pectinata)**

**Federal status** - In April 2003, the U.S. “distinct population segment” of the smalltooth sawfish was listed as an endangered species under the ESA.

**Description** - The sawfish, who like sharks and rays has a skeleton made of cartilage, is considered a modified ray with a shark-like body and gill slits on its ventral side. Sawfish get their name from the “saws”, long-flat snouts edged with pairs of teeth, which are used to locate, stun, and kill their prey. Their diet includes mostly fish and some crustaceans. Smalltooth sawfish commonly reach 18 feet in length and may grow to 25 feet.

**Habitat** - Smalltooth sawfish have an affinity for shallow, estuarine systems with muddy and sandy bottoms. Historically, this species commonly occurred in the shallow waters of the Gulf of Mexico and along the eastern seaboard as far north as North Carolina. The current distribution is believed to be centered near Florida’s Everglades National Park, including Florida Bay. The most recent sawfish records are limited to Georgia, Florida, and Texas. Notably, the Texas sighting was not verified and may have been either the endangered smalltooth sawfish or the similar largettooth sawfish (P. perotteti); records of both are rare throughout the western Gulf of Mexico. Therefore, it is highly unlikely that the proposed project will have adverse impacts on this species.

**Sea turtles**

Five of the world’s seven sea turtle species—Kemp’s ridley (Lepidochelys kempii), hawksbill (Eretmochelys imbricata), leatherback (Dermochelys coriacea), loggerhead (Caretta caretta), and green (Chelonia mydas)—are found in the Gulf of Mexico, and therefore, potentially within the proposed project area. All five species are listed under the ESA as threatened or endangered.

Sea turtles share a number of common traits, including (1) living most of their lives in the ocean; (2) returning to beaches on land to lay their eggs; and (3) migrating long distances between foraging grounds and nesting beaches. They also share common threats, which include destruction of nesting and foraging habitats, incidental capture in commercial and recreational fisheries, and vessel strikes, including dredges in the Gulf of Mexico. Some unique characteristics of the five species found in the Gulf are noted below.

**Kemp’s ridley (Lepidochelys kempii)**

**Federal status** - Listed under the ESA as endangered throughout its range, the Kemp’s ridley is the most endangered species of the sea turtles.

**Description** – Considered the smallest marine turtle in the world, this species weighs 100 pounds on average and has a carapace (top shell) that measures between 24-28 inches in
length. Each of the front flippers has one claw while the back flippers may have one or two. Females nest from May to July and incubate the eggs for 50-60 days.

Habitat – Kemp's ridley primarily occupies shallow, coastal waters with muddy or sandy bottoms where prey can be found. Their diet consists mainly of crab, but may also include fish, jellyfish, and an array of mollusks.

Green turtle (Chelonia mydas)
Federal status – This species was listed under the ESA in July, 1978. The breeding populations in Florida and the Pacific coast of Mexico are listed as endangered; elsewhere, the species is listed as threatened.

Description – Green turtles are the largest of the hard-shelled sea turtles, growing to more than three feet long and weighing 300-350 pounds. They are believed to reach sexual maturity sometime between 20 and 50 years.

Habitat - Adult green turtles are unique among sea turtles in that they are herbivorous, feeding primarily on sea grasses and algae. This diet is thought to turn their fat greenish-colored; hence their name. In the U.S. Atlantic and Gulf of Mexico waters, green turtles are found in inshore and nearshore waters from Texas to Massachusetts, U.S. Virgin Islands and Puerto Rico. In the U.S., they nest primarily along the central and southeast coast of Florida. Sightings of green turtles by fishermen in Louisiana have occurred gulfward of Isles Dernieres and Timbalier Islands in spring, summer, and fall. Although strandings evidence is not uniform, the majority of strandings that occurred between 1988 and 2002 occurred along the western end of Louisiana and the Texas state line, some distance from the proposed project area.

Hawksbill (Eretmochelys imbricata)
Federal status – The hawksbill turtle was listed under the ESA as endangered in 1970.

Description – This species is unique among sea turtles in that it has two pairs of prefrontal scales on top of the head and each of its flippers usually has two claws. In comparison to the other sea turtle species, it is small to medium-sized. Adults weigh 100-150 pounds on average, but can grow as large as 200 pounds. The head is elongated and tapers to a point. Its beak-like mouth gives the species its name and enables it to reach into crevices of coral reefs for sponges, its primary food source.

Habitat – Hawksbill turtles use different habitats at different stages of their life cycle, but are most commonly associated with healthy coral reefs. They have also been known to inhabit mangrove-fringed bays and estuaries, particularly along the eastern shore of continents where coral reefs are absent. In the continental U.S., this species is recorded from all the Gulf states and along the east coast as far north as Massachusetts, although sightings north of Florida are rare. Texas is the only other U.S. state where hawksbills are sighted with any regularity. The most significant nesting area within the U.S. occurs in Puerto Rico and the U.S. Virgin Islands. The highly migratory behavior of hawksbills
makes them a shared resource among many countries. A primary global threat to this species is the loss of coral reef communities.

**Leatherback (Dermochelys coriacea)**

**Federal status** – This species was listed under the ESA as endangered in 1970.

**Description** – The leatherback is the largest turtle and the largest living reptile in the world, with mature males and females growing as long as six and a half feet and weighing almost 2,000 pounds. It is also the only sea turtle that lacks a hard, bony shell. The front flippers lack claws and scales and back flippers are paddle-shaped. Its ridged carapace, large flippers, and ability to tolerate a wide range of water temperatures make the leatherback uniquely equipped for long distance foraging migrations; in fact, they are the most migratory and wide-ranging of sea turtle species. Rather than the crushing chewing plates characteristic of sea turtles that feed on hard-bodied prey, leatherbacks have pointed tooth-like cusps and sharp-edged jaws adapted for a diet of soft-bodied pelagic prey, such as jellyfish and salps.

**Habitat** – Although commonly known as pelagic animals, leatherbacks also forage in coastal waters. They mate in the waters adjacent to nesting beaches and along migratory corridors. After nesting, females migrate from tropical waters to more temperate latitudes. Puerto Rico, the U.S. Virgin Islands, and southeast Florida represent the most significant nesting activity within the U.S.

**Loggerhead (Caretta caretta)**

**Federal status** – In July 1978, this species was listed under the ESA as threatened throughout its range.

**Description** – Loggerheads were named for their relatively large heads, which support powerful jaws and enable them to feed on hard-shelled prey, such as welks and conchs. Average length of the carapace of adults in the southeastern U.S. is approximately 36 inches; weight at that length is about 250 pounds. Loggerheads reach sexual maturity at approximately 35 years of age.

**Habitat** – This species of sea turtle occupies three different ecosystems during its life—the terrestrial zone, the oceanic zone, and the neritic (nearshore coastal) zone. Although they have been seen off the coast of Louisiana and Texas, this species was 50 times more abundant in Florida than in the western Gulf. It has also been noted that the majority of the sightings were in the summer, when food sources and environmental factors are favorable.

**ASSESSMENT OF IMPACTS**

There are two possible areas where threatened or endangered, or other protected species, could be impacted by the construction of the proposed project—on the island and in the vicinity of the borrow area.
Section 3(19) of the ESA (as amended) defines “take” as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting, or attempting to engage in any such conduct. In the implementing regulations, “harm” is further defined as “an act which actually kills or injures wildlife” and which “may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.” Moreover, the regulations define “harass” as “an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering.”

The potential for a take during the construction of the proposed project is highly unlikely. Controls will be implemented to ensure that the project activities are conducted first to avoid, and otherwise to minimize, the potential adverse effects on the piping plover, the brown pelican, and other protected species. Measures that may be employed include identifying and marking habitat areas for avoidance; planning project implementation to minimize the potential for any effects; using qualified inspectors with authority to alter a project in areas with species-related concerns; and adjusting project timing to avoid periods of activity. Thus, any potential adverse effects on protected species and their habitat will be avoided or minimized.

Analysis of Potential Impacts on Species and Habitat

Piping Plover

(For the bird): Piping plovers may be present in Louisiana for 8 to 10 months, arriving from the breeding grounds as early as late July and remaining until late March or April. However, most birds have left the wintering grounds by April or May, the currently planned window for beginning construction of the proposed restoration project.

The proposed activities would be temporary. An abundance of suitable foraging and roosting habitat exists on both ends of Whiskey Island within close proximity to the proposed project area. Therefore, any plovers remaining in the project area during construction would most likely disperse to those other parts of the island where they would have ample habitat into which they can disperse during project implementation.

Based on the above, EPA and LDNR believe that the project, as proposed, is not likely to adversely affect wintering piping plovers during the implementation of the project.

(For the critical habitat): The proposed project will enhance several important primary constituent elements for piping plover wintering habitat, including components that support foraging, roosting, and sheltering. Specifically, as illustrated in Table 1 and Figures 4-6, the proposed marsh platform will add 261 acres of temporary foraging habitat in year zero of the project’s life; the dune and fill would cause no change in habitat use. Without the project, approximately 36 acres of roosting/sheltering habitat will be lost in year five, whereas, if the project is constructed, only 24 acres of that habitat class will be lost in that timeframe. Moreover, by year five, it is anticipated that
eight additional acres of foraging habitat and 12 acres of roosting/sheltering habitat would remain as a result of the project.

For year five, it is assumed that, without the project, plover habitat would migrate with erosion of the island and approximately half of roosting habitat in the dune footprint would be lost to shoreline erosion. With the project, 80% of the created marsh area would become unsuitable habitat due to vegetation colonization and erosion and 50% of the dune would be lost to shoreline erosion, although this will still provide a net gain of approximately 20 acres of plover habitat from existing conditions. It is expected that this would then be maintained proportionally as the overall island area is maintained over the currently projected 20-year period. (It should be noted that the “non-use” areas reflected in the table are not currently used by piping plovers nor will they be used in the future.)

On a larger, long-term scale, the addition of sand to form a more stable dune and marsh platform on Whiskey Island will add to the probability that critical wintering grounds in the Isles Dernieres barrier island chain will be available to piping plovers. Without the proposed project, impacts from future storms will continue to destroy existing critical piping plover habitat.

Based on the above, EPA and LDNR believe that the proposed project will not adversely affect wintering piping plover critical habitat in the long-term. Moreover, it is expected that the overall short and long-term benefits to the plover and its winter grounds outweigh any potential short-term negative impacts from the proposed restoration work.

**Brown pelican**

*(For the bird)*: The most significant potential adverse impacts to the brown pelicans would most likely result from the temporary noise of heavy machinery while construction activities are underway. Should the brown pelicans return to the island during construction of the project, it is expected that they will most likely disperse to the other side of the island where other suitable habitat currently exists within close proximity.

Upon completion of the project construction, the brown pelicans would be able to return to the project area, making their displacement temporary. LDNR will take all necessary precautions during construction, as well as during future operation and maintenance, to avoid adverse impacts to brown pelicans in the project area. LDNR will also conduct surveys of the project site to document any nesting birds and other avian activities and will coordinate all construction activities with LDWF, EPA, and USFWS. Moreover, all contractors will be required to minimize habitat disturbance.

Based on the above, EPA and LDNR believe that the proposed marsh restoration project is not likely to adversely affect the brown pelican population.

**Gulf sturgeon**

The Gulf sturgeon occurs in many rivers, streams, and estuarine waters along the northern Gulf coast between the Mississippi River and the Suwannee River, Florida. In Louisiana, Gulf sturgeon have been reported at Rigolets Pass, rivers and lakes of the Lake
Pontchartrain basin, and adjacent estuarine areas. Spawning occurs in coastal rivers between late winter and early spring, i.e., March to May. Adult and sub-adult sturgeon may be found in those rivers and streams until November, and in estuarine or marine waters during the remainder of the year. Sturgeon less than two years old appear to remain in riverine habitats and estuarine areas throughout the year, rather than migrate to marine waters. Habitat alterations such as those caused by water control structures that limit and prevent spawning, poor water quality, and over-fishing have negatively affected this species.

No designated critical habitat for the Gulf sturgeon occurs in the proposed project area. Moreover, as mentioned previously, current plans are to begin construction of the proposed project in the spring. Therefore, construction activities should avoid disturbing migration and spawning activities. For these reasons, EPA and LDNR believe that the proposed project will not have any significant adverse effects on this species or its habitat.

**Smalltooth sawfish**

Based on EPA’s historical work in the proposed project area, there has been no documentation of the presence of the smalltooth sawfish. However, measures will be employed to avoid or minimize potential adverse impacts to this endangered marine species in the event of a sighting. All personnel associated with the project will be notified of the potential presence of the smalltooth sawfish and the need to follow the “Sea Turtle and Smalltooth Sawfish Construction Conditions” referenced in the section below entitled “Minimization and Avoidance”.

Based on the above, EPA and LDNR believe that the proposed project will have no effect on the endangered smalltooth sawfish.

**Sea turtles**

Sea turtles have not been sighted in the vicinity of the proposed project. However, measures will be employed to avoid or minimize potential adverse impacts to endangered or threatened turtles in the event of a sighting. Specifically, all personnel associated with the project will be notified of the potential presence of sea turtles, the need to avoid all collisions with these species, and the need to follow the Sea Turtle and Smalltooth Sawfish Construction Conditions outlined in the section below entitled “Minimization and Avoidance”. For these reasons, EPA and LDNR believe that the proposed project is not likely to adversely affect these marine species.

**Barrier Island Degradation and Habitat**

As mentioned previously, the Isles Dernieres barrier island chain, of which Whiskey Island is a component, is considered one of the most rapidly deteriorating shorelines in the United States. The historic rates of land loss for Louisiana’s barrier islands are varied, and can average as high as 50 acres per year over several years. Whiskey Island, in particular, lost an average of 24 acres per year from 1978 to 1996.
Chain breakup has resulted from major storms and the loss of nourishing sediment from the natural system due to human alterations. Consequently, the chain has been losing its barrier functions for the coastal estuarine ecosystem. Chief among these is the chain's capacity to buffer the inland coastal/estuarine ecosystem and to protect human populations, oil and gas infrastructure, and inland bays, estuaries, and wetlands.

Because Whiskey Island provides critical habitat for the threatened piping plover and important nesting habitat for the endangered brown pelican, the continuing erosion of the island could further threaten the future of these two protected species. With the proposed project, the island could be stabilized to slow down the erosion and extend the availability of vital habitat to both, the piping plover and the brown pelican.

Survey data collected over both existing marsh lobes of Whiskey Island suggest that healthy marsh elevations are on the order of +1.2 to +1.6 ft NAVD88 under present sea level conditions. These elevations fall in the upper half of the tidal range, which is typically the case for salt water marshes in coastal Louisiana. Therefore, one of the primary goals of the proposed project is to construct a back barrier marsh that will remain within this range of elevations over as long a period of time as possible within the project's 20-year life. Moreover, the proposed project will help increase the longevity of the previously restored and natural portions of the island as well as the longevity of the overall island by conserving sand volume and elevation.

**Potential Benefits**

**Available Intertidal Habitat**

Benefits from the proposed project will include the creation of over 300 acres of back barrier intertidal habitat. In addition, three one-acre ponds tidal ponds will allow hydraulic exchange and circulation within the new back barrier marsh. The proposed project would also increase the longevity of the island by adding to its width and providing a stable back barrier platform onto which the barrier island can migrate through time.

On a larger and long-term scale, the addition of sand to form a more stable dune and platform on Whiskey Island adds to the probability of the long-term availability of wintering grounds for the piping plover and nesting habitat for the brown pelican in the Isles Dernieres chain. Moreover, adding sustainability to this island chain will ensure that critical wintering habitat remains for those creatures requiring intertidal mud flats and sand bars. Without such construction, intertidal habitat in the Whiskey Island area could be completely lost in the near future.

**Dune**

Because it provides physical protection against storm wave and wind energy and serves as a valuable natural resource, a healthy dune is a critical element of the barrier island system. Dunes help maintain the structural integrity of the island and allow for the establishment and growth of back barrier marsh vegetation. Although the initial restoration strategy for the TE-50 project only included back barrier marsh restoration, a
dune feature to restore the relatively low barrier elevations along the front of the island has been recommended.

**Unavoidable Adverse Effects**
The primary unavoidable adverse effects are the immediate impacts from construction-related sediment excavation and deposition on benthic organisms and minor, temporary disturbance to adjacent wetlands, water, and air quality. The effects on air quality, and in particular, noise generated by the proposed project, will be of a temporary nature. Because the project is a restoration action through the reintroduction of sediment to Whiskey Island, the social and environmental benefits of the proposed project are considerably greater than the potentially adverse, temporary environmental impacts and irretrievable commitment of resources identified in this document.

**Minimization and Avoidance**
It is the intent of the EPA and LDNR to minimize and/or avoid adverse impacts to the piping plover, the brown pelican, other relevant protected marine species, and their designated critical habitat to the extent practicable. The contractor will, to the extent reasonably possible, conduct the construction activities in a manner that avoids potential effects to these threatened and endangered species and their critical habitat, including by following NMFS’ March 23, 2006 Sea Turtle and Smalltooth Sawfish Construction Conditions. If avoidance is reasonably and practically unachievable, the contractor will conduct the activities in a manner that minimizes any potential adverse effects. Following is a summary of the controls and other measures designed to achieve that goal:

1. Planning project implementation to minimize the potential for any adverse effects;

2. Collaborating with resource agencies to:
   a) develop implementation procedures in sensitive areas;
   b) identify and mark habitat areas for avoidance;
   c) adjust project timing to avoid species concerns

3. Notifying qualified biologists in the project area for immediate response in the event a sighting occurs during construction.

**RECOMMENDATIONS** – EPA and LDNR recommend construction of the proposed back barrier marsh creation project on Whiskey Island (TE-50). The project is not likely to have any significant, long-term adverse impacts on the threatened piping plover or its designated critical habitat, on the endangered brown pelican, the threatened Gulf sturgeon, or on any other protected species that may be found in, or in close proximity to, the project area, including sea turtles and the smalltooth sawfish. Moreover, the overall, long-term benefits of the project, especially for piping plover critical habitat and long-term, brown pelican nesting habitat, is expected to outweigh any short-term adverse effects to these protected species.
CONCLUSIONS – EPA and LDNR have concluded that the proposed project described in this biological assessment will result in an overall gain in benefits to the piping plover, its current critical habitat, the brown pelican, and other protected species. In addition, the likelihood of jeopardizing the continued existence of any listed species or adversely modifying designated critical habitats is minimal.
LITERATURE CITED


50 CFR Part 17


16 USC 1544


FINDING OF NO SIGNIFICANT IMPACT

To All Interested Agencies and Public Groups:

In accordance with the environmental review guidelines of the Council on Environmental Quality at 40 Code of Federal Regulations Part 1500, the U.S. Environmental Protection Agency (EPA) has performed an Environmental Assessment (EA) for the following proposed action under the authority of the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) of November 1990, House Document 646, 101st Congress (Public Law 101-646).

**Project Name:** Whiskey Island Back Barrier Marsh Creation (TE-50)

**Sponsors:**
- U.S. Environmental Protection Agency, Region 6
- Louisiana Department of Natural Resources

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<th>Total estimated funding</th>
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**Location:** On Whiskey Island, within the Isles Dernieres Barrier Island chain, approximately 18 miles southwest of Cocodrie, Louisiana, in Terrebonne Parish. The project area is located between Coupe Colin, Whiskey Pass, Lake Pelto, Caillou Boca, and Caillou Bay to the north, and the Gulf of Mexico to the south. The proposed sand borrow site is located approximately 2.8 to 4.5 miles southeast of Whiskey Island and encompasses about 230 acres.

**Background:** The EPA prepared an Environmental Assessment (EA) in December 1993 for the restoration of Isles Dernieres Barrier Island, which included Racoon Island, Whiskey Island, Trinity Island and East Island. On September 4, 1997, EPA issued an addendum to the EA and a Finding of No Significant Impact (FNSI) for the Whiskey Island Barrier Island Restoration and Coastal Wetland Creation (TE-27) project. This project was completed in June 2000, addressing the direct creation of approximately 355 acres of emergent marsh platform, and four major breach closures, including the Coupe Nouvelle. Continuing this effort to create additional back barrier marsh habitat north of the TE-27 project, in 2004, the CWPPRA Task Force approved Phase I funding for Engineering and Design of the Whiskey Island Back Barrier Marsh Creation (TE-50).

**Proposed Action:** The goals of the project are to construct a sand dune along the gulf side beach shore, to create approximately 316 acres of back barrier intertidal habitat, to construct a minimum of 5,800 linear feet of tidal creeks and three 1-acre tidal ponds to allow hydraulic exchange and circulation within the new back barrier marsh, and to increase the longevity of the
natural and previously-restored portions of the island by increasing the width of the island to help retain sand volumes and elevations. The newly created intertidal habitat will be planted with smooth cordgrass (*Spartina alterniflora*), and black mangrove (*Avicennia nitida*). Additionally, the constructed sand dunes will be planted with bitter panicum (*Panicum amarum*), seacoast bluestem (*Schizachyrium scoparium*), seashore dropseed (*Sporobolus virginicus*), marshhay cordgrass (*Spartina patens*), and sea oats (*Uniola paniculata*).

The proposed project is part of and consistent with the ecosystem strategy of the Louisiana Coastal Wetlands Conservation and Restoration Task Force, and the Wetlands Conservation and Restoration Authority to restore barrier islands and gulf shorelines. Under CWPPRA, the project cost is shared between the sponsoring federal agency and the State of Louisiana, with the federal government providing 85 percent of the cost and the Louisiana Department of Natural Resources providing the remaining 15 percent.

**Finding:** On the basis of this EA for the proposed project and other findings and available information, EPA Region 6 has determined that the proposed project is not a major Federal action significantly or adversely affecting the quality of the human environment and that preparation of an EIS is not warranted. This preliminary FNSI will become final 30 days after the issuance of the public notice if no new information is received to alter this finding. No administrative action will be taken on this decision during the 30-day comment period. Comments regarding this preliminary decision not to prepare an EIS, requests for copies of the EA, or review of the Administrative Record containing the information supporting this decision, may be submitted in writing to the U.S. Environmental Protection Agency; Office of Planning and Coordination (6EN-XP); 1445 Ross Avenue, Suite 1200; Dallas, Texas 75202-2733, or by telephone at (214) 665-8150.

Responsible Official,

[Signature]

John Blevins
Director
Compliance Assurance and Enforcement Division
STATE OF LOUISIANA
DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION

PLANS OF PROPOSED
WHISKEY ISLAND BACK BARRIER
MARSH CREATION (TE-50)

SEPTEMBER 2008
TERREBONNE PARISH

TYPE OF CONSTRUCTION
CLASSIFICATION: HEAVY CONSTRUCTION
HYDRAULIC MODELS
CONTAINED LEVEE/S STRUCTURES
DREDGE/POND EXCAVATION

BENCHMARK: "TE-16-784-01"
N: 158,932.20
E: 3,438,808.46

DATE: DEC 31 2005 NAAD

VICINITY MAP

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
TIME ENGINEERING DIVISION
427 NORTH 23RD STREET BATON ROUGE, LOUISIANA 70802

T. BAKER SMITH
PROFESSIONAL ENGINEER