

# Biological Evaluation Form

## Deepwater Horizon Oil Spill Restoration

### U.S. Fish and Wildlife Service & National Marine Fisheries Service

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This form will be filled out by the Implementing Trustee and used by the regulatory agencies. The form will provide information to initiate informal Section 7 consultations under the Endangered Species Act (ESA) and may be used to document a No Effect determination or to initiate pre-consultation technical assistance.

It is recommended that this form also be completed to inform and evaluate additional needs for compliance with the following authorities: Migratory Bird Treaty Act (MBTA), Marine Mammal Protection Act (MMPA), Coastal Barrier Resources Act (CBRA), Bald and Golden Eagle Protection Act (BGEPA) and Section 106 of the National Historic Preservation Act (NHPA).

Further information may be required beyond what is captured on this form. Note: if you need additional space for writing, please attach pages as needed.

For assistance, please contact the compliance liaisons  
USFWS: Erin Chandler at erin\_chandler@fws.gov  
NMFS: Christy Fellas at christina.fellas@noaa.gov

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#### A. Project Identification

Federal Action Agency(one or more):USFWS  NOAA  EPA  USDA

Implementing Trustee(s): The Louisiana Coastal Protection and Restoration Authority (CPRA)

Contact Name: Chris Barnes Phone: 225-342-9036 Email: chris.barnes@la.gov

Project Name: PO-0174 Biloxi Marsh Living Shoreline Alternative

DIVER ID# [Click to enter text](#) TIG: Louisiana TIG Restoration Plan # 6

#### B. Project Phase and Supporting Documentation

Please choose the box which best describes the project status, as proposed in this BE form:

Planning/Conceptual  Construction/Implementation  Engineering & Design

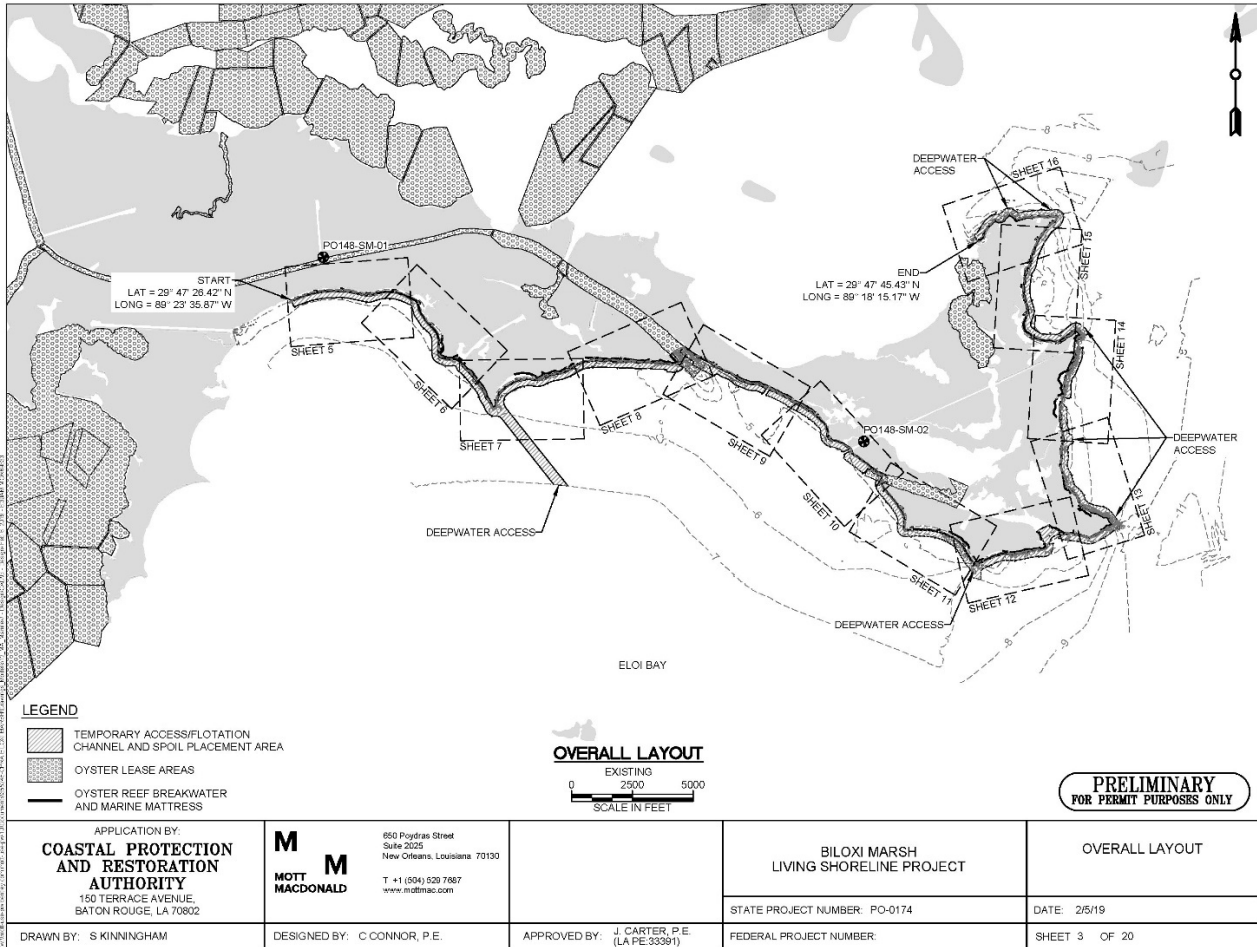
If "Engineering & Design" was selected, please describe the level of design that has been completed and is available for review:

Data collection activities and a coastal engineering analysis have been conducted. A draft Alternatives Development and Analysis document was submitted September 14, 2019. The 30% design milestone should be achieved in March of 2020 and final design by May of 2020. Construction permit applications were submitted in December 2018; CPRA has received authorization from OCM and continues coordination with USACE to secure permits. CPRA submitted a coastal use permit (C.U.P.) in December 2018 and on August 14, 2019, CPRA received the C.U.P./Consistency Determination application from the LDNR Office of Coastal Management.

### Supporting Documentation

Please attach any maps, aerial photographs, or design drawings that will support the information in this BE form. Examples of such supporting documentation include, but are not limited to:

- Plan view of design drawings
- Aerial images of project action area and surrounding area
- Map of project area with elements proposed (polygons showing proposed construction elements)
- Map of action area with critical habitat units or sensitive habitats overlaid



**Preliminary Permit Drawing for the Biloxi Marsh Living Shoreline Proposed Project.**



**Aerial image of the Proposed Project footprint shown in yellow.**



<b>BILOXI MARSH LIVING SHORELINE ALTERNATIVE</b>	Alternative AOI	Eloi Point	<b>1:90,550</b> Created By: AB Project Number: 56773 Date: 9/12/2019 NAD 1983 StatePlane Louisiana South FIPS 1702 Feet
	Marine Mattress	Energy Facility	
	Oyster Reef Breakwater	Pipelines	 0 5,100 10,200 Feet 0 3,400 6,800 10,200 Feet
	Temporary Access/Flotation Channel	Oyster Lease	
	Temporary Spoil Area	Oyster Seed Ground	
	Temporary Warning Sign		

Aerial image of the action area indicating locations of existing infrastructure.

**C. Project Location**

I. State and County/Parish of action area

St. Bernard Parish, Louisiana

II. Latitude/Longitude for action area (Decimal degrees and datum [e.g., 27.71622°N, 80.25174°W NAD83] [online conversion: <https://www.fcc.gov/encyclopedia/degrees-minutes-seconds-tofrom-decimal-degrees>] 29.783185° N, 89.354931° W NAD83

**D. Existing Compliance Documentation**

**NEPA Documents**

Are there any existing draft or final NEPA analyses (not PDARP/PEIS) that cover all or part of this project?

YES

NO

**Permits**

Have any federal permits been obtained for this project, if so which ones and what is the permit number(s)?

YES

NO

Permit Number and Type:

Have any federal permits been applied for but not yet obtained, if so which ones and what is the permit number(s)?

YES

NO

Permit Number and Type:2013-01344-EG

If yes to any question above, please provide details in the text box (i.e. link to the NEPA document, or name of the document, year, lead federal agency, POC, copy of the permit or permit application, etc.). This is needed to check for consistency of the project scope across different sources and to facilitate the NEPA analysis. If you do not have a link, email the documents to the TIG representative for the Trustee designated as lead federal agency for the restoration plan.

Mississippi River Gulf Outlet (MRGO) Ecosystem Restoration Final Environmental Impact Statement. 2012. New Orleans District US Army Corps of Engineers. Available at:

<https://www.mvn.usace.army.mil/Portals/56/docs/environmental/MRGO/MRGOEcosystemRestorationFinalEnvironmentalImpactStatementJune2012compressed.pdf>

Joint Permit Application submitted December 17, 2018 to OCM/USACE; signed C.U.P. No.: P20181324 received August 14, 2019. See imbedded permit. USACE NO district will issue a programmatic General permit (PGP) for Biloxi and Golden Triangle Proposed Projects.



TIG RP/EA is currently being drafted and will be reviewed by the LA TIG several times prior to finalization of the document.

Any documentation or information provided will be very helpful in moving your project forward.

Name of Person Completing this Form: Ashley Lawson, Meggan Dugan, Caitlin Glymph

Name of Project Lead: Micaela Coner

Date Form Completed: 2/27/2020

Date Form Updated: 2/27/2020

### **E. Description of Action Area**

*Provide a description of the existing environment (e.g., topography, vegetation type, soil type, substrate type, water quality, water depth, tidal/riverine/estuarine, hydrology and drainage patterns, current flow and direction), and land uses (e.g., public, residential, commercial, industrial, agricultural). Describe all areas that may be directly or indirectly affected by the action.*

*If CH is not designated in the area, then describe any suitable habitat in the area*

#### **a. Waterbody**

*If applicable. Name the body of water, including wetlands (freshwater or estuarine), on which the project is located. If applicable, please describe water quality, depth, hydrology, current flow, and direction of flow.*

The Biloxi Marsh Living Shoreline action area is located in southeast St. Bernard Parish, Louisiana along the shoreline of Bayou La Loutre. The action area extends from Eloi Bay to Morgan Harbor on the north side of the peninsula and is open to the Chandeleur and Breton Sound. The western portion of the action area contains the boundary of the Bayou La Loutre Mississippi River Gulf Outlet to Eloi Bay (subsegment 042003), an estuarine segment of the Mississippi River, and Eloi Bay (subsegment 042206), an estuary (LDEQ 2004). The eastern portion of the action area is located in Eloi Bay and the Morgan Harbor (subsegment 042205), which is also an estuary. The action area is characterized by low brackish and salt marshes with an erosional shoreline. Water elevations in the alternative area range from approximately 1.1 to -0.5 ft (NAVD88). In addition, the action area hydrology and water quality have been influenced by oil and gas infrastructure and activities and levee construction and maintenance. Despite these on-going conditions, the water quality in the action area meets LDEQ's (2017) water quality standards. In 2018, Bayou La Loutre (subsegment 042003), Eloi Bay (subsegment 042206), and Morgan Harbor (subsegment 042205) were listed as fully supporting PCR, SCR, FWP, and OYS and had no water quality impairments (LDEQ 2019). Water quality measurements taken during a Biological Oyster Assessment (T. Baker Smith, LLC. 2019) for this area documented the following:

Average surface salinity: 9.2 ppt

Average bottom salinity: 9.4 ppt

Average surface temp: 31.2° C

Average bottom temp: 21.0° C

*Does the project area include a river or estuary?*

YES  NO

*If yes, please approximate the navigable distance from the project location to the marine environment.*

The action area is located within the marine environment and extends from Eloi Bay to Morgan Harbor on the north side of the peninsula and is open to the Chandeleur and Breton Sounds.

#### **b. Existing Structures**

*If applicable. Describe the current and historical structures found in the action area (e.g., buildings, parking lots, docks, seawalls, groynes, jetties, marina). If known, please provide the years of construction.*

The action area is uninhabited and only accessible by boat; however, there are two energy facilities located within the action area. The action area is crisscrossed with pipelines, manmade canals, and levee construction and maintenance. A Louisiana Intrastate Gas Co. natural gas pipeline also crosses the action area (see figure above).

#### **c. Seagrasses & Other Marine Vegetation**

*If applicable. Describe seagrasses found in action area. If a benthic survey was done, provide the date it was completed and a copy of the report. Estimate the species area of coverage and density. Attach a separate map showing the location of the seagrasses in the action area.*

The waters behind the Chandeleur Islands contain the only extensive areas of submerged seagrass meadows in Louisiana (Coastal Environments, 2012). The Chandeleur Islands are 20 to 30 miles east of Eloi Bay; therefore, seagrass meadows are not expected in the action area.

Brackish marsh submerged aquatic vegetation (SAV) communities are composed primarily of water celery (*Vallisneria americana*), widgeon grass (*Ruppia maritima*), southern naiad (*Najas guadalupensis*), and horned pondweed (*Zannichellia palustris*). Widgeon grass is the main submerged aquatic plant in the action area (LDFW 2019a). Brackish SAV communities grow in sand/mud bottom substrates in shallow, protected waters with low turbidity. Based on known conditions these communities may be present within the action area.

Other brackish marsh vegetation that may be present in the action area include blackrush (*Juncus roemerianus*), glasswort (*Salicornia* spp.), oystergrass (*Spartina alterniflora*), saltgrass (*Distichlis spicata*), saltwort (*Batis maritima*), and wiregrass (*Spartina patens*) (Coastal Environments, 2012).

#### d. Mangroves

*If applicable. Describe the mangroves found in action area. Indicate the species found (red, black, white), the species area of coverage in square footage and linear footage along project shoreline. Attach a separate map showing the location of the mangroves in the action area.*

Black mangrove (*Avicennia germinans*) occurs in a few areas within the Biloxi Marsh; therefore, black mangrove may be present within the action area. In 2016, The St. Bernard Parish Government worked with Nichols State University to develop a black mangrove program and since the initiation of the program, over 3,150 black mangrove trees have been planted in Biloxi Marsh (SBPG 2019).

#### e. Corals

*If applicable. Describe the corals found in action area. If a benthic survey was done, provide the date it was completed and a copy of the report. Estimate the species area of coverage and density. Attach a separate map showing the location of the corals in the action area. Click here to enter text.*

Not applicable; corals are not expected to be in the saline marsh action area.

#### f. Uplands

*If applicable. Describe the current terrestrial habitat in which the project is located (e.g. pasture, forest, meadows, beach and dune habitats, etc.).*

The action area consists of saline marsh habitat; however, scrub habitat may also be present along old natural levees (Coastal Environments, 2012).

#### g. Marine Mammals

*Please select the following marine mammals that could be present within the project area:*

Dolphins YES  NO   
Whales YES  NO   
Manatees YES  NO

If applicable. Indicate and describe the species found in the action area. Use NMFS' Stock Assessment Reports (SARs) for more information, see <http://www.nmfs.noaa.gov/pr/sars/region.htm>

Common bottlenose dolphins (*Tursiops truncatus truncatus*; Northern GOM BSE stock) frequent estuarine areas for feeding and may be present within the action area.

West Indian manatees (*Trichechus manatus*) are common in shallow coastal waters as they feed on submerged vegetation. While there are no extensive areas of submerged vegetation in the action area, widgeon grass is present and could provide limited foraging habitat for West Indian manatee.

#### h. Soils and Sediments

If applicable. Indicate topography, soil type, substrate type.

The action area is underlain by marsh deposits from the Holocene Age, consisting of undifferentiated clays and layers of interdelta deposits of sandy soils. Within Bayou La Loutre are natural levee and point bar deposits consisting of silts and sands. Surface soils in the marsh area are part of the Scatlake series (Coastal Environments, 2012 Plate 8). The USDA describes the Scatlake series as consisting of very deep, very poorly drained, very slowly permeable fluid mineral soils that are continuously saturated with saline water. These soils formed in unconsolidated saline clayey and organic sediments within the saline marsh areas along the Gulf Coast. The nearshore elevations range from approximately -2.0 to -6.0 feet NAVD88.

#### i. Land Use

If applicable. Indicate existing or previous land use activities (agriculture, dredge disposal, etc).

This area has been historically used for oil and gas exploration, transport, and collection. There are two facilities located within the action area (See Section E(b)). The area is uninhabited and only accessible by boat. Commercial and recreational fishing activities are known to occur in the action area. Public oyster leases and oyster seeding grounds are also present within the action area.

#### j. Essential Fish Habitat

If applicable. Describe any designated Essential Fish Habitat within the project area

The Gulf of Mexico Fishery Management Council delineated Essential Fish Habitat (EFH) for federally managed species in coastal Louisiana. The Project Site is within Eco-Region 3, and contains a variety of estuarine habitat types designated as EFH including: open water, emergent saline and brackish marsh, submerged aquatic grass beds, oyster reef, sand/shell bottom, and mud/soft bottom. The National Marine Fishery Service (NMFS) also manages highly migratory species (e.g., sharks) for which EFH is identified by geographical area rather than habitat type.

Eleven species with designated EFH are likely to be within the Biloxi Marsh Project Area, including shrimp (two species), fish (four species), and sharks (five species). The following table lists the federally managed species found within the Biloxi Marsh Project Area. No Habitat Areas of Particular Concern (HAPC) or EFH Areas Protected from Fishing (EFHA) were identified within the action area.

Common Name	Scientific Name
<b>REEF FISH</b>	
gray (mangrove) snapper	<i>Lutjanus griseus</i>
lane snapper	<i>Lutjanus synagris</i>
Spanish mackerel	<i>Scomberomorus maculatus</i>
<b>SHRIMP</b>	
brown shrimp	<i>Farfantepenaeus aztecus</i>
white shrimp	<i>Litopenaeus setiferus</i>



SHARKS	
Atlantic sharpnose shark	<i>Rhizoprionodon terraenovae</i>
black-tipped shark	<i>Carcharhinus limbatus</i>
bull shark	<i>Carcharhinus leucas</i>
finetooth shark	<i>Carcharhinus isodon</i>
scalloped hammerhead shark	<i>Sphyrna lewini</i>
RED DRUM	
red drum	<i>Sciaenops ocellatus</i>

## F. Project Description

I. Describe the Proposed Action/Project Objectives: What are you trying to accomplish and how with this project? Describe in detail the construction equipment and methods\*\* needed; long term vs. short term impacts; duration of short term impacts; dust, erosion, and sedimentation controls; restoration areas; if the project is growth-inducing or facilitates growth; whether the project is part of a larger project or plan; and what permits will need to be obtained.

Attach a separate map showing project footprint, avoidance areas, construction accesses, staging/laydown areas.

\*\*If construction involves overwater structures, pilings and sheetpiles, boat slips, boat ramps, shoreline armoring, dredging, blasting, artificial reefs or fishery activities, list the method here, but complete the next section(s) in detail.

The purpose of this Proposed Project is to create bioengineered, marsh-fringing oyster reefs to promote the formation of self-sustaining living shoreline protection structures, reduce wave erosion, provide oyster habitat, and prevent further marsh degradation. The goal of the project is to install 9 to 11 miles (and no more than 12.5 miles) of reef breakwaters, marine mattresses, and/or rock revetment along the eastern shore of Biloxi Marsh. Bioengineered oyster reefs would be created by placing a manufactured product, or products, off the shoreline to establish a living breakwater structure.

The goals of the Proposed Project are to:

1. provide shoreline protection by using living shoreline products to attenuate wave energy
2. stimulate oyster growth in the project area.

Eastern oysters (*Crassostrea virginica*) are vital to Louisiana's coastal ecosystems as they provide aquatic habitat as well as filter large volumes of water during feeding. In general, if the physical environment is conducive to oyster growth, oysters need only a hard surface on which to attach. The Biloxi Marsh system is an important storm buffer for the Lake Pontchartrain Basin, including the Greater New Orleans Metropolitan Area and North Shore communities. The marshes are experiencing high rates of shoreline erosion caused by wind driven wave action.

Specific bioengineered oyster reef products have not yet been identified; however, oyster reef breakwaters would be constructed from materials such as concrete, steel, mesh, geogrid, piles, rock, floating platforms, oyster shell, or similar materials (Mott MacDonald 2019). See embedded alternative detail sheets. The oyster reef breakwater would be constructed on the edge (approximately 0-400 feet) off the existing shoreline. The oyster reef breakwater would range from 8-35 feet wide at the base of the breakwater. The height of the breakwater would ultimately be determined so that it maximizes project performance over the 9 to 11 miles (and no more than 12.5 miles) of living shoreline structures. To facilitate construction of the breakwater, a temporary access channel may be dredged approximately 20 feet from the breakwater on the seaward side along the length of the project area. Where stumps are present within the areas identified for dredging and/or breakwater placement, it is likely that the stumps would be excavated individually, and the void backfilled with a granular fill. Permanent navigation signs would be placed in accordance with United States Coast Guard standards.

Based on modeling conducted for preliminary engineering analysis, the Proposed Project is estimated to reduce land loss by over 50% where the reef breakwater structures are placed, which would reduce the average shoreline erosion rate to -5.5 feet annually. Once met, the Proposed Project will save approximately 6 to 7.3 acres per year over the 9 to 11 miles (and no more than 12.5 miles) of breakwater structure constructed. (Mott MacDonald 2019).

Access to the project site will be through existing navigable waterways. Construction activities will take place from the water. To facilitate construction of the breakwater, a temporary access channel may be dredged, where necessary, approximately 20 feet from the oyster reef breakwater along the length of the project area along the seaward side of the breakwater. The temporary access channel would be excavated using barge-mounted bucket excavators and associated crews. All excavated material would be placed into a designated location for temporary spoils, approximately 20 feet from the temporary access channel on the seaward side of the access channel. The temporary spoils would be backfilled into the temporary access channel at the completion of the Proposed Project.

Construction methods for the Biloxi Marsh Proposed Project would involve using an excavator to either excavate or backfill the footprint of the oyster reef breakwater with upland fill or gravel. Individual stumps may be removed. Geotextile fabric would be placed over the fill prior to placing the oyster reef breakwater.

Marsh buggy and other track equipment would be limited to those 18 feet in width and confined to the project footprint. All equipment would be mobilized and demobilized by barge. Fully loaded drafts of all vessels would not exceed 7 feet at the lowest point on all vessels. Other construction machinery would include work boats and crew boats, quarters barge generators, welding machines, and miscellaneous vehicles.

Oyster lease areas would be buffered by 150 feet to avoid impacts during construction. If unfeasible, oyster leases within the 150-foot buffer would be acquired and extinguished prior to construction. CPRA is the only entity with the authority to extinguish oyster leases. The total estimated construction duration is 25 months.

Equipment:

- Marsh buggy
- Dragline/excavator
- Barge mounted bucket dredge
- Tugboat
- Barge mounted backhoe/crane

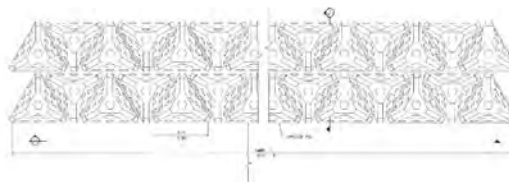
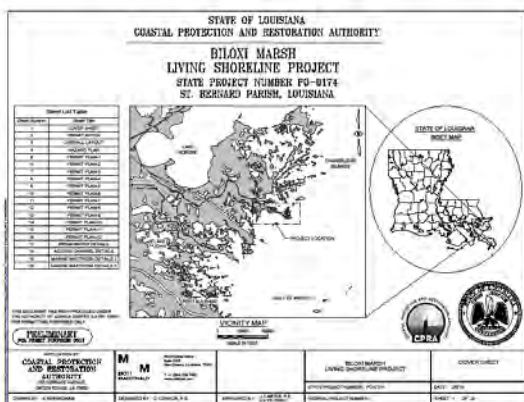
Planned excavation: 2,040,044 y<sup>3</sup>

Planned fill: 3,231,625 y<sup>3</sup>

Oyster reef breakwater/marine mattress: 767,560 y<sup>3</sup>

Total area of wetlands and/or waterbottoms filled and/or excavated: 1,150.80 acres

Please see embedded PDF files with the Preliminary Permit Drawings and Alternative Detail Sheets



II. Construction Schedule (What is the anticipated schedule for major phases of work? Include duration of in-water work.)

The estimated construction duration would be 25 months, and in-water work would be occurring throughout this time period.

Proposed Start Date: 8/1/2020

## Proposed Completion Date: 8/1/2023

## III. Specific In-Water and/or Terrestrial Construction Methods

Please check yes or no for the following questions related to in-water work and overwater structures

Does this project include in-water work?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
Does this project include terrestrial construction?	* YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
Does this project include construction of an overwater structure?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Will fishing be allowed from this overwater structure?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Will wildlife observation be allowed from this overwater structure?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Will boat docking be allowed from this overwater structure?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Will fishing be allowed from this overwater structure?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>

## \* May include marine mattress placement

If this is a fishing pier, please provide the following information: public or private access to pier, estimated number of people fishing per day, plan to address hook and line captures of protected species, specific operating hours/open 24 hours, artificial lighting of pier (if any), number of fish cleaning stations, and number of pier attendants (if any).

Not applicable; not a fishing pier.

Construction: Provide a detailed account of construction methods. It is important to include step-by-step descriptions of how demolition or removal of structures is conducted and if any debris will be moved and how. Describe how construction will be implemented, what type and size of materials will be used and if machines will be used, manual labor, or both. Indicate if work will be done from upland, barge, or both.)

iii. Use of "Dock Construction Guidelines"? [http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/quidance\\_docs/documents/dockkey2002.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/quidance_docs/documents/dockkey2002.pdf)

- iv. Type of decking: Grated – 43% open space; Wooden planks or composite planks – proposed spacing?
- v. Height above Mean High Water (MHW) elevation?
- vi. Directional orientation of main axis of dock?
- vii. Overwater area (sq ft)?

b. Pilings & Sheetpiles: If this project includes installation of pilings or sheets, please provide answers to questions 1-11 listed below

Table info applies to navigation pilings only:

1. Method of pile installation	Vibratory hammer
2. Material type of piles used	steel pipe piles
3. Size (width) of piles/sheets	16 inch diameter, ½ wall thickness
4. Total number of piles/sheets	~ 126
5. Number of strikes for each single pile	N/A (vibratory hammer to be used) Duration: Est. 10-15 minutes per pile using vibratory hammer
6. Number of strikes per hour (for a single pile)	Specifications not yet determined
7. Expected number of piles to be driven each day	~11
8. Expected amount of time needed to drive each pile (minutes of driving activities)	Est. 10-15 minutes per pile
9. Expected number of sequential days spent pile driving	~12 days to complete including barge repositioning, setup and breakdown between piles
10. Whether pile driving occurring in-water or on land	In water
11. Depth of water where piles will be driven	Varies from 4-9 ft, piles are 65 ft long (top elevation of +14 NAVD88 and bottom elevation of -51 ft NAVD88)

Metal and/or timber piles may be required for the installation of temporary and/or permanent navigational aids, in accordance with United States Coast Guard requirements. Temporary warning signs are anticipated to be pile-mounted or buoy-mounted dayboards placed at approximately 1,000-foot increments along the temporary spoil placement areas and USCG approved NAVAIDS warning vessel operators of the breakwater would be installed permanently via pile driving in key locations. The method of installation and quantity of the temporary warning signs has not been determined.

The EcoBale is a pile supported product which may be selected for construction (see attachments for product design sheets). The 12-inch diameter timber pile design for EcoBale is installed employing a push method using a side grip driver attached to an excavator. Hammering and vibration are not required. Number of product piles and location of product would be determined by the contractor during the bid process.

*c. Marinas and Boat Slips (Describe the number and size of slips and if the number of new slips changes from what is currently available at the project. Indicate how many are wet slips and how many are dry slips. Estimate the shadow effect of the boats - the area (sqft) beneath the boats that will be shaded.)*

**Not applicable; not a marina or boat slip.**

*d. Boat Ramp (Describe the number and size of boat ramps, the number of vessels that can be moored at the site (e.g., staging area) and if this is a public or private ramp. Indicate the boat trailer parking lot capacity, and if this number changes from what is currently available at the project.)*

**Not applicable; not a boat ramp.**

*e. Shoreline Armoring (This includes all manner of shoreline armoring (e.g., riprap, seawalls, jetties, groins, breakwaters, etc.). Provide specific information on material and construction methodology used to install the shoreline armoring materials. Include linear footage and square footage. Attach a separate map showing the location of the shoreline armoring in the action area.*

Artificial reef products are anticipated to be installed along the shoreline in continuous breakwater segments that are anticipated to be no longer than 1,000 feet and no wider than 35 feet. These products may include breakwater structures, as well as marine mattresses and rock revetments, as needed. Gaps between breakwaters will be required for recreational and animal passage and are anticipated to be between 100 and 500 feet in length. Additional structures may be positioned landward or seaward to provide gap protection. The landward toe of the breakwaters is anticipated to be installed at an elevation of approximately -3.0 feet NAVD88, but this may vary between -2.0 feet NAVD88 and -6.0 feet NAVD88.

*f. Dredging or digging (Provide details about dredge type (hopper, cutterhead, clamshell, etc.), maximum depth of dredging, area (ft<sup>2</sup>) to be dredged, volume of material (yd<sup>3</sup>) to be produced, grain size of material, sediment testing for contamination, spoil disposition plans, and hydrodynamic description (average current speed/direction)). If digging in the terrestrial environment, please describe fully with details about possible water jetting, vibration methods to install pilings for dune walk-over structure, or other methods. If using devices/methods/turtle relocation dredging to relocate sea turtles, then describe the methods here.*

Construction activities will take place from the water. The nearshore elevations in the action area range from approximately -2.0 to -6.0 feet (NAVD88). If necessary, a temporary flotation channel will be dredged for access. Lines for floating objects tethered to the sea floor would ensure that all in-water lines be made of materials such as stiff cable or plastic-coated lines and any ropes need to be thick, heavy, and taut lines that do not loop or entangle, and are installed in a manner to minimize the risk of entanglement of protected species. The temporary access channel would be excavated using barge-mounted bucket excavators and associated crews. Where stumps are present within the areas identified for dredging and/or breakwater placement, it is likely that the stumps would be excavated individually, and the void backfilled with a granular fill. All excavated material would be placed into a designated location for temporary spoils, approximately 20 feet from the temporary access channel on the seaward side of the access channel. The temporary spoils would be

backfilled into the temporary access channel at the completion of the project. Light load, low draft equipment will be used to minimize dredging. Access channels will be backfilled at completion of the activities.

Planned excavation: 2,040,044 yd<sup>3</sup>

Planned fill: 3,231,625 yd<sup>3</sup>

Oyster reef breakwater/marine mattress: 767,560 yd<sup>3</sup>

Total acres of wetlands and/or waterbottoms filled and/or excavated: 1,150.80 acres

*g. Blasting (Projects that use blasting might not qualify as “minor projects,” and a Biological Assessment (BA) may need to be prepared for the project. Arrange a technical consultation meeting with NMFS Protected Resources Division to determine if a BA is necessary. Please include explosive weights and blasting plan.)*

Not applicable; no blasting is planned.

*h. Artificial Reefs (Provide a detailed account of the artificial reef site selection and reef establishment decisions [i.e., management and siting considerations, stakeholder considerations, environmental considerations, long term maintenance plan (periodic clean-up of lost fishing gear/debris)], deployment schedule, materials used, deployment methods, as well as final depth profile and overhead clearance for vessel traffic. For additional information and detailed guidance on artificial reefs, please refer to the artificial reef program websites for the particular state the project will occur in.*

Up to 12.5 miles of oyster reef breakwaters would be constructed using artificial reef products which use materials such as concrete, steel, mesh, geogrid, piles, rock, floating platforms, oyster shell, or similar materials. See attached alternative detail sheets at the end of this document. In-water lines for floating platforms would be made of materials such as stiff cable or plastic-coated lines and any ropes would be thick, heavy, and taut lines that do not loop or entangle, and are installed in a manner to minimize the risk of entanglement of protected species. The height of the breakwater would ultimately be determined so that it maximizes project performance over the 9 to 11 miles (and no more than 12.5 miles) of living shoreline structures. Artificial reef products are anticipated to be installed along the shoreline (0-400 ft off existing shoreline) in continuous breakwater segments that are anticipated to be no longer than 1,000 feet and no wider than 35 feet. Gaps between breakwaters will be required for recreational and wildlife passage and are anticipated to be between 100 and 500 feet in length. Additional structures may be positioned landward or seaward to provide gap protection. The landward toe of the breakwaters is anticipated to be installed at an elevation of approximately -3.0 feet NAVD88, but this may vary between -2.0 feet NAVD88 and -6.0 feet NAVD88.

*i. Fishery Activities (Describe any use of gear that could entangle or capture protected species. This includes activities that may enhance fishing opportunities (e.g. fishing piers) or be fishery/gear research related (e.g. involve trawl gear, gillnets, hook and line gear, crab pots etc)).*

Not applicable; no fishery activities are planned.

### **G. NOAA Species & Critical Habitat and Effects Determination Requested**

*If your project occurs in a location that does not contain any listed NOAA species or designated Critical Habitats, please check the box below. If this box is checked, you may skip Section G. and proceed to Section H.*

This project occurs in a location that does not contain any listed NOAA species or designated Critical Habitats.

ESA effects have been accounted for under an existing consultation.

*1. List all species, critical habitat, proposed species and proposed critical habitat that may be found in the action area. Species that do not currently occur in the action area (but are listed on county species lists) do not need to be listed in drop downs.*

2. Attach a separate map identifying species/critical habitat locations within the action area. For information on species and critical habitat under NMFS jurisdiction, visit:

[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/threatened\\_endangered/Documents/gulf\\_of\\_mexico.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/threatened_endangered/Documents/gulf_of_mexico.pdf).

Identify if Gulf sturgeon are in marine or in freshwater in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Gulf sturgeon CH - marine). Identify if sea turtles are in water or on land in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Loggerhead sea turtle CH - terrestrial).

Species and/or Critical Habitat	CH Unit (if applicable)	Location (Sea turtles and Gulf Sturgeon only)	Determinations (see definitions below)	For "No Effect", please select justification.
Gulf Sturgeon (T)	N/A, outside CH	Marine	May Affect, Not Likely to Adversely Affect	Choose an item.
Loggerhead Sea Turtle	N/A, outside CH	Marine	May Affect, Not Likely to Adversely Affect	Choose an item.
Green Sea Turtle (T)	N/A, outside CH	Marine	May Affect, Not Likely to Adversely Affect	Choose an item.
Leatherback Sea Turtle (E)	N/A, outside CH	Marine	No Effect	No suitable habitat in action area
Hawksbill Sea Turtle (E)	N/A, outside CH	Marine	No Effect	No suitable habitat in action area
Kemp's Ridley Sea Turtle (E)	N/A, outside CH	Marine	May Affect, Not Likely to Adversely Affect	Choose an item.

The nearshore habitats in the action area do not provide suitable foraging habitat for hawksbill or leatherback sea turtles; therefore, it is unlikely these species would be present (LDWF 2019c; Love et al. 2013; NatureServe 2016; NOAA 2019).

## Determination Definitions

**NE = no effect.** This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat.

**NLAA = may affect, not likely to adversely affect.** This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources. Response requested is concurrence with the not likely to affect determination. This conclusion is appropriate when effects to the species or critical habitat will be wholly beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the Services concur in writing with the Action Agency's determination of "is not likely to adversely affect" listed species or critical habitat, the section 7 consultation process is completed.

**LAA = may affect, likely to adversely affect.** This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response requested for listed species is formal consultation for action with a likely to adversely affect determination, with a biological opinion as the concluding document. This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat, but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination is "likely to adversely affect." Any LAA determination requires formal section 7 consultation and will require additional information.

**Critical Habitat No Destruction** = When the proposed action will not diminish the value of critical habitat.

## H. USFWS Species & Critical Habitat and Effects Determination Requested

If your project occurs in a location that does not contain any listed USFWS species or designated Critical Habitats, please check the box below. If this box is checked, you may skip Section G. and proceed to Section H.

This project occurs in a location that does not contain any listed USFWS species or designated Critical Habitats.

ESA effects have been accounted for under an existing consultation.

1. List all species, critical habitat, proposed species and proposed critical habitat that may be found in the action area. Species that do not currently occur in the action area (but are listed on county species lists) do not need to be listed in drop downs.

2. Attach a separate map identifying species/critical habitat locations within the action area. For information on species and critical habitat under NMFS jurisdiction, visit:

[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/threatened\\_endangered/Documents/gulf\\_of\\_mexico.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/threatened_endangered/Documents/gulf_of_mexico.pdf).

Identify if Gulf sturgeon are in marine or in freshwater in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Gulf sturgeon CH - marine). Identify if sea turtles are in water or on land in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Loggerhead sea turtle CH - terrestrial).

Species and/or Critical Habitat	CH Unit (if applicable)	Location (Sea turtles and Gulf Sturgeon only)	Determinations (see definitions below)	For "No Effect", please select justification.
Gulf Sturgeon	N/A, outside CH	Riverine/Freshwater	No Effect	No suitable habitat in action area
West Indian Manatee	N/A, outside CH	Choose an item.	May Affect, Not Likely to Adversely Affect	Select Most Appropriate
Loggerhead Sea Turtle	N/A, outside CH	Terrestrial	No Effect	No suitable habitat in action area
Leatherback Sea Turtle	N/A, outside CH	Terrestrial	No Effect	No suitable habitat in action area
Green Sea Turtle	N/A, outside CH	Terrestrial	No Effect	No suitable habitat in action area
Kemp's Ridley	N/A, outside CH	Terrestrial	No Effect	No suitable habitat in action area
Hawksbill Sea Turtle	N/A, outside CH	Terrestrial	No Effect	No suitable habitat in action area
Red Knot	N/A, outside CH	Choose an item.	No Effect	No suitable habitat in action area
Piping Plover	N/A, outside CH	Choose an item.	No Effect	No suitable habitat in action area

The red knot and piping plover both have ranges that extend across the Action Area. These species could potentially be present in the action area but would not be affected by the Proposed Project because the beach/dune habitats they prefer for foraging, overwintering (red knot), and nesting (piping plover) is not present in the project area.

### Determination Definitions

**NE = no effect.** This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat.

**NLAA = may affect, not likely to adversely affect.** This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources. Response requested is concurrence with the not likely to affect determination. This conclusion is appropriate when effects to the species or critical habitat will be wholly beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the Services concur in writing with the Action Agency's determination of "is not likely to adversely affect" listed species or critical habitat, the section 7 consultation process is completed.

**LAA = may affect, likely to adversely affect.** This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response requested for listed species is formal consultation for action with a likely to adversely affect determination, with a biological opinion as the concluding document. This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat, but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination is "likely to adversely affect." Any LAA determination requires formal section 7 consultation and will require additional information.

**Critical Habitat No Destruction** = When the proposed action will not diminish the value of critical habitat.

## **I. Effects of the proposed project to the species and actions to reduce impacts**

*NOTE: Species selected as "No Effect" with justification in table do not need to be addressed in Section I or J.*

I. Explain the potential beneficial and adverse effects to each species listed above. Describe what, when, and how the species will be impacted and the likely response to the impact. Be sure to include direct, indirect, and cumulative impacts and where possible, quantify effects.

*If species are present (or potentially present) and will not be adversely affected describe your rationale. If species are unlikely to be present in the general area or action area, explain why. This justification provides documentation for your administrative record, avoids the need for additional correspondence regarding the species, and helps expedite review.*

The Gulf sturgeon, West Indian manatee, and five species of sea turtles were all listed as being potentially present in the action area by the USFWS Information for Planning and Consultation (IPaC) database (USFWS 2019a).

### **Gulf Sturgeon (*Acipenser oxyrinchus desotoi*)**

**Direct and Indirect Impacts:** The Gulf sturgeon can occur in river systems and nearshore bays and estuaries depending upon the life stage of the species and season (NOAA Fisheries 2016a). In Louisiana, the Gulf sturgeon is found in the Pearl, Bouge, Chitto and Tchefuncte rivers in St. Tammany and Washington Parishes and is suspected to also occur in any large river in the Lake Pontchartrain drainage area (LDWF 2019b). As the action area contains estuarine and marine habitats, the Proposed Project would have the potential to impact adult and sub-adult Gulf sturgeon while overwintering and foraging. Gulf sturgeon feed on a variety of bottom dwelling marine organisms, including amphipods, isopods, lancelets, polychaetes, and other marine worms (USFWS 2019b). The action area is located within historical Gulf sturgeon range but outside of designated critical habitat in Lake Borgne and Lake Pontchartrain; however, there is a potential for individuals to be present within the action area. Gulf sturgeon could be impacted by dredge and artificial reef placement activities that result in temporary localized turbidity and short-term habitat alteration caused by dredging activity. Noise related to construction and human activity may also disturb Gulf sturgeon. Other impacts include collision with vessels/barges, and increased risk of entanglement with debris that may catch on anchor management systems. These fish are highly mobile; therefore, individuals disturbed by effects from construction activities would likely move to another area. Long-term impacts such as downstream turbidity, pollution, or habitat loss are not anticipated due to the localized and temporary nature of the Proposed Project activities and the implementation of the Gulf Sturgeon BMPs to reduce and avoid potential impacts to this species. As the long-term effects associated with the Proposed Project are anticipated to be beneficial to ecological



conditions of benthic environments in the action area, the overall impacts of the Proposed Project could benefit foraging habitat for this species.

Impact avoidance measures for the Proposed Project will include:

- Operate dredge equipment in a manner to avoid risks to Gulf sturgeon (e.g., disengage pumps when the cutter head is not in the substrate; avoid pumping water from the bottom of the water column).
- Implement NMFS Sea Turtle and Smalltooth Construction Conditions (revised March 23, 2006) and NMFS Measures for Reducing Entrapment Risk to Protected Species (revised May 22, 2012), as they are protective of Gulf sturgeon as well.
- In-water lines for floating platforms would be made of materials such as stiff cable or plastic-coated lines and any ropes would be thick, heavy, and taut lines that do not loop or entangle, and would be installed in a manner to minimize the risk of entanglement of protected species.

Cumulative Impacts: No potential adverse, cumulative impacts on Gulf Sturgeon are anticipated if the avoidance measures are implemented.

**West Indian Manatee (*Trichechus manatus*)**

Direct and Indirect Impacts: Habitats suitable to support marine vegetation may be present within the action area that could attract the West Indian manatee. However, no known occurrences of this species has been documented within the action area; thus, occurrences of this species is rare and there is a low probability the species would occur in the action area (LDWF 2019b; NatureServe 2016). However, manatees moving between areas of suitable habitat may occur within the action area.

Proposed Project in-water work includes dredging and spoil placement for the temporary access channel, and placement of artificial reef structures. These activities will result in temporary localized turbidity and construction noise that may result in avoidance behaviors. Other impacts include collision with vessels/barges, and increased risk of entanglement with debris that may catch on anchor management systems. Standard Manatee Conditions BMPs will be implemented to reduce and avoid potential impacts to this species. Adherence to the protection measures would help ensure that any manatee present in the action area would not be adversely affected. The disturbance to the manatee would be temporary, limited to project construction and would result in temporary displacement as individuals would likely move to another area for foraging or resting purposes.

Impact avoidance measures for the Proposed Project will include:

- All contract personnel associated with the project would be informed of the potential presence of manatees and the need to avoid collisions with manatees, which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973.
- All construction personnel are responsible for observing water-related activities for the presence of manatee(s).
- Temporary signs would be posted prior to and during all construction/dredging activities to remind personnel to be observant for manatees during active construction/dredging operations or within vessel movement zones (i.e., work area), and at least one sign would be placed where it is visible to the vessel operator.
- Siltation barriers, if used, would be made of material in which manatees could not become entangled, and would be properly secured and monitored.
- If a manatee is sighted within 100 yards of the active work zone, special operating conditions would be implemented, including: no operation of moving equipment within 50 feet of a manatee; all vessels will operate at no wake/idle speeds within 100 yards of the work area; and siltation barriers, if used, would be re-secured and monitored. Once the manatee has left the 100-yard buffer zone around the work area on its own accord, special operating conditions are no longer necessary, but careful observations would be resumed.
- Any manatee sighting would be immediately reported to the USFWS and the Louisiana Department of Wildlife and Fisheries (LDWF) Natural Heritage Program.

- To prevent entrapment of manatee inside of dredged material receiving areas that have dikes or other retention features that enclose an area of open water, the area would be inspected for the presence of manatee(s): 1) before complete closure of the confining features; and 2) again before material is discharged in to the receiving area. Any manatee that is sighted would be allowed to leave the area before work resumes.
- In-water lines for floating platforms would be made of materials such as stiff cable or plastic-coated lines and any ropes would be thick, heavy, and taut lines that do not loop or entangle, and would be installed in a manner to minimize the risk of entanglement of protected species.

Cumulative Impacts: With the implementation of BMPs and avoidance measures to reduce the potential for impacts to West Indian manatee, the likelihood for cumulative impacts to this species is low. The temporary increase in potential for disturbance or strikes of individual manatees from human noise and activity and/or habitat impacts associated with construction activities may still contribute to a minor increase in adverse effects, when combined with existing levels of disturbance and human noise and activity. Long-term beneficial impacts would result as the oyster reef would become a self-sustaining and valuable habitat for many estuarine species and benefit the water quality in the area. The beneficial impacts to the ecosystem could result in improved conditions for SAV, which may provide additional forage for the species.

### **Sea Turtles**

Three species of sea turtles may possibly occur in the action area (USFWS 2019a), and include the loggerhead, Kemp's Ridley, and green sea turtle species. Due to the absence of suitable nesting beach habitats and the absence of any records of nesting for these species, these species are not expected to occur in terrestrial habitats within the Proposed Project action area (LDWF 2019b; Love et al. 2013; NatureServe 2016; NOAA 2019).

Direct and Indirect Impacts: The loggerhead, green and Kemp's Ridley sea turtles may be present within the Proposed Project action area and it is located within the known ranges of these species (LDWF 2019b; NatureServe2016). The Proposed Project's in-water work may result in temporary increases in turbidity and construction noise that may result in temporary avoidance behaviors. Sea turtles would likely avoid or move away from construction activities. Other impacts include collision with vessels/barges and/or entrapment during fill activities, and increased risk of entanglement with debris that may catch on anchor management systems. Sea turtle BMPs will be implemented to reduce and avoid impacts to these species. The construction of the artificial oyster reef would improve benthic habitat and water quality and could benefit to foraging habitat for sea turtles in the area.

### Impact avoidance measures for the Proposed Project will include:

- Implement the following in-water work guidelines:
  - NMFS's Sea Turtle and Smalltooth Sawfish Construction Conditions (revised March 23, 2006);
  - NMFS's Measures for Reducing Entrapment Risk to Protected Species (revised May 22, 2012); and
  - NMFS's Vessel Strike Avoidance Measures and Reporting for Mariners (revised February 2008).
- In-water lines for floating platforms would be made of materials such as stiff cable or plastic-coated lines and any ropes would be thick, heavy, and taut lines that do not loop or entangle, and would be installed in a manner to minimize the risk of entanglement of protected species.
- If implemented, WAD devices will have a cast tongue and groove bottom affixed with stainless steel straps to prevent sea turtle entry into the product. See attached product detail sheet and representative photos.

Cumulative Impacts: With the implementation of BMPs and avoidance measures to reduce the potential for impacts to sea turtle foraging habitat, the likelihood for cumulative impacts to these species is low. The temporary increase in potential for disturbance or strikes of individual sea turtles from human noise and activity and/or habitat impacts associated with construction activities may still contribute to an increase in adverse effects, when combined with existing levels of disturbance and human noise and activity.

*II. Explain the actions to reduce adverse effects to each species listed above. For each species for which impacts were identified, describe any conservation measures (e.g. BMPs) that will be implemented to avoid or minimize the impacts. Conservation measures are designed to avoid or minimize effects to listed species and critical habitats or further the recovery of the species under review. Conservation*

measures are considered part of the proposed action and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinstate this consultation.

**Frequently Recommended BMPs:** This checklist provides standard BMPs recommended by NOAA and USFWS. Please select any BMPs that will be implemented:

- |                                     |                                                                                        |
|-------------------------------------|----------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> | <b>USFWS Standard Manatee In Water Conditions</b>                                      |
| <input checked="" type="checkbox"/> | <b>NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions<sup>1</sup></b>      |
| <input checked="" type="checkbox"/> | <b>NMFS Measures for Reducing the Entrapment Risk to Protected Species<sup>1</sup></b> |
| <input checked="" type="checkbox"/> | <b>NMFS Vessel Strike Avoidance Measures and Reporting for Mariners<sup>1</sup></b>    |

**Additional BMPs or Conservation Measures**

Chapter 6 of the PDARP included an important appendix (6.A) of best practices, see information starting on page 6-173.  
[http://www.gulfspillrestoration.noaa.gov/sites/default/files/wp-content/uploads/Chapter-6\\_Environmental-Consequences\\_508.pdf](http://www.gulfspillrestoration.noaa.gov/sites/default/files/wp-content/uploads/Chapter-6_Environmental-Consequences_508.pdf)

Use the box below to indicate which best management practices or conservation measures you'll be using in your project (that were not listed in Section I above)

Additional practices and measures have not yet been identified.

**J. Effects to critical habitats and actions to reduce impacts**

*NOTE: Species selected as "No Effect" with justification in table do not need to be addressed in Section I or J.*

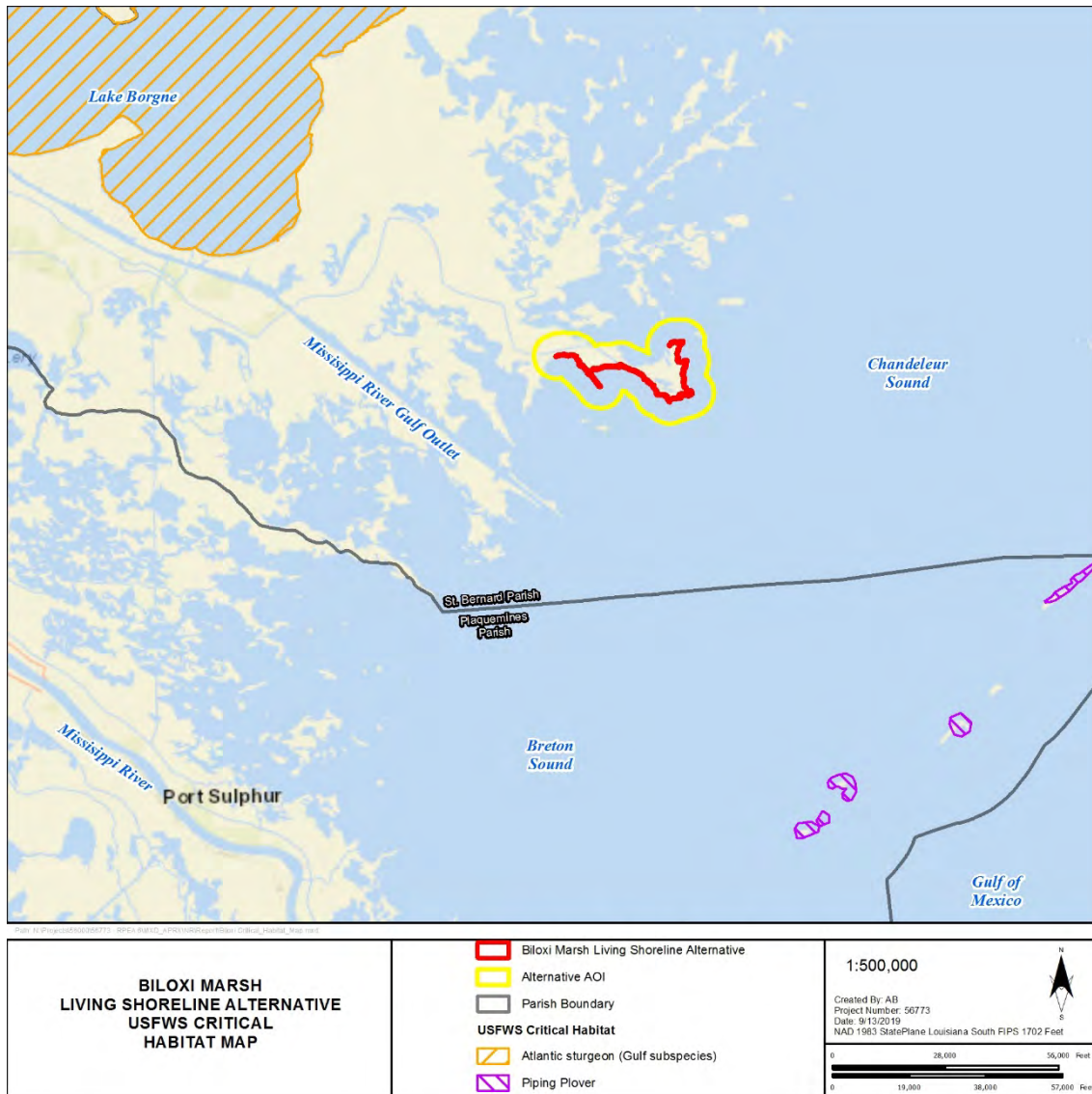
I. Explain the potential beneficial and adverse effects to critical habitat listed above. Describe what, when, and how the critical habitat will be impacted and the likely response to the impact. Be sure to include direct, indirect, and cumulative impacts to physical and biological features, and where possible, quantify effects (e.g. acres of habitat, miles of habitat).

*Describe your rationale if designated or proposed critical habitats are present and will not be adversely affected.*

Not applicable. The action area is not located within any designated critical habitat. See image below.

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<sup>1</sup> Documents can be found here: [http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/index.html](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/index.html)



**Image showing the Biloxi Marsh Action Area in relation to designated Critical Habitats.**

II. Explain the actions to reduce adverse effects to critical habitat listed above. For critical habitat for which impacts were identified, describe any conservation measures (e.g. BMPs) that will be implemented to avoid or minimize the impacts. Conservation measures are designed to avoid or minimize effects to listed species and critical habitats or further the recovery of the species under review. Conservation measures are considered part of the proposed action and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinstate this consultation.

Not applicable. The action area is not located within any designated critical habitat. See image above.

**K. Marine Mammals**

I. The Marine Mammal Protection Act prohibits the taking (including disruption of behavior, entrapment, injury, or death) of all marine mammals (e.g., whales, dolphins, manatees). However, the MMPA allows limited exceptions to the take prohibition if authorized, such as the incidental (i.e., unintentional but not unexpected) take of marine mammals. The following questions are designed to allow the

Agencies to quickly determine if your action has the potential to take marine mammals. If the information provided indicates that incidental take is possible, further discussion with the Agencies is required.

Is your activity occurring in or on marine or estuarine waters?  NO  YES

If yes, is your activity likely to cause large-scale, ecosystem level impacts to the quality (e.g. salinity, temperature) of marine or estuarine waters?  NO  YES

II. If Yes, describe activities further using checkboxes. Does your activity involve any of the following:

NO	YES	ACTIVITY
<input checked="" type="checkbox"/>	<input type="checkbox"/>	a) Use of active acoustic equipment (e.g., echosounder) producing sound below 200 kHz
<input type="checkbox"/>	<input checked="" type="checkbox"/>	b) In-water construction or demolition
<input checked="" type="checkbox"/>	<input type="checkbox"/>	c) Temporary or fixed use of active or passive sampling gear (e.g., nets, lines, traps; turtle relocation trawls)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	d) In-water Explosive detonation
<input checked="" type="checkbox"/>	<input type="checkbox"/>	e) Aquaculture
<input type="checkbox"/>	<input checked="" type="checkbox"/>	f) Restoration of barrier islands, levee construction or similar projects
<input checked="" type="checkbox"/>	<input type="checkbox"/>	g) Fresh-water river diversions
<input checked="" type="checkbox"/>	<input type="checkbox"/>	h) Building or enhancing areas for water-related recreational use or fishing opportunities (e.g. fishing piers, bridges, boat ramps, marinas)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	i) Dredging or in-water construction activities to change hydrologic conditions or connectivity, create breakwaters and living shorelines, etc.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	k) Use of floating pipeline during dredging activities

III. If you checked “Yes” to any of the activities immediately above or the activity could impact the quality of marine or estuarine waters, please describe the nature of the activities in more detail or indicate which section of the form already includes these descriptions. See the NOAA Acoustic Guidance for more information: <http://www.nmfs.noaa.gov/pr/acoustics/faq.htm>

Access to the project site will be through existing navigable waterways. Construction activities will take place from the water and may require the dredging of a temporary access channel approximately 20 feet from the footprint of the artificial reef structures and removal and backfilling of individual stumps. Light load, low draft equipment will be used to minimize dredging. Access channels will be backfilled at completion of the activities. Marine mattresses are intended to prevent further erosion of the wetland shoreline. Artificial reef products are anticipated to be installed along the shoreline in continuous breakwater segments that are anticipated to be no longer than 1,000 feet and no wider than 35 feet. Gaps between breakwaters will be required for recreational and wildlife passage and are anticipated to be between 100 and 500 feet in length. Additional structures may be positioned landward or seaward to provide gap protection. The landward toe of the breakwaters is anticipated to be installed at an elevation of approximately -3.0 feet NAVD88, but this may vary between -2.0 feet NAVD88 and -6.0 feet NAVD88.

IV. *Frequently Recommended BMPs for marine mammals (manatees are covered in Section I above): This checklist provides standard BMPs recommended by NOAA. Please select any BMPs that will be implemented:*

<input type="checkbox"/>	NMFS Southeast U.S. Marine Mammal and Sea Turtle Viewing Guidelines <sup>2</sup>
--------------------------	----------------------------------------------------------------------------------

<sup>2</sup> Documents can be found here: [http://sero.nmfs.noaa.gov/protected\\_resources/outreach\\_and\\_education/index.html](http://sero.nmfs.noaa.gov/protected_resources/outreach_and_education/index.html)

<input checked="" type="checkbox"/>	NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions <sup>3</sup>
<input checked="" type="checkbox"/>	NMFS Measures for Reducing the Entrapment Risk to Protected Species <sup>3</sup>
<input checked="" type="checkbox"/>	NMFS Vessel Strike Avoidance Measures and Reporting for Mariners <sup>3</sup>
<input type="checkbox"/>	Reproducing and posting outreach signs: Dolphin Friendly Fishing Tips sign, Don't Feed Wild Dolphins sign <sup>3</sup>

If not listed above, please describe any additional BMPs or conservation measures that may be implemented for marine mammals. Additional practices and measures have not yet been identified.

### **L. Bald Eagles**

Are bald eagles present in the action area? NO YES

If YES, the following conservation measures should be implemented:

1. If bald eagle breeding or nesting behaviors are observed or a nest is discovered or known, all activities (e.g., walking, camping, clean-up, use of a UTV, ATV, or boat) should avoid the nest by a minimum of 660 feet. If the nest is protected by a vegetated buffer where there is *no* line of sight to the nest, then the minimum avoidance distance is 330 feet. This avoidance distance shall be maintained from the onset of breeding/courtship behaviors until any eggs have hatched and eaglets have fledged (approximately 6 months).
2. If a similar activity (e.g., driving on a roadway) is closer than 660 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
3. If a vegetated buffer is present and there is no line of sight to the nest and a similar activity is closer than 330 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
4. In some instances, activities conducted at a distance greater than 660 feet of a nest may result in disturbance. If an activity appears to cause initial disturbance, the activity shall stop and all individuals and equipment will be moved away until the eagles are no longer displaying disturbance behaviors.

Will you implement the above measures? NO YES

If these measures cannot be implemented, then you must contact the Service's Migratory Bird Permit Office.

Texas – (505) 248-7882 or by email: [permitsR2MB@fws.gov](mailto:permitsR2MB@fws.gov)

Louisiana, Mississippi, Alabama, Florida – (404) 679-7070 or by email: [permitsR4MB@fws.gov](mailto:permitsR4MB@fws.gov)

### **M. Request approval for use of NMFS PDCs for this project**

Complete this section only if your project qualifies for streamlined ESA consultation under the ESA Framework Programmatic Biological Opinion completed by NMFS on February 10, 2016. To be eligible for streamlined ESA consultation with NMFS, you must implement all Project Design Criteria (PDCs) applicable to your project. Check "yes" for PDC categories that apply to the proposed project, and request PDC checklist from NMFS.

NO	YES	ACTIVITY
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<b>Oyster Reef Creation and Enhancement</b>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<b>Marine Debris Removal</b>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<b>Construction of Living Shorelines</b>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<b>Marsh Creation and Enhancement</b>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<b>Construction of Non-Fishing Piers</b>

### **N. Submitting the BE Form**

We request that all BE forms and consultation materials be placed on Sharepoint for review. Upon receipt, we will conduct a preliminary review and provide any comments and feedback, including any requests for modifications or additional information. If

<sup>3</sup> Documents can be found here: [http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/index.html](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/index.html)

modifications or additional information is necessary, we will work with you until the Biological Evaluation form is considered complete. Once complete, we will use the Biological Evaluation form to initiate appropriate consultations.

Questions may be directed to:

<p><b>NMFS ESA § 7 Consultation</b> Christy Fellas, National Oceanic Atmospheric Administration Email: Christina.Fellas@noaa.gov Phone: 727-551-5714</p>	<p><b>USFWS ESA § 7 Consultation</b> Erin Chandler, Department of the Interior Email: Erin_Chandler@fws.gov Phone: 470-361-3153</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------

## REFERENCES

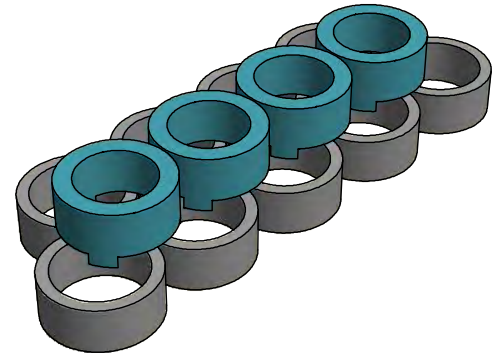
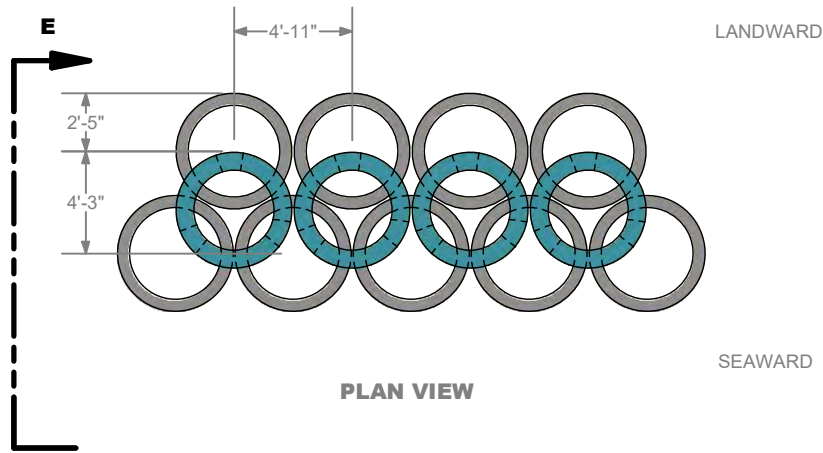
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- . 2019b. Gulf Sturgeon Fact Sheet. Available at: <https://www.fws.gov/panamacity/resources/SturgeonFactS08.pdf>. Accessed September 19, 2019.



# **Product Design Sheets**

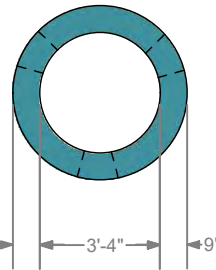
- 1) Oysterbreak
- 2) Shorejax
- 3) Ecobale
- 4) Wave Attenuation Device (WAD)

**CONFIGURATION 2 (2 FLOOR UNITS WITH 1 TOP UNIT)**

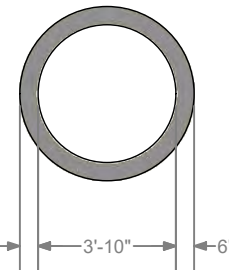


**GEOGRID SCHEDULE**

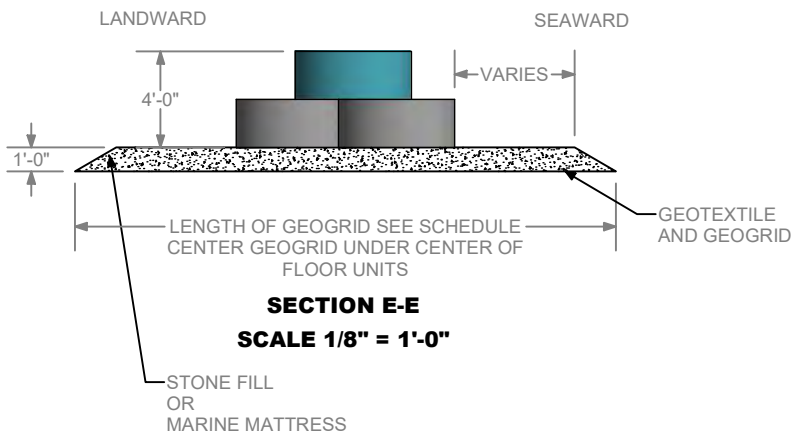
Length of Geogrid (ft)	Boring location I.D.
36.0	NB03
21.0	NB04, NB12, NB16, NB18
24.0	NB09
34.0	NB11



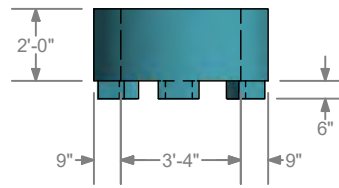
**PLAN VIEW  
(TOP UNIT)**



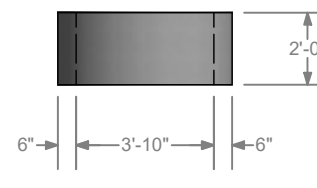
**PLAN VIEW  
(BASE UNIT)**



**SECTION E-E  
SCALE 1/8" = 1'-0"**



**ELEV. VIEW  
20.3128 cu.ft.**



**ELEV. VIEW**

OYSTERBREAK ARMOR UNITS  
MAY BE EITHER OYSTERKRETE  
OR CONSOLIDATED CONCRETE  
DEPENDING ON PROJECT NEEDS



MADE IN  
THE USA



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**DESCRIPTION**

58" Diameter  
OYSTERBREAK

**PROJECT**

PO 174 (Configuration Alternative #2)

**CUSTOMER**

WAYFARER

**MODELED BY**

Jason

**DATE**

8/15/2018

**SHEET**

1 of 3

**REVISED BY**

Mario B.

**REV DATE**

4/25/2019

**REV**

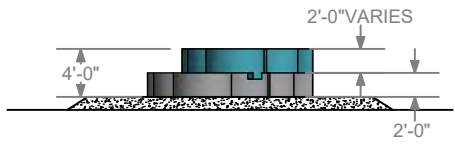
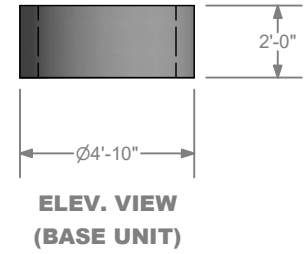
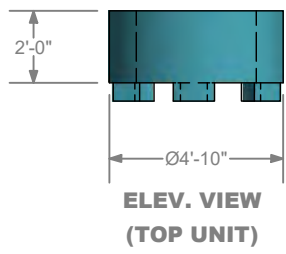
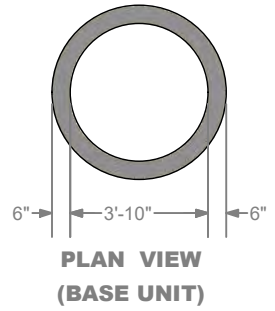
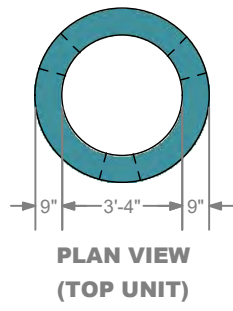
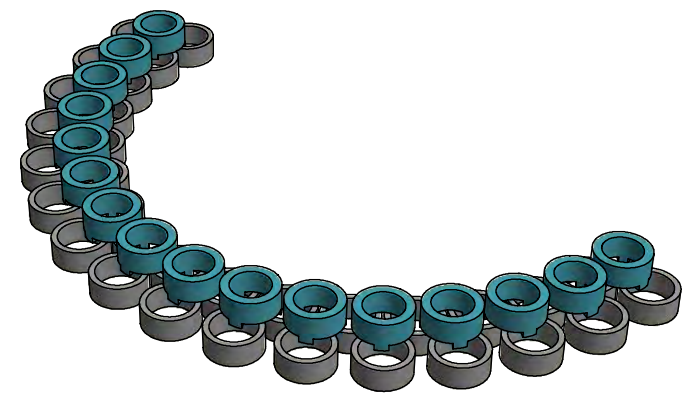
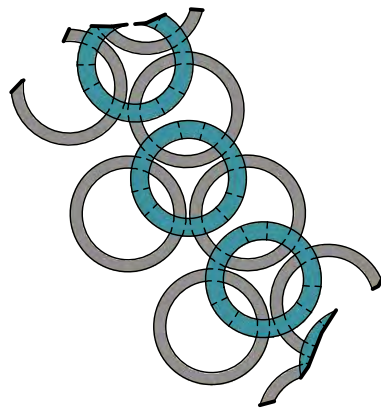
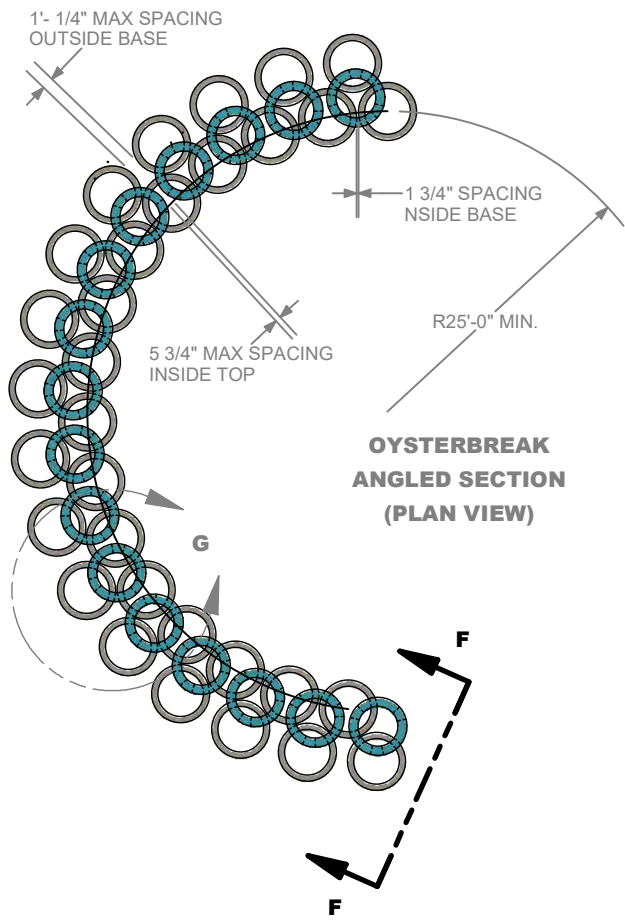
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**CHECKED BY**

**SCALE**

A4

OysterBreak Armor Unit Properties					
OysterBreak Unit Type	OK Wt. (lbs) 130 cu ft Density	SCC (lbs) 145 cu ft Density	Submerged Wt. OK (lbs)	Submerged Wt SCC (lbs)	Loading Area Per Ring (sq. ft)
TOP UNIT	2,046	2,202	1,074	1,230	9.61
FLOOR UNIT	1,390	1,496	730	836	9.61



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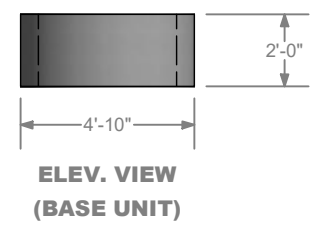
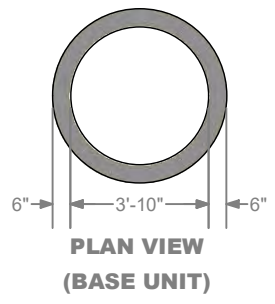
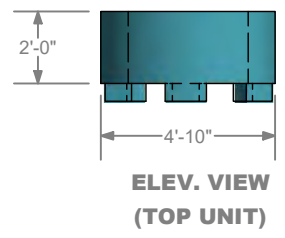
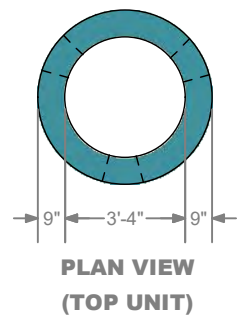
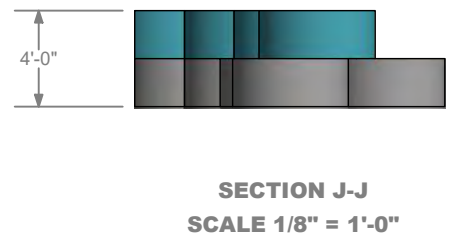
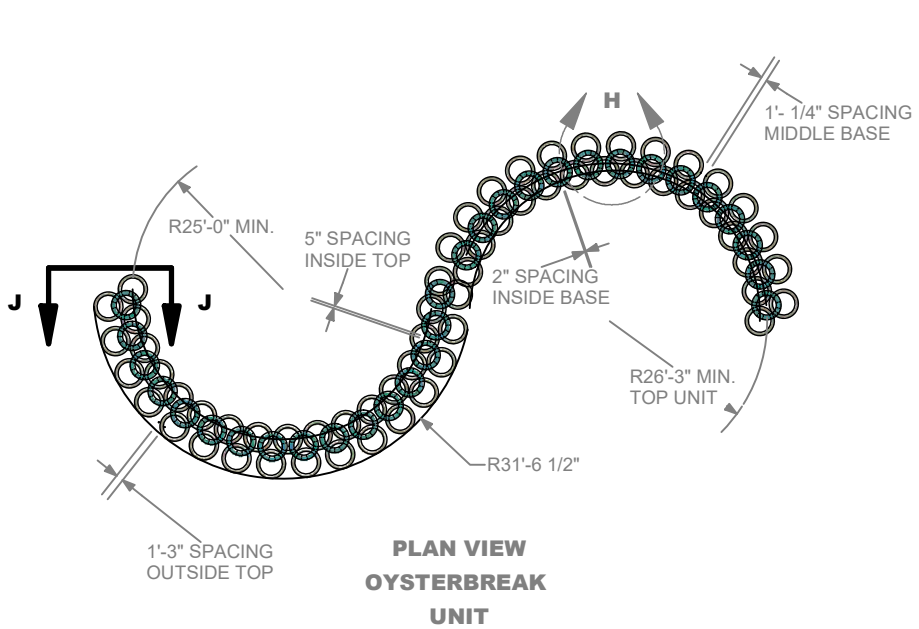
**DESCRIPTION**  
58" Diameter OYSTERBREAK

**PROJECT**  
PO 174 (Configuration Alternative #2)

**CUSTOMER**  
WAYFARER

MODELED BY Jason	DATE 8/15/2018	SHEET 2 of 3
REVISED BY Mario B.	REV DATE 4/25/2019	REV 6
CHECKED BY		SCALE A4

OysterBreak Armor Unit Properties					
OysterBreak Unit Type	OK Wt. (lbs) 130 cu ft Density	SCC (lbs) 145 cu ft Density	Submerged Wt. OK (lbs)	Submerged Wt SCC (lbs)	Loading Area Per Ring (sq. ft)
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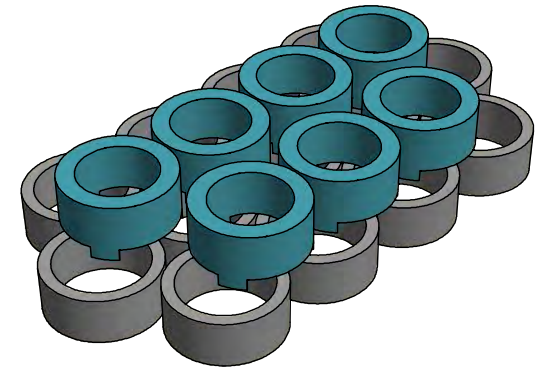
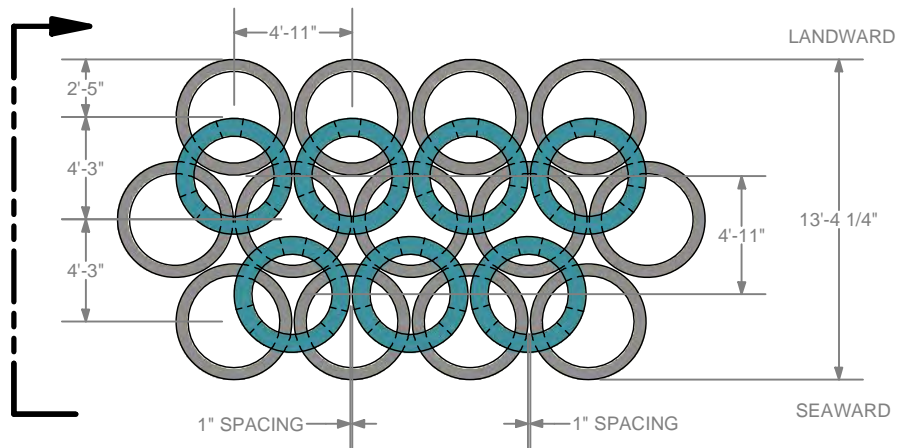
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PO 174 (Configuration Alternative #2)

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MODELED BY Jason	DATE 8/15/2018	SHEET 3 of 3
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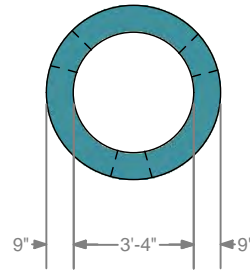
**E CONFIGURATION 1 (3 FLOOR UNITS WITH 2 TOP UNITS)**



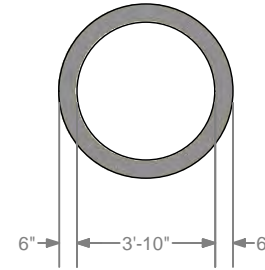
**GEOGRID SCHEDULE**

Length of Geogrid (ft)	Boring Location I.D.
49.0	NB02
36.0	NB03
21.0	NB04, NB12, NB16, NB08
31.0	NB07
24.0	NB09
34.0	NB11
39.0	NB14
47.0	NB15

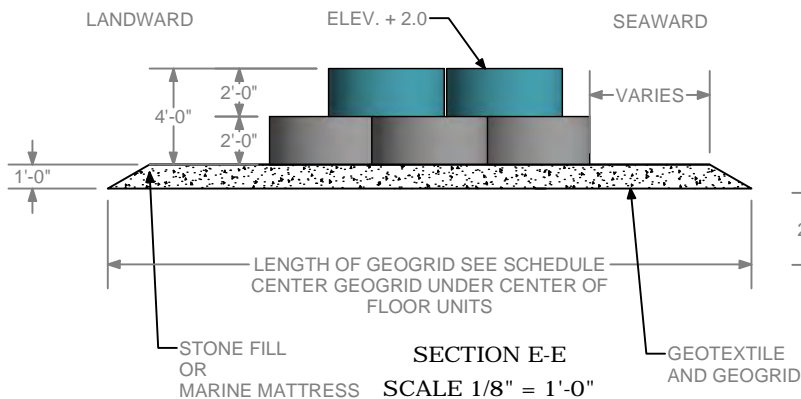
**PLAN VIEW**



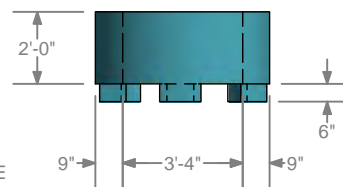
**PLAN VIEW (TOP UNIT)**



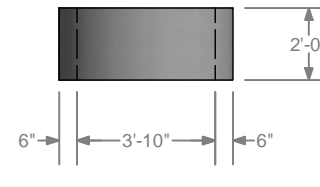
**PLAN VIEW (BASE UNIT)**



**SECTION E-E SCALE 1/8" = 1'-0"**



**ELEV. VIEW 20.3128 cu.ft.**



**ELEV. VIEW**

OYSTERBREAK ARMOR UNITS MAY BE EITHER OYSTERKRETE OR CONSOLIDATED CONCRETE DEPENDING ON PROJECT NEEDS



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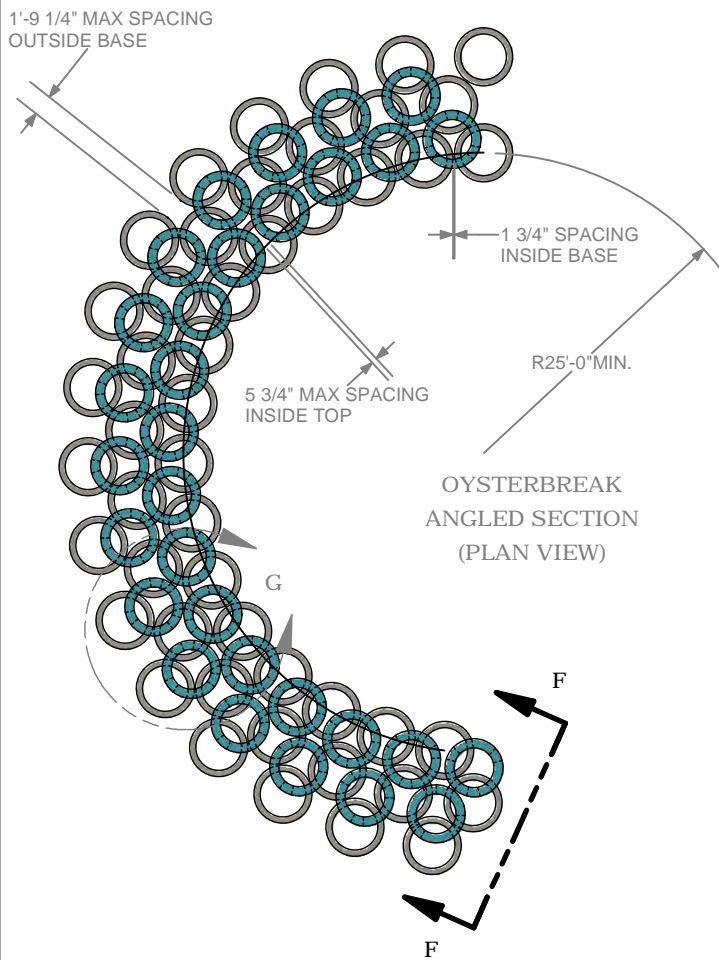


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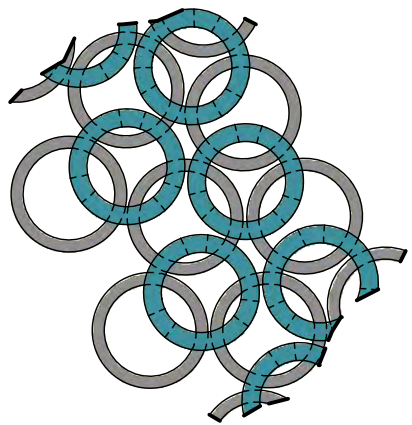
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58" Diameter OYSTERBREAK
<b>PROJECT</b>
PO 174 (Configuration Alternative #1)

<b>CUSTOMER</b>		
WAYFARER		
<b>MODELED BY</b>	<b>DATE</b>	<b>SHEET</b>
Jason	8/15/2018	1 of 3
<b>REVISED BY</b>	<b>REV DATE</b>	<b>REV</b>
Mario B.	4/25/2019	6
<b>CHECKED BY</b>	<b>SCALE</b>	
	A4	

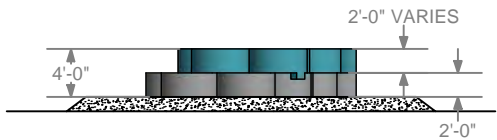
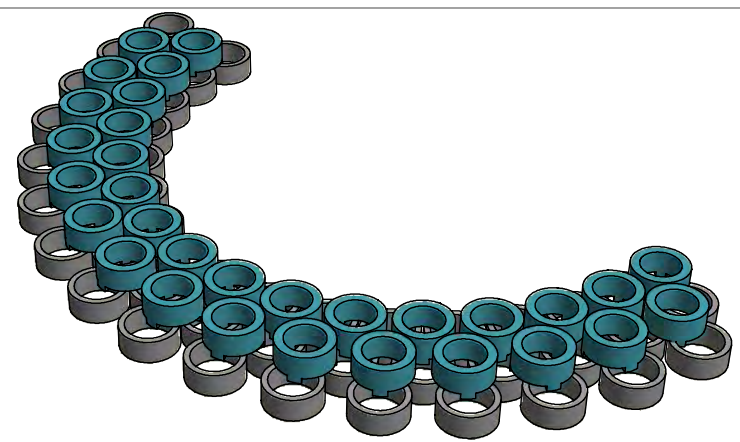
OysterBreak Armor Unit Properties					
OysterBreak Unit Type	OK Wt. (lbs) 130 cu ft Density	SCC (lbs) 145 cu ft Density	Submerged Wt. OK (lbs)	Submerged Wt SCC (lbs)	Loading Area Per Ring (sq. ft)
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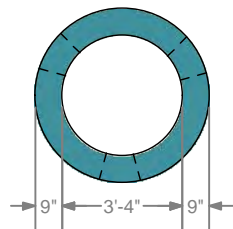
OYSTERBREAK  
ANGLED SECTION  
(PLAN VIEW)



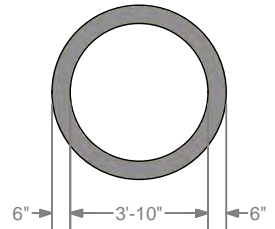
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SCALE 1/8" = 1'-0"



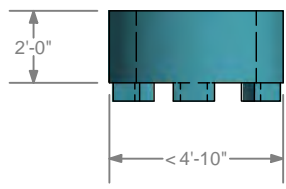
SECTION F-F  
SCALE 1/16" = 1'-0"



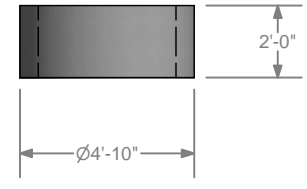
PLAN VIEW  
(TOP UNIT)



PLAN VIEW  
(BASE UNIT)



ELEV. VIEW  
(TOP UNIT)



ELEV. VIEW  
(BASE UNIT)

OysterBreak Armor Unit Properties					
OysterBreak Unit Type	OK Wt. (lbs) 130 cu ft Density	SCC (lbs) 145 cu ft Density	Submerged Wt. OK (lbs)	Submerged Wt SCC (lbs)	Loading Area Per Ring (sq. ft)
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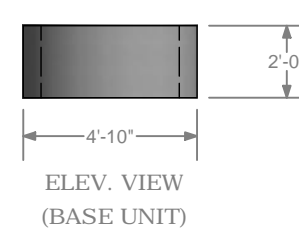
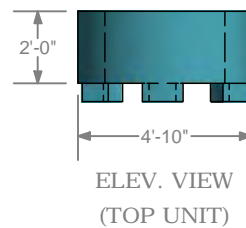
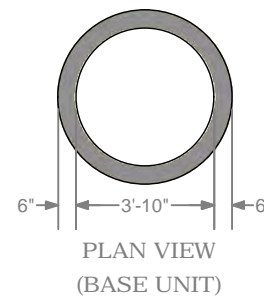
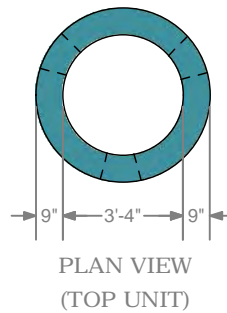
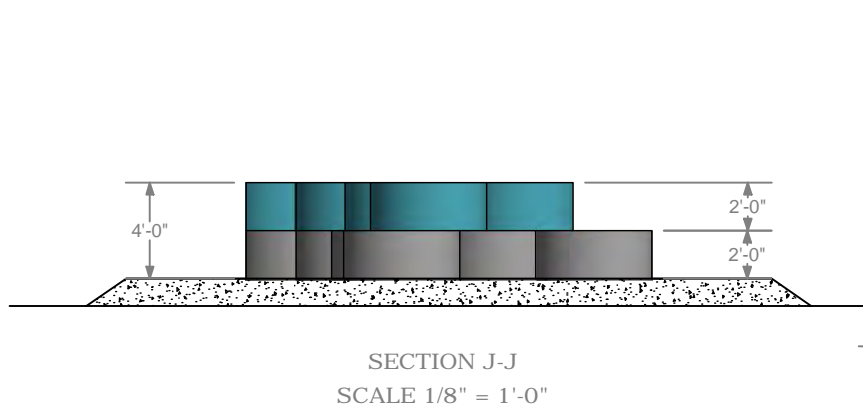
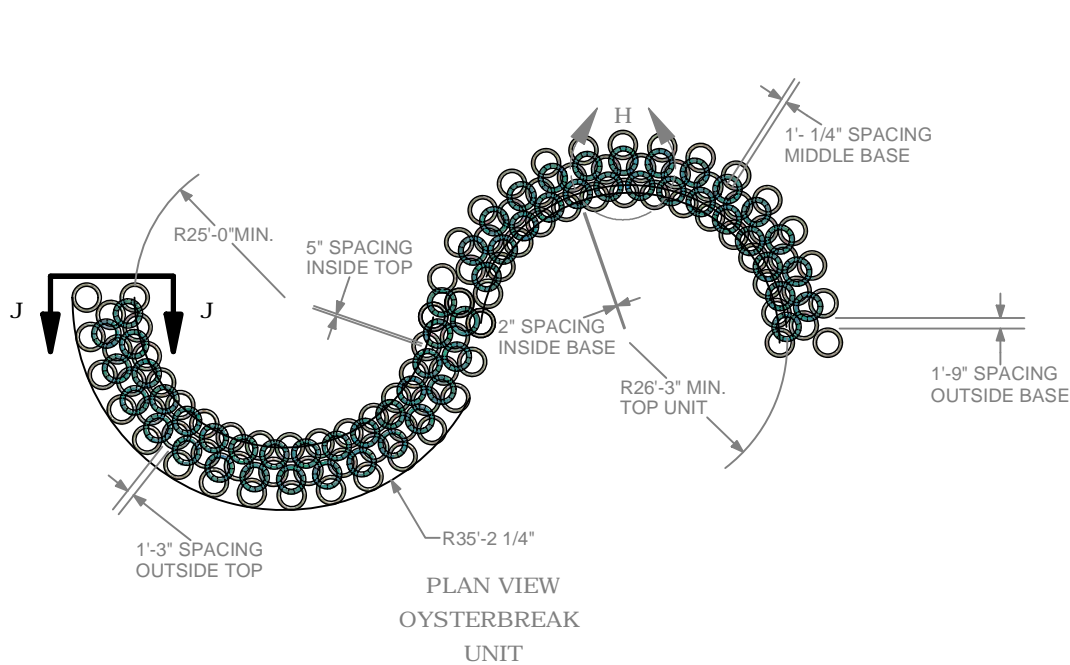


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DESCRIPTION  
58" Diameter  
OYSTERBREAK  
PROJECT  
PO 174 (Configuration Alternative #1)

CUSTOMER  
WAYFARER

MODELED BY Jason	DATE 8/15/2018	SHEET 2 of 3
REVISED BY Mario B.	REV DATE 4/25/2019	REV 6
CHECKED BY		SCALE A4



OysterBreak Armor Unit Properties

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FLOOR UNIT	1,390	1,496	730	836	9.61



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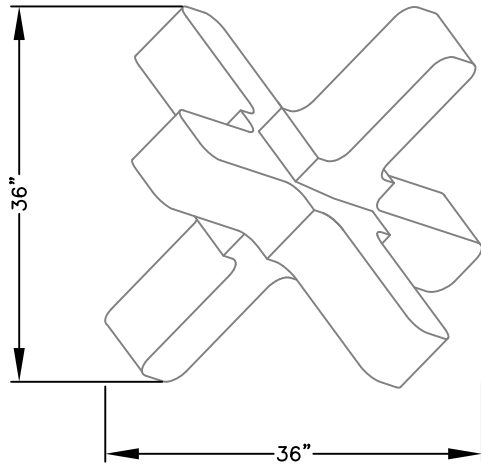
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58" Diameter  
OYSTERBREAK

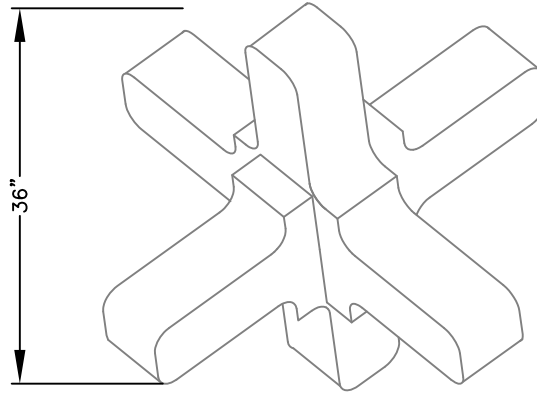
**PROJECT**  
PO 174 (Configuration Alternative #1)

**CUSTOMER**  
WAYFARER

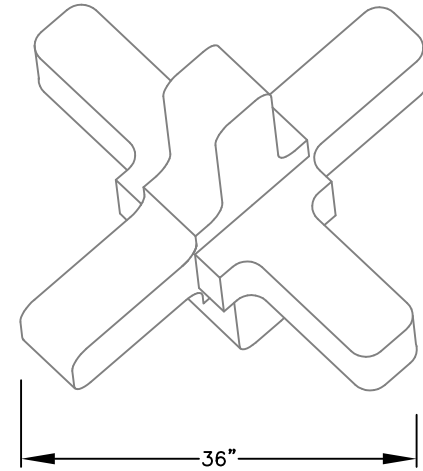
MODELED BY Jason	DATE 8/15/2018	SHEET 3 of 3
REVISED BY Mario B.	REV DATE 4/25/2019	REV 6
CHECKED BY		SCALE A4



PLAN VIEW



SECTION VIEW




PROFILE VIEW

VOLUME OF CONCRETE:  
 FULL UNIT – 4.49FT<sup>3</sup>  
 FROM BASE UP TO 2.52' – 4.25FT<sup>3</sup>  
 FROM BASE UP TO 3.31' – FULL UNIT

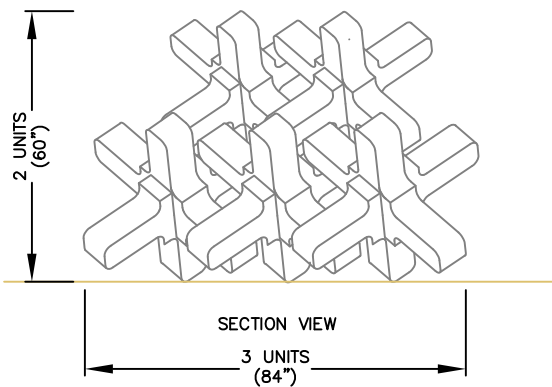
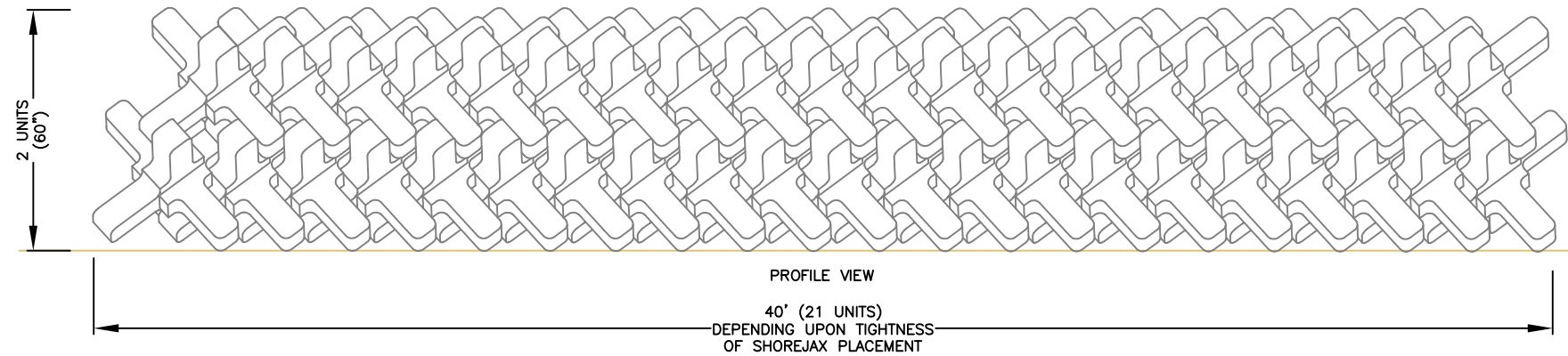
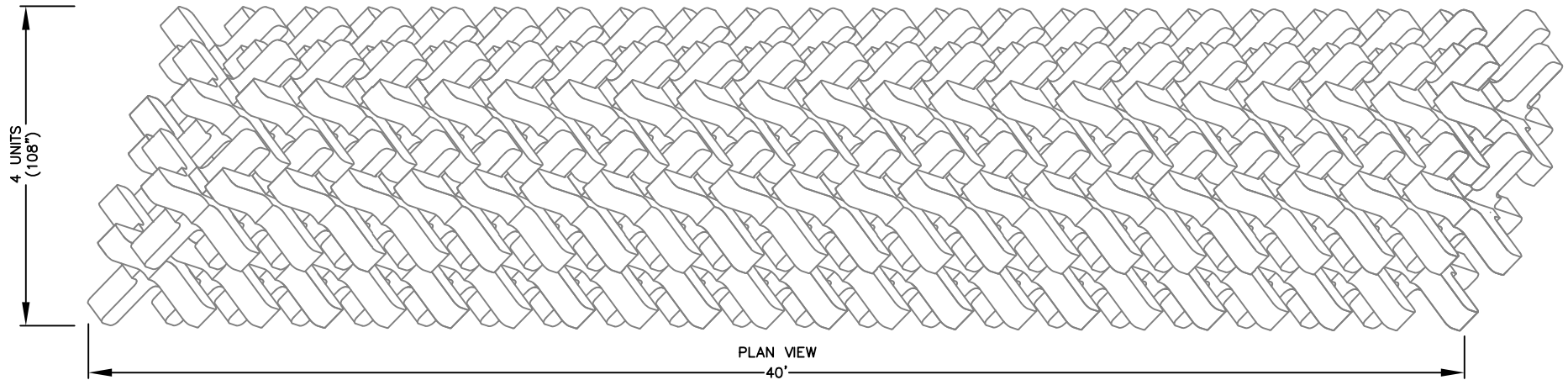
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PREPARED FOR: **PREMIER CONCRETE PRODUCTS, INC.**  
 510 O' Neal Lane  
 Baton Rouge, LA 70819  
 225-273-3511 Phone  
 225-273-9888 Fax



TITLE:  ShoreJax 48" Unit Detail		DRAWN BY: MDD	DATE: 4/15/19	CAD FILE: Prem. Conrete
		CHECKED BY: BD	SCALE: N.T.S.	DRAWING NAME/NO: Artificial Reef





40' LONG 3-2 CLUSTER INFO:

105+/- UNITS

VOLUME OF CLUSTER - 471.5ft<sup>3</sup>

VOLUME FROM BASE TO 2.52' - 332.8ft<sup>3</sup>


VOLUME FROM BASE TO 3.31' - 409.1ft<sup>3</sup>

VOLUME FROM BASE TO 4.1' - 446.2ft<sup>3</sup>

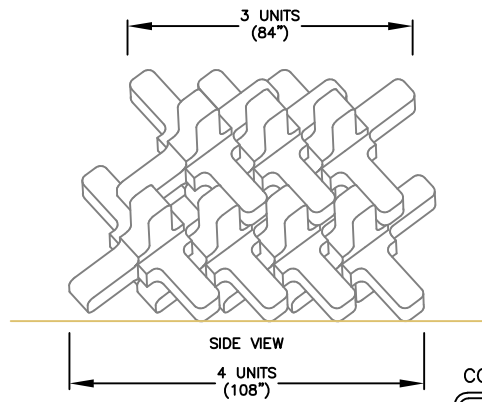
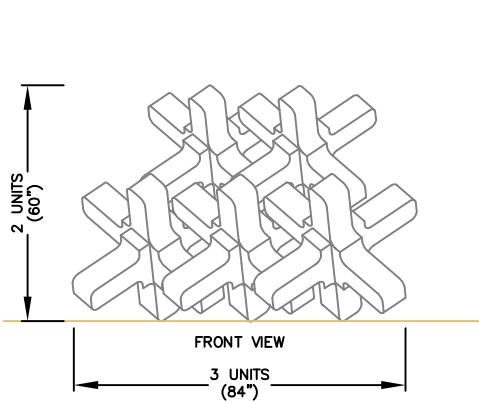
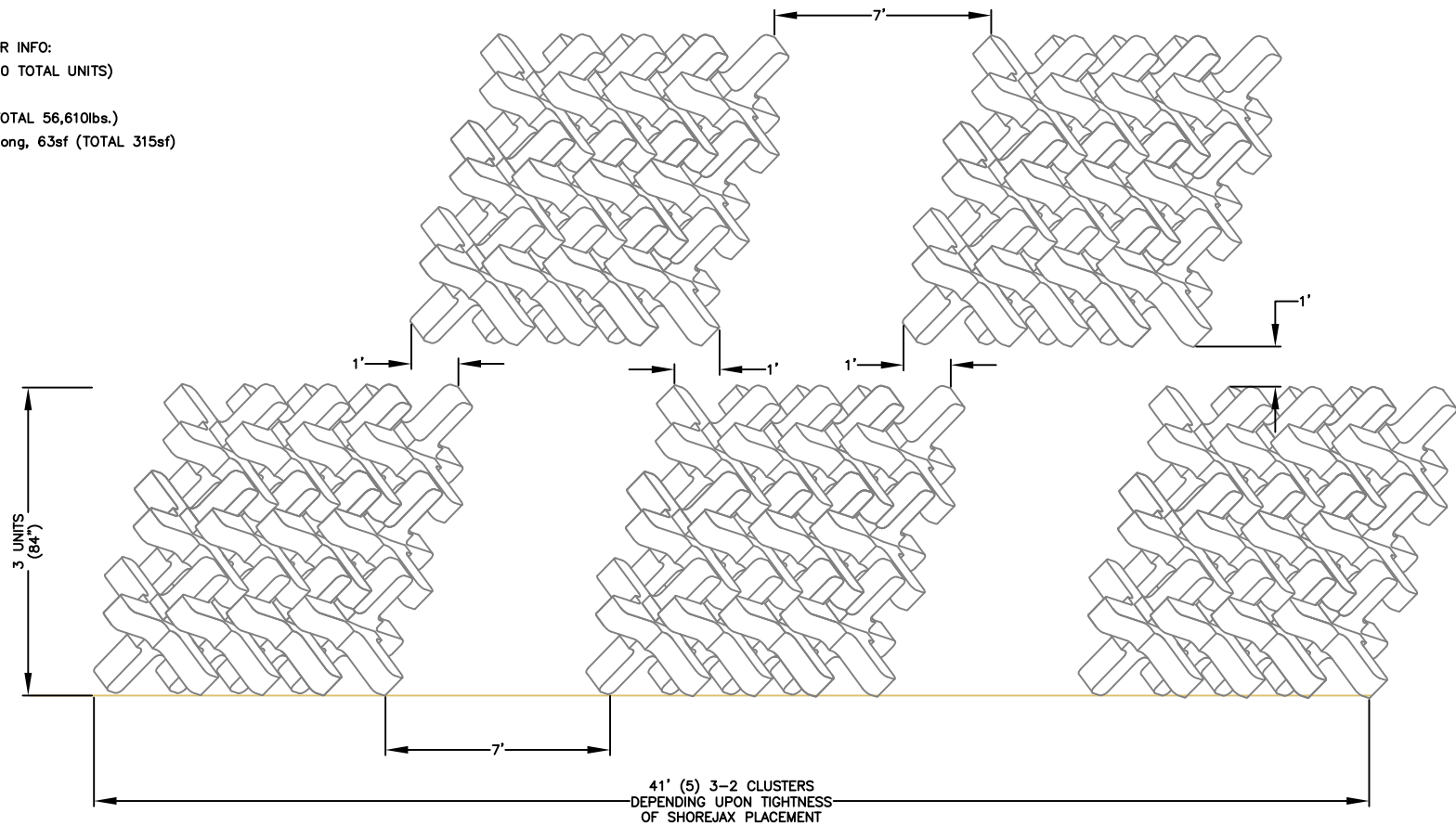
COPYRIGHT © ACF 2019 ALL RIGHTS RESERVED.

PREPARED FOR: **PREMIER CONCRETE PRODUCTS, INC.**  
 510 O' Neal Lane  
 Baton Rouge, LA 70819  
 225-273-3511 Phone  
 225-273-9888 Fax



TITLE: ShoreJax Detail 40' Long 3:2 Stack	DRAWN BY: MDD	DATE: 4/15/19	CAD FILE: Prem. Conrete
		CHECKED BY: BD	DRAWING NAME/NO: Artificial Reef
	SCALE: N.T.S.		


41' LONG (5) 3-2 CLUSTER INFO:  
 18 UNITS PER CLUSTER (90 TOTAL UNITS)  
 9.5FT<sup>3</sup> PER LF.  
 11,322lbs PER CLUSTER (TOTAL 56,610lbs.)  
 7ft wide X 5ft tall X 9ft long, 63sf (TOTAL 315sf)  
 180lbs. PER SQFT.

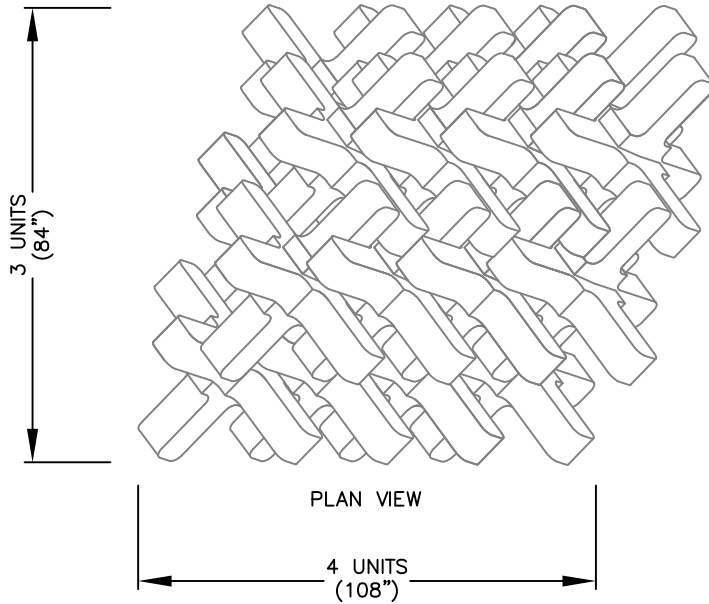


PREPARED FOR: **PREMIER CONCRETE PRODUCTS, INC.**  
 510 O' Neal Lane  
 Baton Rouge, LA 70819  
 225-273-3511 Phone  
 225-273-9888 Fax

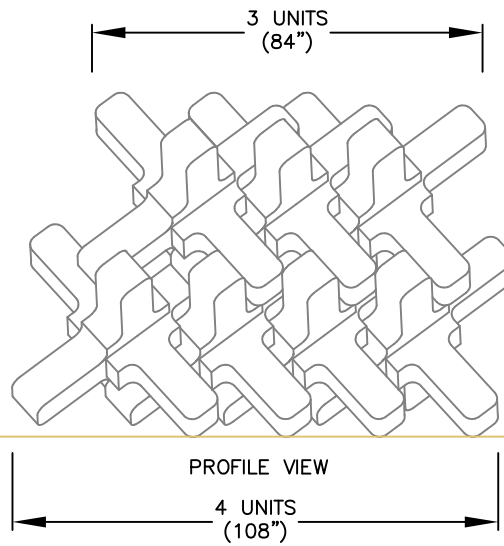
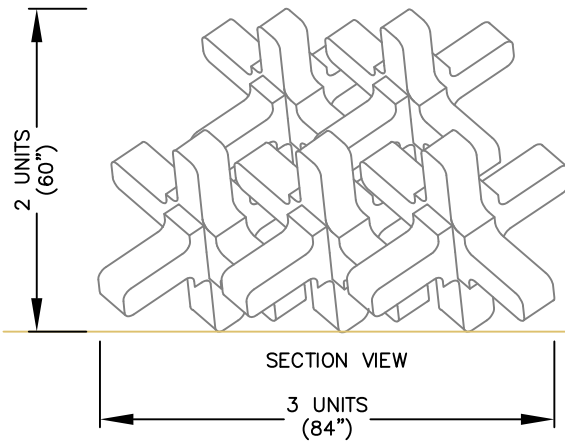


COPYRIGHT © ACF 2019 ALL RIGHTS RESERVED.

TITLE: ShoreJax 41' Long 3:2 Stack Detail 	DRAWN BY: MDD	DATE: 4/23/19	CAD FILE: Prem. Conrete
	CHECKED BY: BD	SCALE: N.T.S.	DRAWING NAME/NO: Artificial Reef




3-2 CLUSTER (4 UNITS LONG) INFO:  
 20 UNITS  
 VOLUME OF CLUSTER - 89.8ft<sup>3</sup>  
 VOLUME FROM BASE TO 2.52' - 61ft<sup>3</sup>  
 VOLUME FROM BASE TO 3.31' - 76.8ft<sup>3</sup>  
 VOLUME FROM BASE TO 4.1' - 86.2ft<sup>3</sup>



PREPARED FOR: **PREMIER CONCRETE PRODUCTS, INC.**  
 510 O' Neal Lane  
 Baton Rouge, LA 70819  
 225-273-3511 Phone  
 225-273-9888 Fax



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TITLE: ShoreJax Detail 3:2 Stack (4 Units Long)		DRAWN BY: MDD	DATE: 4/15/19	CAD FILE: Prem. Conrete
		CHECKED BY: BD	SCALE: N.T.S.	DRAWING NAME/NO: Artificial Reef

# Attachment 2

4/15/2019 - P:\Y-2019\2019.0143\DWG\3D MODEL\MARTIN\_ECOSYSTEMS\_FINAL.DWG

NOTES:



**T. BAKER SMITH**  
 AGENCY OF SOLUTIONS  
 412 South Van Ave, Houma, LA 70363  
 (885)568-1050 - tbsmith.com

REV. NO: 00  
 REV. DATE: --/--  
 REVISION DESCRIPTION:

REV. BY: --

DRAWN BY: J.M. APPROVED BY: J.M.C.

DATE: 4/15/2019 JOB NO: 2019.0143

DRAWING NAME: MARTIN\_ECOSYSTEMS\_FINAL.DWG

PROJECTION: SPCS LOUISIANA SOUTH ZONE (1702)

GEO. DATUM: NAD83 11VERT, DATUM: NAD83

GRID UNITS: US SURVEY FEET

SHEET NO: 1 OF 4



**MARTIN**  
 ecosystems

60" ECOBALE UNIT



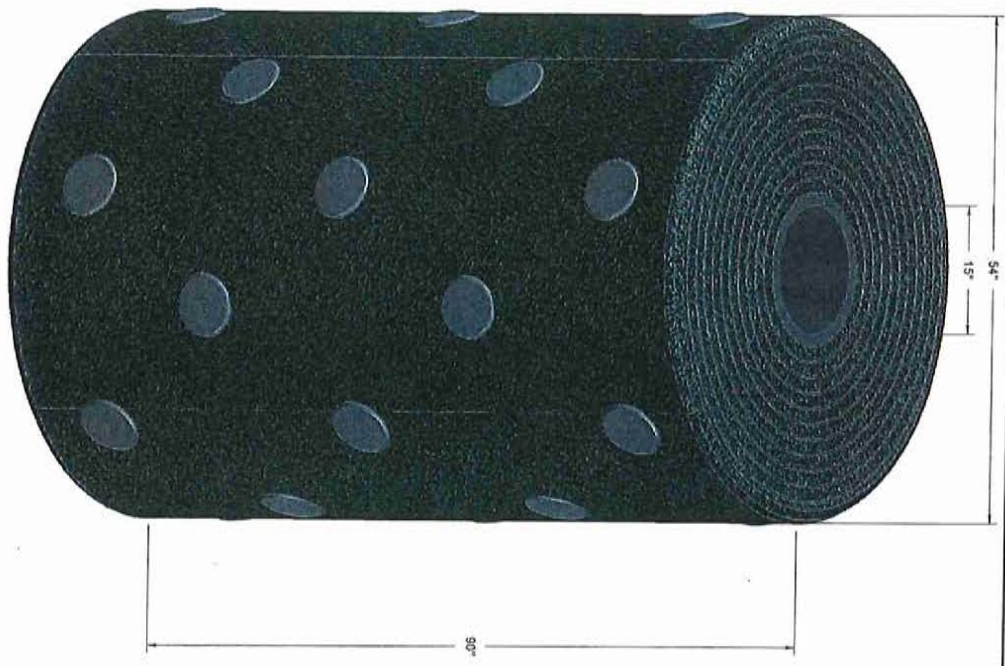
NOTES:



**T. BAKER SMITH**  
 A CENTURY OF SOLUTIONS  
 412 South Van Ave, Houma, LA 70363  
 (985)983-1050 - tbsmith.com

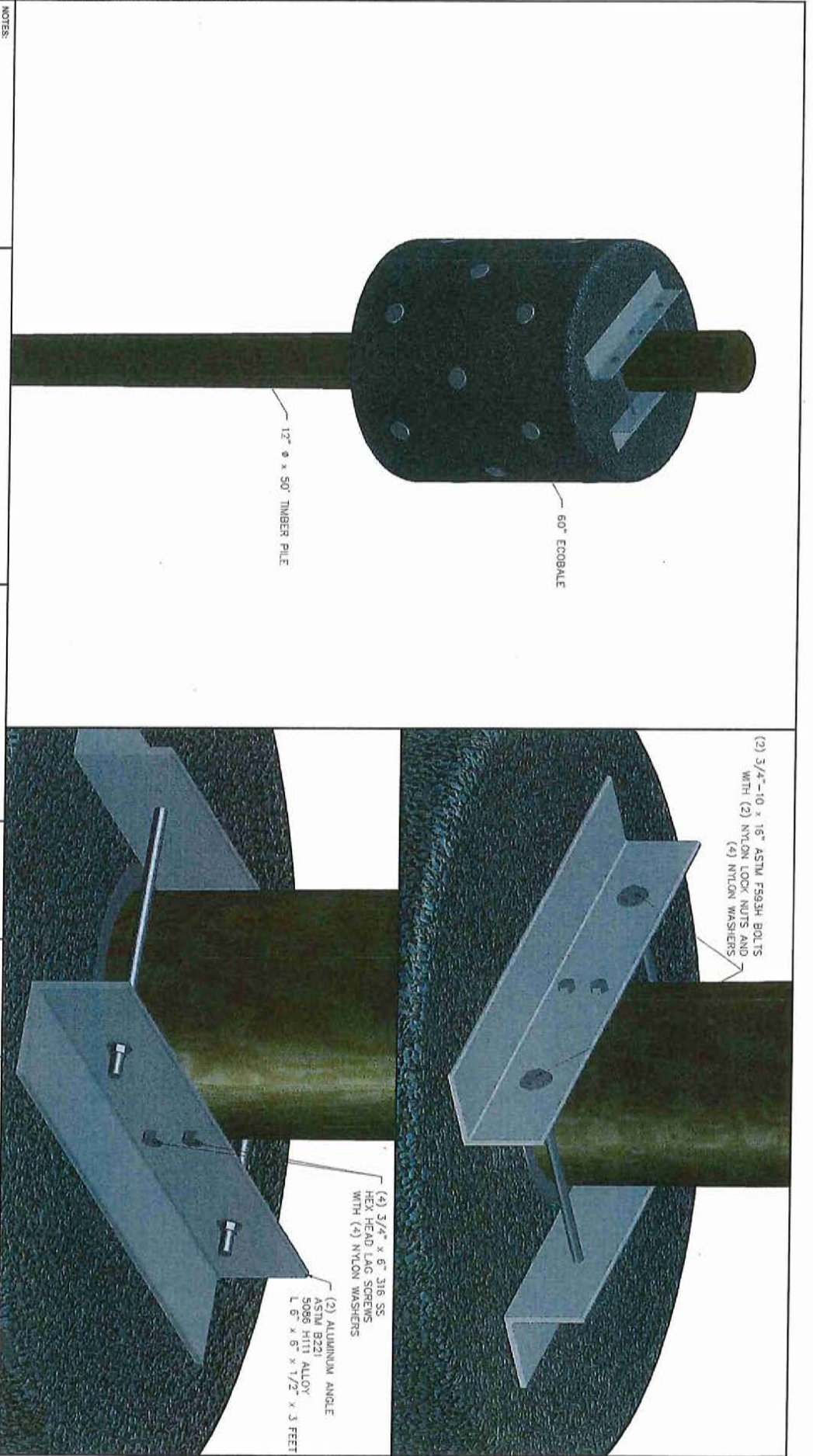
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DATE:	4/15/2019	JOB NO.:	2019.0143
DRAWING NAME:	MARTIN_ECOSYSTEMS_FINAL.DWG		
PROJECTION:	SPCS LOUISIANA SOUTH ZONE (1702)		
GEO. DATUM:	NAD83 1 VERT. DATUM: NAVD83		
GRID UNITS:	US SURVEY FEET		
SHEET NO.:	2	OF:	4





**MARTIN**  
 ecosystems

90" ECOBALE UNIT



NOTES:




**T. BAKER SMITH**  
 AGENCY OF SOLUTIONS  
 412 South Van Ave., Houma, LA 70363  
 (985)998-1050 - tbsmith.com

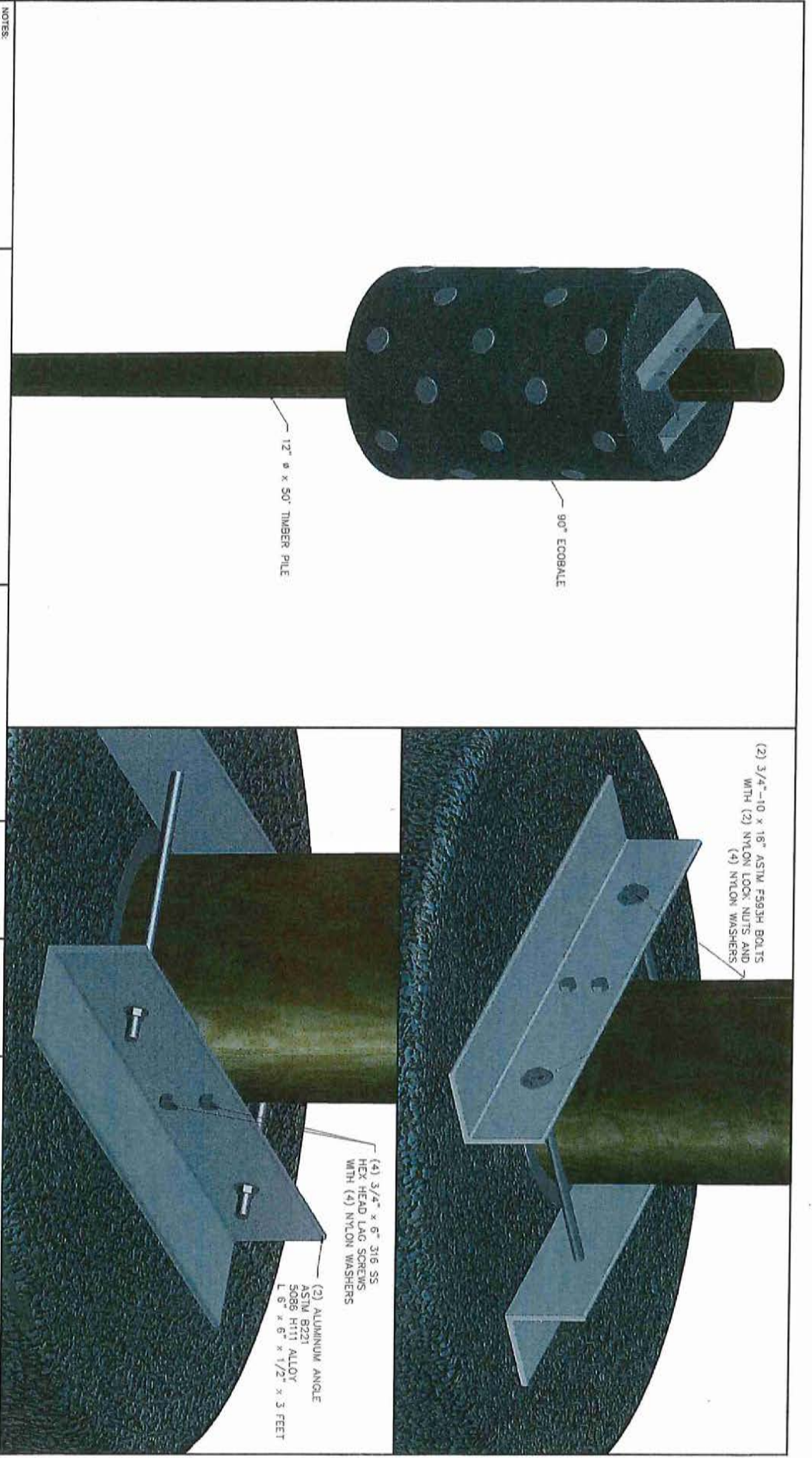
REV. NO.	REV. DATE	REV. BY
00	4-14	-

REVISION DESCRIPTION:

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DATE: 4/15/2019	JOB NO: 2019-0143
DRAWING NAME: MARTIN_ECOSYSTEMS_FINAL.DWG	PROJECTION: SPCS LOUISIANA SOUTH ZONE (1702)
GEO. DATUM: NAD83   VERT. DATUM: NAVD83	GRID UNITS: US SURVEY FEET
SHEET NO. 3	OF 4

**60" ECOBALE INSTALLATION**





12" Ø x 50' TIMBER PILE

90° ECOBALE

(2) 3/4"-10 x 18" ASTM F503H BOLTS  
WITH (2) NYLON LOCK NUTS AND  
(4) NYLON WASHERS

(4) 3/4" x 8" 316 SS  
HEX HEAD LAG SCREWS  
WITH (4) NYLON WASHERS

(2) ALUMINUM ANGLE  
ASTM B221  
5086 H111 ALLOY  
L 6" x 8" x 1/2" x 3 FEET

NOTES:



**T. BAKER SMITH**  
AGENCY OF SOLUTIONS  
412 South Van Ave, Houma, LA 70063  
(985) 288-1050 - [tb@mail.com](mailto:tb@mail.com)

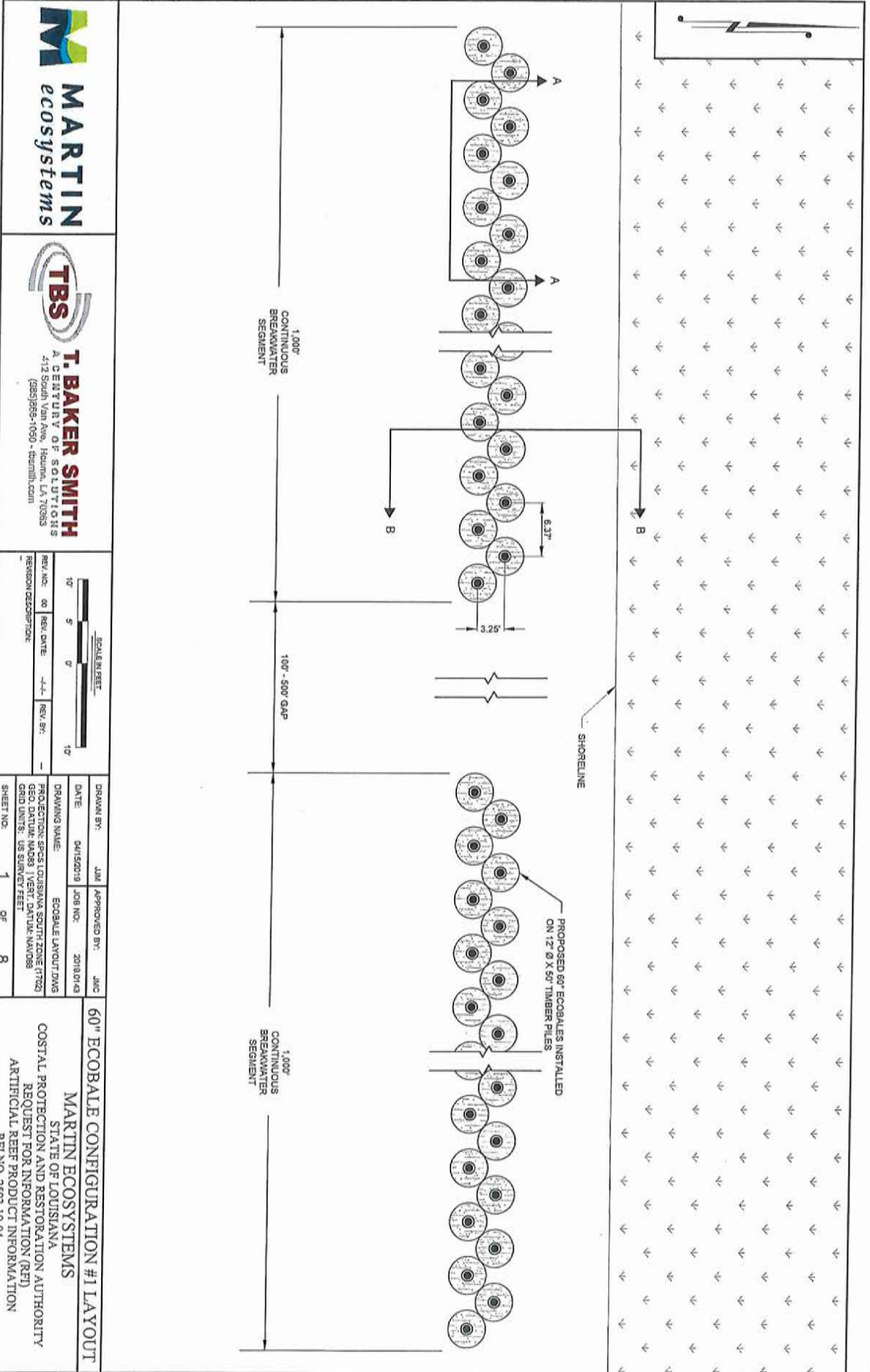
REV. NO.	DATE	REV. DATE	REV. BY:
01	4/15/2019		JAC

REVISION DESCRIPTION:

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DATE:	4/15/2019	JOB NO.:	2019.0143
DRAWING NAME:	MARTIN_ECOSYSTEMS_PNAI.CMG		
PROJECTION:	SPCS LOUISIANA SOUTH ZONE (1702)		
GEO. DATUM:	NAD83   VERT. DATUM: NAVD88		
GRID UNITS:	US SURVEY FEET		
SHEET NO.:	4	OF	4

90° ECOBALE INSTALLATION





**T. BAKER SMITH**  
 A CERTIFIED CONSULTING  
 412 South Van Ave, Houma, LA 70333  
 (985)963-1050 • tbsmith.com

REV. NO.	REV. DATE	REV. BY
00	J-L	-
REVISION DESCRIPTION:		

SCALE IN FEET	10'
0'	10'

DRAWN BY:	JLM	APPROVED BY:	JMC
DATE:	04/15/2019	JOB NO.:	2019.0143
DRAWING NAME:	ECOBAL LAYOUT.DWG	PROJECTION:	SPCS LOUISIANA SOUTH ZONE (1728)
GRID UNITS:	US SURVEY FEET	GRID UNITS:	WEST DATUM: NAVD88
SHEET NO.:	1	OF	8

**60" ECOBALE CONFIGURATION #1 LAYOUT**  
 MARTIN ECOSYSTEMS  
 STATE OF LOUISIANA  
 COSTAL PROTECTION AND RESTORATION AUTHORITY  
 REQUEST FOR INFORMATION (RFI)  
 ARTIFICIAL REEF PRODUCT INFORMATION  
 RFI NO. 2503-19-04



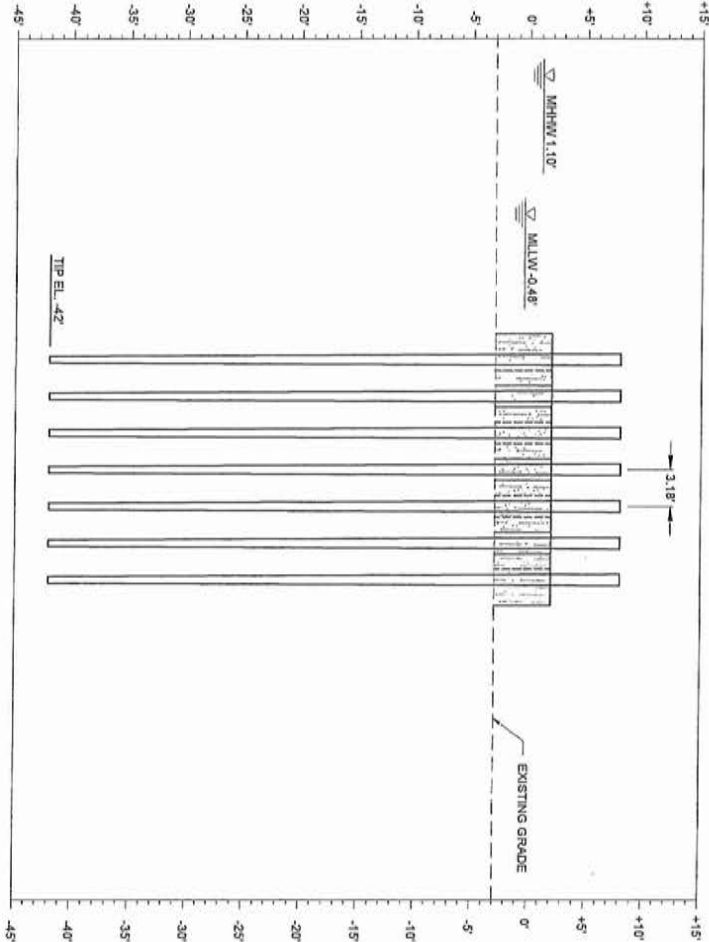


SCALE IN FEET	
10'	10'
5'	0'
0'	10'
REV. NO.	REV. DATE
00	----
REVISION DESCRIPTION	

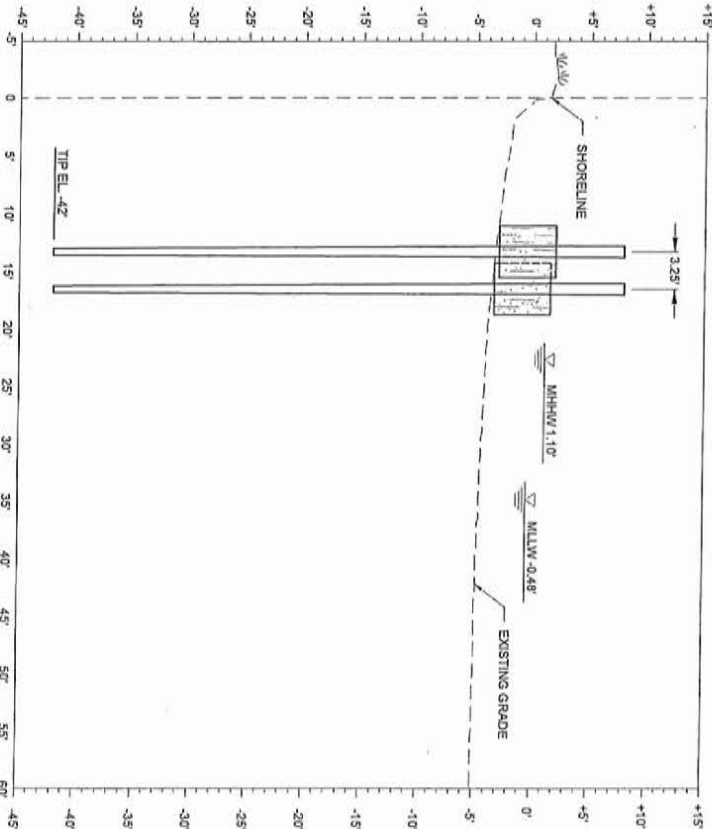
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DATE:	04/15/2019	JOB NO.:	2019/0143
DRAWING NAME:	ECOBAL LAYOUT.DWG		
PROJECT:	PROTECTION SPONSORSHIP SOUTH ZONE (TZS)		
GRID UNITS:	US SURVEY FEET		
SHEET NO.:	2	OF	8

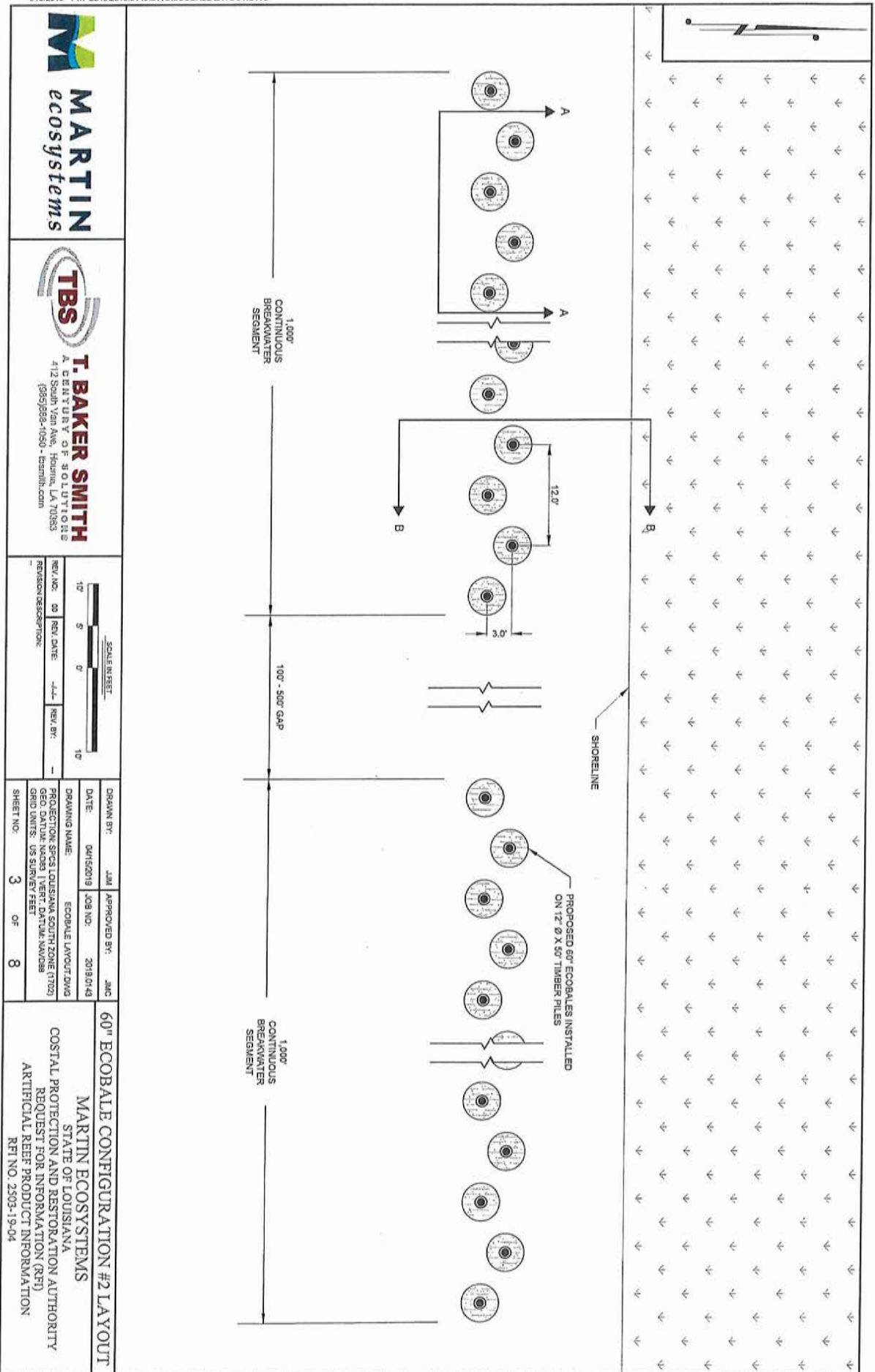
60" ECOBALE CONFIGURATION #1 SECTIONS  
 MARTIN ECOSYSTEMS  
 STATE OF LOUISIANA  
 COSTAL PROTECTION AND RESTORATION AUTHORITY  
 REQUEST FOR INFORMATION (RFI)  
 ARTIFICIAL REEF PRODUCT INFORMATION  
 RFI NO. 2503-19-04

TYPICAL SECTION A-A  
 PROFILE VIEW



TYPICAL SECTION B-B  
 CROSS - SECTION VIEW





SCALE IN FEET

10'	5'	0'	10'
-----	----	----	-----

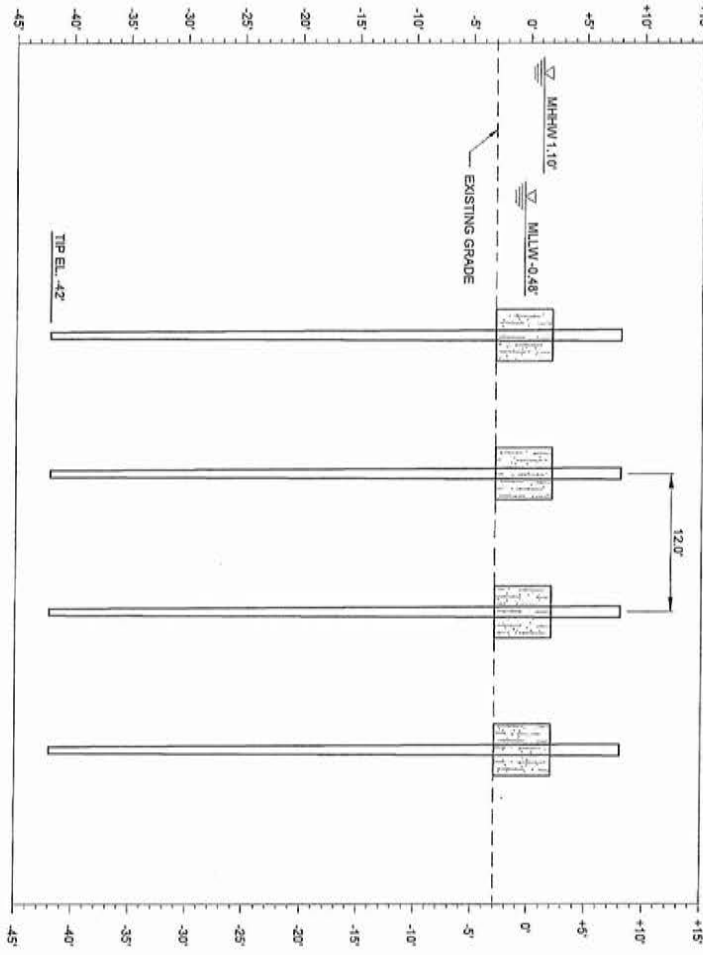
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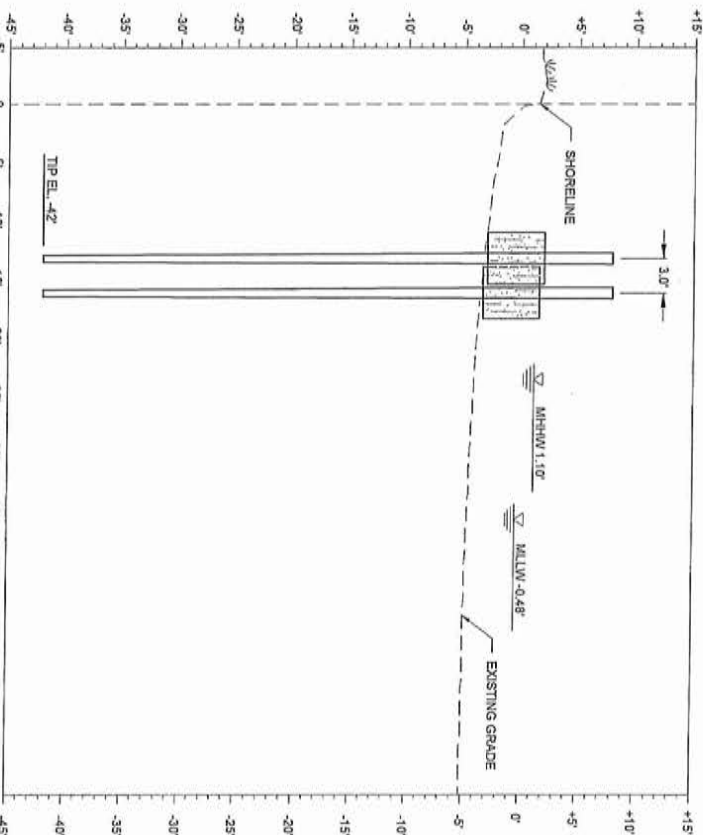
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DATE: 04/15/2019	JOB NO.: 2019.0143
DRAWING NAME: ECOBALE LAYOUT.DWG	
PROJECTION: SCS1 LOUISIANA EQUATORIAL ZONE (1703)	
GEO. DATUM: NAD83 11EFT DATUM: NAD83	
GRID UNITS: US SURVEY FEET	
SHEET NO.: 3	OF 8

60' ECOBALE CONFIGURATION #2 LAYOUT

MARTIN ECOSYSTEMS  
STATE OF LOUISIANA  
COSTAL PROTECTION AND RESTORATION AUTHORITY  
REQUEST FOR INFORMATION (RFI)  
ARTIFICIAL REEF PRODUCT INFORMATION  
RFI NO. 2503-19-04



TYPICAL SECTION A-A  
PROFILE VIEW



TYPICAL SECTION B-B  
CROSS - SECTION VIEW



SCALE IN FEET			
10'	5'	0'	10'
REV. NO.	00	REV. DATE	---
REVISION DESCRIPTION		REV. BY	--

DRAWN BY:	JLM	APPROVED BY:	JMC
DATE:	04/15/2019	JOB NO.:	20180743
DRAWING NAME:	ECOBAL LAYOUT.DWG		
PROJECTION:	NAD 83 / UTM ZONE 18N		
GEO DATUM:	NAD 83		
GRID UNITS:	US SURVEY FEET		
SHEET NO.:	4	OF	8

60" ECOBALE CONFIGURATION #2 SECTIONS

MARTIN ECOSYSTEMS  
STATE OF LOUISIANA  
COSTAL PROTECTION AND RESTORATION AUTHORITY  
REQUEST FOR INFORMATION (RFI)  
ARTIFICIAL REEF PRODUCT INFORMATION  
RFI NO. 2503-19-04



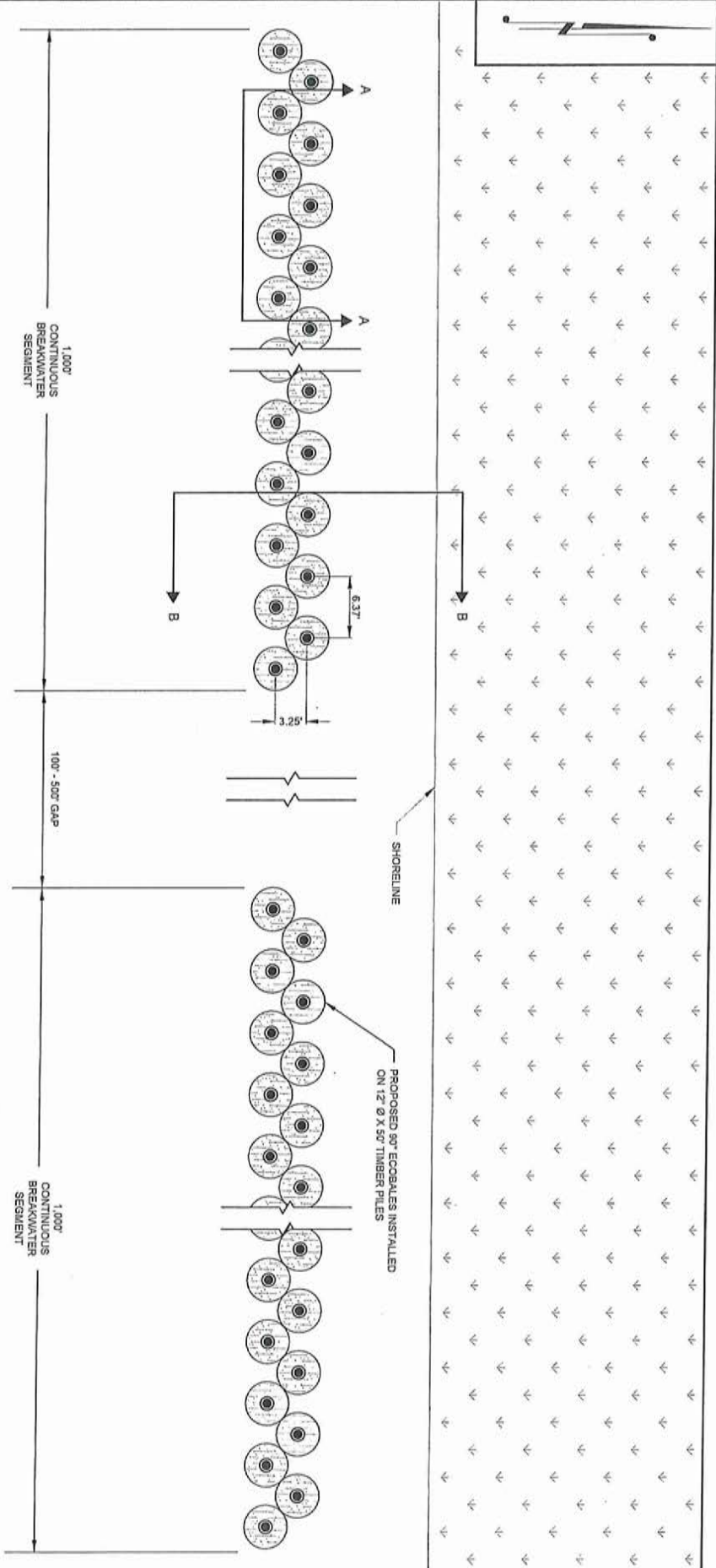
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REV. NO.	REV. DATE	REV. BY	REV. DATE
REVISION DESCRIPTION			

DRAWN BY:	JLM	APPROVED BY:	JMC
DATE:	04/15/2019	JOB NO.:	2019-0143
DRAWING NAME:	ECOBAL LAYOUT.DWG		
PROJECTION:	STATE OF LOUISIANA SOUTH ZONE (170Z)		
GRID UNITS:	US SURVEY FEET		
SHEET NO.:	5	OF	8

**90" ECOBALE CONFIGURATION #1 LAYOUT**

**MARTIN ECOSYSTEMS**

STATE OF LOUISIANA  
 COSTAL PROTECTION AND RESTORATION AUTHORITY  
 REQUEST FOR INFORMATION (RFI)  
 ARTIFICIAL REEF PRODUCT INFORMATION  
 RFI NO. 2503-19-04



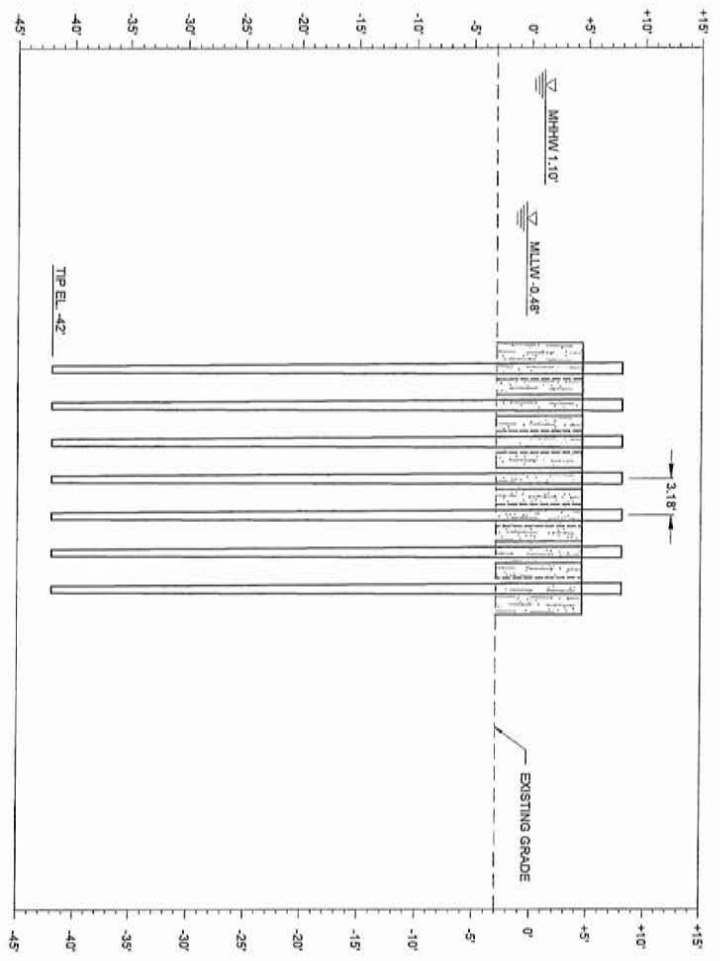


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REVISION DESCRIPTION:			

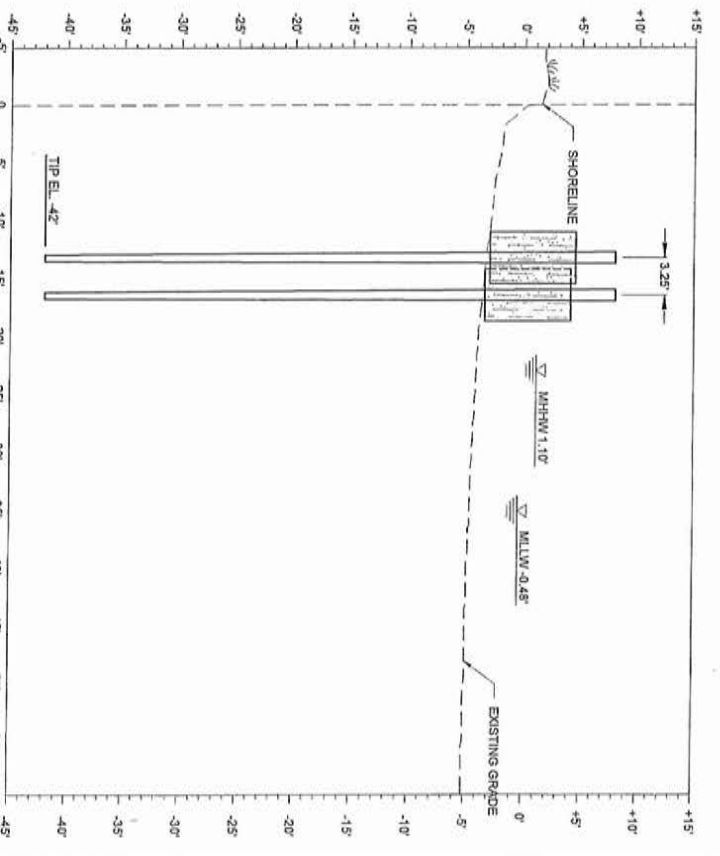
DATE:	04/15/2019	JOB NO.:	20190143
DRAWING NAME:	ECOBALE LAYOUT.DWG		
PROJECT:	PROTECTION SPDS LOUISIANA SOUTH ZONE (TT02)		
GRID UNITS:	1/8" SQUARE FEET		
SHEET NO.:	6	OF	8

90" ECOBALE CONFIGURATION #1 SECTIONS  
 MARTIN ECOSYSTEMS  
 STATE OF LOUISIANA  
 COSTAL PROTECTION AND RESTORATION AUTHORITY  
 REQUEST FOR INFORMATION (RFI)  
 ARTIFICIAL REEF PRODUCT INFORMATION  
 RFI NO. 2503-19-04

TYPICAL SECTION A-A  
 PROFILE VIEW



TYPICAL SECTION B-B  
 CROSS - SECTION VIEW

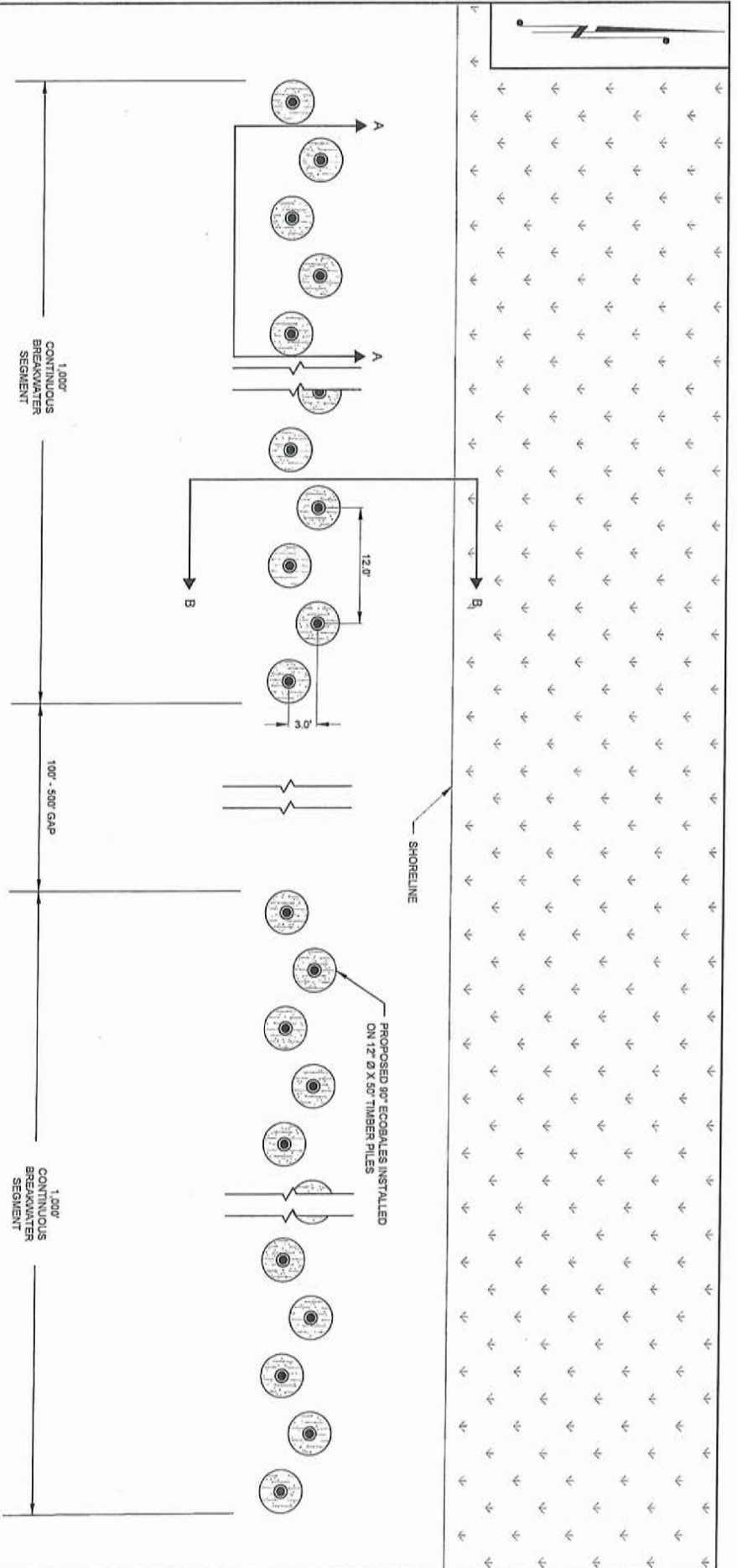




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REVISION DESCRIPTION:			

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DATE: 04/15/2019	CDS NO: 2019.0143
DRAWING NAME: ECOBALE LAYOUT.DWG	PROJECT NAME: MARTIN ECOSYSTEMS
PROJECT LOCATION: SOUTH ZONE (T702)	GRID UNITS: US SURVEY FEET
SHEET NO: 7	OF 8

**90" ECOBALE CONFIGURATION #2 LAYOUT**  
 MARTIN ECOSYSTEMS  
 STATE OF LOUISIANA  
 COSTAL PROTECTION AND RESTORATION AUTHORITY  
 REQUEST FOR INFORMATION (RFI)  
 ARTIFICIAL REEF PRODUCT INFORMATION  
 RFI NO. 2503-19-04



SCALE IN FEET			
10'	5'	0'	10'
REV. NO. 00	REV. DATE	REV. BY	REV. DATE
REVISION DESCRIPTION:			

DRAWN BY: JMI	APPROVED BY: JMC
DATE: 04/15/2019	CDS NO: 2019.0143
DRAWING NAME: ECOBALE LAYOUT.DWG	PROJECT NAME: MARTIN ECOSYSTEMS
PROJECT LOCATION: SOUTH ZONE (T702)	GRID UNITS: US SURVEY FEET
SHEET NO: 7	OF 8

**90" ECOBALE CONFIGURATION #2 LAYOUT**  
 MARTIN ECOSYSTEMS  
 STATE OF LOUISIANA  
 COSTAL PROTECTION AND RESTORATION AUTHORITY  
 REQUEST FOR INFORMATION (RFI)  
 ARTIFICIAL REEF PRODUCT INFORMATION  
 RFI NO. 2503-19-04



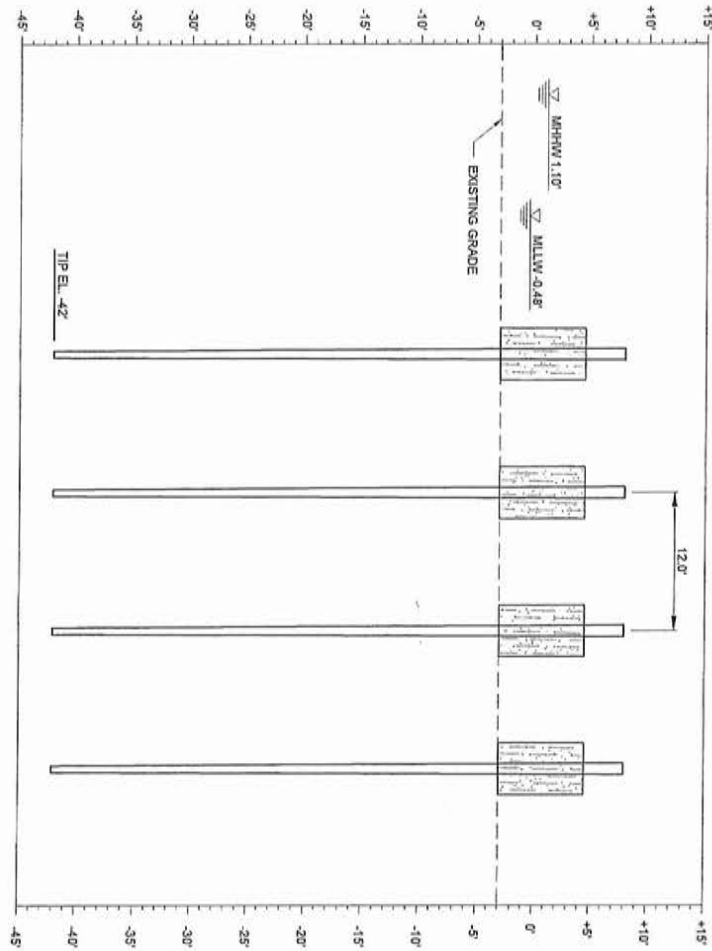
**T. BAKER SMITH**  
 A DIVISION OF SOLUTIONS  
 412 South Van Ave. Houma, LA 70393  
 (985)969-1050 - tbsmith.com



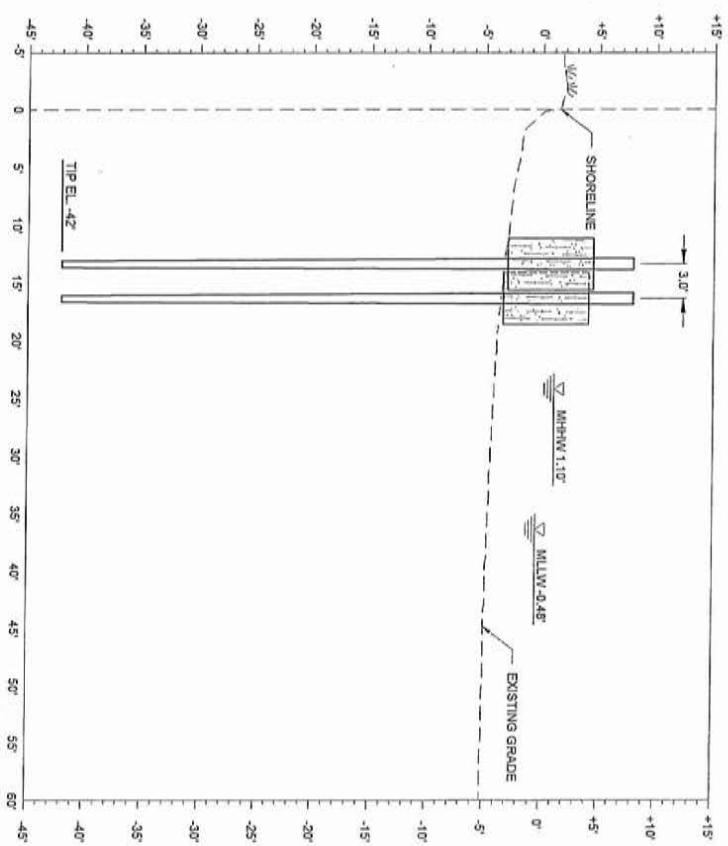
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DRAWING NAME:	ECOBALE LAYOUT.DWG	PROJ. NO.:	2019.0143
REQ. NO.:	01	REV. DATE:	---
REV. DESCRIPTION:		REV. BY:	
SHEET NO.:	8	OF	8

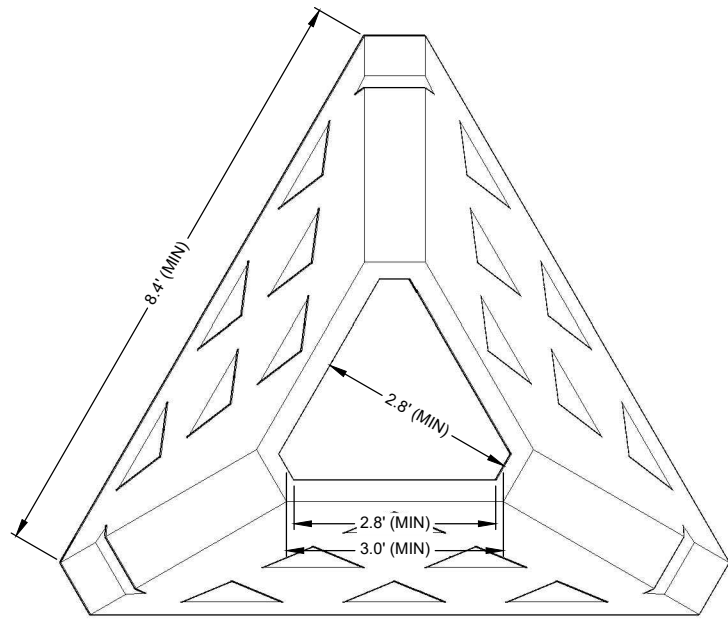
**90" ECOBALE CONFIGURATION #2 SECTIONS**  
 MARTIN ECOSYSTEMS  
 STATE OF LOUISIANA  
 COASTAL PROTECTION AND RESTORATION AUTHORITY  
 REQUEST FOR INFORMATION (RFI)  
 ARTIFICIAL REEF PRODUCT INFORMATION  
 RFI NO. 2503-19-04

TYPICAL SECTION A-A  
 PROFILE VIEW



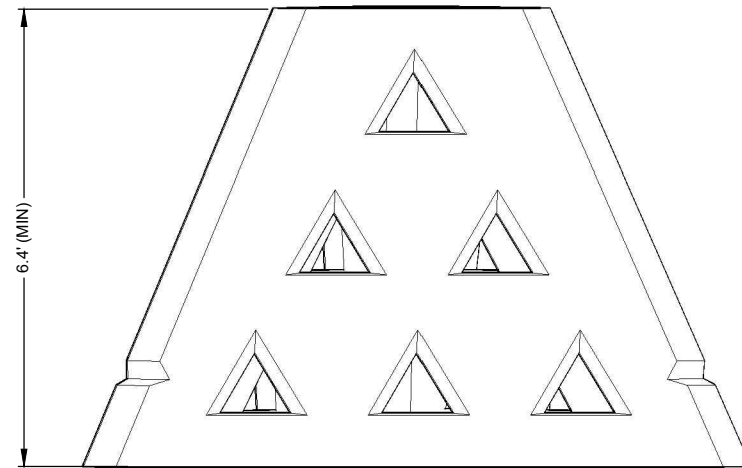
TYPICAL SECTION B-B  
 CROSS - SECTION VIEW





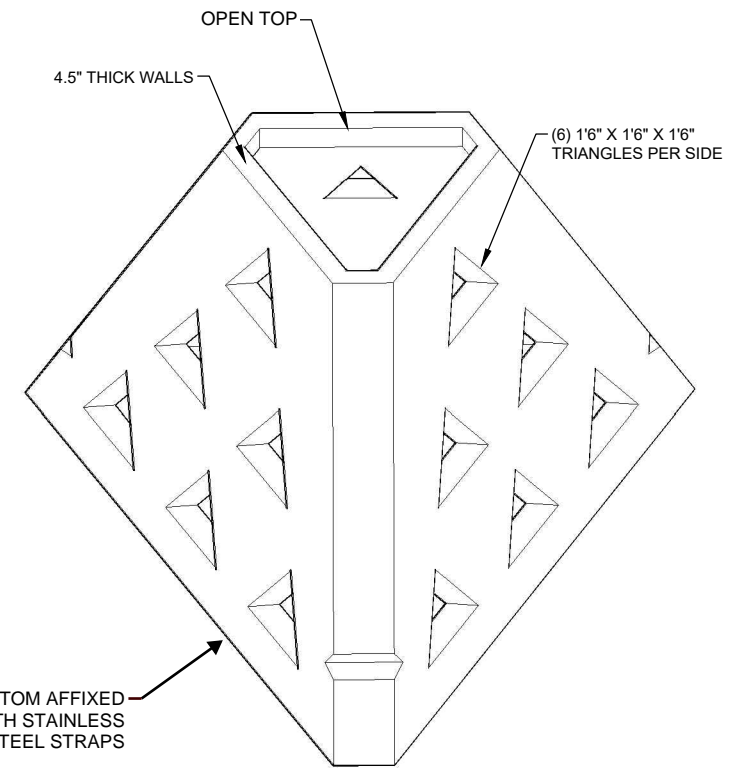
**1** DETAIL  
STANDARD WAD  
PLAN VIEW

0 16 36  
SCALE IN INCHES



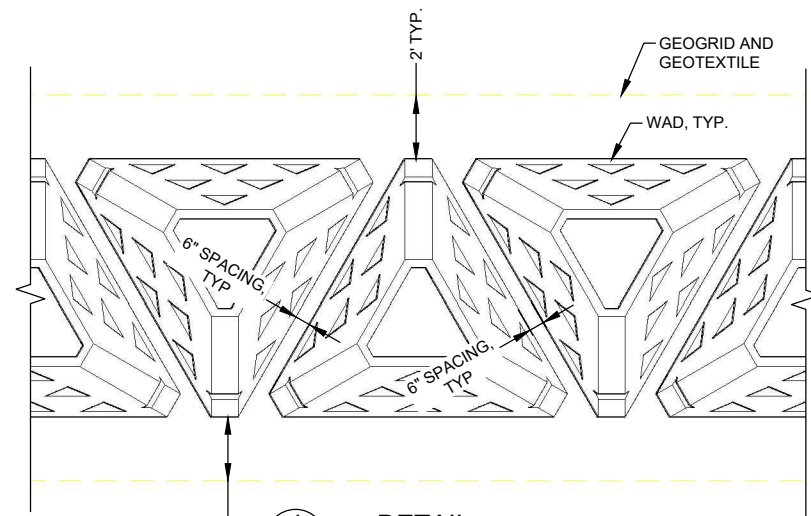
**2** DETAIL  
STANDARD WAD  
FRONT VIEW

0 16 36  
SCALE IN INCHES



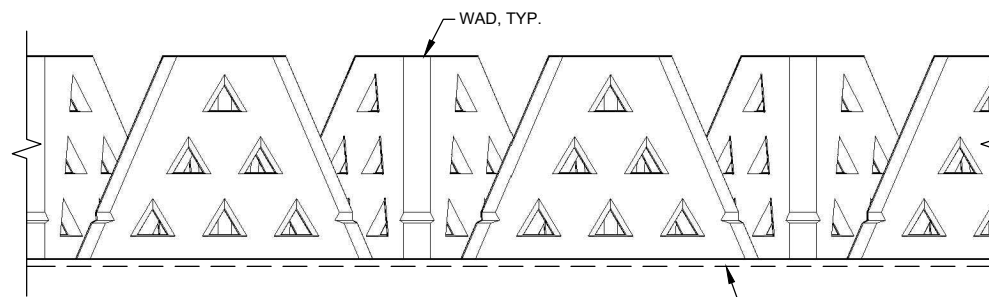
**3** DETAIL  
STANDARD WAD  
ISOMETRIC VIEW

0 16 36  
SCALE IN INCHES



**4** DETAIL  
STANDARD WAD  
PLAN VIEW AND SPACING

0 3 6  
SCALE IN FEET



**5** DETAIL  
STANDARD WAD  
ELEVATION VIEW

0 3 6  
SCALE IN FEET



10415 Morado Circle  
Building One, Suite 300  
Austin, Texas 78759  
Texas Registered Firm No. 12181

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F +1 (512) 342 9708  
www.mottmacamericas.com

Client

Rev	Date	Drawn	Description	Ch'k'd	App'd

Project Number	B/O	Total

Designed	Eng check		
Drawn	Coordination		
Dwg check	Approved		
Scale at ANSI D	Status	Rev	Security
Drawing Number			

Title  
**BILOXI**

**WAD DETAIL**





JOHN BEL EDWARDS

# State of Louisiana

GOVERNOR

October 20, 2020

Ms. Christy Fellas  
DWH Environmental Compliance Coordinator  
NOAA Restoration Center  
263 13<sup>th</sup> Ave. South  
St. Petersburg, FL 33701

Re: Biloxi Marsh Living Shoreline Restoration Project from Louisiana TIG Restoration Plan and Environmental Assessment #6 – Additional Ecobale Detail

Dear Ms. Fellas:

I am sending an updated version of the product detail sheets for the Martin Ecosystems Ecobale unit. The product detail drawings originally included and available at the time of the PO-0174 Biloxi Marsh Living Shoreline Alternative Biological Evaluation Form did not have the level of detail as shown herein. In addition, we have included information on the product manufacturing process and quality assurance and control measures proposed to ensure product integrity.

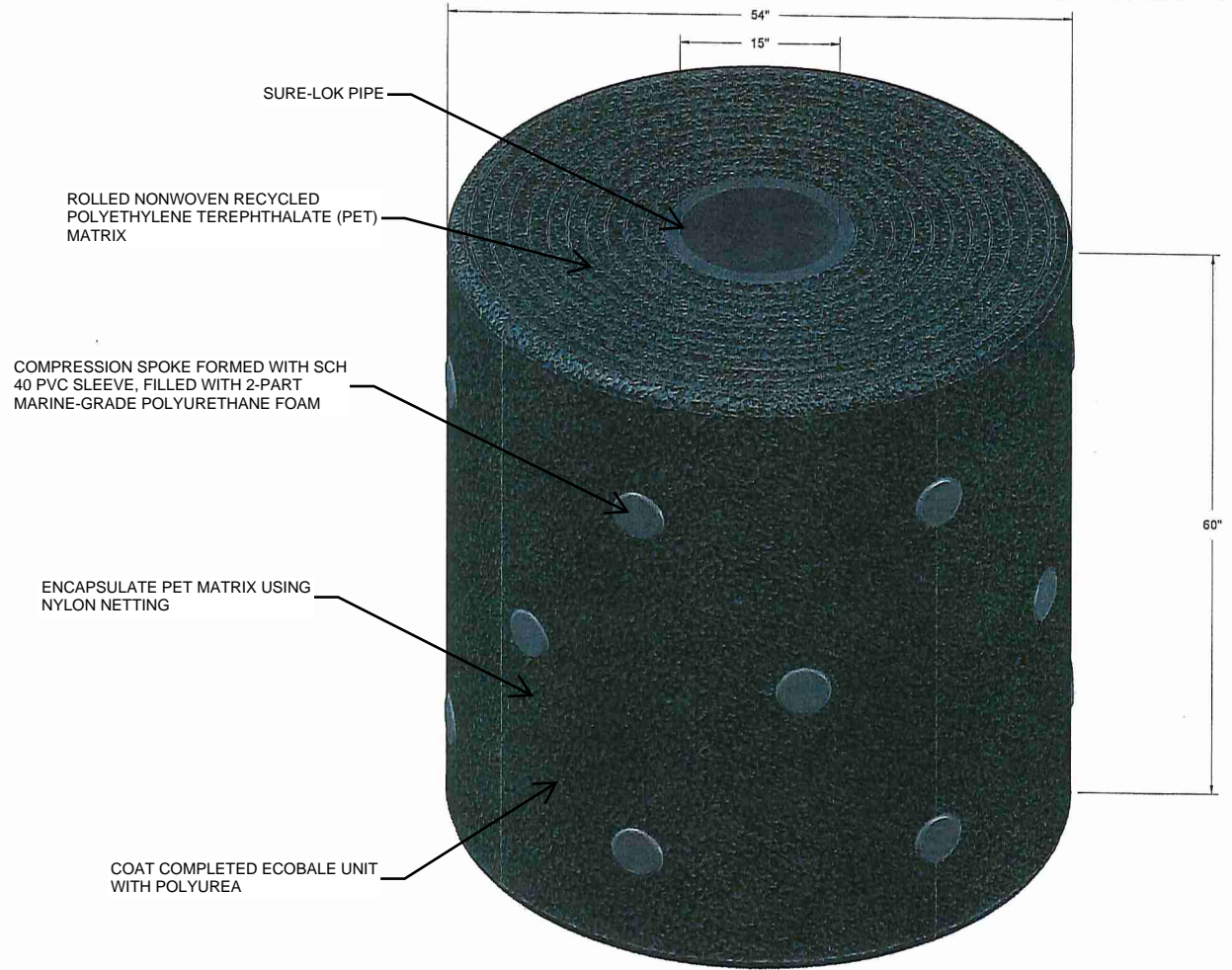
Should you have any questions or comments, please contact me at (225) 342-1952 or e-mail me at [micaela.coner@la.gov](mailto:micaela.coner@la.gov).

Sincerely,

Micaela Coner, PMP  
Coastal Resources Scientist Manager  
Project Management Division  
Coastal Protection & Restoration Authority

Enclosure(s)

4/15/2019 - P:\Y-2019\018.0143\DWG3D MODEL\MARTIN\_ECOSYSTEMS\_FINAL.DWG



NOTES:

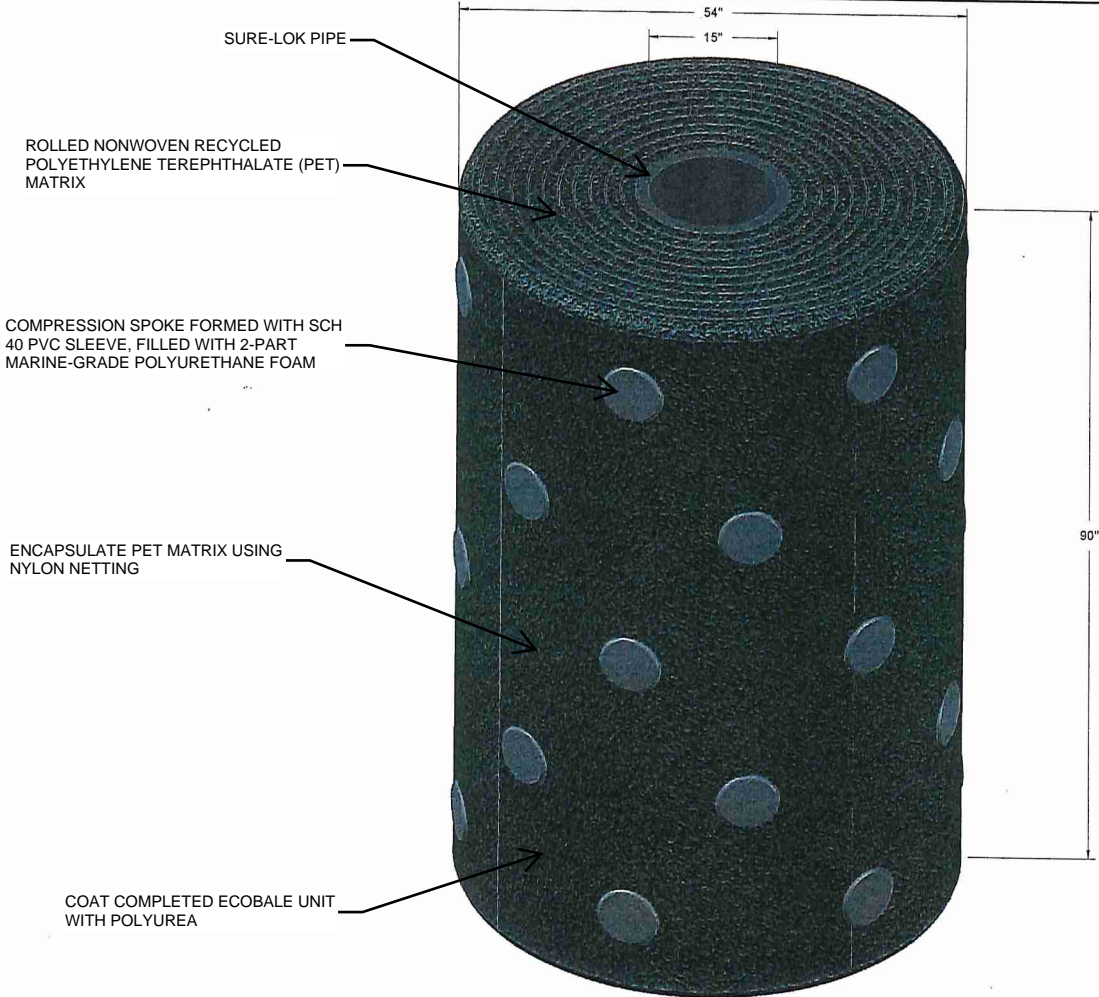
**T. BAKER SMITH**  
A CENTURY OF SOLUTIONS  
412 South Van Ave. Houma, LA 70363  
(985)968-1050 - tbsmith.com

REV. NO:	00	REV. DATE:	--/--	REV. BY:	--
REVISION DESCRIPTION:					
-					

DRAWN BY:	JJM	APPROVED BY:	JMC
DATE:	4/15/2019	JOB NO:	2019.0143
DRAWING NAME: MARTIN_ECOSYSTEMS_FINAL.DWG			
PROJECTION: SPCS LOUISIANA SOUTH ZONE (1702)			
GEO. DATUM: NAD83   VERT. DATUM: NAVD88			
GRID UNITS: US SURVEY FEET			
SHEET NO:	1	OF	4

60" ECOBALE UNIT

4/15/2019 - PLY-20190019.0143DWG3D MODEL\MARTIN\_ECOSYSTEMS\_FINAL.DWG




NOTES:

**TBS**  
**T. BAKER SMITH**  
 A CENTURY OF SOLUTIONS  
 412 South Van Ave, Houma, LA 70363  
 (985)868-1050 - tbsmith.com

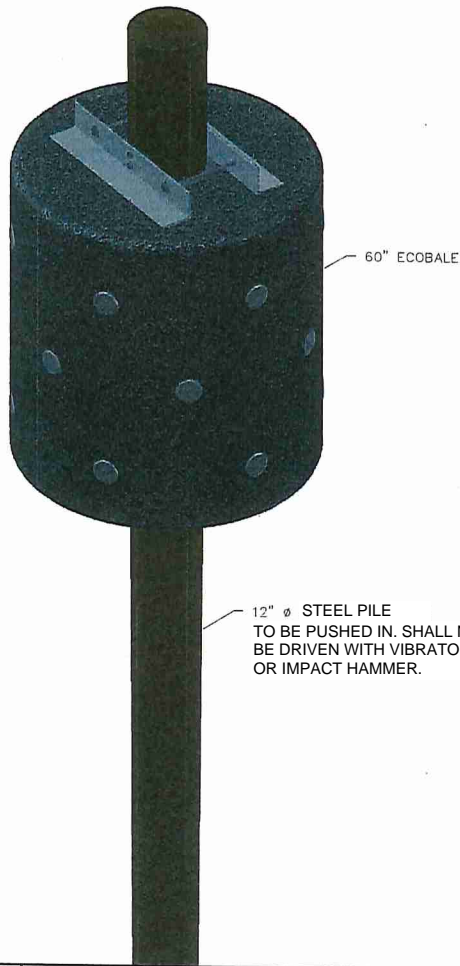
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REVISION DESCRIPTION:		
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DATE: 4/15/2019	JOB NO: 2019.0143
DRAWING NAME: MARTIN_ECOSYSTEMS_FINAL.DWG	
PROJECTION: SPCS LOUISIANA SOUTH ZONE (1702)	
GEO. DATUM: NAD83   VERT. DATUM: NAVD88	
GRID UNITS: US SURVEY FEET	
SHEET NO: 2	OF 4

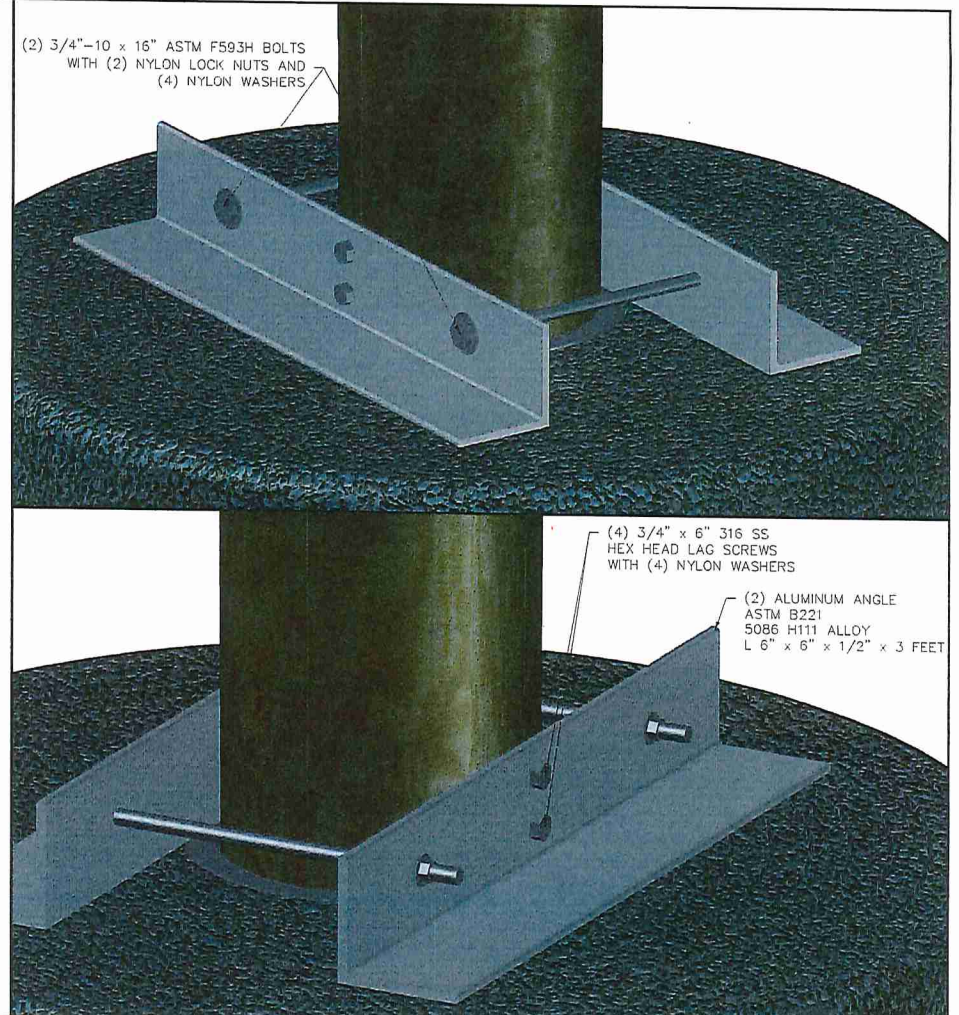
90" ECOBALE UNIT



4/15/2019 - PLY-20190150143DWGSD MODEL\MARTIN\_ECOSYSTEMS\_FINAL.DWG



12"  $\phi$  STEEL PILE  
TO BE PUSHED IN. SHALL NOT  
BE DRIVEN WITH VIBRATORY  
OR IMPACT HAMMER.



(2) 3/4"-10 x 16" ASTM F593H BOLTS  
WITH (2) NYLON LOCK NUTS AND  
(4) NYLON WASHERS

(4) 3/4" x 6" 316 SS  
HEX HEAD LAG SCREWS  
WITH (4) NYLON WASHERS

(2) ALUMINUM ANGLE  
ASTM B221  
5086 H111 ALLOY  
L 6" x 6" x 1/2" x 3 FEET

NOTES:



**T. BAKER SMITH**  
A CENTURY OF SOLUTIONS  
412 South Van Ave, Houma, LA 70363  
(985)968-1050 - tbsmith.com

REV. NO: 00	REV. DATE: --/--	REV. BY: --
REVISION DESCRIPTION:		

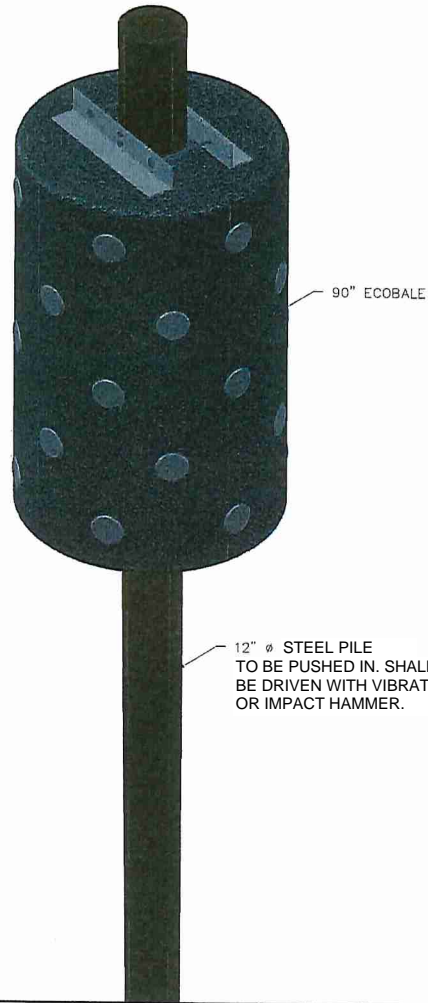
DRAWN BY: JJM	APPROVED BY: JMC
DATE: 4/15/2019	JOB NO: 2019.0143
DRAWING NAME: MARTIN_ECOSYSTEMS_FINAL.DWG	
PROJECTION: SPCS LOUISIANA SOUTH ZONE (1702)	
GEO. DATUM: NAD83   VERT. DATUM: NAVD88	
GRID UNITS: US SURVEY FEET	
SHEET NO: 3	OF 4

60" ECOBALE INSTALLATION



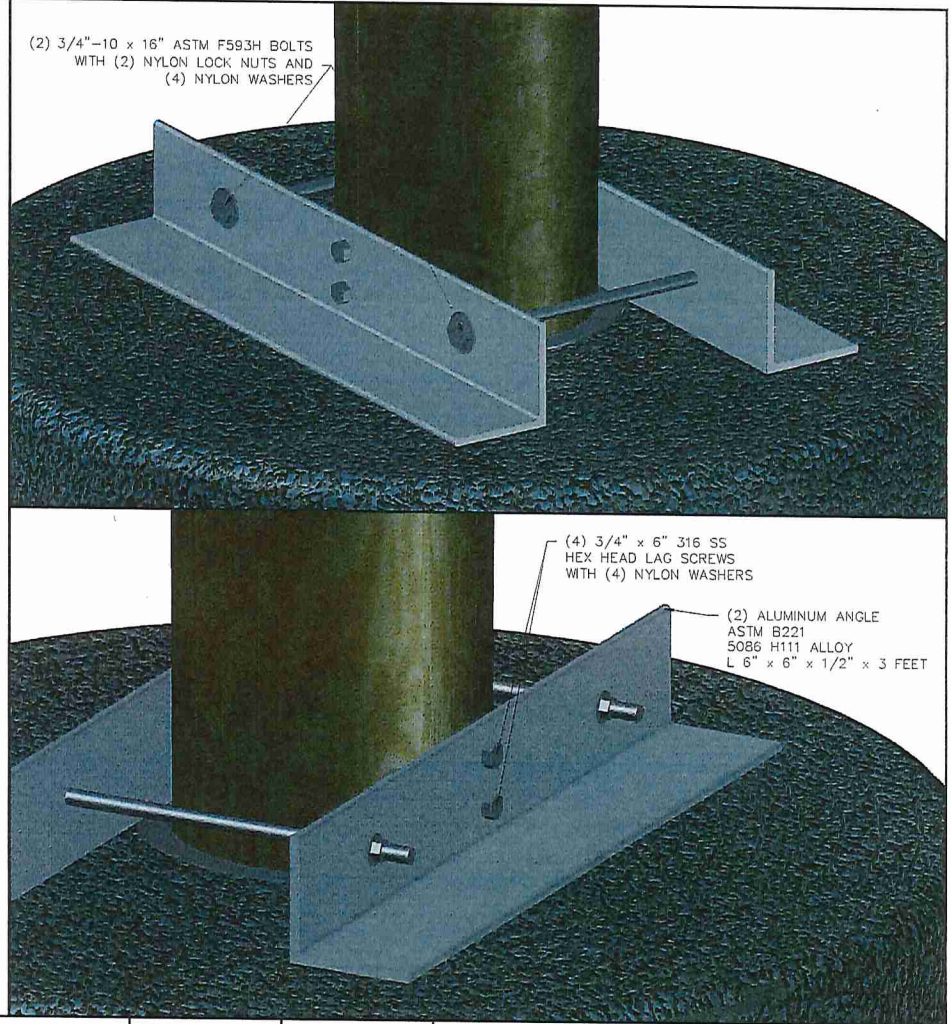
**MARTIN**  
ecosystems

4/15/2019 - P.J.Y. - 2019010190143DVG3D MODEL\MARTIN\_ECOSYSTEMS\_FINAL.DWG



90" ECOBALE

12" Ø STEEL PILE  
TO BE PUSHED IN. SHALL NOT  
BE DRIVEN WITH VIBRATORY  
OR IMPACT HAMMER.



(2) 3/4"-10 x 16" ASTM F593H BOLTS  
WITH (2) NYLON LOCK NUTS AND  
(4) NYLON WASHERS

(4) 3/4" x 6" 316 SS  
HEX HEAD LAG SCREWS  
WITH (4) NYLON WASHERS

(2) ALUMINUM ANGLE  
ASTM B221  
5086 H111 ALLOY  
L 6" x 6" x 1/2" x 3 FEET

NOTES:



**T. BAKER SMITH**  
A CENTURY OF SOLUTIONS  
412 South Van Ave., Houma, LA 70363  
(985)868-1050 - tbsmith.com

REV. NO: 00	REV. DATE: --/--	REV. BY: --
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REVISION DESCRIPTION:

DRAWN BY: JJM	APPROVED BY: JMC
DATE: 4/15/2019	JOB NO: 2019.0143
DRAWING NAME: MARTIN_ECOSYSTEMS_FINAL.DWG	
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GEO. DATUM: NAD83   VERT. DATUM: NAVD88	
GRID UNITS: US SURVEY FEET	
SHEET NO: 4	OF 4

90" ECOBALE INSTALLATION



### Description of EcoBale Manufacturing Process

1. Cut Sure-Lok pipe to proper length.
2. Spool nonwoven recycled polyethylene terephthalate (PET) matrix onto Sure-Lok pipe.
3. Drill compression spoke holes through PET matrix. The 5 ft tall EcoBale units have 18 spokes while the 7.5 ft tall EcoBale units have 30 spokes.
4. Insert Schedule 40 PVC into drilled holes.
5. Encapsulate PET matrix and PVC with nylon netting.
6. Inject 2-part marine-grade polyurethane foam into the PVC sleeves. Fill until foam forms a flat circular pancake and adheres to the nylon netting.
7. Spray EcoBale with polyurea and allow to cure. Polyurea is applied at 150 deg F which shrinks the net, bonding it to the PET matrix. The polyurea is marine-grade and ultraviolet (UV) light stabilized to protect against degradation.

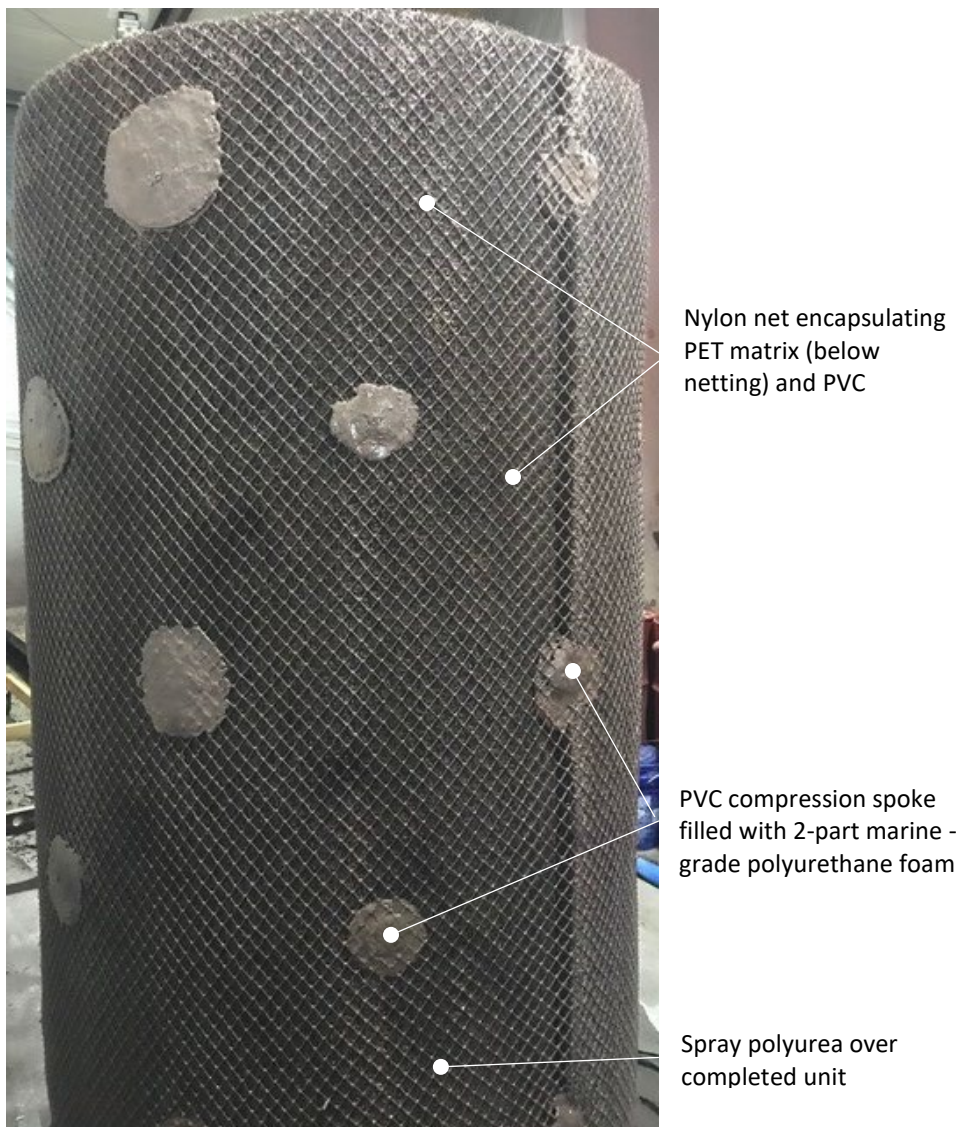


Figure 1. Completed EcoBale unit.



*Figure 2. EcoBale unit being placed on a timber pile.*

EcoBale units will be rejected under the following criteria:

1. Foam counts are greater than 15% of the targeted count.
2. Polyurea counts are less than 5% of the targeted count.
3. Weights are not in compliance with targeted weight.
4. Encapsulated netting is cut or torn.
5. Encapsulated netting is separated from the surface of the EcoBale unit at one or more compression spoke.

	<b>EcoBale Manufacturing</b>	Document No.	ME-MFG-5
		Origination Date	April 27, 2018
		Revision Date	October 8, 2020
QA/QC Tracking & Inspection for EcoBale Manufacturing		Page	1

## Standard of Quality

A strict standard of quality will be enforced in the manufacturing of each and every EcoBale.

A. **Materials**-Material will be inspected upon arrival from supplier for defects and damage. In addition, material analysis documentation and material certificates will be collected and reviewed by QA/QC Supervisor to verify material standards have been met.

1. Material Certificates will be collected and kept for the following:

- Matrix
- Foam
- HDPE Pipe
- Strapping
- PVC Pipe
- Netting
- Polyurea

2. Material Test Reports will be collected and kept for the following:

- Matrix Analysis
- Foam QC
- Netting Inspeicton
- Polyurea SOP-11
- Polyurea SPO-09

B. **Manufacturing**-Throughout the manufacturing process there will be QA/QC checkpoints to ensure that EcoBale are manufactured to the required weight, size and standard, without defects. These checkpoints will align with the Project Unit Replacement Criteria for EcoBale Rejection. The checkpoints are as follows:

1. Identification

- Each EcoBale will be numbered according to Martin Ecosystems' Product Numbering/Tracking Policy. This includes Project number and product number. This number will be inside the center tube.
- Each EcoBale will be identified and marked with a permanent paint marker inside the corrugated pipe with a Project # & Bale #. Example, EcoBale 275-1, 275-2, 275-3 and so on.
- Each Project or Job will have an **EcoBale QA/QC Checklist** for documentation of measurable as the EcoBale goes through each step of the manufacturing process.

2. Spooling Station

- Banding is aligned inside the tubing groove.
- Customized 4'5" diameter plates are placed on both sides of the matrix as it is rolled onto the center pipe, providing a standard template for measuring each



EcoBale's diameter during production. The technician will cut the matrix at a pre-measured 4'5" diameter.

- Each EcoBale diameter will be measured following rolling of matrix onto corrugated pipe for consistency and tight wrapping. This measurement will be documented on the **EcoBale QA/QC Checklist**.
  - **As per the Unit Replacement Criteria, EcoBales will be rejected if the diameter is <4'5**
3. Drilling Station
    - Each EcoBale spoke will be inspected for proper cutting, PVC pipe insertion and replacement of 3 matrix dots into PVC pipe. This visual inspection will be signed off on the **EcoBale QA/QC Checklist**.
  4. Netting Station
    - Each EcoBale will be inspected following the placement of netting. This will be a visual inspection to confirm that the ropes of the netting are tied on top and bottom of the EcoBale and that the netting is free of tears. This will be signed off on the **EcoBale QA/QC Checklist**.
  5. Foaming Station
    - The Graco Foaming machine used to spray foam automatically counts the amount of foam being injected into the EcoBale. After each EcoBale has been foamed, the amount of foam sprayed will be taken from the foam machine and recorded on the **EcoBale QA/QC Checklist**.
    - **As per the Unit Replacement Criteria, EcoBales will be rejected if the foam count is greater than 15% of the targeted round count for the specific EcoBale size.**
    - Each foam spoke will be inspected to confirm that a "pancake" has occurred and that the netting has been captured and is secure within the pancake of foam.
  6. Polyurea Station
    - The Graco Foaming machine used to spray polyurea automatically counts the amount of polyurea coating the EcoBale. After each EcoBale has been fully coated with the required amount of milage, the amount of polyurea sprayed will be taken from the polyurea machine and recorded on the **EcoBale QA/QC Checklist**.
    - **As per the Unit Replacement Criteria, EcoBales will be rejected if the polyurea count is less than 5% of the targeted round coat for the specific EcoBale size.**
    - After polyurea has been applied, each EcoBale will be inspected for bare spots. EcoBale will be re-sprayed if bare spots exist.
  7. Weigh Station
    - Following the 24 hour curing time, every EcoBale will be weighed and that weight will be recorded on the **EcoBale QA/QC Checklist**.
    - **As per the Unit Replacement Criteria, if any EcoBale weighs +/- 10% of the targeted weight for the specific EcoBale size, it will be rejected.**

8. Diameter Measure

- Following completion of manufacture, every EcoBale diameter will be measured to ensure correct size and diameter will be recorded on the **EcoBale QA/QC Checklist**.
- **As per the Unit Replacement Criteria, EcoBales will be rejected if the diameter is <4'5".**

9. Inspection Stamp

- Following the completion of the above checkpoints and manufacturing, every EcoBale will be stamped as inspected/approved for delivery.









# Biological Evaluation Form

## Deepwater Horizon Oil Spill Restoration

### U.S. Fish and Wildlife Service & National Marine Fisheries Service

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This form will be filled out by the Implementing Trustee and used by the regulatory agencies. The form will provide information to initiate informal Section 7 consultations under the Endangered Species Act (ESA) and may be used to document a No Effect determination or to initiate pre-consultation technical assistance.

It is recommended that this form also be completed to inform and evaluate additional needs for compliance with the following authorities: Migratory Bird Treaty Act (MBTA), Marine Mammal Protection Act (MMPA), Coastal Barrier Resources Act (CBRA), Bald and Golden Eagle Protection Act (BGEPA) and Section 106 of the National Historic Preservation Act (NHPA).

Further information may be required beyond what is captured on this form. Note: if you need additional space for writing, please attach pages as needed.

For assistance, please contact the compliance liaisons  
USFWS: Erin Chandler at erin\_chandler@fws.gov  
NMFS: Christy Fellas at christina.fellas@noaa.gov

---

#### A. Project Identification

Federal Action Agency(one or more):USFWS  NOAA  EPA  USDA

Implementing Trustee(s): The Louisiana Coastal Protection and Restoration Authority (CPRA)

Contact Name: Chris Barnes Phone: 225-342-9036 Email: chris.barnes@la.gov

Project Name: BA-0197 West Grand Terre Beach Nourishment and Stabilization Project

DIVER ID# [Click to enter text](#) TIG: Louisiana TIG Restoration Plan #6 [Click here to enter text](#)

#### B. Project Phase and Supporting Documentation

Please choose the box which best describes the project status, as proposed in this BE form:

Planning/Conceptual  Construction/Implementation  Engineering & Design

If "Engineering & Design" was selected, please describe the level of design that has been completed and is available for review:

The West Grand Terre Project is currently in the 95% design phase for the Beach Nourishment and Stabilization design (see Coastal Engineering Consultants Inc., 2019a). The Structure Removal Design is in the initial stages of the preliminary design phase and Final Plans and Specifications were completed by the end of 2019. Construction permit applications were submitted in November 2018; The Construction permit was received November 25, 2019. Construction is anticipated to take place in Summer 2020.

## Supporting Documentation

Please attach any maps, aerial photographs, or design drawings that will support the information in this BE form. Examples of such supporting documentation include, but are not limited to:

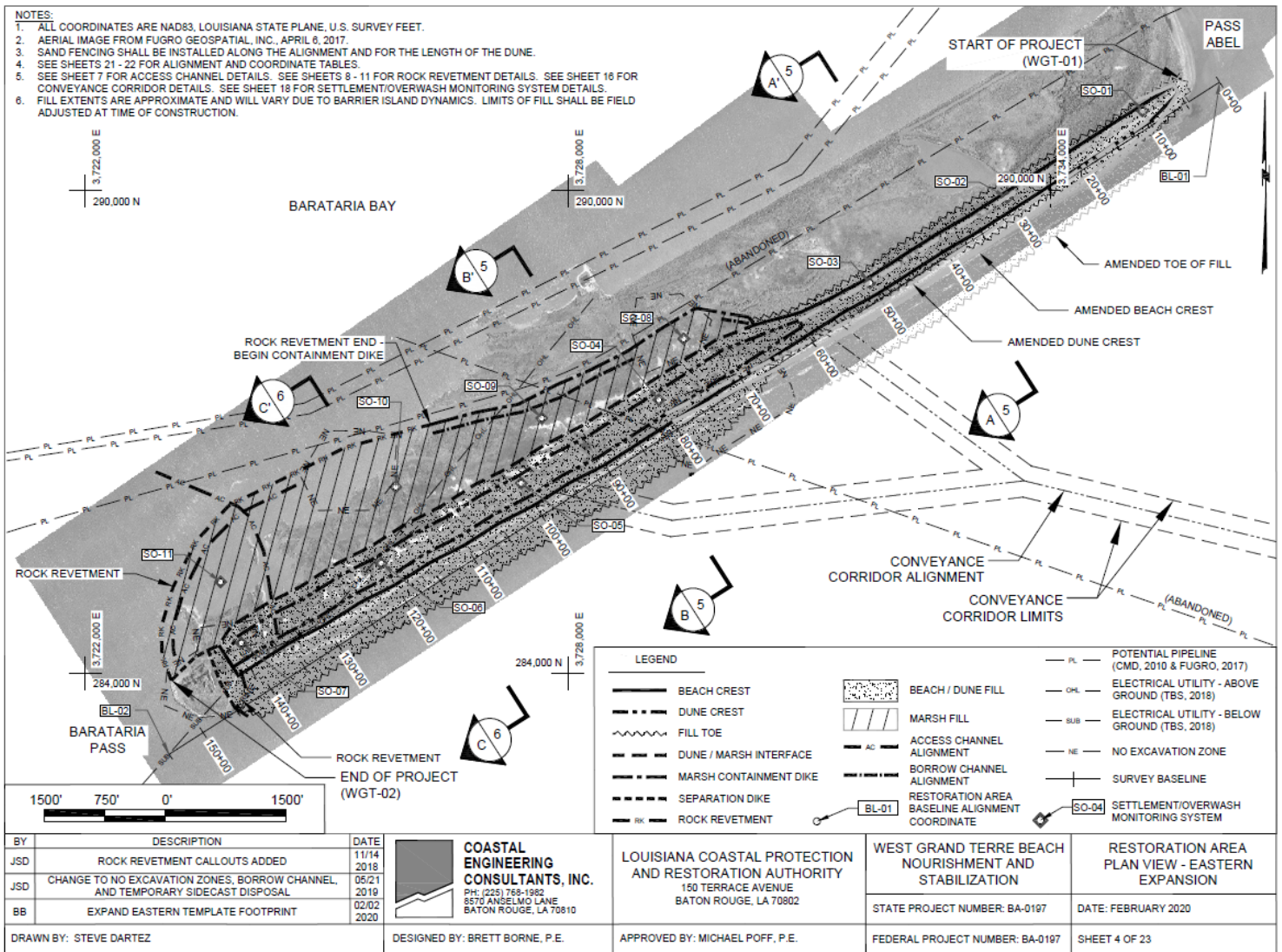
- Plan view of design drawings
- Aerial images of project action area and surrounding area
- Map of project area with elements proposed (polygons showing proposed construction elements)
- Map of action area with critical habitat units or sensitive habitats overlaid



**Location of West Grand Terre Beach Nourishment and Stabilization Project**







**Restoration Plan View from the Amended Final Plan drawings. Approximately 62 acres of open water shown in this drawing will be converted to marsh.**

### C. Project Location

#### I. State and County/Parish of action area

West Grand Terre Island is located approximately 47 miles south of New Orleans and is located in Jefferson Parish, and the borrow areas, conveyance corridor, and overburden disposal area are located in Gulf of Mexico waters within Plaquemines Parish, Louisiana. The island is immediately northeast of Grand Isle at the mouth of Barataria Bay extending approximately 4.3 miles from Barataria Pass to Pass Abel. The island includes the following habitats: beach, barrier vegetation, estuarine vegetated wetlands, intertidal habitat, unvegetated water bottoms, rip-rap, and water.

#### II. Latitude/Longitude for action area (Decimal degrees and datum [e.g., 27.71622°N, 80.25174°W NAD83])

[online conversion: <https://www.fcc.gov/encyclopedia/degrees-minutes-seconds-tofrom-decimal-degrees>]

29.283872° N 89.925531° W (center of West Grand Terre Island)

**D. Existing Compliance Documentation**

**NEPA Documents**

Are there any existing draft or final NEPA analyses (not PDARP/PEIS) that cover all or part of this project?

YES

NO

**Permits**

Have any federal permits been obtained for this project, if so which ones and what is the permit number(s)?

YES

NO

Permit Number and Type: USACE Permit: MVN-2016-1482-EPP

Have any federal permits been applied for but not yet obtained, if so which ones and what is the permit number(s)?

YES

NO

Permit Number and Type: Click or tap here to enter text.

If yes to any question above, please provide details in the text box (i.e. link to the NEPA document, or name of the document, year, lead federal agency, POC, copy of the permit or permit application, etc.). This is needed to check for consistency of the project scope across different sources and to facilitate the NEPA analysis. If you do not have a link, email the documents to the TIG representative for the Trustee designated as lead federal agency for the restoration plan.

Mississippi River Gulf Outlet (MRGO) Ecosystem Restoration Final Environmental Impact Statement. 2012. New Orleans District US Army Corps of Engineers. Available at:  
<https://www.mvn.usace.army.mil/Portals/56/docs/environmental/MRGO/MRGOEcosystemRestorationFinalEnvironmentalImpactStatementJune2012compressed.pdf>.

Coastal Engineering Consultants Inc. 2019b. West Grand Terre Beach Nourishment and Stabilization Project (BA-0197) Environmental Assessment. Jefferson & Plaquemines Parishes, Louisiana. Coastal Protection and Restoration Authority of Louisiana. 94 pp.



TIG RP/EA is currently being drafted and will be reviewed by the LA TIG several times prior to finalization of the document. Any documentation or information provided will be very helpful in moving your project forward.

Name of Person Completing this Form: Ashley Lawson, Meggan Dugan and Caitlin Glymph

Name of Project Lead: James McMenis

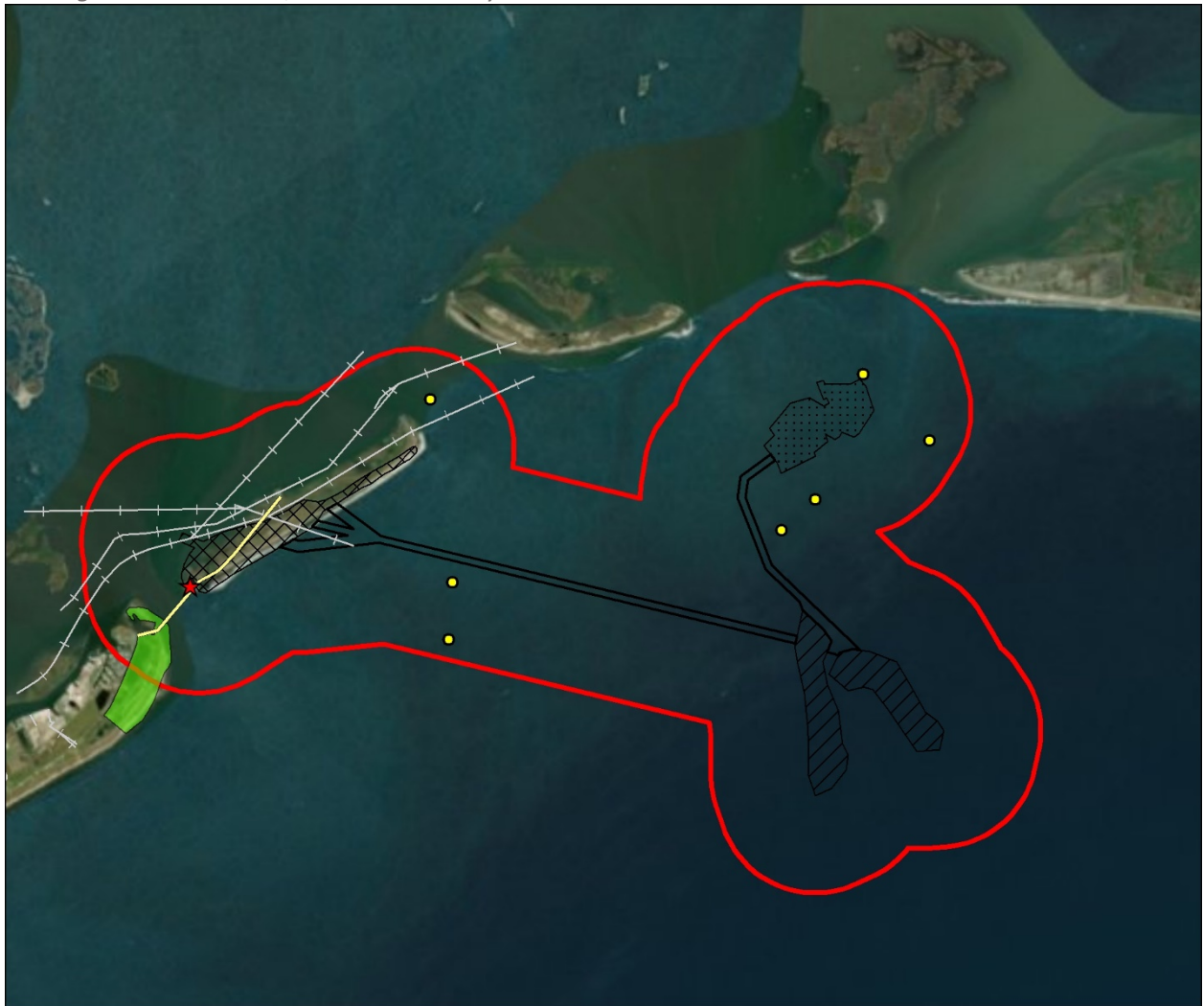
Date Form Completed: 11/26/2019

Date Form Updated: 1/24/2019

**E. Description of Action Area**

Provide a description of the existing environment (e.g., topography, vegetation type, soil type, substrate type, water quality, water depth, tidal/riverine/estuarine, hydrology and drainage patterns, current flow and direction), and land uses (e.g., public, residential, commercial, industrial, agricultural). Describe all areas that may be directly or indirectly affected by the action.

If CH is not designated in the area, then describe any suitable habitat in the area



<b>WEST GRAND TERRE BEACH NOURISHMENT AND STABILIZATION ALTERNATIVE</b>	Alternative AOI	Grand Isle State Park
	Fort Livingston	Oil & Gas Wells
	Existing Pipeline	
	Transmission Line	
	1:120,000	
	Created By: AB Project Number: 56773 Date: 9/12/2019 NAD 1983 StatePlane Louisiana South FIPS 1702 Feet	

Imagery of the action area indicating locations of existing infrastructure. The overburden disposal area shown here (dotted area) is approximately 2.2 Nautical Miles from the borrow area.

### a. Waterbody

*If applicable. Name the body of water, including wetlands (freshwater or estuarine), on which the project is located. If applicable, please describe water quality, depth, hydrology, current flow, and direction of flow.*

West Grand Terre Island is bordered by Barataria Bay to the north west, Pass Abel to the north east, the Gulf of Mexico to the south east, and Barataria Pass to the south west. The island is located in saline waters and is characterized as having barrier vegetation and estuarine vegetated wetlands; however, water quality in the Barataria Basin is influenced by freshwater input from its watershed and outflows from the Mississippi River. The western and eastern portions of West Grand Terre Island and surrounding waters are identified as Coastal Barrier Resources System (CBRS) Areas and Otherwise Protected Areas (OPAs), respectively, which are located within or adjacent to Special Flood Hazard Areas (SFHAs) subject to inundation by the 1 percent annual flood chance (i.e., 100-year flood zone) (FEMA, 2018). The area surrounding the island that includes the restoration area and a portion of the western extent of the conveyance corridor is SFHA Zone VE, which is a coastal flood zone with wave action hazards and a Base Flood Elevation (BFE) of 11 feet. The area south of the island that captures the remaining extent of the conveyance corridor and the entire overburden disposal area and borrow area extents is SFHZ Zone V, which is also a coastal flood zone with wave action hazards but does not have a determined BFE.

The Louisiana Department of Environmental Quality (LDEQ) has established four categories for water use under the Louisiana Environmental Regulatory Code (LAC Title 33, Chapter 11) that apply to the action area: Primary Contact Recreation, Secondary Contact Recreation, Fish and Wildlife Propagation, and Oyster Propagation (Coastal Engineering Consultants Inc, 2019b). None of them are prohibited around the island, however in 2006 a fish consumption advisory was issued due to elevated levels of mercury. Additionally, the back-bay estuaries of Barataria Bay do not fully support fish and wildlife propagation due to naturally occurring low dissolved oxygen levels. The island contains no fresh surface water and due to the distance from any significant source (closest aquifer is the Mississippi River alluvial aquifer, approximately 40 miles north of the island) contains no threat for coliform contamination (Coastal Engineering Consultants Inc, 2019b).

Creating the beach, dune and intertidal marsh habitats would help maintain estuarine conditions by moderation of salinity and tidal hydraulic fluctuations plus the habitat services provided to the wide range of resident and transient fish and wildlife species known to inhabit the Louisiana coast for at least part of their life cycles (Coastal Engineering Consultants Inc. 2019b).

*Does the project area include a river or estuary?*

YES  NO

*If yes, please approximate the navigable distance from the project location to the marine environment.*

The project area is surrounded by saline water bodies; bordered by Barataria Bay to the north west, Pass Abel to the north east, the Gulf of Mexico to the south east, and Barataria Pass to the south west.

### b. Existing Structures

*If applicable. Describe the current and historical structures found in the action area (e.g., buildings, parking lots, docks, seawalls, groynes, jetties, marina). If known, please provide the years of construction.*

There are several existing pipelines, transmission lines, and oil and gas wells within the Action Area.

According to the Draft Final Design Report (Coastal Engineering Consultants Inc. 2019a), the LDWF established the Lyle

St. Amant Marine Laboratory on West Grand Terre Island in the late 1950s. The complex included a laboratory, three dormitories, a radio tower, three water storage tanks, a cistern, a maintenance workshop, a boat maintenance shed, a boat lift, a boat shed, two sets of fisheries research ponds, and an access channel (Coastal Engineering Consultants Inc, 2019a). The complex was heavily damage by Hurricanes Katrina in 2005 and Gustav in 2008 and was abandoned shortly thereafter. The LDWF built a new Fisheries Research Laboratory on Grand Isle which opened in July 2009 and replaced the Lyle St. Amant Marine Laboratory. Currently, the buildings that made up the Lyle St. Amant Marine Laboratory are in various states of disrepair and require demolition, removal, and disposal. Results of a Historical Building Survey indicated that the facility no longer retains integrity to convey its significance and is not eligible for listing in the NRHP; therefore, the structures associated with the Lyle St. Amant Marine Laboratory will be removed prior to the award of a construction contract for this Proposed Project.



**LDWF Marine Laboratory Site Map (Coastal Engineering Consultants Inc, 2019a).**

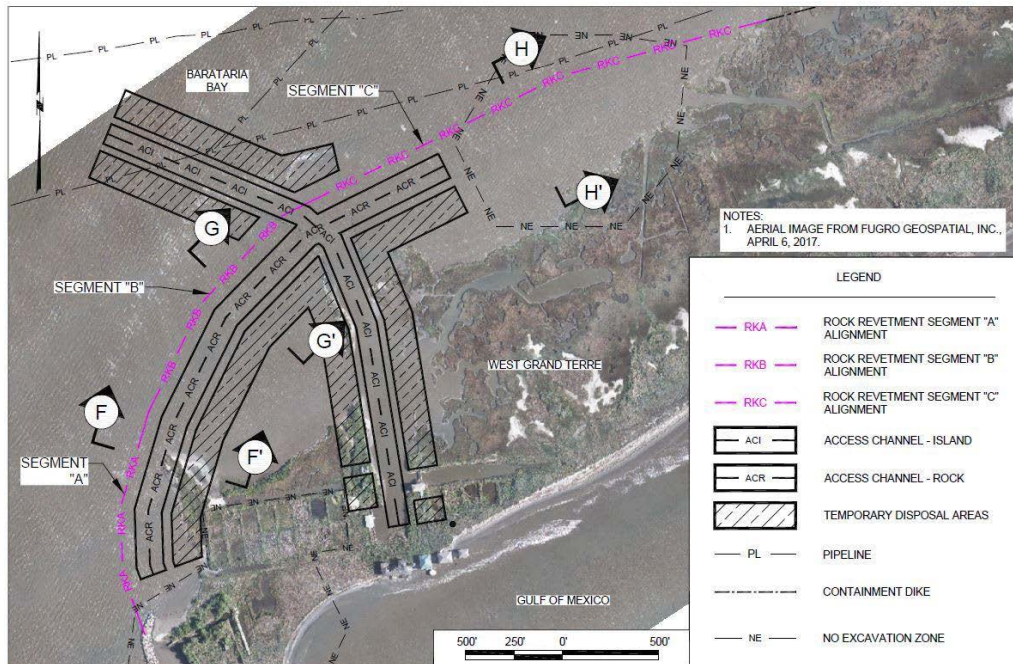
Additionally, an existing oil and gas facility operated by Hilcorp Energy is located on the bayside of the Island. This facility is provided electricity by Entergy. A submerged electrical line from Grand Isle crosses Barataria Pass and enters the West Grand Terre Island through a pull box just south and east of Fort Livingston. The underground electrical line continues through 2 more pull boxes, approximately 300 feet east of the initial box to a 45-foot power pole, which is the first of 19 power poles which carry an overhead electrical line across the Island from the southwest to the Hilcorp Energy facility to the northeast as shown below. The pull boxes will need to be raised by Entergy during construction, so as not to be buried by fill placement. Representatives from Entergy noted that 45-foot poles are typically set approximately 6.5 feet in the ground, which would leave approximately 32 feet of clearance between conductors and

the ground; however, once the land is filled and raised, the poles will lose an additional 3-6 feet. which would result in 26-29 feet of clearance (Coastal Engineering Consultants Inc, 2019a).

Fort Livingston was last occupied in 1889 and despite significant damage from hurricanes, is still intact. The Fort is listed on the NRHP and will be protected by a Separation Dike during the restoration activities to prevent fill sediments and effluent water from impacting the fort (Coastal Engineering Consultants Inc, 2019a). A rock revetment feature is planned to be constructed and is designed in 3 segments. A 540 ft segment of the existing Gulf side rocks surrounding Fort Livingston will be restored and extended north to the current shoreline, and a 180 ft Rock Revetment Spur will extend southeast from the current Fort Livingston rock alignment to capture sand transported by longshore currents (Coastal Engineering Consultants Inc, 2019a).



Existing Energy Infrastructure on West Grand Terre Island (Coastal Engineering Consultants Inc, 2019a).



Rock Revetment Plan View (Coastal Engineering Consultants Inc, 2019a).

### c. Seagrasses & Other Marine Vegetation

If applicable. Describe seagrasses found in action area. If a benthic survey was done, provide the date it was completed and a copy of the report. Estimate the species area of coverage and density. Attach a separate map showing the location of the seagrasses in the action area.

Submerged aquatic vegetation (SAV) can be found throughout Louisiana’s coastal zone marshes and estuaries, typically on substrates that consist of sand/mud and in water depths of 4 feet or less. Estuarine seagrass beds are dominated by widgeon grass (*Ruppia maritima*) and wild celery (*Vallisneria americana*) while the marine seagrass beds are dominated by turtle grass (*Thalassia testudinum*). While small beds occur in ponds scattered throughout marshes of coastal Louisiana, the last remaining extensive seagrass beds are located along the north shore of Lake Pontchartrain and Barataria Basins and in and around the Chandeleur Islands (approximately 50 miles) northeast of the action area (LDWF 2019). The areas adjacent to the Island and existing marshes may provide suitable conditions for SAV; however, no site-specific surveys have been conducted.

Seagrass meadows are not expected to be present in the action area; however, the Island is characterized by Scatlake Series and Felicity Series soils which support the vegetative species listed in the table below. Representative photographs of vegetation present on West Grand Terre Island (Hydro-Environmental Technology Inc, 2017) are provided below. No submerged aquatic vegetation is present in the borrow area or overburden disposal area (Coastal Engineering Consultants Inc, 2019b).

#### Marine vegetation observed on West Grand Terre Island (Coastal Engineering Consultants Inc, 2019b).

Common Name	Scientific Name	Area Observed	Soil Series Type
Marsh hay cordgrass	<i>Spartina patens</i>	Marshes; Loamy Sands; Dune Areas	Scatlake <sup>1</sup> ; Felicity <sup>2</sup>
Smooth cordgrass	<i>Spartina alterniflora</i>		
Black needlerush	<i>Juncus roemerianus</i>	Marshes	Scatlake <sup>1</sup>
Sea oxeye	<i>Borrchia frutescens</i>		
Virginia samphire	<i>Salicornia virginica</i>		
Black mangrove	<i>Avicennia germinans</i>	Loamy Sands	Felicity <sup>2</sup>
White mangrove	<i>Laguncularia racemosa</i>		
Bitter panicgrass	<i>Panicum amarum</i>		
Seashore saltgrass	<i>Distichlis spicata</i>		
Marsh elder	<i>Iva frutescens</i>	Loamy Sands; Dune Areas	
Saltwort	<i>Batis maritima</i>	Loamy Sands	
Largeleaf pennywort	<i>Hydrocotyle bonariensis</i>		
Beach tea	<i>Croton punctatus</i>	Dune Areas	
Yellow rattlebox	<i>Sesbania drummondii</i>		
Bermuda grass	<i>Cynodon dactylon</i>		
Common reed	<i>Phragmites australis</i>		

<sup>1</sup>[https://soilseries.sc.egov.usda.gov/OSD\\_Docs/S/SCATLAKE.html](https://soilseries.sc.egov.usda.gov/OSD_Docs/S/SCATLAKE.html)

<sup>2</sup>[https://soilseries.sc.egov.usda.gov/OSD\\_Docs/F/FELICITY.html](https://soilseries.sc.egov.usda.gov/OSD_Docs/F/FELICITY.html)





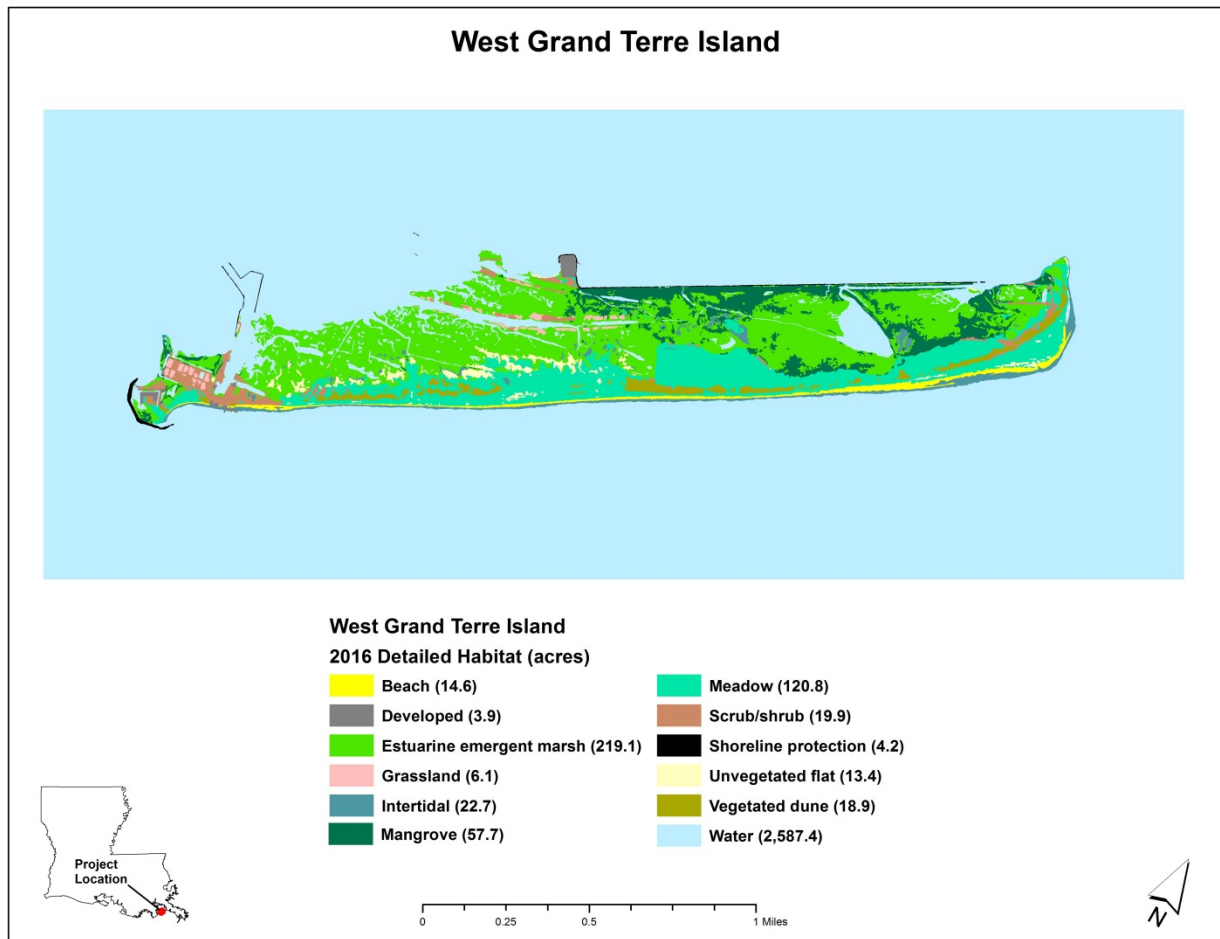
**Representative photographs of the marine and upland vegetation present on West Grand Terre Island (Hydro-Environmental Technology Inc, 2017).**

**d. Mangroves**

*If applicable. Describe the mangroves found in action area. Indicate the species found (red, black, white), the species area of coverage in square footage and linear footage along project shoreline. Attach a separate map showing the location of the mangroves in the action area.*

Black and white mangroves were identified in the Felicity loamy sand areas on the Island (Coastal Engineering Consultants Inc, 2019b). See figure below for location and acreage. Acreages are for the entire island and not restricted

to the project footprint.



#### e. Corals

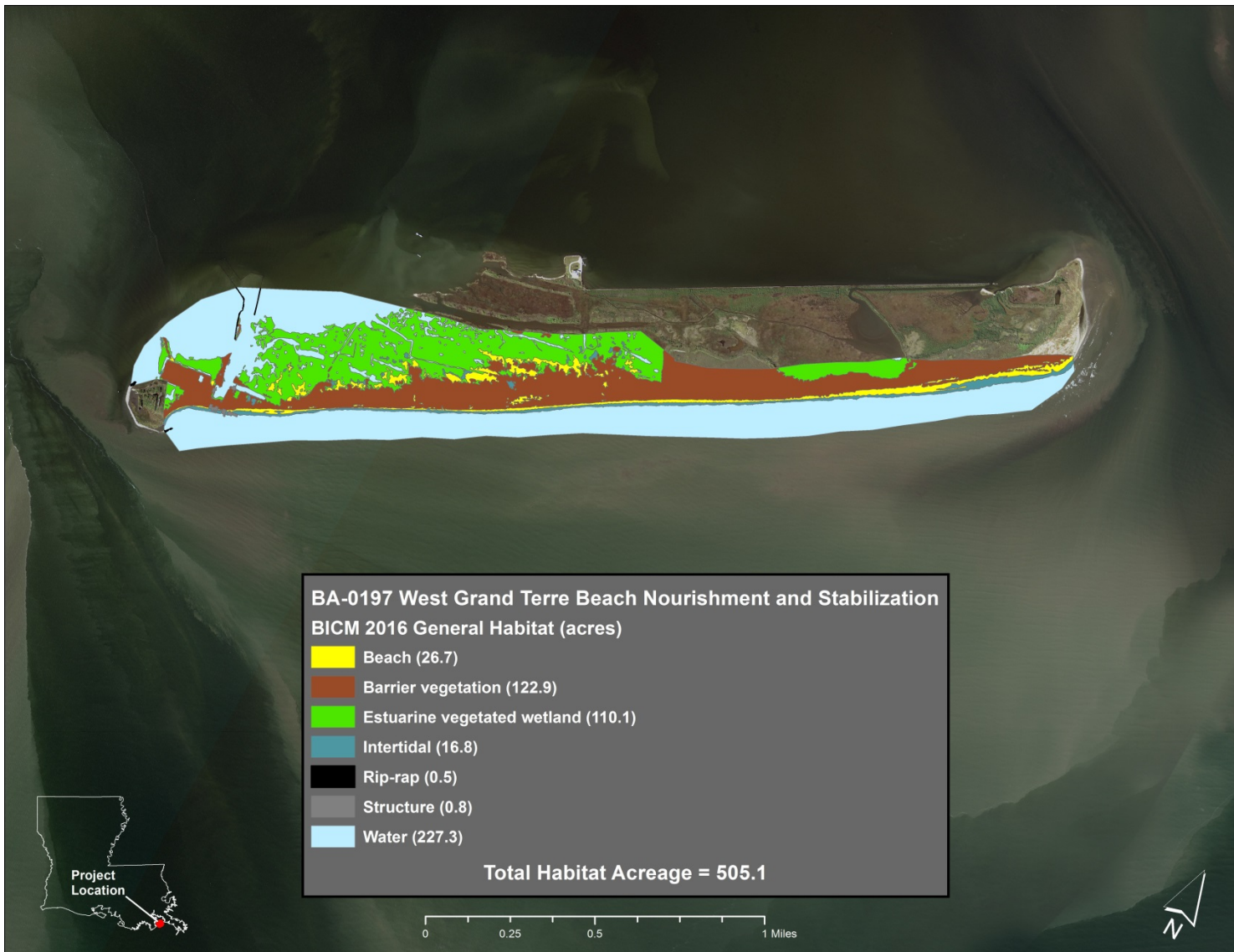
*If applicable. Describe the corals found in action area. If a benthic survey was done, provide the date it was completed and a copy of the report. Estimate the species area of coverage and density. Attach a separate map showing the location of the corals in the action area. Click here to enter text.*

Not applicable; corals are not expected. The action area is surrounded by estuarine and marine systems that lack suitable environments for corals and is located outside of mapped distributions (Love et al. 2013; NOAA 2019).

#### f. Uplands

*If applicable. Describe the current terrestrial habitat in which the project is located (e.g. pasture, forest, meadows, beach and dune habitats, etc.).*

The action area includes a tidal zone, intertidal zone, natural and restored dunes, and a bay side zone of intertidal wetlands surrounded by mangrove and saltwater marsh habitat. West Grand Terre Island is approximately 633 acres and it consists of approximately 330 intertidal acres, 200 supratidal/upland acres, 3 dune acres, and 100 subtidal acres (Coastal Engineering Consultants Inc, 2019a). In 2017, Hydro-Environmental Technology, Inc. prepared a Phase 1 Environmental Site Investigation of West Grand Terre Island. Dense weed and brush vegetation were observed on the majority of the land surfaces. See representative images above of marine and upland vegetation on West Grand Terre Island.



**Habitat characterization map detailing the West Grand Terre Island upland area.**

**g. Marine Mammals**

Please select the following marine mammals that could be present within the project area:

- Dolphins YES  NO
- Whales YES  NO
- Manatees YES  NO

If applicable. Indicate and describe the species found in the action area. Use NMFS' Stock Assessment Reports (SARs) for more information, see <http://www.nmfs.noaa.gov/pr/sars/region.htm>

Common bottlenose dolphins (*Tursiops truncatus truncates*); Northern GOM BSE stock frequent the estuarine area of West Grand Terre Island. The Atlantic spotted dolphin (*Stenella frontalis*) does not frequent inshore areas but is known to occur in nearshore shelf waters; therefore, this species may be present in the Borrow Area and Overburden Disposal Area.

West Indian manatees (*Trichechus manatus*) are common in shallow coastal waters as they feed on submerged vegetation. Habitats suitable to support marine vegetation may be present within the action area that could attract the West Indian manatee.

#### h. Soils and Sediments

*If applicable. Indicate topography, soil type, substrate type.*

Timbalier-Scatlake: level, very poorly drained soils that have a thick or thin mucky surface layer and clayey underlying material in saline marshes. In the sandy dune areas, Felicity soil type has been identified. Vibracore samples were collected in the area in 2018. Generally, the vibracores showed a sequence of silts and clays (overburden) overlying a silty sand unit. Several vibracores penetrated through the silty sand unit and recovered another sequence of silts and clays underlying the sands.

#### i. Land Use

*If applicable. Indicate existing or previous land use activities (agriculture, dredge disposal, etc).*

See Section E(b) Existing Structures. The nearest populated area is on Grand Isle, which is approximately 0.5 miles southwest of West Grand Terre Island. West Grand Terre Island has been the recipient of beneficial dredging in the Barataria Bay Waterway conducted from 1996 through 2018 by USACE. This has added sand to the western end of the beach near Fort Jefferson and a created marsh on the landward side of the Island. In 2001, approximately 300 acres of the new land created from dredge spoil on the east half of West Grand Terre Island was planted with bitter panicgrass, marsh hay cordgrass, smooth cordgrass, and black mangrove (CWPPRA 2018). Trespass livestock have also been removed from the island as part of previous the restoration efforts.

#### j. Essential Fish Habitat

*If applicable. Describe any designated Essential Fish Habitat within the project area*

EFH consultation has already been completed for this project. See below embedded PDF for documentation:



Memo for File EFH  
consult\_Corps\_WGra

**Table 1. Federally Managed Species in the West Grand Terre Island Project Area**

Common Name	Scientific Name
FISH	
Gray (mangrove) snapper	<i>Lutjanus griseus</i>
Lane snapper	<i>Lutjanus synagris</i>
Red snapper	<i>Lutjanus campechanus</i>
Red drum	<i>Sciaenops ocellatus</i>
Cobia	<i>Rachycentron canadum</i>
King mackerel	<i>Scomberomorus cavalla</i>
Gray triggerfish	<i>Balistes capriscus</i>
Greater amberjack	<i>Seriola dumerili</i>
Almaco jack	<i>Seriola rivoliana</i>

SHRIMP	
Brown shrimp	<i>Farfantepenaeus aztecus</i>
White shrimp	<i>Litopenaeus setiferus</i>
SHARKS	
Atlantic sharpnose shark	<i>Rhizoprionodon terraenovae</i>
Blacktip shark	<i>Carcharhinus limbatus</i>
Blacknose shark	<i>Carcharhinus acronotus</i>
Bull shark	<i>Carcharhinus leucas</i>
Finetooth shark	<i>Carcharhinus isodon</i>
Scalloped hammerhead shark	<i>Sphyrna lewini</i>
Silky shark	<i>Carcharhinus falciformis</i>
Spinner shark	<i>Carcharhinus brevipinna</i>

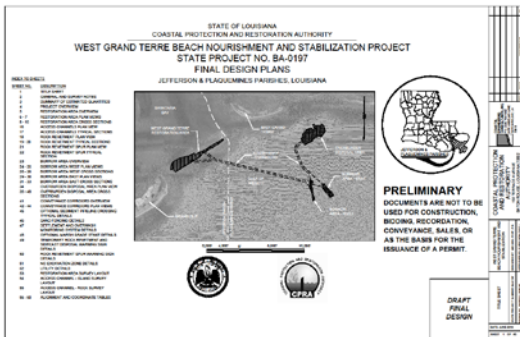
## **F. Project Description**

I. Describe the Proposed Action/Project Objectives: What are you trying to accomplish and how with this project? Describe in detail the construction equipment and methods\*\* needed; long term vs. short term impacts; duration of short term impacts; dust, erosion, and sedimentation controls; restoration areas; if the project is growth-inducing or facilitates growth; whether the project is part of a larger project or plan; and what permits will need to be obtained.

Attach a separate map showing project footprint, avoidance areas, construction accesses, staging/laydown areas.

\*\*If construction involves overwater structures, pilings and sheetpiles, boat slips, boat ramps, shoreline armoring, dredging, blasting, artificial reefs or fishery activities, list the method here, but complete the next section(s) in detail.

Barrier islands in Louisiana are typically low lying and comprised of three primary physical features, the beach, dune, and back-barrier marsh. They act as a buffer to reduce the full force and effects of wave action, saltwater intrusion, storm surge, and tidal currents on associated estuaries and wetlands. The primary objective of this Proposed Project is to address Gulf shoreline erosion, diminished protection against storm surge, and subsidence of back-barrier marshes, as well as restore dune and back-barrier marsh habitat on West Grand Terre Island to provide storm surge and wave attenuation. Between issuance of the Draft REPEA and this Final RP/EA, the LA TIG reevaluated the maximum restoration potential on West Grand Terre Island to include the dredged material recently placed by USACE and the +1.5-foot tolerance acreage discussed below. The revised alternative would create or restore up to 371 acres of beach and dune habitat, create or restore approximately 160 acres of intertidal marsh habitat, and protect approximately 14,000 linear feet of shoreline on West Grand Terre Island. A rock revetment will be constructed to protect restored marsh and a rock revetment spur will capture sand transported by longshore currents. The portion of the access channel located outside of the marsh fill area will be backfilled from the temporary sidecast areas. The Proposed Project also requires the removal of existing structures that are located within the footprint and impact the beach and dune section. See figure and embedded Plans in Section B above for the Proposed Project overviews.



II. Construction Schedule (What is the anticipated schedule for major phases of work? Include duration of in-water work.)

The Proposed Project is currently in the 95% design phase for the Beach Nourishment and Stabilization design. The Structure Removal Design is in the initial stages of the preliminary design phase and Final Plans and Specifications should be completed by the end of 2019. Construction permit applications were submitted in November 2018; The construction permit was received in November of 2019. Construction is planned for Summer 2020.

**Construction Schedule**

The construction duration is based on the mobilization of crews and equipment; sediment pipeline installation, relocation, and removal; overburden disposal; Rock Revetment installation; sediment excavation and fill placement; and demobilization. The following is a breakdown of the construction duration by major element:

- Mobilization: 60 days
- Overburden Disposal: 90 days
- Restoration Construction: 220 days
- Demobilization: 60 days

In-water work is anticipated to occur during the overburden and restoration construction time periods.

III. Specific In-Water and/or Terrestrial Construction Methods

Please check yes or no for the following questions related to in-water work and overwater structures

Does this project include in-water work?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
Does this project include terrestrial construction?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
Does this project include construction of an overwater structure?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Will fishing be allowed from this overwater structure?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Will wildlife observation be allowed from this overwater structure?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Will boat docking be allowed from this overwater structure?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Will fishing be allowed from this overwater structure?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>

If this is a fishing pier, please provide the following information: public or private access to pier, estimated number of people fishing per day, plan to address hook and line captures of protected species, specific operating hours/open 24 hours, artificial lighting of pier (if any), number of fish cleaning stations, and number of pier attendants (if any).

Not applicable; not a fishing pier.

Construction: Provide a detailed account of construction methods. It is important to include step-by-step descriptions of how demolition or removal of structures is conducted and if any debris will be moved and how. Describe how construction will be implemented, what

type and size of materials will be used and if machines will be used, manual labor, or both. Indicate if work will be done from upland, barge, or both.)

iii. Use of "Dock Construction Guidelines"? [http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/dockkey2002.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/dockkey2002.pdf)

iv. Type of decking: Grated – 43% open space; Wooden planks or composite planks – proposed spacing?

v. Height above Mean High Water (MHW) elevation?

vi. Directional orientation of main axis of dock?

vii. Overwater area (sq ft)?

## Construction Methods

**Sediment Mining and Conveyance to the Island:** Mining the Borrow Area and conveying it to West Grand Terre Island will be done with a hydraulic cutterhead dredge (with or without a booster pump). Cutterhead dredges utilize a rotary excavating bit to loosen the sediment. The bit or cutter is located on the end of an arm (the ladder) that is hinged off the forward end of the dredge. The ladder can be maneuvered vertically to control its depth and the dredge and ladder maneuvered laterally and fore/aft using anchors deployed off the forward quarters in combination with vertical spuds. The loosened slurry is pumped up the ladder to a large suction pump in the dredge hull, which also pumps it ashore through a submerged pipeline, often aided by the booster pump. The submerged pipeline will be anchored/ballasted with weighted coatings, weighted collars, or weighted mats. The submerged pipeline will also be marked with buoys as required by USCG regulations. The dredged material will be discharged into the restoration template where it will be graded using conventional earth moving equipment.

There are two conveyance corridors established for the restoration activities. The conveyance corridor for transport of sediment to the Restoration Area is named the West Grand Terre Conveyance Corridor (WGTC) with connectors between the two potential Borrow Area subsections. The Overburden Disposal Conveyance Corridor (ODCC) connects the Borrow Area to the Overburden Disposal Area. The southern end of the ODCC bifurcates to connect the potential Borrow Area subsections.

**Island Construction Access:** Construction access to West Grand Terre Island shall not impact existing wetlands or the restored beach, dune, and marsh habitat. Vehicles and other earth-moving construction machinery would gain access to the beach at the west end of the Island as shown on the permit plats. Construction equipment movement and construction materials storage would be confined to the fill templates. Typically, the Access Channel is sufficient for the Contractor to gain access to the island with construction equipment. Temporary board mats may also be used within the Restoration footprint.

## Equipment Assumptions

Specifications	Beach/Dune and Marsh Fill	Overburden Disposal
Cutterhead dredge size	30 inches	30 inches
Cutterhead dredge excavation duration/day	18 hours per day	18 hours per day
Cutterhead dredge horsepower	9,000 HP	9,000 HP
Number of booster pumps	1	0
Average pipeline distance	36,000 feet	18,350 feet
Average production rate	1,728 CY/hour	2,194 CY/hour

We anticipate that a 30" cutterhead suction dredge will be used for this project to dredge material from the borrow area. In general these are approximately 250' x 65' and draft approximately 10'. These dredges are not self-propelled and must be towed on site. Once on site they utilized a system of anchors and pulleys to move about the borrow area. All movement of the dredge while digging in the borrow is fairly slow at approximately 1-2 mph as it swings back in forth. Other vessels anticipated to be used for the project will be crew boats to transport supplies and personnel, tender barges to set the submerged pipeline and move dredge anchors, and survey vessels. It is foreseeable that multiple trips will be made per day between the Project site on WGT, the borrow area, and Grand Isle which is the closest road access. A lookout can be present where required.

b. *Pilings & Sheetpiles: If this project includes installation of pilings or sheets, please provide answers to questions 1-11 listed below*

1. Method of pile installation	N/A
2. Material type of piles used	N/A
3. Size (width) of piles/sheets	N/A
4. Total number of piles/sheets	N/A
5. Number of strikes for each single pile	N/A
6. Number of strikes per hour (for a single pile)	N/A
7. Expected number of piles to be driven each day	N/A
8. Expected amount of time needed to drive each pile (minutes of driving activities)	N/A
9. Expected number of sequential days spent pile driving	N/A
10. Whether pile driving occurring in-water or on land	N/A
11. Depth of water where piles will be driven	N/A

c. *Marinas and Boat Slips (Describe the number and size of slips and if the number of new slips changes from what is currently available at the project. Indicate how many are wet slips and how many are dry slips. Estimate the shadow effect of the boats - the area (sqft) beneath the boats that will be shaded.)*

Not applicable; not a marina or boat slip.

d. *Boat Ramp (Describe the number and size of boat ramps, the number of vessels that can be moored at the site (e.g., staging area) and if this is a public or private ramp. Indicate the boat trailer parking lot capacity, and if this number changes from what is currently available at the project.)*

Not applicable; not a boat ramp.

e. *Shoreline Armoring (This includes all manner of shoreline armoring (e.g., riprap, seawalls, jetties, groins, breakwaters, etc.). Provide specific information on material and construction methodology used to install the shoreline armoring materials. Include linear footage and square footage. Attach a separate map showing the location of the shoreline armoring in the action area.*

The Proposed Project includes approximately 5,200 feet of rock revetment to protect the newly created marsh shoreline along Barataria Pass and Barataria Bay on the western side of West Grand Terre Island. A 540-foot segment of the Gulf side rocks surrounding Ft. Livingston will be restored and extended north to the current shoreline. Furthermore, a 180-foot rock revetment spur will extend southeast from the current Ft. Livingston rock alignment to capture sand transported by longshore currents.

The Proposed Project includes a Rock Revetment feature along Barataria Pass beginning at the northwestern end of the Fort Livingston breakwater and continuing around the bayside of the Island between the -3-foot and -2-foot contours where it would tie into the edge of the Chevron Pipeline Canal. The Rock Revetment is separated into two segments. The first segment, Segment "A", extends approximately 2,600 feet from the existing northwestern end of the Fort Livingston breakwater around the proposed Marsh Fill template and terminates at the Louisiana Department of Wildlife and Fisheries (LDWF) access canal. Typical features on this segment include a crest width of 10 feet at an elevation of +6.5 feet NAVD88 and a 15-foot bench to elevation +3.0 feet. All side slopes on this component would be set to 1V:2H. The second segment, Segment "B", extends approximately 2,600 feet from the LDWF access canal around the proposed Marsh Fill template and ties into an existing marsh area south of the Chevron Pipeline canal. Typical features on this segment include a crest width of 10 feet at an elevation of +3.0 feet NAVD88. Bayside slopes were set equal to 1V:3H and marsh side slopes were set equal to 1V:2H. Both components would be underlain by a geotextile fabric and include core stone and armor stone layers. A construction tolerance of 1.0 foot is proposed to account for consolidation and settlement as well as construction tolerances.



f. *Dredging or digging (Provide details about dredge type (hopper, cutterhead, clamshell, etc.), maximum depth of dredging, area (ft<sup>2</sup>) to be dredged, volume of material (yd<sup>3</sup>) to be produced, grain size of material, sediment testing for contamination, spoil disposition plans, and hydrodynamic description (average current speed/direction)). If digging in the terrestrial environment, please describe fully with details about possible water jetting, vibration methods to install pilings for dune walk-over structure, or other methods. If using devices/methods/turtle relocation dredging to relocate sea turtles, then describe the methods here.*

See Section F.III, Construction Methods section for details on dredging operations.

The Proposed Project will create or restore up to 371 acres of beach and dune habitat and approximately 160 acres of intertidal marsh habitat.

The Borrow Area is subdivided into two subsections designated as Borrow Area 1 and Borrow Area 2. The stratigraphy for the Borrow Area is generally characterized by two layers, an overburden layer comprised of majority silt and clay; and a sand layer comprised of fine sand with silt and clay lenses. The overburden templates range from approximately 1,400 feet to 3,000 feet wide and 6,600 feet to 9,800 feet in length. The overburden layer thicknesses range from 9 feet to 12 feet and have side slopes of 1V:10H. A 50-foot bench was included between the bottom of cut for the overburden layer and top of cut for the restoration sediment layer to account for slope adjustment between sediment layers. The restoration sediment dredge templates range from approximately 600 feet to 2,200 feet wide and 5,800 feet to 8,800 feet in length. The restoration sediment layer thicknesses range from 10.5 feet to 20 feet and have side slopes of 1V:10H. Cut depths range from -71.0 feet to -73.0 feet. A 3.0 ft limit of disturbance is included below all cut depths bringing the maximum depth of disturbance to -74.0 feet and -76.0 feet NAVD88 in the Borrow Area. The overburden will be disposed of in the previously excavated Borrow Area S1 and D1 of the Chenier Ronquille Barrier Shoreline Restoration Project (BA-76). The Borrow Area subsections were designed based on suitable sediment availability and efficient dredge cut patterns derived from the geophysical and geotechnical surveys. Estimates of the average percent sand and grain size computed from vibracores taken within the subsections equaled 91% and 0.16 mm, respectively. The actual quantity of the full Borrow Area, including Areas 1 and 2, are 22.7 million cubic yards (MCY) for restoration fill and 13.3 MCY for overburden. The cut volume of restoration sediments required to construct the restoration features is estimated to be 3.4 MCY. A cut to fill ratio of 1.2:1 was included in the estimated cut volumes.

g. *Blasting (Projects that use blasting might not qualify as “minor projects,” and a Biological Assessment (BA) may need to be prepared for the project. Arrange a technical consultation meeting with NMFS Protected Resources Division to determine if a BA is necessary. Please include explosive weights and blasting plan.)*

Not applicable; no blasting is planned.

h. *Artificial Reefs (Provide a detailed account of the artificial reef site selection and reef establishment decisions [i.e., management and siting considerations, stakeholder considerations, environmental considerations, long term maintenance plan (periodic clean-up of lost fishing gear/debris)], deployment schedule, materials used, deployment methods, as well as final depth profile and overhead clearance for vessel traffic. For additional Information and detailed guidance on artificial reefs, please refer to the artificial reef program websites for the particular state the project will occur in.*

Not applicable; does not include artificial reefs.

i. *Fishery Activities (Describe any use of gear that could entangle or capture protected species. This includes activities that may enhance fishing opportunities (e.g. fishing piers) or be fishery/gear research related (e.g. involve trawl gear, gillnets, hook and line gear, crab pots etc)).*

Not applicable; no fishery activities are planned.

**G. NOAA Species & Critical Habitat and Effects Determination Requested**

If your project occurs in a location that does not contain any listed NOAA species or designated Critical Habitats, please check the box below. If this box is checked, you may skip Section G. and proceed to Section H.

- This project occurs in a location that does not contain any listed NOAA species or designated Critical Habitats.
- ESA effects have been accounted for under an existing consultation.

1. List all species, critical habitat, proposed species and proposed critical habitat that may be found in the action area. Species that do not currently occur in the action area (but are listed on county species lists) do not need to be listed in drop downs.

2. Attach a separate map identifying species/critical habitat locations within the action area. For information on species and critical habitat under NMFS jurisdiction, visit:

[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/threatened\\_endangered/Documents/gulf\\_of\\_mexico.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/threatened_endangered/Documents/gulf_of_mexico.pdf).

Identify if Gulf sturgeon are in marine or in freshwater in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Gulf sturgeon CH - marine). Identify if sea turtles are in water or on land in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Loggerhead sea turtle CH - terrestrial).

Species and/or Critical Habitat	CH Unit (if applicable)	Location (Sea turtles and Gulf Sturgeon only)	Determinations (see definitions below)	For "No Effect", please select justification.
Gulf Sturgeon (T)	N/A, outside CH	Marine	No Effect	Species does not occur within action area
Green Sea Turtle (T)	N/A, outside CH	Marine	May Affect, Not Likely to Adversely Affect	Choose an item.
Loggerhead Sea Turtle	N/A, outside CH	Marine	May Affect, Not Likely to Adversely Affect	Choose an item.
Leatherback Sea Turtle (E)	N/A, outside CH	Marine	No Effect	No suitable habitat in action area
Hawksbill Sea Turtle (E)	N/A, outside CH	Marine	No Effect	No suitable habitat in action area
Kemp's Ridley Sea Turtle (E)	N/A, outside CH	Marine	May Affect, Not Likely to Adversely Affect	Choose an item.
Giant Manta Ray (T)		Marine	May Affect, Not Likely to Adversely Affect	

**Determination Definitions**

**NE = no effect.** This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat.

**NLAA = may affect, not likely to adversely affect.** This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources. Response requested is concurrence with the not likely to affect determination. This conclusion is appropriate when effects to the species or critical habitat will be wholly beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the Services concur in writing with the Action Agency's determination of "is not likely to adversely affect" listed species or critical habitat, the section 7 consultation process is completed.

**LAA = may affect, likely to adversely affect.** This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response requested for listed species is formal consultation for action with a likely to adversely affect determination, with a biological opinion as the concluding document. This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat, but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination is "likely to adversely affect." Any LAA determination requires formal section 7 consultation and will require additional information.

**Critical Habitat No Destruction** = When the proposed action will not diminish the value of critical habitat.

## **H. USFWS Species & Critical Habitat and Effects Determination Requested**

*If your project occurs in a location that does not contain any listed USFWS species or designated Critical Habitats, please check the box below. If this box is checked, you may skip Section G. and proceed to Section H.*

This project occurs in a location that does not contain any listed USFWS species or designated Critical Habitats.

ESA effects have been accounted for under an existing consultation.

1. List all species, critical habitat, proposed species and proposed critical habitat that may be found in the action area. Species that do not currently occur in the action area (but are listed on county species lists) do not need to be listed in drop downs.

2. Attach a separate map identifying species/critical habitat locations within the action area. For information on species and critical habitat under NMFS jurisdiction, visit:

[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/threatened\\_endangered/Documents/gulf\\_of\\_mexico.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/threatened_endangered/Documents/gulf_of_mexico.pdf).

Identify if Gulf sturgeon are in marine or in freshwater in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Gulf sturgeon CH - marine). Identify if sea turtles are in water or on land in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Loggerhead sea turtle CH - terrestrial).

<b>Species and/or Critical Habitat</b>	<b>CH Unit</b> (if applicable)	<b>Location</b> (Sea turtles and Gulf Sturgeon only)	<b>Determinations</b> (see definitions below)	<b>For "No Effect", please select justification.</b>
Gulf Sturgeon	N/A, outside CH	Riverine/Freshwater	No Effect	No suitable habitat in action area
Green Sea Turtle	N/A, outside CH	Terrestrial	No Effect	No suitable habitat in action area
Loggerhead Sea Turtle	N/A, outside CH	Terrestrial	May Affect, Not Likely to Adversely Affect	Select Most Appropriate
Red Knot	N/A		May Affect, Not Likely to Adversely Affect	Choose an item.
Piping Plover	N/A, outside CH		May Affect, Not Likely to Adversely Affect	Choose an item.
West Indian Manatee	N/A,		May Affect, Not Likely to Adversely Affect	Choose an item.
Leatherback Sea Turtle	N/A, outside CH	Terrestrial	No Effect	No suitable habitat in action area
Kemp's Ridley	N/A, outside CH	Terrestrial	No Effect	No suitable habitat in action area
Hawksbill Sea Turtle	N/A, outside CH	Terrestrial	No Effect	No suitable habitat in

				action area
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## Determination Definitions

**NE = no effect.** This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat.

**NLAA = may affect, not likely to adversely affect.** This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources. Response requested is concurrence with the not likely to affect determination. This conclusion is appropriate when effects to the species or critical habitat will be wholly beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the Services concur in writing with the Action Agency's determination of "is not likely to adversely affect" listed species or critical habitat, the section 7 consultation process is completed.

**LAA = may affect, likely to adversely affect.** This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response requested for listed species is formal consultation for action with a likely to adversely affect determination, with a biological opinion as the concluding document. This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat, but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination is "likely to adversely affect." Any LAA determination requires formal section 7 consultation and will require additional information.

**Critical Habitat No Destruction** = When the proposed action will not diminish the value of critical habitat.

## I. Effects of the proposed project to the species and actions to reduce impacts

*NOTE: Species selected as "No Effect" with justification in table do not need to be addressed in Section I or J.*

*I. Explain the potential beneficial and adverse effects to each species listed above. Describe what, when, and how the species will be impacted and the likely response to the impact. Be sure to include direct, indirect, and cumulative impacts and where possible, quantify effects.*

*If species are present (or potentially present) and will not be adversely affected describe your rationale. If species are unlikely to be present in the general area or action area, explain why. This justification provides documentation for your administrative record, avoids the need for additional correspondence regarding the species, and helps expedite review.*

The Gulf sturgeon, West Indian manatee, piping plover, red knot, and five species of sea turtles were all listed as being potentially present in the area by the USFWS Information for Planning and Consultation (IPaC) database (USFWS 2019a); however, it is unlikely that Gulf sturgeon, and leatherback and hawksbill sea turtles would be present in the action area (see Section H).

### **West Indian Manatee (*Trichechus manatus*)**

**Direct and Indirect Impacts:** Habitats suitable to support marine vegetation may be present within the action area that could attract the West Indian manatee. However, no known occurrences of this species has been documented within the action area; thus, occurrences of this species is rare and there is a low probability the species would occur in the action area (LDWF 2019; NatureServe 2016). Manatees moving between areas of suitable habitat may occur within the action area.

Proposed Project in-water work includes dredging, beach nourishment, marsh fill, overburden deposition, and placement of conveyance pipelines. These activities will result in temporary localized turbidity and construction noise that may result in avoidance behaviors. Other impacts include collision with vessels/barges, and increased risk of entanglement with debris that may catch on anchor management systems. Standard Manatee Conditions BMPs will be implemented to reduce and avoid potential impacts to this species. Adherence to the protection measures would help ensure that any manatee present in the action area would not be adversely affected. The disturbance to the manatee would be temporary, limited to project construction and would result in temporary displacement as individuals would likely move to another area for foraging or resting purposes.

Impact avoidance measures for the Proposed Project may include:

- All contract personnel associated with the project would be informed of the potential presence of manatees and the need to avoid collisions with manatees, which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973.
- All construction personnel are responsible for observing water-related activities for the presence of manatee(s).
- Temporary signs would be posted prior to and during all construction/dredging activities to remind personnel to be observant for manatees during active construction/dredging operations or within vessel movement zones (i.e., work area), and at least one sign should be placed where it is visible to the vessel operator.
- Siltation barriers, if used, would be made of material in which manatees could not become entangled, and should be properly secured and monitored.
- If a manatee is sighted within 100 yards of the active work zone, special operating conditions would be implemented, including: no operation of moving equipment within 50 feet of a manatee; all vessels shall operate at no wake/idle speeds within 100 yards of the work area; and siltation barriers, if used, should be re-secured and monitored. Once the manatee has left the 100-yard buffer zone around the work area on its own accord, special operating conditions are no longer necessary, but careful observations would be resumed.
- Any manatee sighting would be immediately reported to the USFWS and the Louisiana Department of Wildlife and Fisheries (LDWF) Natural Heritage Program.
- To prevent entrapment of manatee inside of dredged material receiving areas that have dikes or other retention features that enclose an area of open water, the area would be inspected for the presence of manatee(s): 1) before complete closure of the confining features; and 2) again before material is discharged in to the receiving area. Any manatee that is sighted would be allowed to leave the area before work resumes.

Cumulative Impacts: With the implementation of BMPs and avoidance measures to reduce the potential for impacts to West Indian manatee, the likelihood for cumulative impacts to this species is low. The temporary increase in potential for disturbance or strikes of individual manatees from human noise and activity and/or habitat impacts associated with construction activities may still contribute to a minor increase in adverse effects, when combined with existing levels of disturbance and human noise and activity. An increase in marsh habitat area would be beneficial for healthy barrier island vegetative communities as marsh habitats are a major energy source for both the planktonic and benthic communities of estuarine and nearshore habitats, which could contribute to improved conditions for SAV in the action area.

**Piping Plover (*Charadrius melodus*) and Red Knot (*Calidris canutus rufa*)**

Direct and Indirect Impacts: The piping plover and red knot wintering habitat includes beaches, tidal sand flats, mud flats, algal mats, washover passes, and small dunes where they feed primarily on small invertebrates (Campbell 2003). These habitats are present within the action area. Proposed Project work in beach habitat includes beach nourishment and these activities would result in temporary localized construction noise and human activity that may result in avoidance behaviors. Other impacts may include effects to prey species within the beach nourishment footprint; however, individuals would likely move to another area for foraging purposes. An objective of the Proposed Project is to restore beach and dune habitats. Piping plovers and red knots have been documented on the beaches in the area; therefore, the Proposed Project

action to restore beach habitat may have a beneficial effect on habitats for these species (deMay et al. 2016). Where practicable, BMPs, including seasonal avoidance of construction in important wintering habitats when piping plovers are present (approximately late July through mid-May), or red knots (approximately August through mid-May), may be implemented to reduce potential disturbance.

Impact avoidance measures for the Proposed Project may include:

- Provide all individuals working on a project with information in support of general awareness of piping plover and red knot presence and means to avoid birds and their critical or otherwise important habitats.
- Avoid working in important wintering sites for rufa red knots when they are present (contact USFWS for red knot timeframes and habitats) to the maximum extent practicable. If work must be conducted when red knots are present, avoid working near concentrations of individuals or post avoidance areas to minimize disturbance.
- For projects that result in large-scale habitat changes, coordinate early with USFWS to enhance or protect habitat features preferred by the species (inlet shoals, lagoons, washover fans, ephemeral pools, baysides, and mud flats). Do not remove sand from intertidal, sand, or mud flats.
- Use dredged material to enhance adjacent emerged and submerged shoals and bayside habitats within and adjacent to project areas.
- Minimize vegetation planting in preferred habitats and avoid removal of wrack year-around along the shoreline.

Cumulative Impacts: No potential adverse, cumulative impacts on piping plovers are anticipated if the avoidance measures are implemented.

### **Sea Turtles**

Three species of sea turtles may possibly occur in the action area (USFWS 2019a).

*Loggerhead Sea Turtle:*

Direct and Indirect Impacts: This species is the most common sea turtle species in Louisiana. Most sea turtle species are not known to nest in Louisiana due to lack of suitable nesting habitat; however, loggerhead sea turtle nests have been observed on Grand Isle, located approximately 0.5-mile west of West Grand Terre Island. As similar beach habitat is also present on West Grand Terre Island, loggerhead sea turtles may utilize the action area for nesting. Impacts to terrestrial life stage for this species would include potential disturbance of nesting habitat as a result of beach nourishment activities; however these activities could ultimately benefit the loggerhead sea turtle by increasing suitable nesting habitat in the area. Loggerhead sea turtles may also be present in the shallow waters of the action area for feeding. Impacts to the marine life stage of this species would be similar to those described for the other sea turtle species. Sea turtle BMPs will be implemented to reduce and avoid impacts to these species.

Impact avoidance measures for the Proposed Project may include:

- Implement the following in-water work guidelines:
  - NMFS's Sea Turtle and Smalltooth Sawfish Construction Conditions (revised March 23, 2006);
  - NMFS's Measures for Reducing Entrapment Risk to Protected Species (revised May 22, 2012); and
  - NMFS's Vessel Strike Avoidance Measures and Reporting for Mariners (revised February 2008).
  - In-water lines would be made of materials such as stiff cable or plastic-coated lines and any ropes would be thick, heavy, and taut lines that do not loop or entangle, and would be installed in a manner to minimize the risk of entanglement of protected species.

Cumulative Impacts: With the implementation of BMPs and avoidance measures to reduce the potential for impacts to loggerhead sea turtle nesting and foraging habitat, the likelihood for cumulative impacts to this species is low. The temporary increase in potential for disturbance or strikes of individual sea turtles from human noise and activity and/or habitat impacts associated with construction activities may still contribute to an increase in adverse effects, when combined with existing levels of disturbance and human noise and activity. However, as the long-term impacts associated with the Proposed Project are anticipated to be beneficial to ecological conditions in the action area, the overall impacts of the Proposed Project would benefit this species.

*Kemp's Ridley and Green, Sea Turtles:*

Due to the absence of suitable nesting beach habitats and the absence of any records of nesting for these species, these species are not expected to occur in terrestrial habitats within the Proposed Project action area (LDWF 2019; Love et al. 2013; NatureServe 2016; NOAA 2019).

**Direct and Indirect Impacts:** The Proposed Project may impact marine life stages for these species.) The green and Kemp's Ridley sea turtles may be present within the action area and it is located within the known ranges of these species (LDWF 2019; NatureServe2016). The Proposed Project's in-water work of beach nourishment, marsh fill, dredging of the borrow areas, and disposal of overburden may result in temporary increases in turbidity and construction noise that may result in temporary avoidance behaviors. Dredging and conveyance activities are expected to last approximately 16 months and thus these temporary activities are not anticipated to cause long-term behavioral changes. Other effects of the Proposed Project include potential for collision with vessels/barges and/or entrapment during fill activities, and increased risk of entanglement with anchors or lines. Sea turtle BMPs will be implemented to reduce and avoid impacts to these species.

**Impact avoidance measures for the Proposed Project may include:**

- Implement the following in-water work guidelines:
  - NMFS's Sea Turtle and Smalltooth Sawfish Construction Conditions (revised March 23, 2006);
  - NMFS's Measures for Reducing Entrapment Risk to Protected Species (revised May 22, 2012); and
  - NMFS's Vessel Strike Avoidance Measures and Reporting for Mariners (revised February 2008).
  - In-water lines would be made of materials such as stiff cable or plastic-coated lines and any ropes would be thick, heavy, and taut lines that do not loop or entangle, and would be installed in a manner to minimize the risk of entanglement of protected species.

**Cumulative Impacts:** With the implementation of BMPs and avoidance measures to reduce the potential for impacts to sea turtle foraging habitat, the likelihood for cumulative impacts to these species is low. The temporary increase in potential for disturbance or strikes of individual sea turtles from human noise and activity and/or habitat impacts associated with construction activities may still contribute to an increase in adverse effects, when combined with existing levels of disturbance and human noise and activity. However, as the long-term impacts associated with the Proposed Project are anticipated to be beneficial to ecological conditions in the action area, the overall impacts of the Proposed Project would benefit these species.

*II. Explain the actions to reduce adverse effects to each species listed above. For each species for which impacts were identified, describe any conservation measures (e.g. BMPs) that will be implemented to avoid or minimize the impacts. Conservation measures are designed to avoid or minimize effects to listed species and critical habitats or further the recovery of the species under review. Conservation measures are considered part of the proposed action and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinitiate this consultation.*

**Frequently Recommended BMPs:** This checklist provides standard BMPs recommended by NOAA and USFWS. Please select any BMPs that will be implemented:

- |                                     |                                                                                        |
|-------------------------------------|----------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> | <b>USFWS Standard Manatee In Water Conditions</b>                                      |
| <input checked="" type="checkbox"/> | <b>NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions<sup>1</sup></b>      |
| <input checked="" type="checkbox"/> | <b>NMFS Measures for Reducing the Entrapment Risk to Protected Species<sup>1</sup></b> |
| <input checked="" type="checkbox"/> | <b>NMFS Vessel Strike Avoidance Measures and Reporting for Mariners<sup>1</sup></b>    |

**Additional BMPs or Conservation Measures**

<sup>1</sup> Documents can be found here: [http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/index.html](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/index.html)

Chapter 6 of the PDARP included an important appendix (6.A) of best practices, see information starting on page 6-173.  
[http://www.gulfspillrestoration.noaa.gov/sites/default/files/wp-content/uploads/Chapter-6\\_Environmental-Consequences\\_508.pdf](http://www.gulfspillrestoration.noaa.gov/sites/default/files/wp-content/uploads/Chapter-6_Environmental-Consequences_508.pdf)

Use the box below to indicate which best management practices or conservation measures you'll be using in your project (that were not listed in Section I above)

Additional practices and measures have not yet been identified.

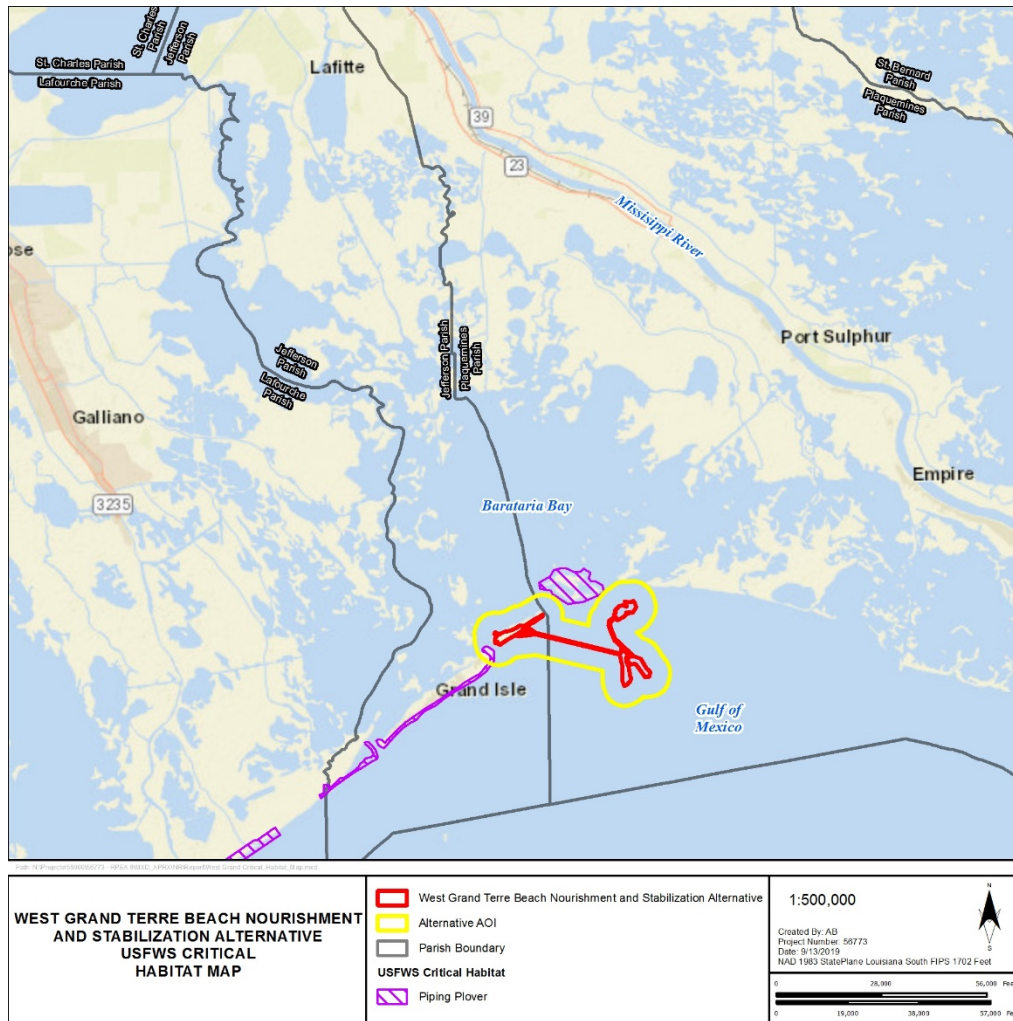
### **J. Effects to critical habitats and actions to reduce impacts**

*NOTE: Species selected as "No Effect" with justification in table do not need to be addressed in Section I or J.*

*I. Explain the potential beneficial and adverse effects to critical habitat listed above. Describe what, when, and how the critical habitat will be impacted and the likely response to the impact. Be sure to include direct, indirect, and cumulative impacts to physical and biological features, and where possible, quantify effects (e.g. acres of habitat, miles of habitat).*

*Describe your rationale if designated or proposed critical habitats are present and will not be adversely affected.*





Piping plover designated critical habitat occurs within the buffer area (figure above). Piping plover-designated critical habitat is located all along the southeastern shoreline of Grand Isle and other neighboring barrier islands, including East Grand Terre Island (Unit LA-5). This designation applies to suitable overwintering habitats on the beaches, mud flats, and estuarine wetlands abutting and adjacent to the Gulf of Mexico. Primary constituent elements (PCEs) for piping plover overwintering habitat are those habitat components that support foraging, roosting, and sheltering and the physical features necessary for maintaining the natural processes that support those habitat components. The elements include intertidal flats, including sand and/or mud flats with no or very sparse emergent vegetation, and adjacent unvegetated or sparsely vegetated sand, mud, or algal flats above high tide, which are important for roosting plovers.

While the buffer area overlaps Piping Plover critical habitat on Grand Isle, no impacts from the Proposed Project are expected to impact critical habitat. The buffer zone was sized conservatively, to provide extra distance from the active project footprint in order to avoid any potential disturbance or noise impacts to Piping Plover critical habitat, which is adjacent to but outside of the action area. Grand Isle is approximately 0.5 miles away from West Grand Terre and therefore activities related to beach nourishment and shoreline stabilization on West Grand Terre Island will not affect the foraging, sheltering, or roosting needs of piping plovers within critical habitat.

II. Explain the actions to reduce adverse effects to critical habitat listed above. For critical habitat for which impacts were identified, describe any conservation measures (e.g. BMPs) that will be implemented to avoid or minimize the impacts. Conservation measures are designed to avoid or minimize effects to listed species and critical habitats or further the recovery of the species under review.

Conservation measures are considered part of the proposed action and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinstate this consultation.

No impacts to piping plover critical habitat were identified, as the Proposed Project activities will occur 0.5-mile away and is separated by open water from designated critical habitat.

**K. Marine Mammals**

I. The Marine Mammal Protection Act prohibits the taking (including disruption of behavior, entrapment, injury, or death) of all marine mammals (e.g., whales, dolphins, manatees). However, the MMPA allows limited exceptions to the take prohibition if authorized, such as the incidental (i.e., unintentional but not unexpected) take of marine mammals. The following questions are designed to allow the Agencies to quickly determine if your action has the potential to take marine mammals. If the information provided indicates that incidental take is possible, further discussion with the Agencies is required.

Is your activity occurring in or on marine or estuarine waters?  NO  YES

If yes, is your activity likely to cause large-scale, ecosystem level impacts to the quality (e.g. salinity, temperature) of marine or estuarine waters?  NO  YES

II. If Yes, describe activities further using checkboxes. Does your activity involve any of the following:

NO	YES	ACTIVITY
<input checked="" type="checkbox"/>	<input type="checkbox"/>	a) Use of active acoustic equipment (e.g., echosounder) producing sound below 200 kHz
<input type="checkbox"/>	<input checked="" type="checkbox"/>	b) In-water construction or demolition
<input checked="" type="checkbox"/>	<input type="checkbox"/>	c) Temporary or fixed use of active or passive sampling gear (e.g., nets, lines, traps; turtle relocation trawls)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	d) In-water Explosive detonation
<input checked="" type="checkbox"/>	<input type="checkbox"/>	e) Aquaculture
<input type="checkbox"/>	<input checked="" type="checkbox"/>	f) Restoration of barrier islands, levee construction or similar projects
<input checked="" type="checkbox"/>	<input type="checkbox"/>	g) Fresh-water river diversions
<input checked="" type="checkbox"/>	<input type="checkbox"/>	h) Building or enhancing areas for water-related recreational use or fishing opportunities (e.g. fishing piers, bridges, boat ramps, marinas)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	i) Dredging or in-water construction activities to change hydrologic conditions or connectivity, create breakwaters and living shorelines, etc.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	j) Conducting driving of sheet piles or pilings
<input checked="" type="checkbox"/>	<input type="checkbox"/>	k) Use of floating pipeline during dredging activities

III. If you checked “Yes” to any of the activities immediately above or the activity could impact the quality of marine or estuarine waters, please describe the nature of the activities in more detail or indicate which section of the form already includes these descriptions. See the NOAA Acoustic Guidance for more information: <http://www.nmfs.noaa.gov/pr/acoustics/faq.htm>

See Sections F.I. and II. project description and construction methods sections above.

IV. *Frequently Recommended BMPs for marine mammals (manatees are covered in Section I above): This checklist provides standard BMPs recommended by NOAA. Please select any BMPs that will be implemented:*

<input type="checkbox"/>	NMFS Southeast U.S. Marine Mammal and Sea Turtle Viewing Guidelines <sup>2</sup>
<input checked="" type="checkbox"/>	NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions <sup>3</sup>
<input checked="" type="checkbox"/>	NMFS Measures for Reducing the Entrapment Risk to Protected Species <sup>3</sup>

<sup>2</sup> Documents can be found here: [http://sero.nmfs.noaa.gov/protected\\_resources/outreach\\_and\\_education/index.html](http://sero.nmfs.noaa.gov/protected_resources/outreach_and_education/index.html)

<sup>3</sup> Documents can be found here: [http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/index.html](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/index.html)

<input checked="" type="checkbox"/>	NFMS Vessel Strike Avoidance Measures and Reporting for Mariners <sup>3</sup>
<input type="checkbox"/>	Reproducing and posting outreach signs: Dolphin Friendly Fishing Tips sign, Don't Feed Wild Dolphins sign <sup>3</sup>

If not listed above, please describe any additional BMPs or conservation measures that may be implemented for marine mammals. Dolphins would be monitored during dredging activities following the same protocols used for sea turtles and manatees. Specifically: (a) If dolphins come within 50 ft of active dredging and are not just traveling through the area (e.g. remaining within 50 ft to forage), dredge operations should not start, or, if dredging has already begun, they should cease until the dolphins are beyond and are not likely to re-enter (i.e., are on a dedicated path away from the 50 ft area). This is to avoid physical harm from dredge equipment. (b) To avoid perceived physical barriers to dolphins, avoid transversing waterbodies with any floating pipelines from the dredge activities.

**L. Bald Eagles**

Are bald eagles present in the action area? NO YES

If YES, the following conservation measures should be implemented:

1. If bald eagle breeding or nesting behaviors are observed or a nest is discovered or known, all activities (e.g., walking, camping, clean-up, use of a UTV, ATV, or boat) should avoid the nest by a minimum of 660 feet. If the nest is protected by a vegetated buffer where there is *no* line of sight to the nest, then the minimum avoidance distance is 330 feet. This avoidance distance shall be maintained from the onset of breeding/courtship behaviors until any eggs have hatched and eaglets have fledged (approximately 6 months).
2. If a similar activity (e.g., driving on a roadway) is closer than 660 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
3. If a vegetated buffer is present and there is no line of sight to the nest and a similar activity is closer than 330 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
4. In some instances, activities conducted at a distance greater than 660 feet of a nest may result in disturbance. If an activity appears to cause initial disturbance, the activity shall stop and all individuals and equipment will be moved away until the eagles are no longer displaying disturbance behaviors.

Will you implement the above measures? NO YES

If these measures cannot be implemented, then you must contact the Service’s Migratory Bird Permit Office.

Texas – (505) 248-7882 or by email: [permitsR2MB@fws.gov](mailto:permitsR2MB@fws.gov)

Louisiana, Mississippi, Alabama, Florida – (404) 679-7070 or by email: [permitsR4MB@fws.gov](mailto:permitsR4MB@fws.gov)

**M. Request approval for use of NMFS PDCs for this project**

Complete this section only if your project qualifies for streamlined ESA consultation under the ESA Framework Programmatic Biological Opinion completed by NMFS on February 10, 2016. To be eligible for streamlined ESA consultation with NMFS, you must implement all Project Design Criteria (PDCs) applicable to your project. Check “yes” for PDC categories that apply to the proposed project, and request PDC checklist from NMFS.

NO	YES	ACTIVITY
<input type="checkbox"/>	<input type="checkbox"/>	<b>Oyster Reef Creation and Enhancement</b>
<input type="checkbox"/>	<input type="checkbox"/>	<b>Marine Debris Removal</b>
<input type="checkbox"/>	<input type="checkbox"/>	<b>Construction of Living Shorelines</b>
<input type="checkbox"/>	<input type="checkbox"/>	<b>Marsh Creation and Enhancement</b>
<input type="checkbox"/>	<input type="checkbox"/>	<b>Construction of Non-Fishing Piers</b>

## **N. Submitting the BE Form**

We request that all BE forms and consultation materials be placed on Sharepoint for review. Upon receipt, we will conduct a preliminary review and provide any comments and feedback, including any requests for modifications or additional information. If modifications or additional information is necessary, we will work with you until the Biological Evaluation form is considered complete. Once complete, we will use the Biological Evaluation form to initiate appropriate consultations.

Questions may be directed to:

### **NMFS ESA § 7 Consultation**

Christy Fellas, National Oceanic Atmospheric Administration

Email: Christina.Fellas@noaa.gov

Phone: 727-551-5714

### **USFWS ESA § 7 Consultation**

Erin Chandler, Department of the Interior

Email: Erin\_Chandler@fws.gov

Phone: 470-361-3153

- Campbell, L. 2003. Endangered and Threatened Animals of Texas: Their Life History and Management. Austin, Texas: Texas Parks and Wildlife Department.
- Coastal Engineering Consultants Inc. 2019a. Draft West Grand Terre Beach Nourishment and Stabilization Project Draft Final Design Report. Jefferson & Plaquemines Parishes, Louisiana. Coastal Protection and Restoration Authority of Louisiana. 106 pp.
- Coastal Engineering Consultants Inc. 2019b. West Grand Terre Beach Nourishment and Stabilization Project (BA-0197) Environmental Assessment. Jefferson & Plaquemines Parishes, Louisiana. Coastal Protection and Restoration Authority of Louisiana. 94 pp.
- Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA), 2018. Vegetative Plantings of a Dredged Material Disposal Site on Grand Terre Island (BA - 28) Project Fact Sheet. Available at: <https://www.lacoast.gov/reports/gpfs/BA-28.pdf>. Accessed August 26, 2019.
- DeMay, R., D. LeBlanc, N. Waters, E. Clark, B. Hutchinson. 2016. Piping Plover 2016 Survey of the Caminada Headland, Louisiana: November 16, 2016. Thibodaux, Louisiana: Barataria-Terrebonne National Estuary Program. Prepared for the Coastal Protection and Restoration Authority.
- Federal Emergency Management Agency (FEMA). 2018. Flood Insurance Rate Map (FIRM) for Jefferson Parish, Louisiana and Incorporated Areas. Panel 525 of 600. Available: <https://msc.fema.gov/portal/advanceSearch#searchresultsanchor>. Accessed August 16, 2019.
- Hydro-Environmental Technology, Inc. 2017. Phase I Environmental Site Investigation of the West Grand Terre property. Louisiana Department of Wildlife and Fisheries (LDWF). 2019. Louisiana Natural Heritage Program. Available at: <http://www.wlf.louisiana.gov/wildlife/louisiana-natural-heritage-program>. Accessed September 18, 2019.
- Love, M., Baldera, A., Yeung, C., & Robbins, C. 2013. The Gulf of Mexico Ecosystem: A Coastal and Marine Atlas. New Orleans, Louisiana: Ocean Conservancy, Gulf Restoration Center.
- National Oceanic and Atmospheric Administration (NOAA). 2019. Gulf of Mexico Data Atlas. Available at <https://www.ncddc.noaa.gov/website/DataAtlas/atlas.htm>. Accessed September 18, 2019.
- National Oceanic and Atmospheric Administration (NOAA) Fisheries. 2016. Gulf Sturgeon (*Acipenser oxyrinchus desotoi*).

Available at: <https://www.fisheries.noaa.gov/species/gulf-sturgeon>. Accessed September 18, 2019.

NatureServe. 2016. NatureServe Explorer: An online encyclopedia of life. Version 7.1. NatureServe, Arlington, Virginia.

Available at: <http://explorer.natureserve.org>. Accessed September 18, 2019.

United State Fish and Wildlife Service (USFWS). 2019a. IPaC Information for Planning and Conservation. Available at:

<http://ecos.fws.gov/ipac>. Accessed September 15, 2019.

------. 2019b. Gulf Sturgeon Fact Sheet. Available at: <https://www.fws.gov/panamacity/resources/SturgeonFactS08.pdf>.

Accessed September 19, 2019.

## Biological Evaluation Form

### Deepwater Horizon Oil Spill Restoration

#### U.S. Fish and Wildlife Service & National Marine Fisheries Service

This form will be filled out by the Implementing Trustee and used by the regulatory agencies. The form will provide information to initiate informal Section 7 consultations under the Endangered Species Act (ESA) and may be used to document a No Effect determination or to initiate pre-consultation technical assistance.

It is recommended that this form also be completed to inform and evaluate additional needs for compliance with the following authorities: Migratory Bird Treaty Act (MBTA), Marine Mammal Protection Act (MMPA), Coastal Barrier Resources Act (CBRA), Bald and Golden Eagle Protection Act (BGEPA) and Section 106 of the National Historic Preservation Act (NHPA).

Further information may be required beyond what is captured on this form. Note: if you need additional space for writing, please attach pages as needed.

For assistance, please contact the compliance liaisons  
USFWS: Erin Chandler at erin\_chandler@fws.gov  
NMFS: Christy Fellas at christina.fellas@noaa.gov

#### A. Project Identification

Federal Action Agency(one or more):USFWS  NOAA  EPA  USDA

Implementing Trustee(s): The Louisiana Coastal Protection and Restoration Authority (CPRA)

Contact Name: Chris Barnes Phone: 225-342-9036 Email: Chris.Barnes@la.gov

Project Name: PO-163 Golden Triangle Marsh Creation Project

DIVER ID# [Click to enter text](#) TIG: Louisiana TIG Restoration Plan # [Click here to enter text](#)

#### B. Project Phase and Supporting Documentation

Please choose the box which best describes the project status, as proposed in this BE form:

Planning/Conceptual  Construction/Implementation  Engineering & Design

If "Engineering & Design" was selected, please describe the level of design that has been completed and is available for review:

The Final 30% Design Report was completed in November 2018. The project is currently in the 95% Design Phase.

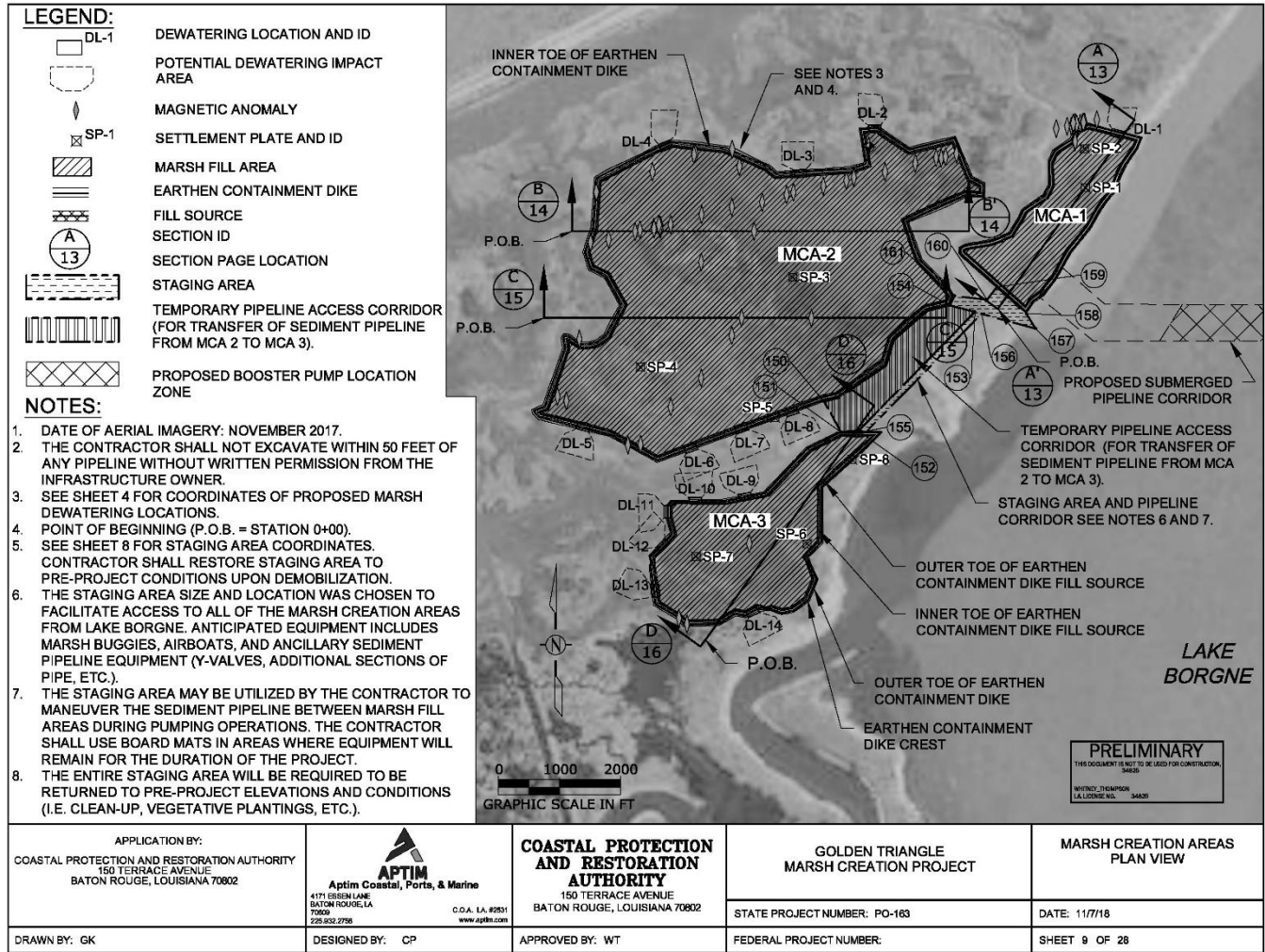
#### Supporting Documentation

Please attach any maps, aerial photographs, or design drawings that will support the information in this BE form. Examples of such supporting documentation include, but are not limited to:

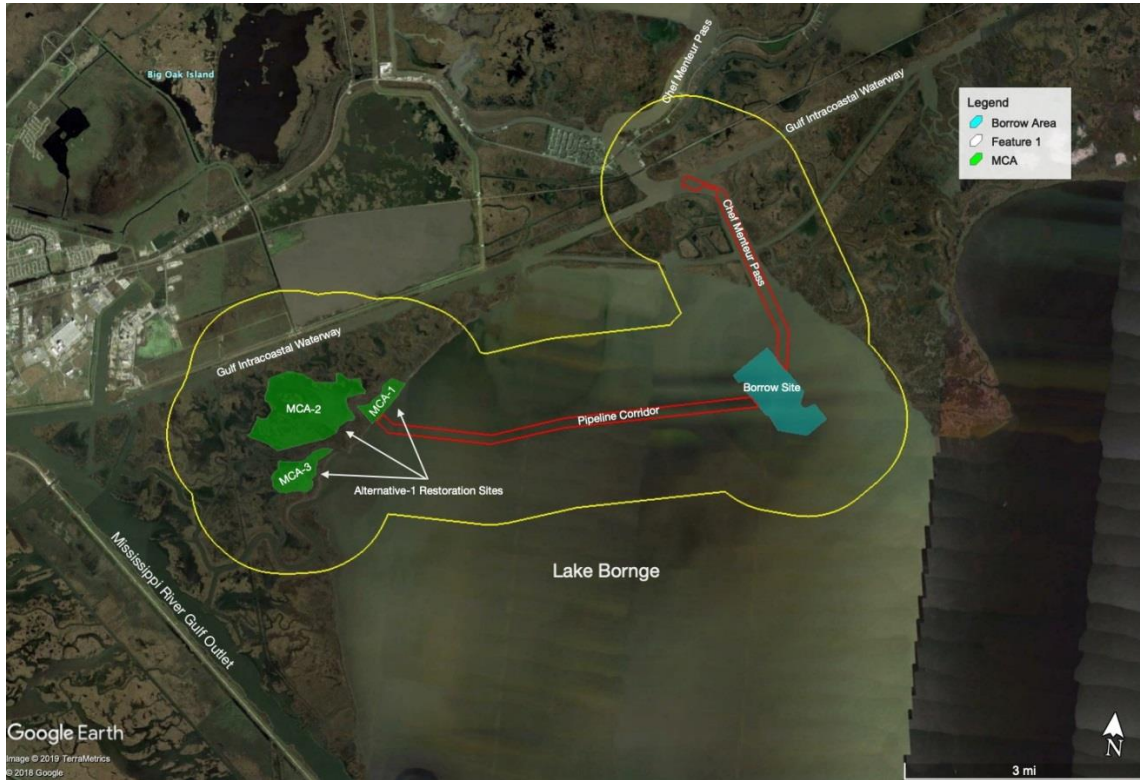
- Plan view of design drawings
- Aerial images of project action area and surrounding area
- Map of project area with elements proposed (polygons showing proposed construction elements)
- Map of action area with critical habitat units or sensitive habitats overlaid



Preliminary Permit  
Plats 8.1.19.pdf



**Preliminary Permit Drawing for the Golden Triangle Proposed Project, see also all embedded drawings.**



**Aerial image of Action Area.**

## **C. Project Location**

### **I. State and County/Parish of action area**

The Golden Triangle Marsh is a narrow band of brackish marsh located directly east of New Orleans between Lake Borgne and the confluence of the Mississippi River Gulf Outlet (MRGO) and the Gulf Intracoastal Waterway (GIWW), on the western shore of Lake Borgne and lies in both St. Bernard and Orleans Parishes, Louisiana. The marsh creation areas are located in Orleans Parish, while the borrow area and pipeline corridor are located in Lake Borgne which is in St. Bernard Parish.

### **II. Latitude/Longitude for action area (Decimal degrees and datum [e.g., 27.71622°N, 80.25174°W NAD83])**

[online conversion: <https://www.fcc.gov/encyclopedia/degrees-minutes-seconds-tofrom-decimal-degrees>]

Latitude/Longitude = 30.016622°N, 89.862363°W NAD833 - X= 3746352.1 Y= 554525.1 (NAD 83 Louisiana State Plane, South Zone, U.S. survey feet)

## **D. Existing Compliance Documentation**

### **NEPA Documents**

Are there any existing draft or final NEPA analyses (not PDARP/PEIS) that cover all or part of this project?



YES

NO

**Permits**

Have any federal permits been obtained for this project, if so which ones and what is the permit number(s)?

YES

NO

Permit Number and Type: P20170705 LDNR/OCM

Permit authorized 08/10/2017; MVN201701015EV - US Army Corps of Engineers authorized 11/06/2017; C.U.P. No.: P20181324 received August 14, 2019

Have any federal permits been applied for but not yet obtained, if so which ones and what is the permit number(s)?

YES

NO

Permit Number and Type:

If yes to any question above, please provide details in the text box (i.e. link to the NEPA document, or name of the document, year, lead federal agency, POC, copy of the permit or permit application, etc.). This is needed to check for consistency of the project scope across different sources and to facilitate the NEPA analysis. If you do not have a link, email the documents to the TIG representative for the Trustee designated as lead federal agency for the restoration plan.

Click here to enter text.

Mississippi River Gulf Outlet (MRGO) Ecosystem Restoration Final Environmental Impact Statement. 2012. New Orleans District US Army Corps of Engineers.

<https://www.mvn.usace.army.mil/Portals/56/docs/environmental/MRGO/MRGOEcosystemRestorationFinalEnvironmentalImpactStatementJune2012compressed.pdf>

Joint Permit Application submitted December 17, 2018 to OCM/USACE; signed C.U.P. No.: P20181324 received August 14, 2019. See imbedded permit. USACE NO district will issue a programmatic General permit (PGP) for Biloxi and Golden Triangle Proposed Projects.



Aptim Environmental & Infrastructure, Inc. (APTIM). 2019. Golden Triangle Marsh Creation Project (PO-163) Draft Environmental Assessment, Baton Rouge, LA: APTIM Environmental & Infrastructure, Inc. (Prepared for Coastal Protection and Restoration Authority of Louisiana). See embedded document.

Version: January 21, 2020



TIG RP/EA is currently being drafted and will be reviewed by the LA TIG several times prior to finalization of the document.

Any documentation or information provided will be very helpful in moving your project forward.

Name of Person Completing this Form: Tony Martin, Meggan Dugan and Caitlin Glymph

Name of Project Lead: Vida Carver

Date Form Completed: 12/5/2019

Date Form Updated: 1/24/2019

#### **E. Description of Action Area**

*Provide a description of the existing environment (e.g., topography, vegetation type, soil type, substrate type, water quality, water depth, tidal/riverine/estuarine, hydrology and drainage patterns, current flow and direction), and land uses (e.g., public, residential, commercial, industrial, agricultural). Describe all areas that may be directly or indirectly affected by the action.*

*If CH is not designated in the area, then describe any suitable habitat in the area*

##### **a. Waterbody**

*If applicable. Name the body of water, including wetlands (freshwater or estuarine), on which the project is located. If applicable, please describe water quality, depth, hydrology, current flow, and direction of flow.*

The Proposed Project restoration areas are located on the western shore of Lake Borgne, in Orleans Parish, LA. The sediment borrow site, booster pump and pipeline corridors are located within Lake Borgne in St. Bernard Parish (See Action Area figure provided in Section B). The Action Area is shown with a 1-mile buffer zone extending around the restoration sites, the borrow areas, and pipeline corridor. The waters around the restoration area and the western terminus of the conveyance corridor would include the estuarine portion of the Bayou Bienvenue from the Mississippi River Gulf Outlet (MRGO) to Bayou Villere (subsegment 042004) (LDEQ 2004). Water depths in the marsh creation area vary, with water bottoms typically being less than 1 foot below the water surface (NAVD88). The conveyance corridor, borrow area, and the southern portion of the access corridor are in Lake Borgne (subsegment 042001), which is an estuarine coastal lagoon, with depths near the project area ranging from 6 to 10 feet. The northern portion of the access corridor is in Chef Menteur Pass and the Gulf Intracoastal Waterway (GIWW), which is an estuary that includes a hurricane protection levee (subsegment 041702). The Proposed Project action area is located within SFHAs subject to inundation

by the 1 percent annual flood chance (i.e., 100-year flood zone). The marsh creation area, areas north of the conveyance corridor and borrow area, and the access corridor are within a SFHA Zone VE, with BFEs ranging from 17 to 24 feet (FEMA 2016).

The water quality of the action area is heavily influenced by saline water inputs through tidal exchanges (USGS 2002). The marsh creation area has experienced changes in salinities and hydrology from loss of wetlands, freshwater inputs (primarily rainfall), and saline inputs from Lake Borgne, which is heavily influenced by saltwater inputs from the Mississippi Sound and freshwater inputs from the Pearl River (USGS 2002). Bayou Bienvenue (subsegment 042004), which lies to the south of the marsh creation areas, fully supports PCR, SCR, and FWP. However, this subsegment does not fully support OYS due to the presence of fecal coliform from wildlife and other waterfowl sources and was placed on 2018 303(d) List of Impaired Waterbodies (LDEQ 2019). Lake Borgne fully supports PCR, SCR, FWP and OP, and the Bayou Sauvage segment crossed by the alternative fully supports PCR, SCR, and FWP.

Salinity levels within Lake Borgne are indicative of brackish surface water. Water quality measurements were collected in 2018 from 38 locations in and around the borrow area in Lake Borgne at depths of 1 to 10 feet. These samples revealed salinity concentrations in Lake Borgne ranging from 2.79 to 2.85 parts per thousand (ppt) (LDEQ 2017), while the nearest Coastwide Reference Monitoring System (CRMS) station (CRMS 3650) to the project area recorded salinities between 0.20 and 16.89 ppt between 2007 and 2019 (CPRA 2019). Dissolved oxygen concentrations in Lake Borgne ranged by depth from 7.34 to 6.84 mg/L, which exceed estuarine water quality standards of 4 mg/L. Turbidity levels in the lake, which range in depth from 5.72 to 8.91 FNU, are well below the maximum guideline level for estuarine lakes, as defined by LDEQ water quality standards, of 50 NTU.

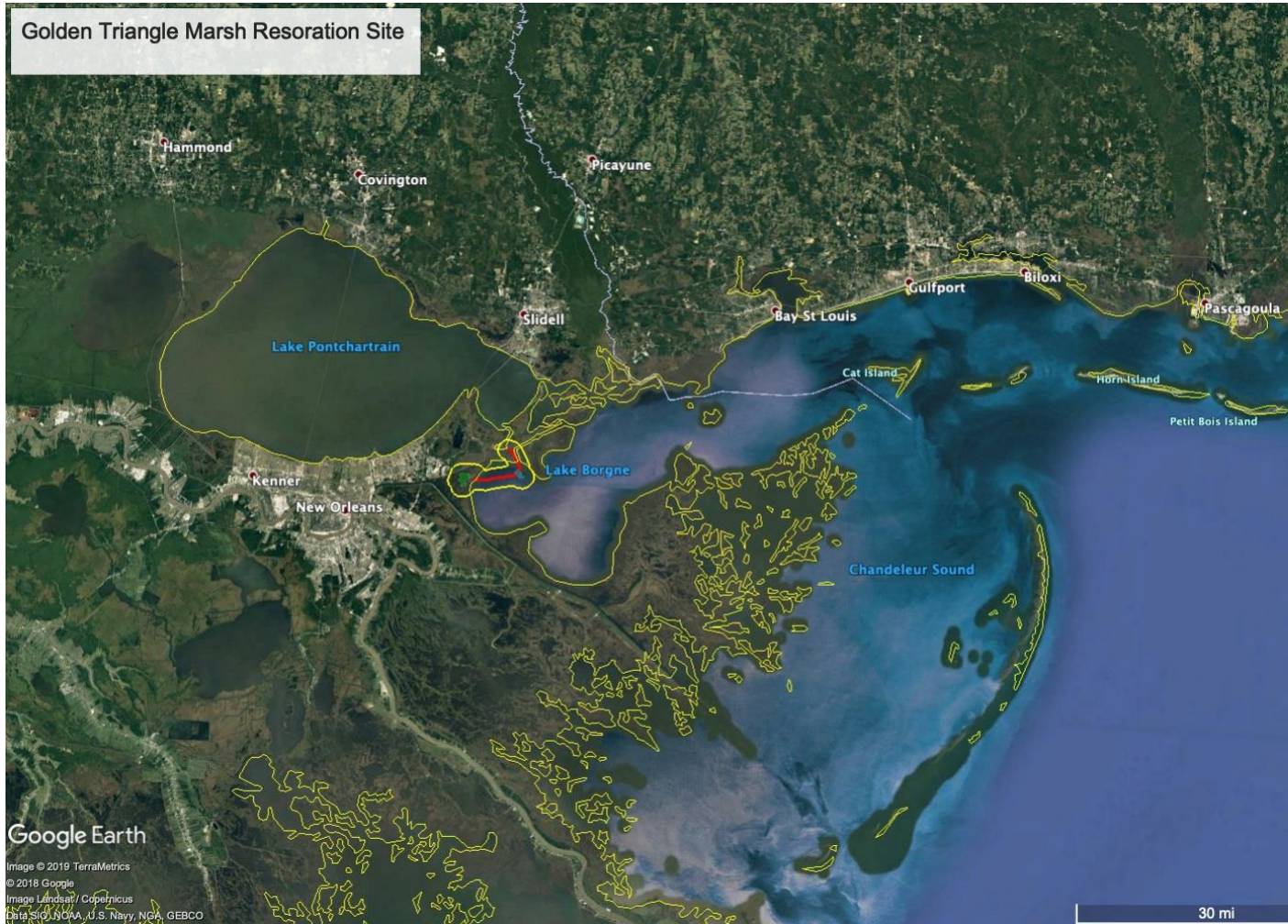
The restoration sites contain brackish marsh habitat consisting mixed stands of smooth cordgrass (*Spartina alterniflora*) and marsh hay cordgrass (*Spartina patens*) and scattered discontinuous patches of Black mangroves (*Avicennia germinans*) [Engineering and Design Services (PO-163) Final 30% Design Report (APTIM 2018b)].

*Does the project area include a river or estuary?*

YES  NO

*If yes, please approximate the navigable distance from the project location to the marine environment.*

The Proposed Project is located within estuarine waters of Lake Borgne, approximately 40 nm (74 km) from Chandeleur Sound (see image below).



**b. Existing Structures**

*If applicable. Describe the current and historical structures found in the action area (e.g., buildings, parking lots, docks, seawalls, groynes, jetties, marina). If known, please provide the years of construction.*

There are several pipeline canals and interconnected bayous located within the action area. Oil and gas exploration in the action area has also resulted in pipelines and wells. Several pipelines cross the marsh restoration area (LCSINC 2019).

**c. Seagrasses & Other Marine Vegetation**

*If applicable. Describe seagrasses found in action area. If a benthic survey was done, provide the date it was completed and a copy of the report. Estimate the species area of coverage and density. Attach a separate map showing the location of the seagrasses in the action area.*

Submerged aquatic vegetation (SAV) can be found throughout Louisiana’s coastal zone marshes and estuaries, typically on substrates that consist of sand/mud and in water depths of 4 feet or less.

Estuarine submerged vegetation beds are dominated by widgeon grass (*Ruppia maritima*) and wild celery (*Vallisneria americana*), while the marine seagrass beds are dominated by turtle grass (*Thalassia testudinum*) (LDWF 2019a). The last remaining extensive seagrass beds are located along the north shore of Lake Pontchartrain and into Lake Maurepas and also in and around the Chandeleur Islands (approximately 97 km (60 nmi.) east of the proposed project area) (LDWF, 2019).

SAV was observed in shallow water areas throughout the marsh restoration portion of the project area (APTIM 2018b), but surveys conducted in the proposed borrow area, pipeline corridor, and access channel confirmed that there are no SAV present (APTIM 2018a).

#### d. Mangroves

*If applicable. Describe the mangroves found in action area. Indicate the species found (red, black, white), the species area of coverage in square footage and linear footage along project shoreline. Attach a separate map showing the location of the mangroves in the action area.*

Black mangrove (*Avicennia germinans*) can be found in mixed stands of smooth cordgrass (*Spartina alterniflora*) generally near the leeward side of barrier islands and high salinity salt marsh habitats in Louisiana (Giri et al. 2011). Black mangroves were observed within the marsh areas of the action area (APTIM 2018b).

#### e. Corals

*If applicable. Describe the corals found in action area. If a benthic survey was done, provide the date it was completed and a copy of the report. Estimate the species area of coverage and density. Attach a separate map showing the location of the corals in the action area. Click here to enter text.*

Not applicable; corals are not expected to be in the action area. The action area is surrounded by estuarine systems that lack suitable environments for corals and is located outside of mapped distributions (Love et al. 2013; NOAA 2019). The closest known reef that supports coral assemblages is the Viosca Knoll reef in the Gulf of Mexico which is located approximately 91 nmi (170 km) from the action area.

#### f. Uplands

*If applicable. Describe the current terrestrial habitat in which the project is located (e.g. pasture, forest, meadows, beach and dune habitats, etc.).*

Within the action area, small areas of upland habitats with live oaks are limited to along the levee for the Gulf Intracoastal Water Way (GIWW) and along the banks and levees of the Chef Mentuer Pass.

#### g. Marine Mammals

*Please select the following marine mammals that could be present within the project area:*

Dolphins YES  NO

Whales YES  NO

Manatees YES  NO

*If applicable. Indicate and describe the species found in the action area. Use NMFS' Stock Assessment Reports (SARs) for more information, see <http://www.nmfs.noaa.gov/pr/sars/region.htm>*

Common bottlenose dolphins (*Tursiops truncatus truncatus*; Northern GOM BSE stock, [NMFS 2018]) utilize the southeastern Louisiana salt and brackish marsh habitat within Lake Borgne and Bay Boudreau, LA (Hayes et al. 2019); therefore, this species may be present in the action area.

West Indian Manatee (*Trichechus manatus*) is common in shallow coastal waters as they feed on submerged vegetation. Habitats suitable to support marine vegetation may be present within the action area that could attract the West Indian manatee.

#### h. Soils and Sediments

*If applicable. Indicate topography, soil type, substrate type.*

Sediments within the marsh creation portion of the action area are categorized as Clovelly muck and Lafitte muck according to the Soil Survey Geographic Database (SSURGO) Soil Classification (NRCS, 2018). Clovelly muck is part of the Clovelly series, which consists of very deep, very poorly drained, very slowly permeable soils and are typical of broad coastal marshes that are nearly continuously flooded with brackish water. Lafitte muck is part of the Lafitte series, which consists of very deep, very poorly drained, moderately rapidly permeable organic soils and are found in intermediate and brackish marshes in coastal areas. (NRCS, 2018).

Soil conditions within the marsh restoration portion of the action area consisted of very soft peat and organic clay to an approximate depth of 15 feet below the mudline. Very soft to soft Holocene clay with varying silt and sand contents were encountered between depths of 15 to 60 feet. Underlying this layer of soft to very soft clay, medium to stiff Pleistocene clay, and sandy clay deposits were observed to the boring (sampling) termination depths (APTIM 2018a).

Sediment and soil conditions within the borrow area and pipeline corridor portion of the action area were found to be predominantly very soft clays with trace to some silt layers and lenses, classified as CH (inorganic clays of high plasticity). The uppermost layers of the (typically the top 4 feet to 6 feet) consisted of very soft sandy clays with whole shells, organics, peats and silts. (APTIM 2018a).

#### i. Land Use

*If applicable. Indicate existing or previous land use activities (agriculture, dredge disposal, etc).*

This area has been historically used for commercial and recreational fishing activities. The Proposed Project is located near the confluence of two major navigation and shipping channels, the Mississippi River Gulf Outlet (MRGO) and the Gulf Intracoastal Waterway (GIWW). Because of multiple environmental impacts to coastal wetlands system in southeastern Louisiana and potential role in the severity of flooding related to Hurricane Katrina, the USACE provided a report to Congress to deauthorize MRGO. Since the deauthorization, MRGO has been modified and restoration efforts by the USACE and other State and Federal Agencies have been completed. The MRGO is no longer utilized for navigation and shipping. Public oyster leases are also located within the action area (Please see Figure in Section B of this Form). The marsh areas also provide recreational opportunities and provide for duck hunting (APTIM 2018a, 2018b).

The action area falls within a portion of the Bayou Sauvage National Wildlife Refuge acquisition boundary, one of the last remaining marsh areas adjacent to Lakes Pontchartrain and Borgne (USFWS

2009). It is the largest urban National Wildlife Refuge, as it falls within the city limits of New Orleans.

**j. Essential Fish Habitat**

*If applicable. Describe any designated Essential Fish Habitat within the project area*

EFH consultation has been completed for this project through the USACE. See the below embedded PDF for documentation:



**Memo for File EFH  
consult\_Corps\_WGra**

The Gulf of Mexico Fishery Management Council delineated Essential Fish Habitat (EFH) for federally managed species in coastal Louisiana. The Project Site is within Eco-Region 3, and contains a variety of estuarine habitat types designated as EFH including: open water, emergent saline and brackish marsh, submerged aquatic grass beds, oyster reef, sand/shell bottom, and mud/soft bottom. The National Marine Fishery Service (NMFS) also manages highly migratory species (e.g., sharks) for which EFH is identified by geographical area rather than habitat type.

Eleven species with designated EFH are likely to be within the Golden Triangle Project Area, including shrimp (two species), fish (four species), and sharks (five species). The following table lists the federally managed species found within the Golden Triangle Project Area. No Habitat Areas of Particular Concern (HAPC) or EFH Areas Protected from Fishing (EFHA) were identified within the Project Area.

**Table 1. Federally Managed Species in the Golden Triangle Project Area**

Common Name	Scientific Name
<b>REEF FISH</b>	
gray (mangrove) snapper	<i>Lutjanus griseus</i>
lane snapper	<i>Lutjanus synagris</i>
<b>MACKERELS</b>	
Spanish mackerel	<i>Scomberomorus maculatus</i>
<b>SHRIMP</b>	
brown shrimp	<i>Farfantepenaeus aztecus</i>
white shrimp	<i>Litopenaeus setiferus</i>
<b>SHARKS</b>	
Atlantic sharpnose shark	<i>Rhizoprionodon terraenovae</i>
black-tipped shark	<i>Carcharhinus limbatus</i>
bull shark	<i>Carcharhinus leucas</i>
finetooth shark	<i>Carcharhinus isodon</i>
scalloped hammerhead shark	<i>Sphyrna lewini</i>
<b>RED DRUM</b>	
red drum	<i>Sciaenops ocellatus</i>

## **F. Project Description**

*I. Describe the Proposed Action/Project Objectives: What are you trying to accomplish and how with this project? Describe in detail the construction equipment and methods\*\* needed; long term vs. short term impacts; duration of short term impacts; dust, erosion, and sedimentation controls; restoration areas; if the project is growth-inducing or facilitates growth; whether the project is part of a larger project or plan; and what permits will need to be obtained.*

*Attach a separate map showing project footprint, avoidance areas, construction accesses, staging/laydown areas.*

*\*\*If construction involves overwater structures, pilings and sheetpiles, boat slips, boat ramps, shoreline armoring, dredging, blasting, artificial reefs or fishery activities, list the method here, but complete the next section(s) in detail.*

The Golden Triangle Marsh is a narrow band of brackish marsh located directly east of New Orleans between Lake Borgne and the confluence of the Mississippi River Gulf Outlet (MRGO) and the Gulf Intracoastal Waterway (GIWW).

The goals of the Proposed Project are:

1. Restore approximately 600 acres of brackish marsh.
2. Restore and protect wetland, fish, and wildlife habitats.
3. Restore degraded marsh and reduce wave/wake erosion.
4. Maintain landscape integrity and enhance community resilience.
5. Promote natural resource stewardship and environmental education and outreach.

The Proposed Project includes restoration areas in the Golden Triangle Marsh; a borrow area located within Lake Borgne; a pipeline corridor connecting the borrow area to the restoration site; and an access corridor from Chef Menteur Pass, northeast of the marsh, to the borrow area. A staging area would be located near the shoreline of Lake Borgne between the marsh restoration areas. See embedded Permit Drawings and Plans in Section B above.

The Golden Triangle Marsh Creation Project would create or restore approximately 774 acres of broken marsh and open water, which includes the restoration of 694 acres of degraded marsh and nourishment of 80 acres of marsh, through the construction of approximately 44,000 linear feet of containment dikes. These marshes act as a buffer to reduce the full force and effects of wave action, saltwater intrusion, storm surge, and tidal currents on associated estuaries and wetlands, thereby helping restore and protect wetland, fish and wildlife habitats. The project would help buffer the surge barrier, which will increase flood protections to highly populated areas of New Orleans and provide important estuarine habitat for Lake Borgne.

There are three marsh creation areas (MCAs) proposed under the Golden Triangle Marsh Creation Project. These MCAs include the following:

- MCA 1: 560 acres of broken marsh and open water
- MCA 2: 134 acres of open water and broken marsh
- MCA 3: 80 acres of marsh adjacent to Lake Borgne

Each of the MCAs would be constructed to an elevation of +2.5 feet NAVD88 with material pumped from the Golden Triangle Borrow Area in Lake Borgne to maximize the time that the marsh elevation is in the intertidal range (where intertidal is referring to the water level between local mean high water and mean low water elevations and not the global WVA definition of intertidal). An estimated 6,700,000 cubic yards (yd<sup>3</sup>) of marsh compatible sediments would be required to meet the elevation goals in the three MCAs. The



total marsh fill footprint is approximately 774 acres.

Approximately 44,930 linear feet of earthen containment dikes would be constructed along the perimeter of the MCAs to contain the marsh fill material. These dikes would be constructed using in-situ material excavated within the boundaries of the fill area so that the excavated area is refilled during construction.

The earthen dike fill source would be excavated from the area adjacent to the earthen dike, within the marsh creation areas. Marsh buggies with back-hoe buckets have been proposed to be used to construct the earthen containment dikes, supported by sheet piling.

Following fill and dike construction activities, vegetation would be planted throughout the MCAs and along containment dike slopes to support marsh restoration. These vegetation plantings would consist of salt meadow cordgrass and marsh hay, which are common brackish marsh species found in the area.

Marsh fill material used to construct the MCAs would be dredged hydraulically from a 78-acre borrow area approximately 5.3 miles east-northeast of the restoration areas within Lake Borgne. The borrow area contains a mixture of soft to very soft clays, with fine sand and/or silts, which is compatible material for marsh creation. The borrow area design consists of one dredge cut to -24.0 feet NAVD88, with approximately 10,000,000 yd<sup>3</sup> of available marsh compatible fill material. Approximately 6,700,000 yd<sup>3</sup> of marsh compatible sediments from Lake Borgne would be dredged to fill the three MCAs. A cutterhead suction dredge will be used to collect fill material from the proposed borrow site in Lake Borgne.

One booster pump would be installed within the pipeline corridor to facilitate efficient hydraulic dredging and placement of marsh fill. A maximum area of 200 feet by 50 feet would be excavated to a maximum elevation of -10.0 feet NAV88 to accommodate the booster pump. All excavated material would be sidecast adjacent to the booster pump footprint within the pipeline corridor.

A 361-acre pipeline corridor would be used to transport fill from the borrow area to the restoration site through a submerged pipeline. The pipeline corridor runs from east to west from the Golden Triangle Borrow Area to MCA 1. The pipeline corridor passes through a 500-foot wide area adjacent to the northwest shoreline of Lake Borgne that had been previously cleared of oyster leases. The pipeline corridor would be 100 feet wide.

The average pipeline distance would be 31,933 linear feet, with the longest pumping distance being from the borrow area to the central fill area (32,600 linear feet). All dredge pipe/subline installed within the corridor would be submerged, and navigation lights would be affixed to buoys every 500 feet (approximately 70 buoys at maximum length), or per U.S. Coast Guard regulations, to notify marine traffic of the submerged pipeline. Bathymetry within Lake Borgne varies from approximately -6.0 feet NAVD88 to -12.0 feet NAVD88. It is assumed that these depths would be sufficient for floating equipment to install the subline.

A 210-acre access corridor from Chef Menteur Pass into Lake Borgne would be designated as the dredge access corridor to the Golden Triangle Borrow Area. Equipment would enter the access area via the GIWW and into Lake Borgne via the Pass. Bathymetric surveys show that this access corridor may allow for navigation of equipment to access the borrow area without the need for access dredging. The corridor was previously analyzed and cleared for cultural resources in anticipation that it would be permitted for excavation on an as-needed basis to accommodate dredging equipment.

See additional information in Section F.III.f below.

II. *Construction Schedule (What is the anticipated schedule for major phases of work? Include duration of in-water work.)*

Anticipated project start date would be in Summer 2020, and the total estimated construction time is approximately 14-15 months. This project schedule assumes a 60-day period for mobilization and pre-construction surveys; production rate of 300 linear feet/day per marsh buggy for construction of the containment dikes and one week closure periods for the containment dikes in MCAs 2 and 3, resulting in approximately 123 days to create MCAs 1-3, which may be decreased to 93 days if the construction contractor begins dredging prior to the completion of construction of the containment dike; a marsh fill production rate of 70,000 yd<sup>3</sup>/day, resulting in a total of 142 days to complete marsh fill activities; a 70-day demobilization period that includes a 30-day waiting period to begin final marsh platform elevation surveys; and 60 days of flexibility to account for weather and other uncontrollable events. Total anticipated in-water work would occur for 265 days.

The Construction Schedule and sequence of the Proposed Project will likely begin with the construction of the earthen containment dikes. During construction of the earthen containment dikes in Marsh Creation Areas (MCA) 1, 2, and 3, other construction activities may take place simultaneously to stage equipment and prepare for dredging operations within Lake Borgne borrow site. The submerged pipeline will then be installed, extending from the borrow area in Lake Borgne to the MCA 1, 2, and 3. The cutterhead dredge will be transported to the project site, although dredging will not commence until containment dikes enclosing at least one MCA is completed and dewatering structures are in position and functioning. Lines for floating objects tethered to the sea floor would ensure that all in-water lines be made of materials such as stiff cable or plastic-coated lines and any ropes need to be thick, heavy, and taut lines that do not loop or entangle, and are installed in a manner to minimize the risk of entanglement of protected species.

Once all three MCAs are filled and settled, gapping of the earthen dikes will occur to facilitate tidal exchange. The MCAs will be monitored to assess the recruitment of natural vegetation and if natural recruitment is not occurring at a satisfactory level, marsh vegetation may be planted within the MCAs (APTIM 2018b). The need for vegetation planting will be determined a year or two after construction is completed.

The total time for construction is estimated to take 425 days.

III. *Specific In-Water and/or Terrestrial Construction Methods*

*Please check yes or no for the following questions related to in-water work and overwater structures*

<i>Does this project include in-water work?</i>	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
<i>Does this project include terrestrial construction?</i>	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
<i>Does this project include construction of an overwater structure?</i>	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
<i>Will fishing be allowed from this overwater structure?</i>	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
<i>Will wildlife observation be allowed from this overwater structure?</i>	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
<i>Will boat docking be allowed from this overwater structure?</i>	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
<i>Will fishing be allowed from this overwater structure?</i>	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>

*If this is a fishing pier, please provide the following information: public or private access to pier, estimated number of people fishing per day, plan to address hook and line captures of protected species, specific operating hours/open 24 hours, artificial lighting of pier (if any), number of fish cleaning stations, and number of pier attendants (if any).*

**Not applicable; not a fishing pier.**

*Construction: Provide a detailed account of construction methods. It is important to include step-by-step descriptions of how demolition or removal of structures is conducted and if any debris will be moved and how. Describe how construction will be implemented, what type and size of materials will be used and if machines will be used, manual labor, or both. Indicate if work will be done from upland, barge, or both.)*

iii. Use of "Dock Construction Guidelines"?

[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/dockkey2002.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/dockkey2002.pdf)

iv. Type of decking: Grated – 43% open space; Wooden planks or composite planks – proposed spacing?

v. Height above Mean High Water (MHW) elevation?

vi. Directional orientation of main axis of dock?

vii. Overwater area (sq ft)?

Construction methods for the Proposed Project would involve use of a hydraulic cutterhead suction dredge to excavate marsh fill material from the borrow area. A booster pump would be installed as needed to help pump material to the fill sites. Marsh buggies would be used to construct earthen dikes. A staging area would be located near the shoreline of Lake Borgne between the three MCAs and along the pipeline corridor.

The earthen dike fill source would be excavated from the area adjacent to the earthen dike, within the marsh creation areas. The earthen containment dikes would be constructed to a crest elevation of +4.0 feet, NAVD88 with a minimum crest width of 5 feet. In areas where the dike crosses portions of existing marsh, the dike will be built on top of the existing marsh platform. Additional training dikes may be constructed within the marsh footprint to control the fill at the discretion of the construction contractor. Dewatering would occur in up to six locations around the MCAs within the containment dike boundary to allow excess water to drain from the fill areas.

Marsh fill material would be pumped hydraulically to the restoration area via a submerged pipeline. The submerged pipeline would be transported to the site on pontoons in approximately 500-foot sections. Once in the restoration area, the various sections of submerged pipeline would be joined together using ball joints into lengths of up to 2,500 feet and then sank into position within the pipeline corridor. Floating pipeline would be attached to the submerged pipeline at the borrow area end while the opposite end of the submerged line is managed ashore. Once the submerged line is in place, the dredge would be connected to the floating line and traverse the borrow area to mine sediments. Shore pipe would be added as needed to advance the end of the discharge pipe as the MCAs are filled, and flexible HDPE pipe is typically used to distribute the marsh fill material due to self-weight and maneuverability. Marsh buggies will be used to move the end of the discharge to uniformly fill the marsh area. The construction contractor may opt to construct secondary dikes within the marsh platform to assist with controlling the placement of the material.

The total estimated construction time is approximately 14-15 months. This project schedule assumes a 60-day period for mobilization and pre-construction surveys; production rate of 300 linear feet/day per marsh buggy for construction of the containment dikes and one week closure periods for the containment dikes in MCAs 2 and 3, resulting in approximately 123 days to create MCAs 1-3, which may be decreased to 93 days

if the construction contractor begins dredging prior to the completion of construction of the containment dike; a marsh fill production rate of 70,000 yd<sup>3</sup>/day, resulting in a total of 142 days to complete marsh fill activities; a 70-day demobilization period that includes a 30-day waiting period to begin final marsh platform elevation surveys; and 60 days of flexibility to account for weather and other uncontrollable events.

Following a year or two after construction of containment dikes and fill of MCAs, vegetation would be planted within the marsh creation areas and remaining containment dikes. This schedule provides time for the marsh material to consolidate to facilitate accessibility and for natural vegetation to take hold.

b. *Pilings & Sheetpiles: If this project includes installation of pilings or sheets, please provide answers to questions 1-11 listed below*

1. <i>Method of pile installation</i>	Barge mounted excavator
2. <i>Material type of piles used</i>	Steel
3. <i>Size (width) of piles/sheets</i>	22 inches
4. <i>Total number of piles/sheets</i>	310
5. <i>Number of strikes for each single pile</i>	Sheets vibrated into place
6. <i>Number of strikes per hour (for a single pile)</i>	N/A
7. <i>Expected number of piles to be driven each day</i>	30
8. <i>Expected amount of time needed to drive each pile (minutes of driving activities)</i>	10 minutes
9. <i>Expected number of sequential days spent pile driving</i>	10
10. <i>Whether pile driving occurring in-water or on land</i>	Water
11. <i>Depth of water where piles will be driven</i>	Varies from -3.5 to -9.0' NAVD 88

Metal sheet pile may be required to support the construction of containment dikes for MCA sites 2 and 3 of the Proposed Project. Construction for both of these sites consist of placement of sheet piles to an approximate depth of -40 feet NAVD88 with a top elevation at +4.0 feet NAVD88. Additionally, in areas where sheet pile will be installed medium grade, coarse sand will be transported to the site and placed on both sides of the sheet pile to provide lateral support. The sheet pile will be installed utilizing marsh buggies and the placement of sand berms on either side of the sheet pile will be placed utilizing marsh buggy backhoes. The sheet piling may be only utilized for a 3 year period and may potentially be removed (APTIM 2018b).

c. *Marinas and Boat Slips (Describe the number and size of slips and if the number of new slips changes from what is currently available at the project. Indicate how many are wet slips and how many are dry slips. Estimate the shadow effect of the boats - the area (sqft) beneath the boats that will be shaded.)*

Not applicable; not a marina or boat slip.

d. *Boat Ramp (Describe the number and size of boat ramps, the number of vessels that can be moored at the site (e.g., staging area) and if this is a public or private ramp. Indicate the boat trailer parking lot capacity, and if this number changes from what is currently available at the project.)*

Not applicable; not a boat ramp.

e. *Shoreline Armoring (This includes all manner of shoreline armoring (e.g., riprap, seawalls, jetties, groins, breakwaters, etc.). Provide specific information on material and construction methodology used to install the shoreline*

*armoring materials. Include linear footage and square footage. Attach a separate map showing the location of the shoreline armoring in the action area.*

**Not applicable; the Proposed Project would not include shoreline armoring.**

*f. Dredging or digging (Provide details about dredge type (hopper, cutterhead, clamshell, etc.), maximum depth of dredging, area (ft<sup>2</sup>) to be dredged, volume of material (yd<sup>3</sup>) to be produced, grain size of material, sediment testing for contamination, spoil disposition plans, and hydrodynamic description (average current speed/direction)). If digging in the terrestrial environment, please describe fully with details about possible water jetting, vibration methods to install pilings for dune walk-over structure, or other methods. If using devices/methods/turtle relocation dredging to relocate sea turtles, then describe the methods here.*

The Proposed Project would require the use of two dredging/digging methods. Marsh buggies with back-hoe buckets have been proposed to be used to construct the earthen containment dikes around each MCA. A cutterhead suction dredge will be used to collect fill material from the proposed borrow site in Lake Borgne.

The first construction stage of the Proposed Project will require earthen containment dikes to be constructed to contain the dredged fill sediments. Earthen containment dikes will be constructed along the perimeter of each MCA. Borrow material for the containment dikes will be excavated from within the fill footprint so that the excavated area is refilled during construction.

Two earthen containment dike designs are proposed for the construction of marsh fill material containment. The first design consists of an earthen dike elevation of +4.0 feet NAVD88 with side slopes of 5H:1V. The fill source material for the earthen containment dike construction would be located parallel to the earthen dike on the interior of the marsh fill areas so that it would be refilled once marsh sediment is pumped from the borrow area and placed in the fill area. Fill source excavation would be allowed to a depth of -10.0 feet NAVD88 for MCA 2 and MCA 3 with a minimum shelf distance from the inner toe of the earthen dike of 25 feet. Fill source excavation for MCA 1 would be allowed to a depth of -8.0 feet NAVD88 with a minimum shelf distance from the inner toe of the earthen dike of 30 feet.

A cutterhead suction dredge will be used to collect the required fill consisting of 5,180,190 yd<sup>3</sup> (MCA 1 = 342,870 yd<sup>3</sup>, MCA 2 = 3,952,130 yd<sup>3</sup>, MCA 3 = and 885,200 yd<sup>3</sup>) of sediment within the 78-acre designated borrow site in Lake Borgne (APTIM 2018b). The bathymetry in the borrow area ranges from -6.0 feet NAVD88 on the southwest side to -12.0 feet NAVD88 on the northeast side. Dredging would consist of one cut depth ranging from 12 to 18 feet in thickness and extend to the -24.0-foot NAVD88 elevation. The borrow area contains a total of 10 mcy of very soft clays and silts with trace to some sand and silt layers, classified as CL (inorganic clays of low to medium plasticity, sandy clays, silty clays) and very soft clays with trace to some silt layers and lenses, classified as CH (inorganic clays of high plasticity) (APTIM 2018a).

The dredged sediment from the borrow area will be pumped from the borrow site via a submerged pipeline. This pipeline will have a maximum length of 6.2 miles between the borrow site in Lake Borgne and the furthest reaches of MCA 2. The dredged sediment will be pumped into the three MCAs utilizing hydraulic placement which may require a booster pump to be located midway within the permitted pipeline corridor between the borrow site and designated MCAs. One booster pump would be installed within the borrow area to facilitate efficient hydraulic dredging and placement of marsh fill. A maximum area of 200 feet by 50 feet would be excavated to a maximum elevation of -10.0 feet NAV88 to

Version: January 21, 2020

accommodate the booster pump. All excavated material would be sidecast adjacent to the booster pump footprint.

As the dredged sediment would be fully utilized in the marsh fill area, temporary or permanent spoil placement is not anticipated.

A Hazardous, Toxic, and Radioactive Waste (HTRW) Study was not conducted as no indication of hazardous, toxic, and/or radioactive waste had been observed at the project site.

*g. Blasting (Projects that use blasting might not qualify as "minor projects," and a Biological Assessment (BA) may need to be prepared for the project. Arrange a technical consultation meeting with NMFS Protected Resources Division to determine if a BA is necessary. Please include explosive weights and blasting plan.)*

Not applicable; no blasting is planned.

*h. Artificial Reefs (Provide a detailed account of the artificial reef site selection and reef establishment decisions [i.e., management and siting considerations, stakeholder considerations, environmental considerations, long term maintenance plan (periodic clean-up of lost fishing gear/debris)], deployment schedule, materials used, deployment methods, as well as final depth profile and overhead clearance for vessel traffic. For additional Information and detailed guidance on artificial reefs, please refer to the artificial reef program websites for the particular state the project will occur in.*

Not applicable; does not include artificial reefs.

*i. Fishery Activities (Describe any use of gear that could entangle or capture protected species. This includes activities that may enhance fishing opportunities (e.g. fishing piers) or be fishery/gear research related (e.g. involve trawl gear, gillnets, hook and line gear, crab pots etc)).*

Not applicable; no fishery activities are planned.

## **G. NOAA Species & Critical Habitat and Effects Determination Requested**

*If your project occurs in a location that does not contain any listed NOAA species or designated Critical Habitats, please check the box below. If this box is checked, you may skip Section G. and proceed to Section H.*

This project occurs in a location that does not contain any listed NOAA species or designated Critical Habitats.

ESA effects have been accounted for under an existing consultation.

*1. List all species, critical habitat, proposed species and proposed critical habitat that may be found in the action area. Species that do not currently occur in the action area (but are listed on county species lists) do not need to be listed in drop downs.*

*2. Attach a separate map identifying species/critical habitat locations within the action area. For information on species and critical habitat under NMFS jurisdiction, visit:  
[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/threatened\\_endangered/Documents/gulf\\_of\\_mexico.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/threatened_endangered/Documents/gulf_of_mexico.pdf).*

Identify if Gulf sturgeon are in marine or in freshwater in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Gulf sturgeon CH - marine). Identify if sea turtles are in water or on land

in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Loggerhead sea turtle CH - terrestrial).

<b>Species and/or Critical Habitat</b>	<b>CH Unit</b> (if applicable)	<b>Location</b> (Sea turtles and Gulf Sturgeon only)	<b>Determinations</b> (see definitions below)	<b>For "No Effect", please select justification.</b>
Gulf Sturgeon (T)	N/A	Marine	May Affect, Not Likely to Adversely Affect	
Gulf Sturgeon CH	8	Marine	May Affect, Likely to Adversely Affect	
Green Sea Turtle (T)	N/A, outside CH	Marine	May Affect, Not Likely to Adversely Affect	
Loggerhead Sea Turtle	N/A, outside CH	Marine	May Affect, Not Likely to Adversely Affect	
Kemp's Ridley Sea Turtle (E)	N/A, outside CH	Marine	May Affect, Not Likely to Adversely Affect	

### Determination Definitions

**NE = no effect.** This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat.

**NLAA = may affect, not likely to adversely affect.** This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources. Response requested is concurrence with the not likely to affect determination. This conclusion is appropriate when effects to the species or critical habitat will be wholly beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the Services concur in writing with the Action Agency's determination of "is not likely to adversely affect" listed species or critical habitat, the section 7 consultation process is completed.

**LAA = may affect, likely to adversely affect.** This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response requested for listed species is formal consultation for action with a likely to adversely affect determination, with a biological opinion as the concluding document. This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat, but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination is "likely to adversely affect." Any LAA determination requires formal section 7 consultation and will require additional information.

**Critical Habitat No Destruction** = When the proposed action will not diminish the value of critical habitat.

## H. USFWS Species & Critical Habitat and Effects Determination Requested

If your project occurs in a location that does not contain any listed USFWS species or designated Critical Habitats, please check the box below. If this box is checked, you may skip Section G. and proceed to Section H.

This project occurs in a location that does not contain any listed USFWS species or designated Critical Habitats.

ESA effects have been accounted for under an existing consultation.

1. List all species, critical habitat, proposed species and proposed critical habitat that may be found in the action area. Species that do not currently occur in the action area (but are listed on county species lists) do not need to be listed in drop downs.

2. Attach a separate map identifying species/critical habitat locations within the action area. For information on species and critical habitat under NMFS jurisdiction, visit:  
[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/threatened\\_endangered/Documents/gulf\\_of\\_mexico.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/threatened_endangered/Documents/gulf_of_mexico.pdf).

Identify if Gulf sturgeon are in marine or in freshwater in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Gulf sturgeon CH - marine). Identify if sea turtles are in water or on land in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Loggerhead sea turtle CH - terrestrial).

Species and/or Critical Habitat	CH Unit (if applicable)	Location (Sea turtles and Gulf Sturgeon only)	Determinations (see definitions below)	For "No Effect", please select justification.
Pallid Sturgeon	N/A	Riverine/Freshwater	No Effect	Species does not occur within action area
West Indian Manatee	N/A	Choose an item.	May Affect, Not Likely to Adversely Affect	Choose an item.

### **Pallid Sturgeon**

The Pallid Sturgeon inhabits large freshwater rivers with flowing waters specifically within the main-channel habitats (USFW 2014). The Proposed Project is located in Lake Borgne, the estuarine environments of which lack the characteristics of large riverine main channel habitats, sand bars, and islands preferred by the pallid sturgeon (USFWS 2007); thus, this species is not expected to occur in the action area. The Proposed Project activities are anticipated to result in temporary and localized excavation and construction noise for the dredging and marsh restoration. These actions are not expected to result in broad spatial and temporal scale effects beyond the action area.

### **Determination Definitions**

**NE = no effect.** This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat.

**NLAA = may affect, not likely to adversely affect.** This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may



be beneficial effects to these resources. Response requested is concurrence with the not likely to affect determination. This conclusion is appropriate when effects to the species or critical habitat will be wholly beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the Services concur in writing with the Action Agency's determination of "is not likely to adversely affect" listed species or critical habitat, the section 7 consultation process is completed.

**LAA = may affect, likely to adversely affect.** This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response requested for listed species is formal consultation for action with a likely to adversely affect determination, with a biological opinion as the concluding document. This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat, but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination is "likely to adversely affect." Any LAA determination requires formal section 7 consultation and will require additional information.

**Critical Habitat No Destruction** = When the proposed action will not diminish the value of critical habitat.

## **I. Effects of the proposed project to the species and actions to reduce impacts**

*NOTE: Species selected as "No Effect" with justification in table do not need to be addressed in Section I or J.*

*I. Explain the potential beneficial and adverse effects to each species listed above. Describe what, when, and how the species will be impacted and the likely response to the impact. Be sure to include direct, indirect, and cumulative impacts and where possible, quantify effects.*

*If species are present (or potentially present) and will not be adversely affected describe your rationale. If species are unlikely to be present in the general area or action area, explain why. This justification provides documentation for your administrative record, avoids the need for additional correspondence regarding the species, and helps expedite review.*

The Gulf sturgeon, Pallid sturgeon, and West Indian manatee were all listed as being potentially present in the project area by the USFWS Information for Planning and Consultation (IPaC) database (USFWS 2019a);

### **Gulf Sturgeon -**

**Direct and Indirect Impacts:** The Gulf sturgeon can occur in river systems and nearshore bays and estuaries depending upon the life stage of the species and season (NOAA Fisheries 2016). In Louisiana, the Gulf sturgeon is found in the Pearl, Bouge Chitto and Tchefoncté rivers in St. Tammany and Washington Parishes and is suspected to also occur in any large river in the Lake Pontchartrain drainage (LDWF 2019b). Gulf sturgeon are categorized into spawning populations based on the river system they inhabit. Currently Gulf sturgeon inhabit and spawn in seven river systems, the Pearl River system is the closest to the proposed project area. The Pearl River empties into the eastern portion of Lake Borgne near the Rigolets. The action area is located within designated critical habitat for this species in Lake Borgne and Lake Pontchartrain (see Section J).

As the action area contains estuarine habitat, the Proposed Project would have the potential to impact adult and sub-adult Gulf sturgeon while overwintering and foraging. Gulf sturgeon feed on a variety of

bottom dwelling marine organisms, including amphipods, isopods, lancelets, polychaetes, and other marine worms (USFWS 2019b). Gulf sturgeon are found primarily in water 2-4 meters deep with at least 80% sand, where the benthic community was dominated by crustaceans and annelids (Fox et al. 2002). As sandier substrates provide higher concentrations of benthic organisms, sandy-bottomed habitats are likely more valuable foraging ground to Gulf sturgeon.

Gulf sturgeon could be impacted by in-water work that includes dredge and fill activities that result in temporary localized turbidity, decreases in dissolved oxygen, and short-term habitat alteration caused by dredging activity. Noise related to construction and human activity may also disturb Gulf sturgeon. These fish are highly mobile; therefore, individuals disturbed by effects from construction activities would likely move to another area. Other short-term impacts may include potential entrapment or entrainment during dredging and/or entanglement with anchor management systems. Long-term impacts such as downstream turbidity, pollution, or habitat loss are not anticipated due to the localized and temporary nature of the Proposed Project activities and the implementation of the Gulf Sturgeon BMPs to reduce and avoid potential impacts to this species. As the long-term effects associated with the Proposed Project are anticipated to be beneficial to ecological conditions of benthic environments in the action area, the overall impacts of the Proposed Project could benefit foraging habitat for this species.

Impact avoidance measures for the Proposed Project may include:

- Practice Initial Start-up periods prior to dredging operations.
- Halt dredging activity immediately if a Gulf sturgeon is cited within the vicinity of the dredging operations and report the sighting to the Louisiana Dept. Wildlife and Fisheries.
- Operate dredge equipment in a manner to avoid risks to Gulf sturgeon (e.g., disengage pumps when the cutter head is not in the substrate; avoid pumping water from the bottom of the water column).
- Implement NMFS Sea Turtle and Smalltooth Construction Conditions (revised March 23, 2006) and NMFS Measures for Reducing Entrapment Risk to Protected Species (revised May 22, 2012), as they are protective of Gulf sturgeon as well.
- In-water lines for floating platforms would be made of materials such as stiff cable or plastic-coated lines and any ropes would be thick, heavy, and taut lines that do not loop or entangle, and would be installed in a manner to minimize the risk of entanglement of protected species.

Cumulative Impacts: With the implementation of BMPs and avoidance measures to reduce the potential for impacts to Gulf sturgeon the likelihood for cumulative impacts to this species is low. The temporary increase in potential for disturbance from human noise and activity and/or habitat impacts associated with construction activities may still contribute to a minor increase in adverse effects which would be limited to the in-water construction period, when combined with existing levels of disturbance and human noise and activity.

**West Indian Manatee -**

Direct and Indirect Impacts: Habitats suitable to support marine vegetation may be present within the action area that could attract the West Indian manatee. However, no known occurrences of this species has been documented within the action area; thus, occurrences of this species is rare and there is a low probability the species would occur in the action area (LDWF 2019b; NatureServe 2016). Manatees moving between areas of suitable habitat may occur within the action area.

Proposed Project in-water work includes dredging, marsh fill, and placement of pipeline. These activities will result in temporary localized turbidity and construction noise that may result in avoidance behaviors. Other impacts include collision with vessels/barges, and increased risk of entanglement with debris that may catch on anchor management systems. Standard Manatee Conditions BMPs will be implemented to reduce and avoid potential impacts to this species. Adherence to the protection measures would help ensure that any manatee present in the action area would not be adversely affected. The disturbance to the manatee would be temporary, limited to project construction and would result in temporary displacement as individuals would likely move to another area for foraging or resting purposes.

Impact avoidance measures for the Proposed Project may include:

- All contract personnel associated with the project would be informed of the potential presence of manatees and the need to avoid collisions with manatees, which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973.
- All construction personnel are responsible for observing water-related activities for the presence of manatee(s).
- Temporary signs would be posted prior to and during all construction/dredging activities to remind personnel to be observant for manatees during active construction/dredging operations or within vessel movement zones (i.e., work area), and at least one sign should be placed where it is visible to the vessel operator.
- Siltation barriers, if used, would be made of material in which manatees could not become entangled, and should be properly secured and monitored.
- If a manatee is sighted within 100 yards of the active work zone, special operating conditions would be implemented, including: no operation of moving equipment within 50 feet of a manatee; all vessels shall operate at no wake/idle speeds within 100 yards of the work area; and siltation barriers, if used, should be re-secured and monitored. Once the manatee has left the 100-yard buffer zone around the work area on its own accord, special operating conditions are no longer necessary, but careful observations would be resumed.
- Any manatee sighting would be immediately reported to the USFWS and the Louisiana Department of Wildlife and Fisheries (LDWF) Natural Heritage Program.
- To prevent entrapment of manatee inside of dredged material receiving areas that have dikes or other retention features that enclose an area of open water, the area would be inspected for the presence of manatee(s): 1) before complete closure of the confining features; and 2) again before material is discharged in to the receiving area. Any manatee that is sighted would be allowed to leave the area before work resumes.
- In-water lines would be made of materials such as stiff cable or plastic-coated lines and any ropes would be thick, heavy, and taut lines that do not loop or entangle, and would be installed in a manner to minimize the risk of entanglement of protected species.

Cumulative Impacts: With the implementation of BMPs and avoidance measures to reduce the potential for impacts to West Indian manatee, the likelihood for cumulative impacts to this species is low. The temporary increase in potential for disturbance or strikes of individual manatees from human noise and activity and/or habitat impacts associated with construction activities may still contribute to a minor increase in adverse effects, when combined with existing levels of disturbance and human noise and activity. An increase in marsh habitat area would be beneficial for healthy vegetative communities as marsh habitats are a major energy source for both the planktonic and benthic communities of estuarine and nearshore habitats, which could contribute to improved conditions for SAV in the action area.

## Sea Turtles

Three species of sea turtles may possibly occur in the action area (USFWS 2019a), and include the loggerhead, Kemp's Ridley, and green sea turtle species. Due to the absence of suitable nesting beach habitats and the absence of any records of nesting for these species, these species are not expected to occur in terrestrial habitats within the Proposed Project action area (LDWF 2019b; Love et al. 2013; NatureServe 2016; NOAA 2019).

Direct and Indirect Impacts: The loggerhead, green and Kemp's Ridley sea turtles may be present within the Proposed Project action area and it is located within the known ranges of these species (LDWF 2019b; NatureServe2016). The Proposed Project's in-water work may result in temporary increases in turbidity and construction noise that may result in temporary avoidance behaviors. Sea turtles would likely avoid or move away from construction activities. Other impacts include collision with vessels/barges and/or entrapment during fill activities, and increased risk of entanglement with debris that may catch on anchor management systems. Sea turtle BMPs will be implemented to reduce and avoid impacts to these species. The construction of the artificial oyster reef would improve benthic habitat and water quality and could benefit to foraging habitat for sea turtles in the area.

### Impact avoidance measures for the Proposed Project will include:

- Implement the following in-water work guidelines:
  - NMFS's Sea Turtle and Smalltooth Sawfish Construction Conditions (revised March 23, 2006);
  - NMFS's Measures for Reducing Entrapment Risk to Protected Species (revised May 22, 2012); and
  - NMFS's Vessel Strike Avoidance Measures and Reporting for Mariners (revised February 2008).
- In-water lines would be made of materials such as stiff cable or plastic-coated lines and any ropes would be thick, heavy, and taut lines that do not loop or entangle, and would be installed in a manner to minimize the risk of entanglement of protected species.

Cumulative Impacts: With the implementation of BMPs and avoidance measures to reduce the potential for impacts to sea turtle foraging habitat, the likelihood for cumulative impacts to these species is low. The temporary increase in potential for disturbance or strikes of individual sea turtles from human noise and activity and/or habitat impacts associated with construction activities may still contribute to an increase in adverse effects, when combined with existing levels of disturbance and human noise and activity.

*II. Explain the actions to reduce adverse effects to each species listed above. For each species for which impacts were identified, describe any conservation measures (e.g. BMPs) that will be implemented to avoid or minimize the impacts. Conservation measures are designed to avoid or minimize effects to listed species and critical habitats or further the recovery of the species under review. Conservation measures are considered part of the proposed action and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinitiate this consultation.*

***Frequently Recommended BMPs: This checklist provides standard BMPs recommended by NOAA and USFWS. Please select any BMPs that will be implemented:***

<input checked="" type="checkbox"/> <b>USFWS Standard Manatee In Water Conditions</b>
---------------------------------------------------------------------------------------

- |                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> <b>NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions<sup>1</sup></b>      |
| <input checked="" type="checkbox"/> <b>NMFS Measures for Reducing the Entrapment Risk to Protected Species<sup>1</sup></b> |
| <input checked="" type="checkbox"/> <b>NMFS Vessel Strike Avoidance Measures and Reporting for Mariners<sup>1</sup></b>    |

**Additional BMPs or Conservation Measures**

Chapter 6 of the PDARP included an important appendix (6.A) of best practices, see information starting on page 6-173.

[http://www.gulfspillrestoration.noaa.gov/sites/default/files/wp-content/uploads/Chapter-6\\_Environmental-Consequences\\_508.pdf](http://www.gulfspillrestoration.noaa.gov/sites/default/files/wp-content/uploads/Chapter-6_Environmental-Consequences_508.pdf)

Use the box below to indicate which best management practices or conservation measures you'll be using in your project (that were not listed in Section I above)

Additional practices and measures have not yet been identified.

**J. Effects to critical habitats and actions to reduce impacts**

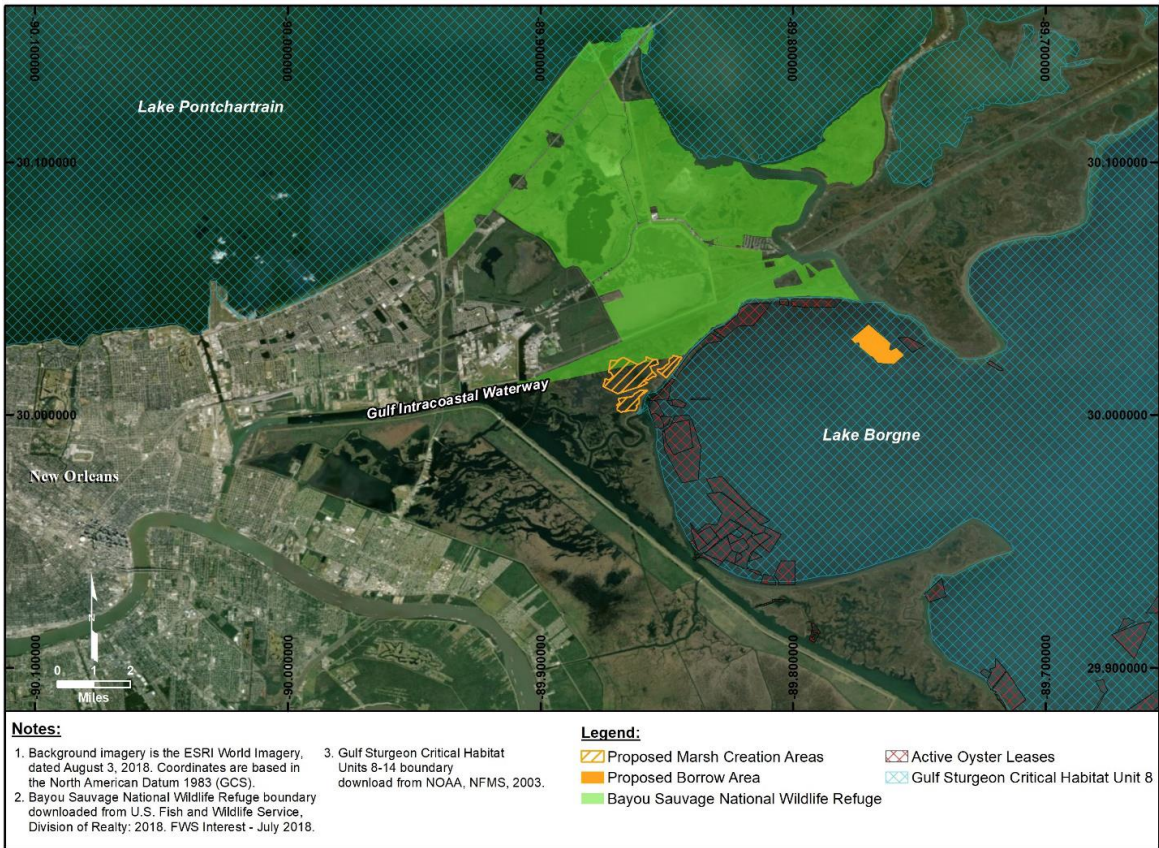
*NOTE: Species selected as "No Effect" with justification in table do not need to be addressed in Section I or J.*

*1. Explain the potential beneficial and adverse effects to critical habitat listed above. Describe what, when, and how the critical habitat will be impacted and the likely response to the impact. Be sure to include direct, indirect, and cumulative impacts to physical and biological features, and where possible, quantify effects (e.g. acres of habitat, miles of habitat).*

*Describe your rationale if designated or proposed critical habitats are present and will not be adversely affected.*

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<sup>1</sup> Documents can be found here: [http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/index.html](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/index.html)



**Aerial image of area showing Gulf Sturgeon Critical Habitat.**

The Proposed Project action area overlaps Gulf sturgeon designated critical habitat Unit 8 (68 FR 13370), as all of Lake Borgne is designated as Gulf sturgeon critical habitat. Proposed Project elements that would be located within the critical habitat unit include the 78-acre borrow area and the portion of the pipeline corridor within Lake Borgne.

Lake Borgne, including the borrow area, is designated as critical habitat for the Gulf sturgeon. Therefore, the dredging of the borrow area could be considered an impact to critical habitat. Impacts to Gulf Sturgeon will be addressed during formal consultation from NMFS to address adverse effects from dredging in the borrow areas due to this and other projects that might use the Lake Borgne borrow source.

There will be a net positive impact on overall marsh habitat associated with the proposed project. Some shallow water areas will be filled to create marsh but the deeper channels accessible to Gulf sturgeon will not be filled.

II. Explain the actions to reduce adverse effects to critical habitat listed above. For critical habitat for which impacts were identified, describe any conservation measures (e.g. BMPs) that will be implemented to avoid or minimize the impacts. Conservation measures are designed to avoid or minimize effects to listed species and critical habitats or further the recovery of the species under review. Conservation measures are considered part of the proposed action and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinitiate this consultation.

Extensive habitat monitoring of this project area will be implemented pre and post construction as a part of the Lake Borgne Marsh Creation project MAM plan .

**K. Marine Mammals**

I. The Marine Mammal Protection Act prohibits the taking (including disruption of behavior, entrapment, injury, or death) of all marine mammals (e.g.,whales, dolphins, manatees). However, the MMPA allows limited exceptions to the take prohibition if authorized, such as the incidental (i.e., unintentional but not unexpected) take of marine mammals. The following questions are designed to allow the Agencies to quickly determine if your action has the potential to take marine mammals. If the information provided indicates that incidental take is possible, further discussion with the Agencies is required.

Is your activity occurring in or on marine or estuarine waters? NO YES

If yes, is your activity likely to cause large-scale, ecosystem level impacts to the quality (e.g. salinity, temperature) of marine or estuarine waters? NO YES

II. If Yes, describe activities further using checkboxes. Does your activity involve any of the following:

NO	YES	ACTIVITY
<input checked="" type="checkbox"/>	<input type="checkbox"/>	a) Use of active acoustic equipment (e.g., echosounder) producing sound below 200 kHz
<input type="checkbox"/>	<input checked="" type="checkbox"/>	b) In-water construction or demolition
<input checked="" type="checkbox"/>	<input type="checkbox"/>	c) Temporary or fixed use of active or passive sampling gear (e.g., nets, lines, traps; turtle relocation trawls)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	d) In-water Explosive detonation
<input checked="" type="checkbox"/>	<input type="checkbox"/>	e) Aquaculture
<input checked="" type="checkbox"/>	<input type="checkbox"/>	f) Restoration of barrier islands, levee construction or similar projects
<input checked="" type="checkbox"/>	<input type="checkbox"/>	g) Fresh-water river diversions
<input checked="" type="checkbox"/>	<input type="checkbox"/>	h) Building or enhancing areas for water-related recreational use or fishing opportunities (e.g. fishing piers, bridges, boat ramps, marinas)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	i) Dredging or in-water construction activities to change hydrologic conditions or connectivity, create breakwaters and living shorelines, etc.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	j) Conducting driving of sheet piles or pilings
<input checked="" type="checkbox"/>	<input type="checkbox"/>	k) Use of floating pipeline during dredging activities

III. If you checked “Yes” to any of the activities immediately above or the activity could impact the quality of marine or estuarine waters, please describe the nature of the activities in more detail or indicate which section of the form already includes these descriptions. See the NOAA Acoustic Guidance for more information: <http://www.nmfs.noaa.gov/pr/acoustics/faq.htm>

See Sections F.I. and II. project description and construction methods sections above. Access to the project site would be through existing navigable waterways. Chef Menteur Pass has been designated as the dredge access corridor to the Golden

Triangle Borrow Area. Equipment may enter the area via the GIWW and into Lake Borgne via the Chef Menteur Pass. Bathymetric surveys conducted by APTIM show that this access corridor may allow for navigation of equipment to access the borrow area without the need for access dredging (APTIM 2018b). Metal sheet pile may be required to support the construction of containment dikes for MCA sites 2 and 3 of the Proposed Project. Construction for both of these sites consist of placement of sheet piles to an approximate depth of -40 feet NAVD88 with a top elevation at +4.0 feet NAVD88. Additionally, in areas where sheet pile will be installed medium grade, coarse sand will be transported to the site and placed on both sides of the sheet pile to provide lateral support. The sheet pile will be installed utilizing marsh buggies and the placement of sand berms on either side of the sheet pile will be placed utilizing marsh buggy backhoes. The sheet piling may be only utilized for a 3 year period and may potentially be removed (APTIM 2018b). See previous table for more detail on sheetpiles.

IV. *Frequently Recommended BMPs for marine mammals (manatees are covered in Section I above): This checklist provides standard BMPs recommended by NOAA. Please select any BMPs that will be implemented:*

<input checked="" type="checkbox"/>	NMFS Southeast U.S. Marine Mammal and Sea Turtle Viewing Guidelines <sup>2</sup>
<input checked="" type="checkbox"/>	NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions <sup>3</sup>
<input checked="" type="checkbox"/>	NMFS Measures for Reducing the Entrapment Risk to Protected Species <sup>3</sup>
<input checked="" type="checkbox"/>	NMFS Vessel Strike Avoidance Measures and Reporting for Mariners <sup>3</sup>
<input type="checkbox"/>	Reproducing and posting outreach signs: Dolphin Friendly Fishing Tips sign, Don't Feed Wild Dolphins sign <sup>3</sup>

If not listed above, please describe any additional BMPs or conservation measures that may be implemented for marine mammals. Dolphins would be monitored during dredging activities following the same protocols used for sea turtles and manatees. Specifically: (a) If dolphins come within 50 ft. of active dredging and are not just traveling through the area (e.g. remaining within 50 ft. to forage), dredge operations should not start, or, if dredging has already begun, they should cease until the dolphins are beyond and are not likely to re-enter (i.e., are on a dedicated path away from the 50 ft. area). This is to avoid physical harm from dredge equipment. (b) To avoid perceived physical barriers to dolphins, avoid transversing waterbodies with any floating pipelines from the dredge activities.

### L. Bald Eagles

Are bald eagles present in the action area?  NO  YES

If YES, the following conservation measures should be implemented:

1. If bald eagle breeding or nesting behaviors are observed or a nest is discovered or known, all activities (e.g., walking, camping, clean-up, use of a UTV, ATV, or boat) should avoid the nest by a minimum of 660 feet. If the nest is protected by a vegetated buffer where there is *no* line of sight to the nest, then the minimum avoidance distance is 330 feet. This avoidance distance shall be maintained from the onset of breeding/courtship behaviors until any eggs have hatched and eaglets have fledged (approximately 6 months).
2. If a similar activity (e.g., driving on a roadway) is closer than 660 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
3. If a vegetated buffer is present and there is no line of sight to the nest and a similar activity is closer than 330 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
4. In some instances, activities conducted at a distance greater than 660 feet of a nest may result in disturbance. If an activity appears to cause initial disturbance, the activity shall stop and all individuals and equipment will be moved away until the eagles are no longer displaying disturbance behaviors.

<sup>2</sup> Documents can be found here: [http://sero.nmfs.noaa.gov/protected\\_resources/outreach\\_and\\_education/index.html](http://sero.nmfs.noaa.gov/protected_resources/outreach_and_education/index.html)

<sup>3</sup> Documents can be found here: [http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/index.html](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/index.html)



Will you implement the above measures?  NO  YES

If these measures cannot be implemented, then you must contact the Service’s Migratory Bird Permit Office.  
 Texas – (505) 248-7882 or by email: permitsR2MB@fws.gov  
 Louisiana, Mississippi, Alabama, Florida – (404) 679-7070 or by email: permitsR4MB@fws.gov

**M. Request approval for use of NMFS PDCs for this project**

Complete this section only if your project qualifies for streamlined ESA consultation under the ESA Framework Programmatic Biological Opinion completed by NMFS on February 10, 2016. To be eligible for streamlined ESA consultation with NMFS, you must implement all Project Design Criteria (PDCs) applicable to your project. Check “yes” for PDC categories that apply to the proposed project, and request PDC checklist from NMFS.

NO	YES	ACTIVITY
<input type="checkbox"/>	<input type="checkbox"/>	<b>Oyster Reef Creation and Enhancement</b>
<input type="checkbox"/>	<input type="checkbox"/>	<b>Marine Debris Removal</b>
<input type="checkbox"/>	<input type="checkbox"/>	<b>Construction of Living Shorelines</b>
<input type="checkbox"/>	<input type="checkbox"/>	<b>Marsh Creation and Enhancement</b>
<input type="checkbox"/>	<input type="checkbox"/>	<b>Construction of Non-Fishing Piers</b>

**N. Submitting the BE Form**

We request that all BE forms and consultation materials be placed on Sharepoint for review. Upon receipt, we will conduct a preliminary review and provide any comments and feedback, including any requests for modifications or additional information. If modifications or additional information is necessary, we will work with you until the Biological Evaluation form is considered complete. Once complete, we will use the Biological Evaluation form to initiate appropriate consultations.

Questions may be directed to:

**NMFS ESA § 7 Consultation**

Christy Fellas, National Oceanic Atmospheric Administration  
 Email: Christina.Fellas@noaa.gov  
 Phone: 727-551-5714

**USFWS ESA § 7 Consultation**

Erin Chandler, Department of the Interior  
 Email: Erin\_Chandler@fws.gov  
 Phone: 470-361-3153

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