



# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Deepwater Horizon Gulf Restoration Office  
341 Greeno  
Fairhope



In Reply Refer To:  
FWS/R4/DH NRDAR



U.S. Fish and Wildlife Service  
Florida Ecological Service Office

FWS Log No. 04EF2000-2021-I-1109

## Memorandum

To: Field Supervisor, Vero Beach

From: Chief, Planning and Compliance Office

Subject: Informal Consultation Request  
Implementation Group's Concurrence  
Optimal Oyster Restoration Locations Along the Florida Gulf Coast Plan

The U.S. Fish and Wildlife Service has reviewed the information provided and finds that the proposed action is not likely to adversely affect any federally listed species or designated critical habitat protected by the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 et. seq.). A record of this consultation is on file at the Florida Ecological Service Office.

This fulfills the requirements of section 7 of the Act and further action is not required. If modifications are made to the project, if additional information involving potential effects to listed species becomes available, or if a new species is listed, reinitiation of consultation may be necessary.

Robert L. Carey, Division Manager, Environmental Review

9/16/2021

Date

The Florida Implementation Group is proposing a plan for Conducting Habitat Suitability Analyses to Identify Optimal Oyster Restoration Locations Along the Florida Gulf Coast to restore natural resources in Florida that were injured as a result of the Deepwater Horizon (DWH) oil spill. We have reviewed the enclosed project in accordance with Section 7 of the Endangered Species Act (ESA) of 1973 as amended (16 U.S.C. 1531-1544). For the project, we have made a May Affect, Not Likely to Adversely Affect determination and are requesting concurrence with our determination through informal consultation. A brief description of the project and species determinations are provided in Tables 1 and 2 below. A project specific description is contained in the attached Biological Evaluation (BE).

Within the BE form, we have also reviewed the proposed project for impacts to bald eagles (*Haliaeetus leucocephalus*) in accordance with the Bald and Golden Eagle Protection Act of 1940 as amended (16 U.S.C. 668-668c) and impacts to migratory birds in accordance with the Migratory Bird Treaty Act of 1918 as amended (16 U.S.C. 703-712) and we determined that take would be avoided.

This memo requests your concurrence with our determinations for the proposed project. To facilitate your response, should you concur with our determination, we have attached a template response letter. If you have questions or concerns regarding this request, please contact Michael Barron, Fish and Wildlife Biologist, at 251-421-7030 or michael\_barron@fws.gov.

## Attachments (2)

- BE form including project maps (1)
- Template response letter

Table 1. Brief description of the project.

<b>Proposed Project</b>	<b>Brief Description</b>
<p><b>Conducting Habitat Suitability Analyses to Identify Optimal Oyster Restoration Locations Along the Florida Gulf Coast</b></p>	<p>This restoration planning activity will develop oyster habitat suitability indices for six basins along the Gulf coast which will provide critical information on the most suitable restoration sites and sequencing of Natural Resources Damage Assessment (NRDA) implementation activities. Maps of suitable oyster habitat will be developed and available to the public through the FWC website. These maps and indices will also help guide future oyster restoration efforts in other areas along the Gulf coast of Florida and throughout Florida. The duration of the activity is five years and will involve 1) data compilation, 2) benthic mapping, 3) oyster reef monitoring, and 4) development of a Geographic Information System (GIS)-based habitat suitability index (HSI) maps for six study sites in Florida: Pensacola Bay and St. Andrew Bay in the Panhandle region, Suwannee Sound and the Withlacoochee/ Crystal River area in the North Peninsular region, and Tampa Bay and Charlotte Harbor in the South Peninsular region.</p>

Table 2. Summary of ESA determinations for the proposed project.  
 (NE = No Effect, NLAA = May Affect, Not Likely to Adversely Affect)

<b>ESA Species Under USFWS Jurisdiction</b>	<b>Status</b>	<b>Conducting Habitat Suitability Analyses to Identify Optimal Oyster Restoration Locations Along the Florida Gulf Coast</b>
West Indian Manatee ( <i>Trichechus manatus</i> )	Threatened	NLAA
West India Manatee (CH)	Threatened	NLAA
Gulf Sturgeon ( <i>Acipenser oxyrinchus desotoi</i> )	Threatened	NLAA
Gulf Sturgeon (CH)	Threatened	NLAA

# 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: Michael Barron at michael\_barron@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): Florida Fish and Wildlife Conservation Commission (FWC)

Contact Name: Gareth Leonard Phone: 850-617-9452 Email: Gareth.leonard@myfwc.com

Project Name: Conducting habitat suitability analyses to identify optimal oyster restoration locations along the Florida Gulf coast

DIVER ID# TBD TIG: Florida 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:

Click here to enter text.

### **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

### **C. Project Location**

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

Florida Gulf Coast: Pensacola Bay and St. Andrew Bay in the Panhandle region, Suwannee Sound and the Withlacoochee/ Crystal River area in the North Peninsular region, and Tampa Bay and Charlotte Harbor in the South Peninsular region (see attached Figure 1)

#### **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>]

Pensacola Bay 30.414354°N, 87.119943°W; St. Andrew Bay 30.146421°N, 85.694295°W; Suwannee Sound 29.229007°N, 83.111278°W; Withlacoochee/Crystal River 28.921430°N, 82.749114°W; Tampa Bay 27.763345°N, 82.543672°W; Charlotte Harbor 26.814469°N, 82.107109°W.

### **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

Examples:

- TIG Restoration Plan/EA or EIS (draft or final)
- USACE programmatic NEPA analysis
- USACE Clean Water Act individual permit for the project
- NEPA analysis provided by a federal agency that gave approval, funding or authorization

#### **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: Click or tap here to enter text

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.

The Florida Trustee Implementation Group's (FL TIG) Implementation Plan – Conducting habitat suitability analyses to identify optimal oyster restoration locations along the Florida Gulf Coast includes a National Environmental Policy Act (NEPA) review, which says in part: Section 6.4.14 of the Final Programmatic Damage Assessment and Restoration Plan (and Final Programmatic Environmental Impact Statement (PDARP/PEIS) considers the environmental consequences associated with activities including, but not limited to planning, feasibility studies, design, engineering, and permitting of conceptual projects. These activities can include a mixture of data collection into historical conditions, modeling of ecological response to the project, conducting surveys, and creating maps and scale drawings of potential project sites. These activities may also include minimally intrusive field activities. The activities described in the Oyster Implementation Plan fall within the scope described in the PDARP/PEIS. Upon review, the federal trustees of the FL TIG find the environmental conditions and NEPA analysis in the PDARP/PEIS current and valid. Therefore, this review relies on the analysis in Section 6.4.14 of the PDARP/PEIS.

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

Name of Person Completing this Form: Amy Raker and Gareth Leonard

Name of Project Lead: Ryan Gandy

Date Form Completed: 2/3/2021

Date Form Updated: Click here to enter text.

### **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*

### 1. 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.*

Pensacola Bay and St. Andrew Bay in the Panhandle region, Suwannee Sound and the Withlacoochee/ Crystal River area in the North Peninsular region, and Tampa Bay and Charlotte Harbor in the South Peninsular region

*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.*

In the six sites of the proposed project area, work will primarily be in estuarine locations where the navigable distance will vary depending on final locations selected.

### 2. 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.*

N/A

### 3. 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.*

Seagrass is present across the project area (see <https://geodata.myfwc.com/datasets/seagrass-habitat-in-florida>). Surveys will be conducted by poling or probing from a boat to determine general benthic composition (e.g., mud, sand, shell, or rock) at subtidal and intertidal locations. Results will be used to provide guidance for targeted acoustic mapping using side-scan sonar or a shallow-water interferometric multibeam system at subtidal locations and for aerial/satellite imagery gathered for intertidal locations. Ground-truthing of acoustically mapped subtidal reefs will be completed by visual assessment and quadrat sampling by using scuba equipment which will allow for substrate classification as well as oyster density determinations. At intertidal sites, ground-truthing will be completed by visual assessment and quadrat sampling at locations with live oysters. Given the proposed activities, seagrasses will not be impacted.

### 4. 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.*

Mangroves are present in some locations across the project area (see <https://geodata.myfwc.com/datasets/salt-marshes-in-florida>). Given the nature of the proposed activities, mangroves will not be impacted.

5. **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.*

N/A

6. **Uplands**

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

N/A

7. **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>*

Project activities will be in the vicinity of the Northern Gulf of Mexico Continental Shelf, Gulf of Mexico Eastern Coastal, and Gulf of Mexico Northern Coastal stocks of bottlenose dolphins (*Tursiops truncatus truncatus*). West Indian manatee (*Trichechus manatus*) also have the potential to occur within the proposed project area. Project activities are not expected to interfere with or impact marine mammals.

8. **Soils and Sediments**

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

Substrate varies across the project area but is largely comprised of sand, mud, silt, clay, limestone, and shell. Initial surveys will be conducted by poling or probing from a boat to determine general benthic composition (e.g., mud, sand, shell, or rock) at subtidal and intertidal locations.

9. **Land Use**

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

N/A

#### 10. Essential Fish Habitat

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

Designated-Essential Fish Habitat (EFH) for reef fish, red drum (*Sciaenops ocellatus*), sharks, coastal migratory pelagics, and shrimp ([www.habitat.noaa.gov/application/efhmapper/index.html](http://www.habitat.noaa.gov/application/efhmapper/index.html)). Seagrass will not be disturbed beyond minimal disturbance from poling/probing. FWC will be using oyster and sea grass data layers to avoid seagrass during its sampling efforts. Furthermore, FWC will be utilizing depth and mapping contours to avoid shallow areas to prevent impacts to seagrass from the boat.

#### **F. Project Description**

*1. 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.*

This restoration planning activity will develop oyster habitat suitability indices for six basins along the Gulf coast which will provide critical information on the most suitable restoration sites and sequencing of Natural Resources Damage Assessment (NRDA) implementation activities. Maps of suitable oyster habitat will be developed and available to the public through the FWC website. These maps and indices will also help guide future oyster restoration efforts in other areas along the Gulf coast of Florida and throughout Florida. The duration of the activity is five years and will involve 1) data compilation, 2) benthic mapping, 3) oyster reef monitoring, and 4) development of a Geographic Information System (GIS)-based habitat suitability index (HSI) maps for six study sites in Florida: Pensacola Bay and St. Andrew Bay in the Panhandle region, Suwannee Sound and the Withlacoochee/ Crystal River area in the North Peninsular region, and Tampa Bay and Charlotte Harbor in the South Peninsular region (Figure 1).

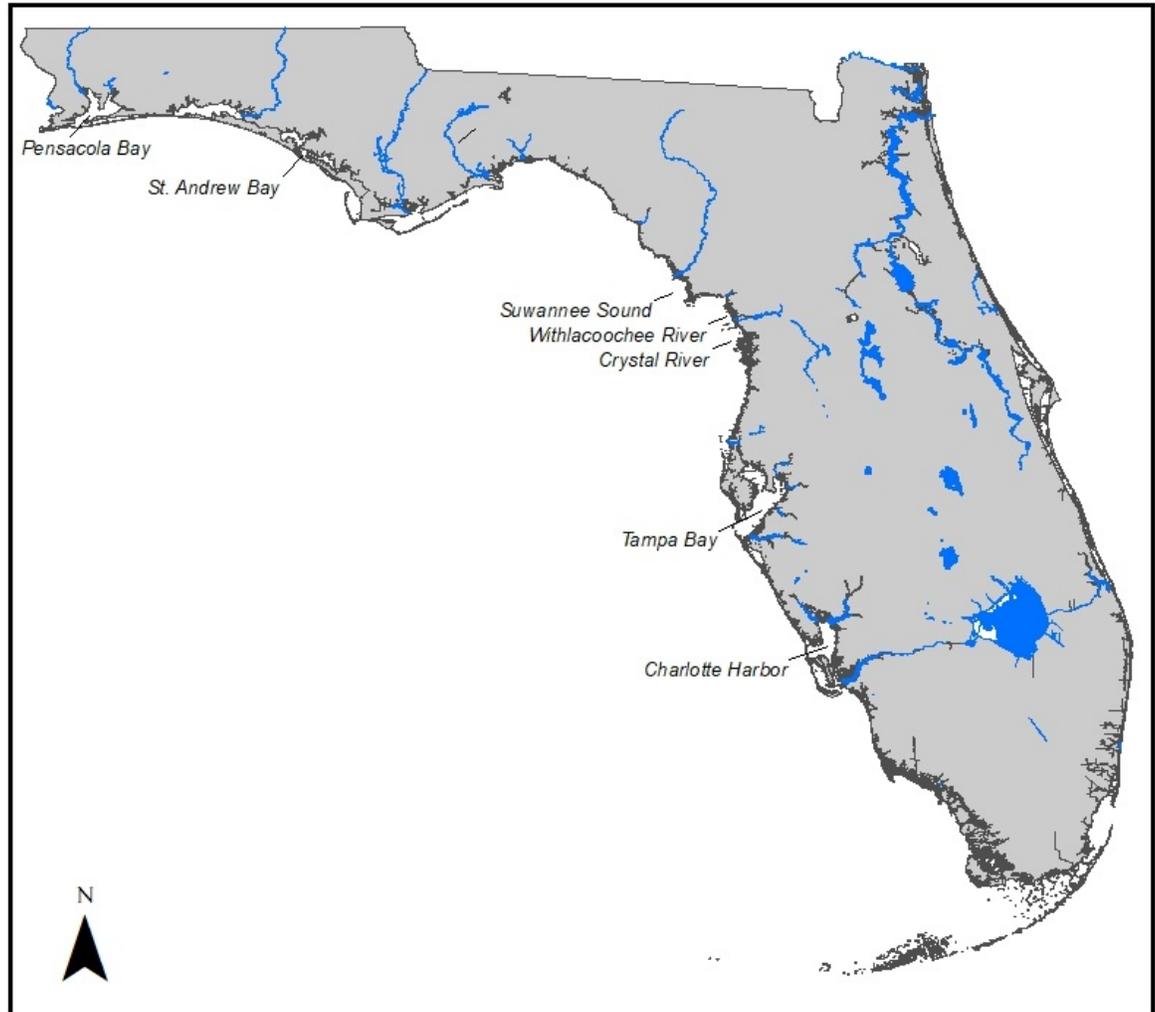


Figure 1. Locations of the six study sites in Florida.

### Description of Work:

#### Task 1: Data Compilation

- **Description:** Existing water quality and oyster data from cooperating agencies (e.g., The Nature Conservancy, University of Florida, Coastal & Heartland National Estuary Partnership) will be compiled to analyze historic trends in environmental conditions and oyster population health, abundance, and distribution. Additionally, every attempt will be made to contact and collaborate with agencies or organizations that have ongoing or recent applicable monitoring efforts at any of the six study sites. Compiled data will also be used to adapt and revise the benthic mapping (Task 2) and oyster reef assessment and monitoring plan (Task 3) for each site to address specific data gaps.
- **Equipment/material needed:** Computers, office supplies
- **Deliverable:** A submitted report will serve as documentation of completion of this task and will summarize data compiled for all six study sites as well as the updated mapping and monitoring plan for each site.

## Task 2: Benthic Mapping

- **Description:** The data compiled from Task 1, specifically the historic trends in environmental conditions, oyster population health, abundance, and distribution will be used to develop a landscape of available oyster habitat in each region (Figure 1) that we will then use to identify locations/areas for initial qualitative surveys to quickly ground truth. The initial qualitative surveys will be conducted by poling or probing from a boat to determine general benthic composition (e.g., mud, sand, shell, or rock) at subtidal and intertidal locations in all six study sites. Results from these coarse assessments will be used to provide guidance for targeted acoustic mapping at subtidal locations and for aerial/satellite imagery gathered for intertidal locations in all six study sites. Acoustic mapping using side-scan sonar or a shallow-water interferometric multibeam system will be conducted at the targeted areas (Grizzle et al 2017). Ground-truthing of acoustically mapped subtidal reefs will be completed by visual assessment and quadrat sampling by using scuba equipment which will allow for substrate classification as well as oyster density determinations. At intertidal sites, ground-truthing will be completed by visual assessment and quadrat sampling at locations with live oysters. The final step of the mapping component will involve synthesis of all data and production of maps detailing the acreage, location, and extent of subtidal and intertidal oyster reefs as well as locations with suitable restoration substrate in all six study sites.
- **Equipment/material needed:** Truck, boat, motor, trailer, subcontract for mapping, field supplies
- **Deliverable:** Submitted final reports from the subcontracted entity(ies) will serve as documentation for completion of this task. Final reports will include methods, results, and final 3D maps (x, y, and z coordinates where practical), GIS map layers/shapefiles, and any relevant metadata.

## Task 3: Field Assessment and Monitoring

- **Description:**
  - *Field assessment to establish monitoring sites:* During the first year of monitoring, a one-time stratified random survey of oysters will be conducted at all six study sites to determine oyster density and size distribution. Survey locations will be selected from the [statewide oyster map layer](#) compiled by the FWC-Fish and Wildlife Research Institute (FWRI) Oyster Integrated Mapping and Monitoring Program. Specific sampling stations will be randomly selected from numbered grid squares overlying oyster habitat (Parker 2016). The total number of stations will be determined by reef acreage, but standardized sampling efforts will be applied at all six study sites. Data collection will include classification of bottom substrate. If hard substrate or live oysters are present, up to fifteen replicate quadrats will be randomly deployed and all oysters within each quadrat will be collected for determination of the total number of live oysters and dead oysters (Parker et al 2013). In addition, shell height (SH; maximum linear distance from the umbo to the ventral shell margin) measurements for all oysters 25 mm or larger will be recorded. A maximum of 25 shell height (SH) measurements will be recorded for spat (oysters < 25 mm). This initial survey will also include field measures of salinity, water temperature,

dissolved oxygen concentration, pH, depth, and turbidity. All oyster samples will be processed on site and oysters will be returned to the site they were taken from.

- *Monitoring*: Following the field assessment, longer term monitoring will begin and continue for up to three years. In each region, a minimum of three stations per site will be established, but the total number of stations will vary among regions depending on the size of the estuary or area. Monitoring will include:
  - *Water Quality*: Temperature, salinity, dissolved oxygen, and pH will be measured monthly at each station within each site along with depth and turbidity. In addition, a continuous data logger will be deployed for the entire period of the long-term field sampling effort to measure temperature and salinity at one location in each of the six study sites.
  - *Sedimentation*: Sedimentation rates and sediment depth will be assessed monthly. Sedimentation rate sampling will use replicate sediment traps at each station at all six study sites (Thomas et al 2007). Upon retrieval, contents will be rinsed into a container and filtered through pre-weighed 35  $\mu\text{m}$  filters. The sediments and filters will be placed in a drying oven at 80°C for a minimum of 48 hours then dry weights recorded. Sedimentation rates will be calculated by dividing the total dry weight of the sediment sample by the number of days the sediment trap was deployed.
  - *Wave Energy*: Methods for measuring wave energy or relative water motion (Wall et al. 2005) will be investigated then applied at subtidal and intertidal stations at each of the six study sites.
  - *Larval Supply*: Larval supply will be assessed monthly by measuring juvenile oyster recruitment rates. Three replicate spat-monitoring arrays (spat = newly settled oyster) will be deployed at stations at all six study sites. Each of the arrays will be comprised of 12 axenic adult oyster shells (5-10 cm shell height) strung onto two separate lengths of galvanized wire (6 shells per wire). The wire is 16-gauge galvanized wire with 6 shells strung to it resulting in no more than 12 inches of exposed wire. The shells will be oriented with their inner surface facing downward when suspended off the bottom. After a month-long deployment, the shell strings will be recovered, and juvenile recruitment will be estimated by discarding the top and bottom shells of each string and counting the number of settled spat on the underside of the remaining shells. Juvenile oyster recruitment rates will be calculated by dividing the raw number of spat per shell by the number of days the shell was deployed, then standardizing to a 28-day month (Parker et al 2013).
  - *Oyster Density and Size Distribution*: Oyster monitoring will be conducted quarterly at stations with live oysters or with existing hard substrate habitat. At those stations, up to fifteen replicate quadrats will be randomly deployed and all oysters within each quadrat will be collected for determination of the total number of live oysters and dead oysters (Parker et al 2013). In addition, SH (maximum linear distance from the umbo to the ventral shell margin) measurements for all oysters 25 mm or larger will be recorded. A maximum of 25 SH measurements will be recorded for spat (oysters < 25 mm). All oyster samples will be processed on site and oysters will be returned to the site they were taken from.

- **Equipment/material needed:** Computers, office supplies (from Task 1). Truck, boat, motor, trailer, field supplies (from Task 2). Lab supplies.
- **Deliverable:** Submitted semi-annual status reports will serve as documentation for progress and completion of this task. Status reports will summarize work accomplished for each field monitoring parameter during each semi-annual period.

#### Task 4: GIS-Based HSI Model

- **Description:** Suitability functions will be developed for environmental variables based on several sources of information. Primarily, we will use the analysis of each region's historic trends in environmental conditions and oyster population health, abundance, and distribution from Task 1. The suitability functions will also be informed by oyster habitat requirements observed in the field in each region during Tasks 3 and 4. The functions will be used to assign an HSI score ranging from 0 (unsuitable) to 1 (optimal) for each variable (Cake 1983, Barnes et al 2007, Soniat et al 2013, Theuerkauf and Lipcius 2016). HSI scores will then be used to create GIS layers for each environmental variable using historic data and data recorded during field monitoring efforts (Linhoss et al 2016). Once the model is created, data collected during mapping efforts and oyster density surveys will be used to verify the validity of the model (Theuerkauf and Lipcius 2016). Upon completion, HSI models will be made publicly available to aid future restoration efforts.
- **Equipment/material needed:** Computers, office supplies (from Task 1)
- **Deliverable:** A final report will serve as documentation for completion of this task and will summarize all work associated with Tasks 1-4 and include methods, results, and final GIS-based HSI models for all six study sites. The maps of suitable oyster habitat will be made available to the public through the FWC-FWRI GIS website.

#### **References:**

- Barnes, T., A. Volety, K. Chartier, F. Mazzotti, and L. Pearlstine. 2007. A habitat suitability index model for the eastern oyster *Crassostrea virginica*, a tool for restoration of the Caloosahatchee Estuary, Florida. *Journal of Shellfish Research* 26: 949-959.
- Cake, E. 1983. Habitat suitability index models: Gulf of Mexico American Oyster. *FWS/OBS* 82, 1-37.
- Grizzle R., K. Ward, and T. Waddington. 2017. Mapping and characterizing restored oyster habitat in Apalachicola Bay Florida. Final Report to the Fish and Wildlife Conservation Commission, Florida.
- Linhoss, A.C., R. Camacho, S. Ashby. 2016. Oyster habitat suitability in the northern Gulf of Mexico. *Journal of Shellfish Research* 35(4): 841-849.
- Parker, M.L., W.S. Arnold, S.P. Geiger, P. Gorman and E.H. Leone. 2013. Impacts of freshwater management activities on eastern oyster (*Crassostrea virginica*) density and recruitment: recovery and long-term stability in seven Florida estuaries. *Journal of Shellfish Research* 32:695-708.
- Parker, M.L. 2016. Apalachicola Bay Fishery Disaster Recovery Project Plan – Job 3. Oyster Monitoring. Status Report #4 to the Florida Department of Economic Opportunity, Florida.

Soniat, T.M., C.P. Conzelmann, J.D. Byrd, D.P. Roszell, J.L. Bridevaux, K.J. Suir, and S.B. Colley. 2013. Predicting the effects of proposed Mississippi River diversions on oyster habitat quality; application of an oyster habitat suitability index model. *Journal of Shellfish Research* 32: 629-638.

Theuerkauf, S.J. and R.N. Liscius. 2016. Quantitative validation of a habitat suitability index for oyster restoration. *Frontiers in Marine Science* 3:64.

Thomas, J.C., M.A. Lutz, J.L. Bruce, D.J. Graczyk, K.D. Richards, D.P. Krabbenhoft, S.M. Westenbroek, B.C. Scudder, D.J. Sullivan, and A.H. Bell. 2007. Water-quality characteristics for selected sites within in the Milwaukee Metropolitan Sewerage District planning area, Wisconsin, February 2004-September 2005 (No. SIR – 2007-5084). U.S. Geological Survey.

Wall, L.M., L.J. Walters, R.E. Grizzle, P.E. Sacks. 2005. Recreational boating activity and its impact on the recruitment and survival of the oyster *Crassostrea virginica* on intertidal reefs in Mosquito Lagoon, Florida. *Journal of Shellfish Research* 24(4): 965-973.

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

The project will be implemented over five (5) years. Task 1 (Data Compilation) will occur over the first six months of the project. Task 2 (Benthic Mapping) will be initiated in Year 1 and will continue through Year 3 or until complete. Task 3 (Field Assessment and Monitoring) will commence within the first six months and last for approximately one year or until the area has been sufficiently surveyed and long-term monitoring stations established. Once established the long-term monitoring will continue at each of the selected sites for a minimum of three consecutive years. Task 4 (GIS-Based HSI Model) will commence once Tasks 1 and 2 are complete for a particular study site and will continue through the end of restoration planning activity.

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).*

N/A

*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)?*

N/A

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

N/A

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.)*

N/A

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.*

N/A

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.*

N/A

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.)*

N/A

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.*

N/A

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)).*

N/A

## **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 (if applicable)</b>	<b>Location (Sea turtles and Gulf Sturgeon only)</b>	<b>Determinations (see definitions below)</b>	<b>For “No Effect”, please select justification.</b>
Gulf Sturgeon (T)		Marine	May Affect, Not Likely to Adversely Affect	Choose an item.
Gulf Sturgeon CH	Unit 9 (Pensacola Bay) and 14 (Suwannee Sound)	Marine	May Affect, Not Likely to Adversely Affect	Choose an item.
Smalltooth Sawfish (E)		Choose an item.	May Affect, Not Likely to Adversely Affect	Choose an item.
Smalltooth Sawfish CH	Unit 1 (Charlotte Harbor Estuary)	Choose an item.	May Affect, Not Likely to Adversely Affect	Choose an item.
Green Sea Turtle (T)		Marine	May Affect, Not Likely to Adversely Affect	Choose an item.
Loggerhead Sea Turtle		Marine	May Affect, Not Likely to Adversely Affect	Choose an item.
Loggerhead Sea Turtle CH	LOGG-N-27 through LOGG-N-30, LOGG-N-33	Marine	May Affect, Not Likely to Adversely Affect	Choose an item.
Leatherback Sea Turtle (E)		Marine	May Affect, Not Likely to Adversely Affect	Choose an item.
Hawksbill Sea Turtle (E)		Marine	May Affect, Not Likely to Adversely Affect	Choose an item.
Kemp's Ridley Sea Turtle (E)		Marine	May Affect, Not Likely to Adversely Affect	Choose an item.
Oceanic Whitetip Shark (T)		Choose an item.	May Affect, Not Likely to Adversely Affect	Choose an item.
Giant Manta Ray (T)		Choose an item.	May Affect, Not Likely to Adversely Affect	Choose an item.

### 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 (if applicable)</b>	<b>Location (Sea turtles and Gulf Sturgeon only)</b>	<b>Determinations (see definitions below)</b>	<b>For “No Effect”, please select justification.</b>
Gulf Sturgeon		Marine	May Affect, Not Likely to Adversely Affect	Select Most Appropriate
Gulf Sturgeon CH	Unit 9 (Pensacola Bay) and 14 (Suwannee Sound)	Marine	May Affect, Not Likely to Adversely Affect	Choose an item.
West Indian Manatee			May Affect, Not Likely to Adversely Affect	
West Indian Manatee CH			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.

### 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.*

West Indian manatee, Gulf sturgeon, smalltooth sawfish, and/or sea turtles may be present in the one or more of the six identified areas where the proposed vessel-based benthic mapping, field assessment, and monitoring would occur for this project. The proposed field operations have the potential to result in temporary disturbances associated with vessel use, including increased underwater noise and human activity, which could contribute to temporary disturbance or displacement of the protected species listed above, as well as the increased chances of vessel strikes. However, the affected protected species are mobile and would likely avoid the area for the duration of in-water work, avoiding injury or mortality. Noise would return to baseline levels immediately following in-water work.

Furthermore, applicable best management practices (BMPs) required would be employed to avoid and minimize impacts to the protected species. Finally, the duration of the in-water work would be short term in duration. In particular, it would be three days a week for the first six months and then, depending on weather conditions, 5-10 days a month after that for the remainder of the project at each of the six sites. Taking all of this into account, this project may affect but is not likely to adversely affect 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.*

The project will implement measures from NMFS's Sea Turtle and Smalltooth Sawfish Construction Conditions (2006), NMFS's Measures for Reducing Entrapment Risk to Protected Species (2012), NMFS's Vessel Strike Avoidance Measures and Reporting for Mariners (2008), and U.S. Fish and Wildlife Service (USFWS) and U.S. Army Corps of Engineers' Standard Manatee Conditions for In-water Work (2011) to avoid and minimize impacts to West Indian manatees, Gulf sturgeon, smalltooth sawfish, and/or sea turtles. Spill prevention/response plans will be developed prior to any in-water work. Prior to conducting surveys, a meeting will provide workers with a list of agencies requiring notifications/hotline numbers and additional instructions such as; if a spill occurs; or, if interactions with, or sighting of strangled, entangled, dead, or injured sea turtles, Gulf sturgeon, smalltooth sawfish, or marine mammals will be immediately reported to NMFS. Any response efforts and outcomes will be reported to NMFS.

The entities implementing in-water project activities will adhere to all National Marine Fisheries Service (NMFS) and FWC permit requirements, including conservation measures to reduce and minimize impacts

on marine mammals (specifically West Indian manatee), sea turtles, Gulf Surgeon, and smalltooth sawfish.

The proposed project areas are located where West Indian manatees, Gulf sturgeon, smalltooth sawfish, and/or sea turtles could occur. Overall, it is not expected that survey/sampling work would appreciably increase risks to these protected species since the proposed sampling techniques and gear are not anticipated to capture or entrap them. Furthermore, the protected species within the vicinity would likely leave the area and move to nearby suitable habitat while the in-water work is being completed thereby avoiding injury or mortality that may result from vessels strikes.

***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>NFMS 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)

N/A

### **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.*

In-water vessel based benthic mapping, field assessment, and monitoring activities have the potential to impact marine CH (including smalltooth sawfish, loggerhead sea turtle , Gulf sturgeon, and West Indian manatee) listed in Sections G and H. (See Figure 2). These in-water activities would be short-term in duration (three days a week for the first six months and then, depending on weather conditions, 5-10 days a month after that for the remainder of the project at each of the six sites) and may disrupt marine habitats

1. 1 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)

and species. In particular, temporary disturbances associated with vessel use, including increased underwater noise and human activity, may briefly disrupt the use of small portions of the critical habitat used by the protected species for the duration of in-water work. However, once the vessel leaves the area, noise levels would return to baseline levels immediately. The in-water work will have no effects to the physical features of the identified critical habitat. With the use of appropriate conservation measures and BMPs checked above, in-water activities may affect, but are not likely to adversely affect, marine CH listed in Sections G and H.

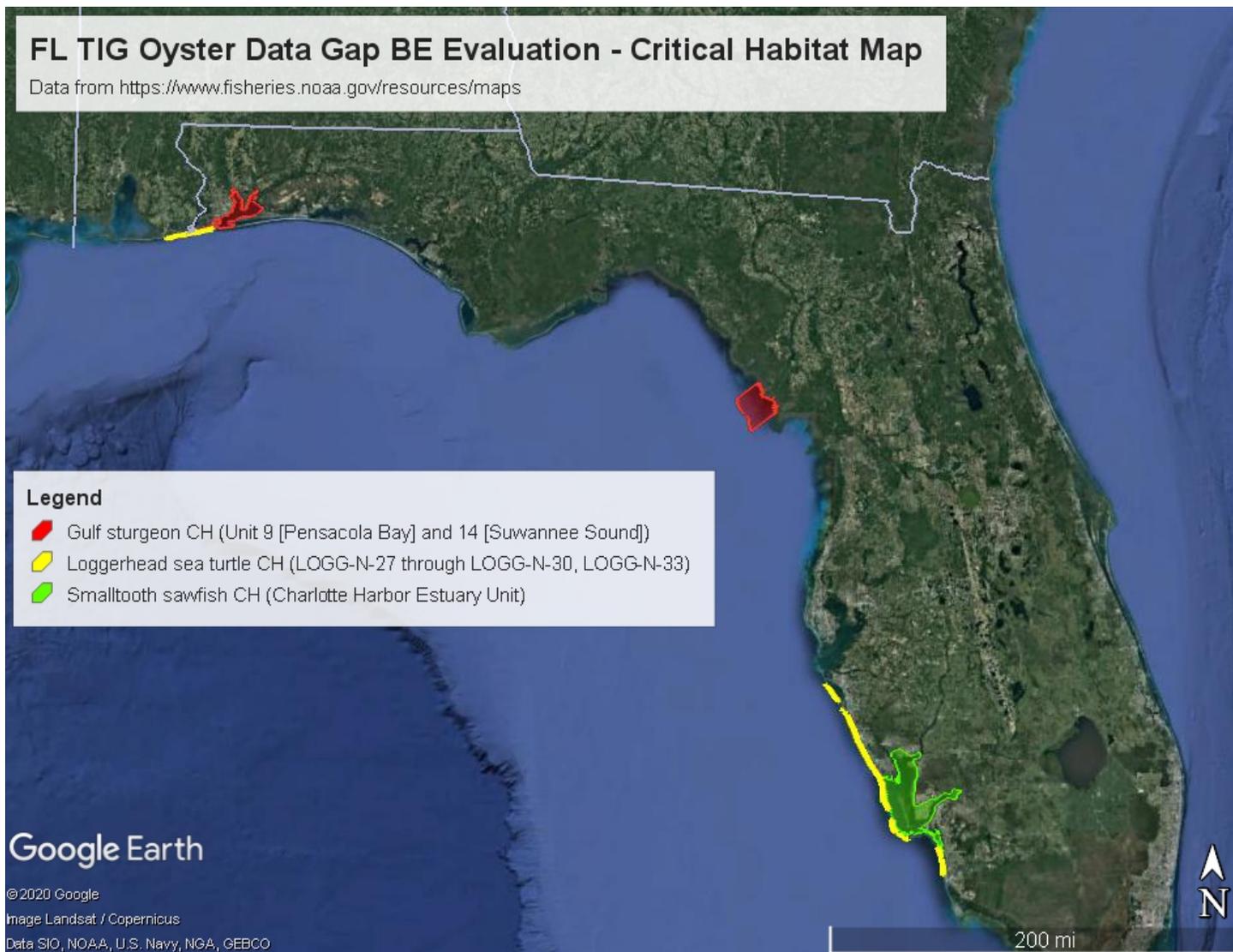


Figure 2. Map of identified critical habitat that overlap with the project's site locations.

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.*

Click here to enter text.

## **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:

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

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>

As described in Section F, three replicate spat-monitoring arrays will be deployed at each of the six sites. The entanglement risk of the from these arrays is extremely low due to rigidity (16-gauge galvanized wire) and short length (<12 inches) of exposed wire between the oyster shells and the frame. See photo below.



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"/>	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.

N/A

## 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

2. 2 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)

3. 3 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)

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.

<b>NO</b>	<b>YES</b>	<b>ACTIVITY</b>
<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 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](mailto:Christina.Fellas@noaa.gov)

Phone: 727-551-5714

#### **USFWS ESA § 7 Consultation**

Michael Barron, Department of the Interior

Email: [michael\\_barron@fws.gov](mailto:michael_barron@fws.gov)

Phone: 251-421-7030