Monitoring and Adaptive Management Activity Implementation Plan

Documenting Sea Turtle Nesting in Louisiana

1. Introduction

The Deepwater Horizon (DWH) oil spill settlement in 2016 provides the Natural Resource Damage Assessment (NRDA) Trustees (Trustees) up to $8.8 billion, distributed over 15 years, to restore natural resources and services injured by the spill. As described in the DWH oil spill Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement (PDARP/PEIS; DWH NRDA Trustees. 2016a), the Trustees selected a comprehensive, integrated ecosystem approach to restoration. As shown in the PDARP/PEIS, the injuries caused by the DWH oil spill affected such a wide array of linked resources over such an enormous area that the effects must be described as constituting an ecosystem-level injury. The PDARP/PEIS and information on the settlement with BP are available at the Gulf Spill Restoration website.

Given the unprecedented temporal, spatial, and funding scales associated with the DWH oil spill restoration effort, the Trustees recognized the need for robust Monitoring and Adaptive Management (MAM) to support restoration planning and implementation. As such, one of the programmatic goals established in the PDARP/PEIS is to "Provide for Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation" to ensure that the portfolio of restoration projects provides long-term benefits to natural resources and services injured by the spill (Appendix 5.E of the PDARP/PEIS). This framework allows the Trustees to evaluate restoration effectiveness, address potential uncertainties related to restoration planning and implementation, and provide feedback to inform future restoration decisions.

To articulate its approach to MAM, the Louisiana Trustee Implementation Group (LA TIG) released its MAM strategy in September 2021. The strategy outlines the TIG's approach to prioritize MAM activities in Louisiana for effective and efficient evaluation of the restoration of resources injured by the DWH oil spill. The strategy describes High Level Objectives and Resource Type-specific Fundamental Objectives, including for sea turtles. Nested within these are MAM needs from which to develop SMART Objectives and suggested MAM activities to address the MAM needs. This activity addresses the sea turtle MAM Need #5a, "Enhance understanding of sea turtle nesting in Louisiana," in the LA MAM strategy (Table 6). It will begin to close a knowledge gap necessary to finalize metrics for a SMART objective by accomplishing the suggested MAM activity: "Identify and characterize important nesting habitats for sea turtle species in coastal Louisiana to support timely adaptive management and restoration planning to reduce terrestrial-based threats (e.g., scale and locations of DWH NRDA restoration actions related to sea turtle habitat), and to inform development of SMART objectives."

2. Purpose of this document

This MAM Activities Implementation Plan (MAIP) describes the MAM activity, "*Documenting Sea Turtle Nesting in Louisiana*" to address MAM priorities identified by the LA TIG for the Sea Turtle Restoration Type. This MAM activity is intended to support evaluation of regional restoration outcomes within the Louisiana Restoration Area; perform data aggregation and data management; resolve critical information gaps and uncertainties for restoration planning and informing restoration decision-making;

and perform monitoring to inform the design and implementation of future restoration projects. This document provides information about the activities to be implemented and the data gaps and uncertainties they will address. This MAM activity is consistent with the LA TIG MAM Strategy and the DWH Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement (PDARP/PEIS).

3. MAM Activity: *Documenting Sea Turtle Nesting in Louisiana*

Background and Description

The northern Gulf of Mexico (GOM) is a vast network of mutually dependent organisms and their chemical, biological, and physical environment. From microbes to plants to animals and from coastline to the continental shelf to the open and deep seas, many of these natural resources and the services they provide were injured as a result of the spill. Specific to sea turtles, the spill caused a suite of quantifiable injuries to four of the five species of sea turtles that inhabit the Gulf of Mexico: green turtle, hawksbill, loggerhead, and Kemp's ridley. Additional injuries were determined to have occurred, but were not formally quantified, such as injuries to leatherback turtles. All species are listed under the Endangered Species Act. These injuries affected nesting (including nesting females, eggs, and hatchlings), small juvenile, large juvenile, and adult sea turtles throughout the GOM. Sea turtles are long-lived, highly migratory, and occupy multiple habitats over the course of their lives. These life history traits necessitate a portfolio of restoration approaches that can address all species and life stages that were injured by the spill. This portfolio includes ecological benefits achieved through reducing bycatch and other anthropogenic mortality, restoring nesting habitat, and robust monitoring (DWH NRDA 2017).

Sea turtles in the Gulf of Mexico (GOM) are a shared resource, crossing state, federal, and international boundaries and relying on a system of interconnected beach, nearshore, and offshore habitats. All sea turtles are highly migratory and thus have a wide geographic range. Although sea turtles spend the vast majority of their lives in the water, significant life events occur on land, including nesting, egg incubation, and hatchling emergence and crawl to the water. The National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) share federal jurisdiction for the conservation and recovery of sea turtles. The roles of the two agencies are defined in a joint Memorandum of Understanding (MOU), originally entered into in 1977, and updated in 2015. USFWS has jurisdiction in the terrestrial environment and NMFS has jurisdiction in the marine environment, unless otherwise specified in the MOU (DWH NRDA 2017). As such, DOI, as the Implementing Trustee, will coordinate with NOAA and LA Trustees to conduct this activity.

This activity will compile and collect data relative to sea turtle nesting and nesting habitat in Louisiana to further inform the approach identified in the PDARP/Sea Turtle Framework: *Enhance sea turtle hatchling productivity, and restore and conserve nesting beach habitat*.

High Level Objective: Reduce direct sources of mortality to sea turtles occurring in Louisiana

Fundamental Objective: Reduce terrestrial threats

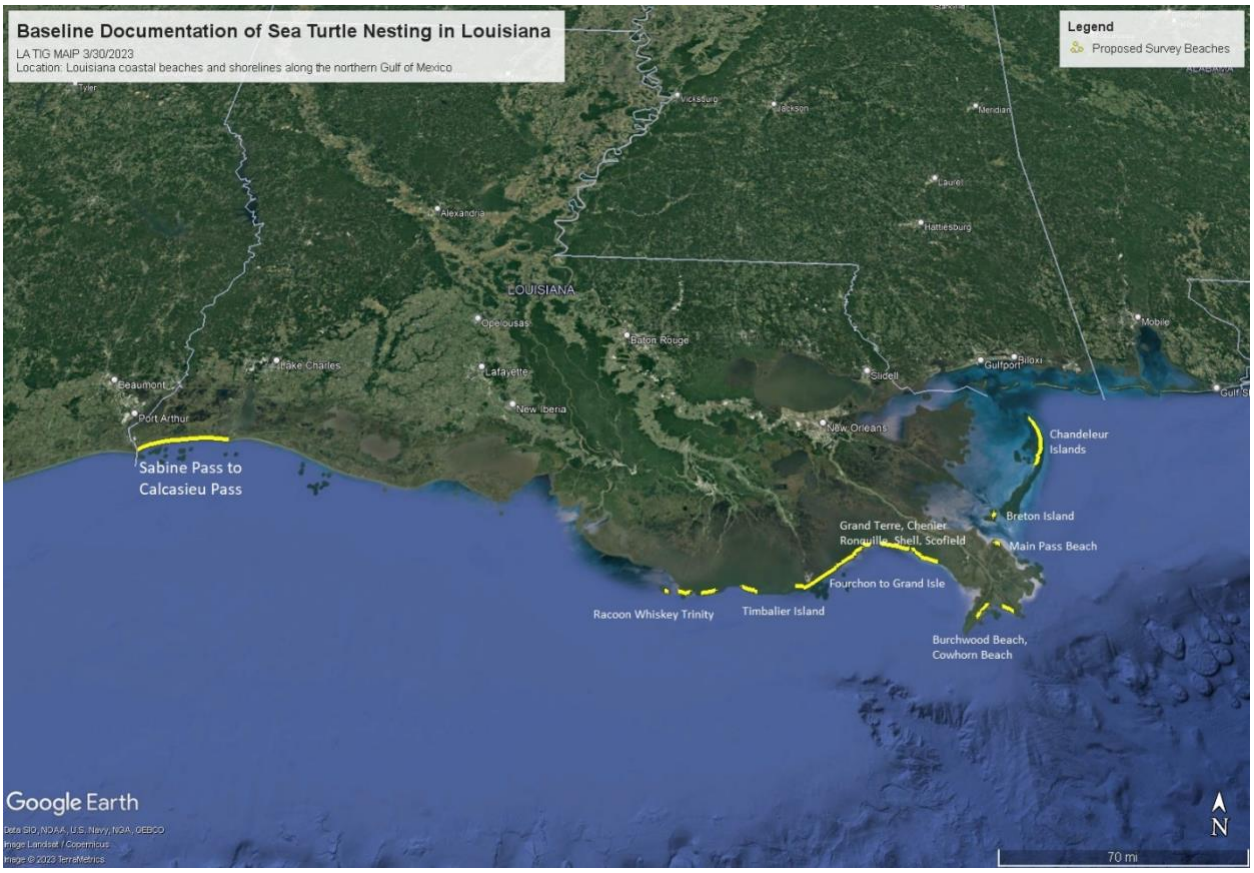
MAM Need to develop SMART Objectives: Enhance understanding of sea turtle nesting in Louisiana (5a)

MAM Activity to address MAM Need: Identify and characterize important nesting habitats for sea turtle species in coastal Louisiana to support timely adaptive management and restoration planning to reduce terrestrial-based threats, and to inform development of SMART Objectives.

3.1 MAM Activity Description

The proposed activities would compile and evaluate existing available nesting data and beach characteristics; initiate new surveys (aerial and/or ground) documenting sea turtle crawls and nests and beach characteristics data collection designed to estimate sea turtle endpoints (distribution trends and breeding performance) and characterize nesting habitat of Louisiana beaches. Various aspects of beach characteristics data across the Louisiana coastline are already available in the State of Louisiana's Barrier Island Comprehensive Monitoring Program database and the Louisiana Sand Resource Database such as: vegetation cover (hyperspectral images); slope and elevation (Lidar); sand color, grain size and classification series (clay, silt, fine sand, etc.). Other aspects relevant to sea turtle nesting habitat not already available that will be collected where feasible are: sand content (calcium carbonate content, soluble mineral content), sand temp and inundation at 50cm depth (sand/water presence loggers), sand compaction (dynamic cone penetrometer 6 and 12 ft).

These efforts in association with established, ongoing monitoring programs are intended to support the planning, implementation, and assessment of Deepwater Horizon restoration actions and for the development of more informed SMART objectives. Accessibility to much of Louisiana's coastline and barrier islands creates challenges for conducting repeatable cost-effective surveys. Few attempts have been made over the past decades to conduct such surveys despite sporadic, mostly anecdotal evidence of nesting. The most recent documentations are: two confirmed loggerhead nests at Grand Isle State Park June 29 and July 3, 2015 (low hatch success 55/112 eggs and 20/110 eggs); three loggerhead crawls documented by USGS in July 2015 during aerial surveys over Chandeleur Islands; one confirmed Kemp's ridley recorded on video actively nesting on Chandeleur Islands in 2018, reported by fisherman through NOAA STSSN; and 53 crawls (Kemp's ridley and loggerhead) and five verified hatched nests documented by LDWF/CPRA during 10 aerial survey days and ground truthing of the Chandeleur Islands in May-Aug 2022.



Aerial view of locations for conducting aerial surveys, ground surveys and beach sampling to document sea turtle nesting along Louisiana's Gulf of Mexico coastline. These include mainland and barrier islands west to east: Sabine Pass to Calcasieu Pass; Racoon, Whiskey, Trinity, and Timbalier Islands; Fourchon to Grand Isle; Grand Terre; Chenier Ronquille; Shell and Scofield Islands; Burwood, Cowhorn, and Main Pass Beaches; and Breton and Chandeleur Islands.

3.2 Objectives and Tasks

The objectives of this monitoring activity are to: 1) establish a baseline of sea turtle nesting effort and locations on Louisiana's coastline, 2) characterize the nesting beach environment, 3) inform future decisions related to the need for systematic nesting surveys, 4) refine SMART objectives for nesting sea turtles.

This project will be conducted with direct input from USGS geographers and in close collaboration with the LA TIG-funded MAIP "Characterizing the barrier island topographic state".

This MAM activity has four tasks:

Task 1: Evaluate existing data sets and literature relevant to nesting sea turtles and beach characteristics in Louisiana. (Year 1) Determine where additional data are needed. Plan next steps.

Coordinate this Task with OO TIG Monitoring Activity Implementation Plan for *Gulf-wide Status of Nesting Sea Turtles and Beaches Data Inventory*.

a) **Assess applicability of/leverage surveys for nesting sea turtles**
   - Review literature: contact LA TIG Trustees and appropriate agencies and stakeholders, Google scholar search
   - Review wildlife agency files

b) **Analyze existing information to detect data gaps, to include habitat use parameters such as:**
   - Species
   - Location
   - Documented sea turtle crawls
   - Documented sea turtle nests
   - Documented hatched nests

c) **Assess applicability of/leverage beach characteristics data in existing datasets:** coordinate with LA TIG Trustees and USGS partners for input on existing datasets
   - Barrier Island Comprehensive Monitoring Program
   - LA TIG-funded MAIP "Characterizing the barrier island topographic state"
   - USACE Mississippi Coastal Improvements Program Ship Island restoration project
   - and other existing datasets

d) **Analyze existing beach characteristics data to detect data gaps, to include parameters such as:**
   - Vegetation cover from 2021 BICM habitat maps (or more recent data if available) and PlanetScope remote sensing data.
   - Slope, elevation and sand characteristics from BICM datasets, additional ongoing CPRA projects, aerial surveys and LIDAR.
   - Moisture and depth to water inundation
   - Sand compaction

e) **Present products to partners and collaborators to identify beaches that may support sea turtle nesting to determine methods, locations, seasonal timeframe, and frequency for conducting sea turtle nesting surveys and nest assessments**.
   - Produce a report of findings of existing data and subsequent work plan to conduct the census and data collection.

Task 2: Conduct census of sea turtle nesting on all suitable mainland and barrier island beaches in Louisiana as feasible. (Years 2 and 3)

a. **Survey methods:** Coordinate with LA TIG Trustees and relevant agencies on timing of surveys to leverage any existing aerial surveys or collect additional information in these surveys for other projects.
   i. aerial surveys by fixed wing or float plane or by unmanned aerial systems ("UAS", i.e., drones)[i]
   ii. ground truth crawls on foot where feasible, including documenting potential threats on suitable nesting beaches
   iii. conduct nest assessments at least 3 days post hatch by digging up the no longer viable nest to document number of eggs, hatched and unhatched

eggs, and collect nest content samples for genetic analysis. Genetic analysis will be used to document species and could elevate our knowledge of individual nesting females from this area and/or from other nesting areas in the Gulf.

b. Timing/frequency:

i. nest surveys March 1 – August 31; 2x/week/2 years, frequency and start and end survey dates are dependent on funding availability, weather, and access to planes/drones as identified above in Task 2.a.1.

ii. crawls will be investigated on the ground throughout the surveyed nesting season, accessing by land or by boat, where feasible, as identified above in Task 2.a.ii.

iii. nest assessments September 1 – October 31; nests 3+ days post hatching /2 years as feasible as identified above in Task 2.a.iii.

c. Collaboration:

Collaborate with NOAA, LDWF, CPRA and others, as necessary during:
survey planning
mid-nesting season
post-nesting season

Task 3: Assess beach characteristics for mainland and barrier island beaches in Louisiana where sea turtles are found nesting. (Year 2):

Compile existing beach characteristics data identified in Task 1. This includes sand color, vegetation coverage, beach slope, sand grain size, and other relevant beach characteristics that are identified in Task 1. If gaps in data are identified, such as sand temperature information or beach compaction, those data will be collected during this study 1 time in conjunction with ground truthing of nests in year 2. These characteristics have been identified as impacting sea turtle nest site selection and/or incubating hatchlings.

Task 4: Analyze the data and produce a report of findings to include (Year 4):

a) sampling methods and protocols
b) findings and implications of the beach environment data, nesting activity and locations, literature review, and genetic analysis to inform potential future restoration actions
c) recommendations for refining Draft Sea Turtle SMART objective 5a for consideration and refinement by the LA TIG

Other Considerations:

- Ensure close collaboration throughout the life cycle of this activity on methods, data collection and evaluation, state and federal lands, and permitting with LA TIG Trustees and appropriate agencies and stakeholders including private landowners where allowable.
    - Leverage compiled literature and new data referencing sea turtle nesting in Louisiana synthesized/produced during implementation of RW TIG-funded Chandeleur Islands Restoration Project (E&D); LA TIG-funded MAIP "Characterizing the barrier island topographic state"; Open Ocean TIG-funded *"Developing a Gulf-wide Comprehensive*

Plan for In-water Sea Turtle Data Collection" and "*Gulf of Mexico Sea Turtle Atlas*" projects.

- Produce reports for Task 1.e., annually during Tasks 2 and 3, and Task 4 final report.
- Fill knowledge gaps necessary to finalize metrics for SMART objective titled "Identify and characterize important nesting habitats for sea turtle species in coastal Louisiana to support timely adaptive management and restoration planning to reduce terrestrial-based threats (e.g., scale and locations of DWH NRDA restoration actions related to sea turtle habitat)". Draft Sea Turtles SMART objective #5a for TIG consideration.

Outputs:

This activity will produce the following outputs:

- Provide baseline data on nesting beach characteristics for Louisiana and put them in perspective to other nesting beaches across the northern GOM.
- Identification of current status of sea turtle nesting in Louisiana.
- Annual DIVER progress reports and reports produced in Task 1.e., Tasks 2 and 3 annual reports, and Task 4 final report.
- Data outputs published as a USGS data release that will be publicly available on ScienceBase (https://doi.sciencebase.gov/) and linked to the DIVER Restoration Portal.
- Report that will cover literature review, methodology, and findings.

Collectively, these outputs would contribute to clarification of MAM SMART objective #5a related to sea turtle nesting in Louisiana using the outputs from NRDA funded in-water and terrestrial focused sea turtle MAIPs.

3.3 Budget

Table 1.

Documenting Sea Turtle Nesting in Louisiana Budget	
Cost Items	**Cost Estimate**
Task 1 literature review	$150,000
Task 2.a.i. aerial surveys	$640,000
Task 2.a.ii. ground surveys	$900,000
Task 2.a.iii. genetic analysis	$150,000
Task 3	$50,000
Task 4	$250,000
CPRA coordination	$50,000
NOAA SME participation (coordination, review, SMART objective development)	$40,000
Total MAM Activity Cost	$2,230,000
Contingency (20%)	$428,000
TOTAL ESTIMATED COST	$2,658,000

Activity Implementation

Timeline

This activity will be conducted over a four-year implementation period (Table 2).

Table 2.

Year	Task	Activity
1	1	Evaluate existing data sets and literature relevant to nesting sea turtles and beach characteristics in Louisiana.
2, 3	2, 3	Conduct census of sea turtle nesting on all suitable mainland and barrier island beaches in Louisiana as feasible. Assess beach characteristics for mainland and barrier island beaches in Louisiana where sea turtles are found nesting.
4	4	Analyze data and produce a report of findings.

Implementation Roles

DOI will be the Implementing Trustee and will be responsible for implementing the work under Tasks 1-4, coordinating with the LA TIG, NOAA and DOI subject matter experts (SMEs), and project partners, providing overall direction and oversight for the MAM activity, including managing cooperator(s) agreement or contracts as needed, compliance, financial tracking, annual reporting, DIVER data

management, and approval of deliverables. NOAA and DOI sea turtle SMEs will exchange information, review draft report, and collaborate to develop draft SMART objectives. All deliverables will be sent to the full LA TIG for a 10-business-day review period. The SMART Objectives will not be considered finalized at the end of this project, but rather will serve as a starting point for further discussion and revision by the LA TIG.

Data management and reporting

The DWH Trustees, as stewards of public resources under OPA, will inform the public on the MAM activity's progress and performance. Therefore, DOI will report the status of the proposed activity via the Data Integration, Visualization, Exploration, and Reporting (DIVER) Restoration Portal annually, as outlined in Chapter 7 of the PDARP/PEIS (*DWH* Trustees, 2016). All reports and final datasets created as part of this activity will also be stored on the DIVER Restoration Portal. Data storage and accessibility will be consistent with the guidelines in Section 3.1.3 of the MAM Manual (DWH NRDA Trustees 2021). In the event of a public records request related to data and information that are not already publicly available, the Trustee to whom the request is addressed would provide notice to the other LA TIG members prior to releasing any data that are the subject of the request.

4. Consistency of MAM Activity with the PDARP/PEIS

The PDARP/PEIS establishes goals to restore and protect sea turtles by enhancing sea turtle hatchling productivity and restoring and conserving nesting beach habitat. This activity is designed to address information gaps and critical uncertainties regarding locations of available sea turtle nesting beach habitat and the level of nesting activity currently and historically in coastal Louisiana. The activity is intended, in part, to contribute to implementing an integrated portfolio of restoration approaches to address all injured life stages (in this case, hatchling and adult female turtles) and species (loggerhead, Kemp's ridley, and green); to restore injuries by addressing primary threats to sea turtles in the marine and terrestrial environment (loss or degradation of nesting beach habitat; restore sea turtles in various geographic and temporal areas in the Gulf of Mexico relevant to injured species and life stages; and support existing conservation efforts by ensuring consistency with recovery plans and goals for those species (PDARP/PEIS Section 5.5.10 and Appendix 5.D.4.3.). This activity furthers the Sea Turtle Restoration Approach: Enhance Sea Turtle Hatchling Productivity and Restore and Conserve Nesting Beach Habitat focuses on improving and maintaining the suitability of nesting beach habitat for sea turtles. Therefore, this MAM activity is consistent with the PDARP/PEIS, including the Monitoring and Adaptive Management Framework, as described in Section 5.5.15.2.

5. Evaluation of NEPA Requirements

The Trustees' approach to compliance with NEPA summarized in this section is consistent with, and tiers where applicable from the PDARP/PEIS Section 6.4.14. Resources considered and impacts definitions (minor, moderate, major) align with the PDARP/PEIS. Relevant analyses from the PDARP/PEIS are incorporated by reference. Such incorporation by reference of information from existing plans, studies or other material is used in this analysis to present a concise document that briefly provides sufficient evidence and analysis to address the Open Ocean TIG's compliance with NEPA (40 CFR 1506.3, 40 CFR §

1508.9). All source documents relied upon are available to the public and links are provided in the discussion where applicable.

As discussed in Chapter 6 of the PDARP/PEIS, a TIG may propose funding a planning phase (e.g., initial engineering, design, and compliance) in one plan for a conceptual project, or for studies needed to maximize restoration planning efforts. This would allow the TIG to develop information needed leading to sufficient project information to develop a more detailed analysis in a subsequent restoration plan, or for use in the restoration planning process. Where these conditions apply and activities are consistent with those described in the PDARP/PEIS, NEPA evaluation is complete and no additional evaluation of individual activities is necessary unless the activities associated with this MAM activity change.

NEPA Review of MAM Activity

There are desktop and field components for this activity. Consistent with the impacts considered in the PDARP/PEIS, this activity would include minimally intrusive field activities (field component) as well as preliminary restoration planning and data-based activities (desktop component). The field component includes 1) aerial surveys from fixed wing or float plane or by drones to document sea turtle crawls, 2) nest surveys and sampling conducted by foot during nesting season, and 3) sampling to characterize beaches and sandy shorelines which may support sea turtle nesting (beach slope/compaction, sediment characteristics and sand content, inundation). Such field methods have been previously evaluated and implemented in other DWH TIG actions. While aerial surveys have not previously been proposed for sea turtle nest monitoring by DWH TIGs, aerial surveys at similar altitudes (no lower than approximately 600') are an activity routinely carried out for colonial waterbird nesting in Louisiana, and the use of drones at similar altitudes to reconnoiter for marine debris has been analyzed for implementation as a component of larger restoration projects in Mississippi TIG's RP3/EA (2022) and in the Regionwide TIG's RP/EA1 (2021). Nest surveys and sampling were analyzed and implemented under the Coastal Alabama Sea Turtle (CAST) Conservation Program in the Alabama TIG's RP/EA 2 (2018). Previously developed sea turtle nest monitoring protocols from Alabama and Florida would be followed for this activity as closely as practicable given the unique challenges of Louisiana's coastal environment. Data collection by these means require federal and state permits for actions involving threatened and endangered species. USFWS and USGS adheres to existing federal permits for sea turtle field activities. Such permitting has independently documented NEPA evaluation for actions allowed under the relevant permits; that analysis is incorporated here (USFWS 2015). State permits (LA) are also required to conduct such activities and would be obtained and provided to USFWS prior to any field activity. Beach monitoring and characterization activities were analyzed and selected as an activity in the Regionwide TIG's RP/EA 1 (2021) and analyzed as an activity in the non-preferred "Removal of Barriers on Sea Turtle Nesting Beaches along Florida's Gulf Coast" in the Florida TIG's RP/EA #2 (2021).

Consistent with the analysis in Section 6.4.14 of the PDARP/PEIS and the restoration plans referenced above, impacts to the biological and physical environment could include short-term, minor disturbance of habitats and species caused by surveyors and sample collectors accessing and transiting the shore and from the noise and movement of overflights during aerial surveys but would resolve as soon as the disturbance ceases in the localized area. Short-term, minor disturbance to terrestrial, estuarine, and marine environments, as well as substrates, would result from the placement of telemetry instrumentation at field sites. Best practices as indicated in related permits will be followed.

Analysis of the data collected, planning meetings, and preparation of reports are desktop components of this activity and as such would have no discernible impacts on natural resources. The generalized study area for the desktop component is represented in the map and includes sandy shorelines and barrier islands in Louisiana's coastal zone. The data gathered would lead to beneficial effects to biological resources through increased understanding of juvenile distribution and usage of physical areas monitored in this study.

NEPA Conclusion

After review of the proposed activities (including those to be authorized by ESA permit) against those actions previously evaluated in the PDARP/PEIS, the LA TIG determined that the environmental consequences resulting from this MAM activity fall within the range of impacts described in Section 6.4.14 of the PDARP/PEIS, thus no additional NEPA evaluation is necessary at this time.

6. Compliance with Environmental Laws and Regulations

The LA TIG has completed technical assistance with the appropriate regulatory agencies for this project. Project Tasks 1 and 4 consist of analysis of existing or new data and thus permits and consultations are not required. Tasks 2 and 3 of this project includes field sampling activities, and thus may require permitting and consultations with relevant state and federal agencies; where possible, existing permits and consultations will be reviewed to determine if they are sufficient to complete the work or if additional compliance work is needed. For the status of reviews under Federal regulatory statutes, see the table below.

Federal environmental compliance responsibilities and procedures follow the Trustee Council Standard Operating Procedures (SOP), which are laid out in Section 9.4.6 of that document. Following the SOP, the Implementing Trustees for each activity will ensure that the status of environmental compliance (e.g., completed vs. in progress) is tracked through the Restoration Portal.

Documentation of regulatory compliance will be available in the Administrative Record that can be found at the DOI's Online Administrative Record repository for the DWH NRDA (https://www.doi.gov/deepwaterhorizon/adminrecord). The current status of environmental compliance can be viewed at any time on the Trustee Council's website: http://www.gulfspillrestoration.noaa.gov/environmental-compliance/.

Table 3. Status of federal regulatory compliance reviews and approvals for the proposed project.

Federal Statute	Compliance Status
Bald and Golden Eagle Protection Act (USFWS)	Complete
Coastal Barrier Resources Act (USFWS)	Complete
Coastal Zone Management Act	Complete
Endangered Species Act (NMFS)	N/A

Federal Statute	Compliance Status
Endangered Species Act (USFWS)	Complete
Essential Fish Habitat (NMFS)	N/A
Marine Mammal Protection Act (NMFS)	N/A
Marine Mammal Protection Act (USFWS)	Complete
Migratory Bird Treaty Act (USFWS)	Complete
National Historic Preservation Act	In Progress
Rivers and Harbors Act/Clean Water Act	N/A
National Environmental Policy Act	Complete, NEPA analysis described in Section 5, above.

7. References

Deepwater Horizon (DWH) Natural Resource Damage Assessment (NRDA) Trustees. 2016. Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan (PDARP) and Final Programmatic Environmental Impact Statement (PEIS). Available: http://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

Deepwater Horizon Natural Resource Damage Assessment Trustees. 2017. Deepwater Horizon Oil Spill Natural Resource Damage Assessment: Strategic Framework for Sea Turtle Restoration Activities Version 1. May. Available: http://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

Deepwater Horizon (DWH) Natural Resource Damage Assessment (NRDA) Trustees. 2021. Monitoring and Adaptive Management (MAM) Procedures and Guidelines Manual Version 2.0. Available: https://www.gulfspillrestoration.noaa.gov/sites/default/files/2021-12%20TC%20Monitoring%20and%20Adaptive%20Management%20Procedures%20and%20Guidelines%20Manual%2C%20Updated%20December%202021.pdf

DWH Oil Spill Alabama Trustee Implementation Group (AL TIG). September 2018. Final Restoration Plan II and Environmental Assessment: Restoration of Wetlands, Coastal, and Nearshore Habitats; Habitat Projects on Federally Managed Lands; Nutrient Reduction (Nonpoint Source); Sea Turtles; Marine Mammals; Birds; and Oysters. Final Restoration Plan II and Environmental Assessment (noaa.gov)

DWH Oil Spill Florida Trustee Implementation Group (FL TIG). June 2021. Final Restoration Plan 2 and Environmental Assessment: Habitat Projects on Federally Managed Lands; Sea Turtles; Marine Mammals; Birds; and Provide and Enhance Recreational Opportunities. Deepwater Horizon Oil Spill Florida Trustee Implementation Group Final Restoration Plan 2 and Environmental Assessment: Habitat Projects on Federally Managed Lands; Sea Turtles; Marine Mammals; Birds; and Provide and Enhance Recreational Opportunities (noaa.gov)

Deepwater Horizon (DWH) Louisiana Trustee Implementation Group (LA TIG). 2021. Louisiana Trustee Implementation Group Monitoring and Adaptive Management Strategy (LA TIG MAM Strategy). Baton Rouge, 55 p. https://www.fws.gov/doiddata/dwh-ar-documents/3443/DWH-ARZ009746.pdf

Deepwater Horizon Louisiana Trustee Implementation Group. 2023. Guidance for Coastal Ecosystem Restoration and Monitoring to Create or Improve Bird-Nesting Habitat. Baton Rouge, Louisiana.

Deepwater Horizon Oil Spill Mississippi Trustee Implementation Group (MS TIG). June 2022. Final Restoration Plan 3 and Environmental Assessment: Habitat Projects on Federally Managed Lands, Sea Turtles, Marine Mammals, Birds, and Provide and Enhance Recreational Opportunities. Mississippi Trustee Implementation Group Restoration Plan 3 and Environmental Assessment (noaa.gov)

Deepwater Horizon Oil Spill Regionwide Trustee Implementation Group (RW TIG). September 2021. Final Restoration Plan/Environmental Assessment 1: Birds, Marine Mammals, Oysters, and Sea Turtles. Final Restoration Plan and Environmental Assessment 1: Birds, Marine Mammals, Oysters, and Sea Turtles (RP/EA) (noaa.gov)

United States Fish and Wildlife Service (USFWS). 2015. Programmatic Biological Opinion for Section 10(a)(1)(A) Permit Application from the North Florida Field Office for sea turtle recovery activities.

8. Activity Close Out

In accordance with Section 9.5.1.6 of the TC SOPs, the Implementing Trustee shall provide the LA TIG with a closeout report after all activities and expenditures have been accomplished. The Final Report shall include a description and any documentation of the completed activity, estimated benefits to natural resources, the final funding balances and any transfers described in Section 7 of the TC SOPs, a summary of the results of monitoring, and any recommendations on adaptive management for the activity. Upon request, the Implementing Trustee shall provide the LA TIG with additional information and supporting documents to complete the closeout report.

[i] On October 21, 2022, DOI issued a memorandum updating UAS operations and procurement policy to remove restrictions on UAS use by all DOI Bureaus. USFWS would use drones for this project only if drone use is consistent with all laws, regulations, and policies applicable on USFWS lands at the time of use. DOI and project partners would confirm the decision to use UAS for this project prior to implementation and would update project plans and budget accordingly.