MISSISSIPPI TRUSTEE IMPLEMENTATION GROUP FINAL RESTORATION PLAN 3 AND ENVIRONMENTAL ASSESSMENT:

Habitat Projects on Federally Managed Lands, Sea Turtles, Marine Mammals, Birds, and Provide and Enhance Recreational Opportunities

June 2022

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

USDA

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Top Right: Round Island Beach Habitat (photo courtesy of Audubon)

Middle Right: Buff-breasted Sandpiper on Round Island (photo courtesy of Bryan White, Audubon)

Lower Right: Shrimp Trawl (stock image Shrimp Boat)

Top Left: Recreational Trail (Stock Image-trail in a forest)

Lower Left: Turtle injured by vessel strike in rehabilitation (Photo courtesy of Tina Nations, Ph.D., Mississippi Department of Environmental Quality)

EXECUTIVE SUMMARY

In the spring of 2010, the *Deepwater Horizon* (DWH) mobile drilling unit exploded resulting in loss of life and a massive release of oil and natural gas from the BP Exploration and Production, Inc. (BP) Macondo well. Extensive response actions, including cleanup activities and actions to prevent the oil from reaching sensitive resources, were undertaken; however, many of these response actions had collateral impacts on the environment and natural resource services. The oil and other substances released from the well, in combination with the extensive response actions, together make up the DWH oil spill.

Pursuant to the Oil Pollution Act (OPA), Title 33 United States Code §§ 2701 *et seq*., and the laws of individual affected states, federal and state agencies, Indian tribes, and foreign governments act as trustees on behalf of the public to assess injuries to natural resources and their services[1] that result from an oil spill incident, and to plan for restoration to compensate for those injuries. Under the authority of OPA, the DWH Trustees conducted a natural resource damage assessment (NRDA) to assess the impacts of the DWH oil spill on natural resources and their services and prepared the 2016 *Deepwater Horizon* Oil Spill: Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement (PDARP/PEIS)[2] which outlines the type of restoration needed to compensate the public for the diverse suite of injuries that occurred at both regional and local scales as well as the funding allocations to each Restoration Type.

In the PDARP/PEIS, the Trustees identified the need for a comprehensive restoration plan at a programmatic level to guide and direct an ecosystem-level restoration effort, based on four programmatic Restoration Goals: Restore and Conserve Habitat; Restore Water Quality; Replenish and Protect Living Coastal and Marine Resources; and Provide and Enhance Recreational Opportunities. In addition, a fifth Restoration Goal, Provide for Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation, supports the Restoration Types under the Restoration Goals and informs overall decision-making (see Figure 5.4-1 in the PDARP/PEIS).

Restoration Plan 3 and Environmental Assessment

The Mississippi Trustee Implementation Group (MS TIG) is responsible for restoring natural resources and their services within the Mississippi Restoration Area that were injured by the DWH oil spill. The MS TIG includes the following agencies: the Mississippi Department of Environmental Quality (MDEQ); the National Oceanic and Atmospheric Administration (NOAA), on behalf of the United States Department of Commerce (DOC); the United States Department of the Interior (DOI), represented by the United States Fish and Wildlife Service (USFWS), the National Park Service (NPS), and the Bureau of Land Management (BLM); the United States Department of Agriculture (USDA); and the United States Environmental Protection Agency (EPA).

[1] Services (or natural resource services) are defined as the functions performed by a natural resource for the benefit of another natural resource and/or the public (15 Code of Federal Regulations § 990.30).
[2] The PDARP/PEIS can be found at www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan/.

The MS TIG has prepared this Restoration Plan 3 and Environmental Assessment (RP3/EA) to address, in part, injuries to natural resources in the Mississippi Restoration Area as a result of the DWH oil spill. The purpose of restoration, as discussed in this document and detailed in the PDARP/PEIS, is to make the environment and the public whole by implementing restoration actions that return injured natural resources and their services to baseline conditions and compensate for interim losses, in accordance with OPA and consistent with associated OPA NRDA regulations. This RP3/EA includes a description and evaluation of 12 restoration projects, also called restoration alternatives, consistent with five of the Restoration Types from the PDARP/PEIS:

Habitat Projects on Federally Managed Lands: two alternatives;
Sea Turtles: two alternatives;
Marine Mammals: three alternatives;
Birds: two alternatives; and
Provide and Enhance Recreational Opportunities: three alternatives.

The term “project” and “alternative” are used interchangeably throughout this RP3/EA. Table ES-1 lists the reasonable range of alternatives, noting those that are preferred for funding by the MS TIG in this RP3/EA. The MS TIG selects the seven preferred alternatives evaluated in this EA for funding and implementation at this time.

Table ES-1 The reasonable range of restoration alternatives proposed in this RP/EA, by Restoration Type

Reasonable Range of Restoration Alternatives		Estimated Project Costs
Restoration Type: Habitat Projects on Federally Managed Lands (FM)		
FM1. Improve Native Habitats by Removing Marine Debris from Mississippi Barrier Islands	Preferred	$3,000,000
FM2. Habitat Management on the Mississippi Barrier Islands	Non-Preferred	$2,000,000
Restoration Type: Sea Turtles (ST)		
ST1. Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities – 3 Years	Preferred	$2,500,000
ST2. Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities – 5 Years	Non-Preferred	$4,166,670
Restoration Type: Marine Mammals (MM)		
MM1. Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities	Preferred	$2,350,000
MM2. Marine Mammal Health Assessments to Monitor Population Health	Non-Preferred	$3,000,000
MM3. Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements	Preferred	$3,090,000
Restoration Type: Birds (B)		
B1. Bird Stewardship and Enhanced Monitoring in Mississippi	Preferred	$6,105,500
B2. Bird Stewardship on the Mississippi Barrier Islands	Non-Preferred	$4,105,500
Restoration Type: Provide and Enhance Recreational Opportunities (REC)		
REC1. Clower Thornton Nature Trail Improvement	Preferred	$630,000
REC2. Environmental Education and Stewardship at Walter Anderson Museum of Art	Preferred	$1,356,000
REC3. Mississippi Gulf Coast Pier Improvements	Non-Preferred	$1,500,000
Subtotal for Preferred Alternatives		$19,031,500

Public Participation in this Restoration Plan 3 and Environmental Assessment

The MS TIG prepared this RP3/EA to inform the public about DWH NRDA restoration planning efforts in the Mississippi Restoration Area and, to present analyses on the potential restoration benefits and environmental consequences of the reasonable range of restoration alternatives.

Summary of Changes From the Draft RP3/EA.—The MS TIG provided the public with 50 days to review and comment on the Draft RP3/EA. The comment period ended on January 26, 2022. The MS TIG received general and project-specific comments on the Draft RP3/EA. Comments received generally fell into categories associated with the proposed projects. A summary of comments received and responses is included in Chapter 6 of this document. After review and consideration of the public comments received, the MS TIG determined that no changes needed to be made to the RP3/EA projects proposed. The MS TIG received one comment on a typographical error identified in Section 3.2.1. Similar editorial revisions were made throughout the document. In addition, the MS TIG clarified an additional location of in-water testing activities associated with MM3 Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements.

Since the Draft RP3/EA, the MS TIG has completed informal Endangered Species Act consultations with USFWS and NOAA National Marine Fisheries Service (NMFS). In addition, USFWS determined that the proposed projects are consistent with the Coastal Barriers Resource Act, where applicable. In addition, the MS TIG has determined that the Proposed Action is consistent, to the maximum extent practicable, with the Coastal Zone Management Act. Chapter 5 provides a summary of environmental compliance statuses.

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Appendices

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1.0 INTRODUCTION, PURPOSE AND NEED, AND PUBLIC PARTICIPATION

1.1 Introduction

The Mississippi Trustee Implementation Group (MS TIG) has prepared this Final Restoration Plan 3 and Environmental Assessment (RP3/EA) and Finding of No Significant Impact (FONSI) to continue restoration of natural resources, and the services they provide, that were injured or lost as a result of the *Deepwater Horizon* (DWH) oil spill, inform the public about the DWH Natural Resource Damage Assessment (NRDA) restoration planning efforts, and seek public comment on the identified reasonable range of alternatives for restoration of injured resources.This RP3/EA and FONSI were prepared in accordance with the *Deepwater Horizon* Oil Spill: Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement (PDARP/PEIS; DWH Trustees 2016a) and the Record of Decision (ROD), the Oil Pollution Act of 1990 (OPA) and associated NRDA regulations, and the National Environmental Policy Act of 1969 (NEPA). The PDARP/PEIS and record of decision can be found online at https://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan (DWH Trustees 2016a).

This RP3/EA evaluates a reasonable range of alternatives to restore injured habitats on federally managed lands, to restore injuries to marine mammals, sea turtles, and birds, and to provide and enhance recreational opportunities to compensate for lost recreational use in the Mississippi Restoration Area. In this RP3/EA, the MS TIG selects seven preferred alternatives to partially compensate the public for injuries caused by the DWH oil spill in the Mississippi Restoration Area (See Table 1-2).

1.2 Deepwater Horizon Trustees, Trustee Council and Trustee Implementation Groups

As a result of the DWH oil spill, a council of federal and state DWH Trustees (the Trustees) was established on behalf of the public to assess natural resource injuries resulting from the incident, and work to make the environment and public whole for those injuries. The MS TIG includes the following agencies: the Mississippi Department of Environmental Quality (MDEQ); National Oceanic and Atmospheric Administration (NOAA), on behalf of the United States Department of Commerce; the United States Department of the Interior (DOI), represented by the United States Fish and Wildlife Service (USFWS), the National Park Service (NPS), and the Bureau of Land Management (BLM); the United States Department of Agriculture (USDA); and the United States Environmental Protection Agency (EPA). The MS TIG makes all restoration decisions for the funding allocated to the Mississippi Restoration Area.

This RP3/EA was prepared by the federal and state natural resource trustees that comprise the MS TIG, which is responsible for restoring the natural resources and services in the Mississippi Restoration Area. Table 1-1 provides the final settlement allocation for the Mississippi Restoration Area.

Table 1-1: Allocation of DWH Settlement Funds for the Mississippi Restoration Area by Restoration Type

PDARP/PEIS Programmatic Restoration Goal	Restoration Type	Total MS TIG Settlement Funds	Funds Allocated to Monitoring Adaptive Management and Administrative Oversight	Funds Allocated to Early Restoration Projects	Funds Allocated to RP1/EA and RP2/EA Projects	Funds Proposed in this RP3/EA
Restore and Conserve Habitat	Wetlands, Coastal and Nearshore Habitats	$135,500,000	--	$80,000,000	$22,387,500	--
	Habitat Projects on Federally Managed Lands	$5,000,000	--	--	--	$3,000,000
Restore Water Quality	Nutrient Reduction	$27,500,000	--	--	$4,000,000	--
	Water Quality	--	--	--	--	--
Replenish and Protect Living Coastal and Marine Resources	Sea Turtles	$5,000,000	--	--	--	$2,500,000
	Marine Mammals	$10,000,000	--	--	--	$5,440,000
	Birds	$25,000,000	--	--	-$5,250,000-	$6,105,500
	Oysters	$33,600,000	--	$13,600,000	$10,500,000	--
Provide and Enhance Recreational Opportunities	Provide and Enhance Recreational Opportunities	$23,957,000	--	$18,957,000	--	$1,986,000
	TOTAL	$265,557,000	$30,000,000	$112,557,000	$42,137,500	$19,031,500

1.3 OPA and NEPA Compliance

The DWH oil spill is subject to the provisions of OPA, 33 U.S.C. § 2701 *et seq*. A primary goal of OPA is to make the environment and public whole for injuries to natural resources and services resulting from an incident involving an oil discharge or substantial threat of an oil discharge. Federal trustees must also comply with NEPA, 42 U.S.C. § 4321 et seq., its regulations, 40 C.F.R. § 1500 eq seq., and agency-specific NEPA regulations when planning restoration projects.

DOI is the lead federal trustee for preparing this RP3/EA. Three federal agencies (USDA, NOAA, and EPA) and MDEQ act as cooperating agencies for NEPA purposes of this RP3/EA. Each federal cooperating agency reviewed RP3/EA for adequacy in meeting its own NEPA implementing procedures and hereby adopts the NEPA analysis. Adoption of the final RP3/EA is complete via signature on the FONSI (Appendix C).

1.4 Purpose and Need

The MS TIG has undertaken this restoration planning effort to restore natural resources and services injured in the Mississippi Restoration Area. This RP3/EA is consistent with and falls within the scope of the purpose and need identified in Section 5.3.2 of the PDARP/PEIS. The PDARP/PEIS defines five DWH Programmatic Trustee Goals that work independently and together to benefit injured resources and services. The proposed alternatives in this RP3/EA would focus on the following three DWH programmatic restoration goals:

1) Restore and Conserve Habitat;
2) Replenish and Protect Living Coastal and Marine Resources, and
3) Provide and Enhance Recreational Opportunities.

Consistent with the DWH Programmatic Trustee Goals for restoration, the Trustees also developed related Restoration Types, Restoration Approaches and restoration techniques to guide restoration planning and project selection (See PDARP/PEIS Sections 5.5.3.1 for injuries to habitats on lands managed by federal agencies, 5.5.11.1 for injuries to marine mammals, and 5.5.12 for injuries to birds, and 5.5.14 for lost recreational use). This RP3/EA addresses five Restoration Types: Habitat Projects on Federally Managed Lands, Sea Turtles, Marine Mammals, Birds, and Provide and Enhance Recreational Opportunities.

1.5 Proposed Action: MS TIG RP3/EA

In the Draft RP3/EA, the MS TIG proposed to implement seven preferred alternatives, identified in Table 1-1. These seven alternatives are included in a reasonable range of twelve alternatives (Table 2-1). Upon consideration of public input and completion of the analysis, the MS TIG selects its proposed action of seven preferred alternatives for funding and implementation (See Table 1-2).

To identify the reasonable range of alternatives, the MS TIG solicited public input for project ideas, screened project submittals against OPA NRDA evaluation criteria found in 15 CFR § 990.54, and reviewed PDARP/PEIS Programmatic Trustee Goals for restoration to develop additional specific MS TIG RP3/EA Goals and Objectives. Further detail on the screening process can be found in Section 2.4. Chapter 3 is a summary of the OPA analysis, resulting in the seven alternatives chosen as preferred for implementation.

No Action Alternative: Pursuant to NEPA, a no action alternative is also considered for each restoration type. The Proposed Action for the plan is the selection of seven alternatives preferred for implementation to provide restoration towards meeting three of the programmatic Restoration Goals identified in the PDARP/PEIS. Table 1-1 is a summary of the Proposed Action (the preferred alternatives). Project locations for the proposed alternatives are depicted in Figure 1.1.

Severability: All alternatives are independent of each other and may be selected independently for implementation in this and/or future restoration plans by the MS TIG. Alternatives not implemented may be considered for future restoration by the MS TIG or may be considered by other TIGs (e.g., Regionwide, Open Ocean).

Detailed information on all alternatives can be found in Section 2.5. Section 3.3 provides a discussion of the preferred and non-preferred alternatives considered in this plan. The MS TIG proposes to use $19,031,500 from the Habitat Projects on Federally Managed Lands, Sea Turtles, Marine Mammals, Birds, and Provide and Enhance Recreational Opportunities Restoration Types, to implement the seven preferred alternatives in this RP3/EA.

Table 1-2. Preferred Alternatives Comprising the Proposed Action in this RP3/EA

Proposed Action (Preferred Alternatives)	PDARP/PEIS Restoration Goal: Restoration Type	Proposed Funding
Improve Native Habitat by Removing Marine Debris from Mississippi Barrier Islands	Restore and Conserve Habitat: Habitat Projects on Federally Managed Land	$3,000,000
Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities	Replenish and Protect Living Coastal and Marine Resources: Sea Turtles	$2,500,000
Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities	Replenish and Protect Living Coastal and Marine Resources: Marine Mammals	$2,350,000
Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements	Replenish and Protect Living Coastal and Marine Resources: Marine Mammals	$3,090,000
Bird Stewardship and Enhanced Monitoring in Mississippi	Replenish and Protect Living Coastal and Marine Resources: Birds	$6,105,500
Clower Thornton Nature Park Trail Improvement	Provide and Enhance Recreational Opportunities: Provide and Enhance Recreational Opportunities	$630,000
Environmental Education and Stewardship at Walter Anderson Museum	Provide and Enhance Recreational Opportunities: Provide and Enhance Recreational Opportunities	$1,356,000

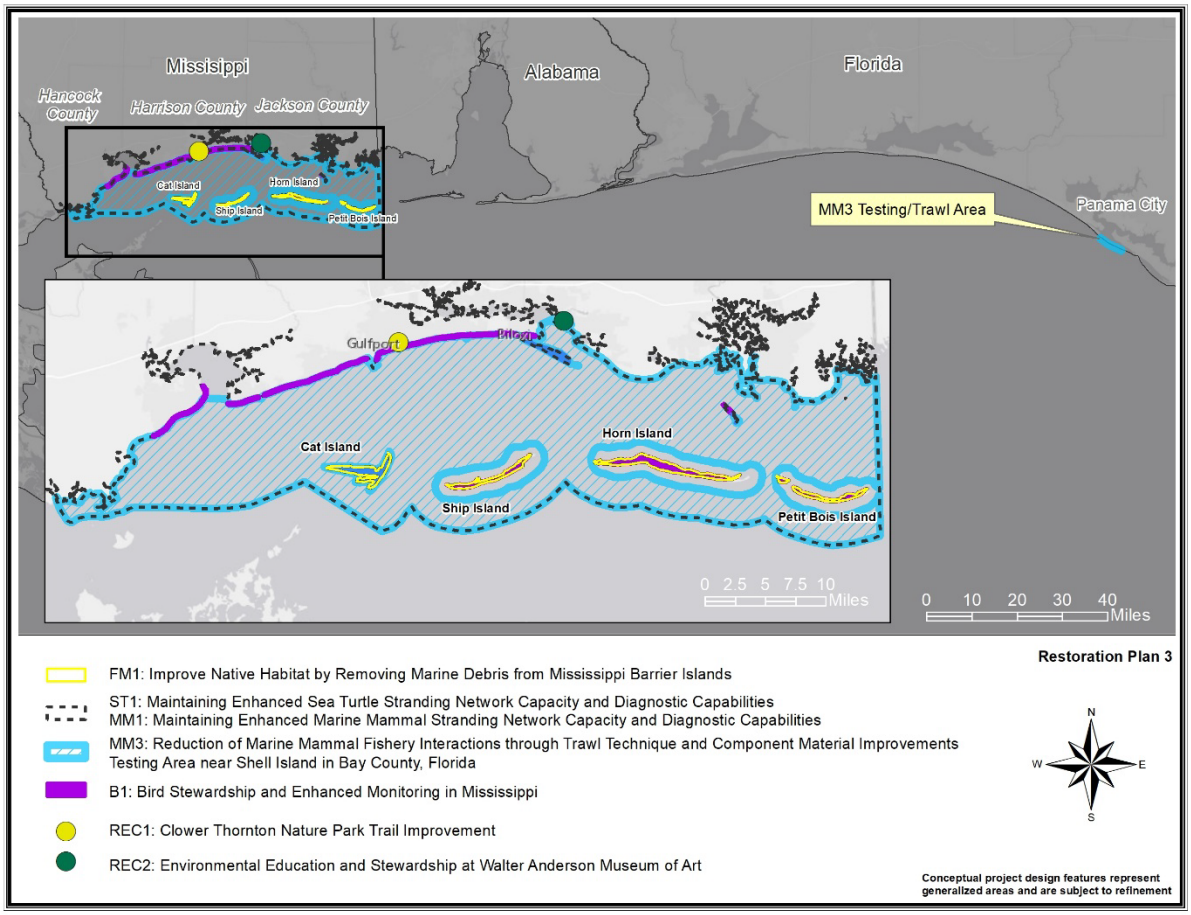

Figure 1.1 RP3/EA Proposed Action (Preferred Alternatives)

1.6 Coordination with Other Gulf Restoration Programs

As discussed in Section 1.5.6 of the PDARP/PEIS, coordination with other Gulf restoration programs would promote successful implementation of restoration projects and optimize ecosystem recovery. The MS TIG is committed to coordinating with other DWH oil spill and Gulf restoration programs (e.g., the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States [RESTORE] Act, the National Fish and Wildlife Foundation's Gulf Environmental Benefit Fund [NFWF-GEBF]) to maximize the overall ecosystem benefit of restoration efforts and ensure effective use of funds by identifying synergies and reducing potential redundancies in project selection. This coordination would ensure that funds are allocated for critical restoration projects across the Gulf and specifically within Mississippi. A number of the preferred alternatives of this RP3/EA complement, support, and enhance projects funded by other TIGs and across funding streams benefitting the Mississippi Restoration Area.

The Improve Native Habitat by Removing Marine Debris from Mississippi Barrier Islands project in this RP3/EA would complement the efforts of the Regionwide TIG RP1/EA in implementation of their Alternative 5: Reducing Marine Debris Impacts on Birds and Sea Turtles.

Two of the preferred alternatives in this RP3/EA (ST1-Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities and MM1-Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities) would build upon the current NFWF-GEBF Mississippi Marine Mammal and Sea Turtle Conservation, Recovery, and Monitoring Program – Phase I that is anticipated to be completed in 2022. The MS TIG RP3/EA ST1- Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities would also coordinate with Regionwide Plan 1 Alternative 6: Regionwide Enhancements to the Sea Turtle Stranding and Salvage Network and Enhanced Rehabilitation.

The MS TIG MM1 - Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities project would also complement and enhance the benefits of similar marine mammal projects underway in neighboring states: the AL TIG RPII/EA Enhancing Capacity for the Alabama Marine Mammal Stranding Network project and the LA TIG RP/EA #5 Increasing Capacity and Expanding Partnerships along the Louisiana Coastline for Marine Mammal Stranding Responses project and would also coordinate with RW TIG RP1/EA Plan Alternative 3: Enhance Marine Mammal Stranding Network Diagnostic Capabilities and Consistency across the Gulf of Mexico.

The RP3/EA Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements preferred alternative is similar in scope and would support and complement the efforts of the RW TIG RP1/EA Alternative 1: Voluntary Modifications to Commercial Shrimp Lazy Lines to Reduce Dolphin Entanglement project.

The MS TIG RP 3/EA Alternative B1 Bird Stewardship and Enhanced Monitoring preferred alternative would enhance the NFWF-GEBF Coastal Bird Stewardship in Mississippi- Phase 1 Project in Mississippi, and would also complement the RW TIG RP1/EA Alternative 3: Bird Nesting and Foraging Area Stewardship project.

NRDA, RESTORE, and NFWF-GEBF projects currently funded within Mississippi are described on the Mississippi Restoration, NFWF-GEBF, and RESTORE websites. Restoration alternatives evaluated in this RP3/EA that leverage funds from NFWF-GEBF are identified within the project descriptions in Section 2.4.

1.7 Public Involvement

Public input is an integral part of NEPA, OPA, and the DWH oil spill restoration planning effort. The MS TIG published a notice on the DWH Trustee Council website calling for project ideas on October 30, 2020[1] (hereafter, October 30, 2020 Notice) for this RP3/EA. Project ideas requested included the Habitat Projects on Federally Managed Lands; Sea Turtles; Marine Mammals; Birds; and Provide and Enhance Recreational Opportunities Restoration Types. The MS TIG encouraged the public to submit new ideas or make revisions to previously submitted project ideas by November 30, 2020. On June 11, 2021, the MS TIG published a Notice of Initiation of Restoration Planning in Mississippi[2]. During the planning process the MS TIG decided to focus on Habitat Projects on Federally Managed Land, Sea Turtles, Marine Mammals, Birds, and Enhance Recreational Opportunities Restoration Types in this RP3/EA.

[1] https://www.gulfspillrestoration.noaa.gov/2020/10/mississippi-trustee-implementation-group-welcomes-publics-project-ideas

[2] https://www.gulfspillrestoration.noaa.gov/2021/06/notice-initiation-restoration-planning-mississippi

In developing this RP3/EA, the MS TIG considered projects previously submitted to the MDEQ Restoration Project Idea portal[3] and the Trustee Council Project Submission Portal[4] as well as those proposed in response to the October 30, 2020 Notice[5].

The MS TIG provided the public with 50 days to review and comment on the Draft RP3/EA. The comment period ended on January 26, 2022. During the comment period, the MS TIG hosted a public webinar to provide an overview and the opportunity to comment on the Draft RP3/EA. Public comments could also be made electronically and by mail. At the close of the public comment period, the MS TIG considered all relevant comments received and revised the RP3/EA as appropriate.

The MS TIG received general and project-specific comments on the Draft RP3/EA. The public comments did not identify any issues of significant environmental concern or significant new information relevant to environmental concerns that would change the OPA or NEPA analysis. Comments received generally fell into categories associated with the proposed projects. A summary of comments received and the MS TIG's responses to them is included in Chapter 6 of this document.

Pursuant to 15 C.F.R. § 990.45, the Trustees opened a publicly available Administrative Record for the DWH oil spill NRDA, including restoration planning activities, concurrently with the publication of the 2010 Notice of Intent to Conduct Restoration Planning (75 Fed. Reg. 60800). DOI is the lead federal Trustee for maintaining the Administrative Record, which can be found at http://www.doi.gov/deepwaterhorizon/adminrecord. Information about MS TIG restoration project implementation is being provided to the public through the MDEQ Website[6], the Administrative Record, the Gulf Spill Restoration website[7], NOAA's Data Integration Visualization and Exploration data warehouse (DIVER)[8] and other outreach efforts.

1.8 Changes Made Between the Draft and Final RP3/EA

The following revisions have been incorporated into this Final RP3/EA:

Typographical errors were corrected in Section 3.2.1 and where necessary throughout the RP/EA.

The MS TIG clarified the location and the nature of in-water testing activities associated with MM3 Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements. Specifically:

- Section 2.4.3.3. The project description was amended to add the location of gear testing near the Panama City, Florida NMFS Facility (Shell Island).

[3] http://www.restore.ms/submit-project-idea/
[4] http://www.gulfspillrestoration.noaa.gov/restoration/give-us-your-ideas/suggest-a-restoration-project/
[5] https://www.gulfspillrestoration.noaa.gov/2020/10/mississippi-trustee-implementation-group-welcomes-publics-project-ideas
[6] https://www.mdeq.ms.gov/restoration/
[7] https://www.gulfspillrestoration.noaa.gov/2018/10/notice-initiation-restoration-planning-mississippi
[8] https://www.diver.orr.noaa.gov/web/guest/diver-explorer?siteid=9&sqid=643&subtitle=DWH%20Restoration%20Projects[9] https://www.gulfspillrestoration.noaa.gov/sites/default/files/wp-content/uploads/PDARP_ROD_Final-with-All-Signatures508.pdf

- Figure 2-7.1 was added to depict the location of the testing site.
- Section 4.3.4.3 Phase 1-Initial Equipment Development and Testing section was modified to describe activities to be conducted near the Panama City, Florida, NFMS Facility (Shell Island), and to include a summary of that affected environment. In addition, the following statement was added: “Research and gear testing conducted by the NMFS Southeast Fisheries Science Center as part of this project will follow conditions outlined in their ESA permit (No. 20339).”
- Section 4.3.4.3 The Environmental Consequences section was updated to analyze impacts resulting from in-water gear testing near Panama City, Florida (Shell Island).

Chapter 5.0 was updated to reflect the current status of environmental compliance.

Chapter 6, Response to Public Comments, and Appendix C, the Finding of No Significant Impact (FONSI) for RP3/EA, were also added.

1.9 Next Steps

The reasonable range of alternatives identified in this document consists of alternatives that are independent of each other and may be selected independently by the MS TIG. A decision not to select one or more of the alternatives does not affect the MS TIG’s selection of any remaining alternatives. Projects that are not included in the reasonable range of alternatives, or not selected for implementation in this RP3/EA, can be considered for inclusion in future restoration plans developed by the MS TIG.

Permits (e.g., Clean Water Act Section 404 permits) may be required for selected alternatives prior to implementation, which could require additional environmental analyses. All environmental compliance requirements would be completed prior to any ground disturbance. If the outcome of environmental compliance reviews would necessitate a change in project scope, additional NEPA review may be conducted to address those changes.

2.0 RESTORATION PLANNING PROCESS AND REASONABLE RANGE OF ALTERNATIVES

NRDA restoration under OPA is a process that includes evaluating injuries to natural resources and their services to determine the type and extent of restoration needed to address those injuries. Restoration activities must produce benefits with a nexus (connection) to natural resources and their services impacted by an oil spill[1]. This chapter summarizes the restoration decisions stated in the PDARP/PEIS ROD[2], the relationship of the PDARP/PEIS to this RP3/EA, injuries addressed, the screening process used by the MS TIG to identify the reasonable range of alternatives, and the projects considered in the reasonable range of alternatives. The reasonable range of alternatives is consistent with the PDARP/PEIS. The restoration planning process was conducted in accordance with OPA, the OPA NRDA regulations (15 CFR § 990.53), NEPA implementing regulations (40 CFR §§ 1500-1508), the Consent Decree, and the Trustee Council's Standard Operating Procedures (SOPs).

2.1 PDARP/PEIS and Record of Decision

Given the potential magnitude and breadth of restoration for DWH oil spill injuries, the Trustees prepared a PDARP/PEIS under OPA and NEPA. As a programmatic restoration plan, the PDARP/PEIS provides direction and guidance for identifying, evaluating, and selecting restoration projects to be implemented by the TIGs (Section 5.10.4 and Chapter 7 of the PDARP/PEIS). As the PDARP/PEIS analysis shows, the injuries caused by the DWH oil spill cannot be fully described at the level of a single species, habitat type, or region. Therefore, there is a need for comprehensive restoration planning on a landscape and ecosystem scale that recognizes and strengthens existing connectivity among habitats, resources, and their services in the Gulf. The Trustees prepared a PEIS to analyze the environmental impacts of the reasonable range of programmatic alternatives, to consider the multiple related actions that could occur because of restoration planning efforts, and to allow for a better analysis of cumulative impacts of potential actions. The PDARP/PEIS was released on February 19, 2016 and detailed a programmatic plan to propose, select, fund, and implement restoration projects across the Gulf. Specifically, the PDARP/PEIS provides a description of the Trustees' framework for restoration which includes the programmatic Restoration Goals, Restoration Types (i.e., broad categories of restoration such as "sea turtles" or "birds") that fall under each programmatic goal, Restoration Approaches (i.e., options for conducting restoration such as create, restore, and enhance coastal wetlands or restore and conserve bird nesting and foraging habitat) under each Restoration Type, and restoration techniques (i.e., specific restoration methods) under each Restoration Approach.

On March 29, 2016, in accordance with OPA and NEPA, the Trustees published a Notice of Availability of a ROD for the PDARP/PEIS in the *Federal Register* (81 FR 17438). Based on the injury determination established in the PDARP/PEIS, the ROD set forth the basis for the Trustees' decision to select Alternative A: Comprehensive Integrated Ecosystem Alternative and its associated funding allocations. More information about Alternative A can be found in Sections 5.5 and 5.10 of the PDARP/PEIS. Summary information about the relationship between the PDARP/PEIS and this document can be found in Section 2.2 below.

[1] Includes exposure to the oil from the spill, dispersants, and response actions resulting from the incident.
[2] The PDARP/PEIS and ROD can be found at www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan

2.2 Summary of Injuries Addressed in this RP3/EA

Chapter 4 of the PDARP/PEIS summarizes the injury assessment, which documented the nature, degree, and extent of injuries from the DWH oil spill to both natural resources and their services. The reasonable range of alternatives identified in this RP3/EA is designed to address injuries in the Mississippi Restoration Area. This section summarizes the most relevant information from Chapter 4 of the PDARP/PEIS injury assessment, provides the section of the PDARP/PEIS that provides details, and establishes the nexus for restoration planning for these Restoration Types. Brief summaries are included below.

Habitat Projects on Federally Managed Lands: The DWH oil spill and response activities caused extensive injuries to wetlands, coastal, and nearshore habitats on federally managed lands across the northern Gulf. In Mississippi, the spill oiled 1,334 acres along 57 miles of federally managed beach shoreline (Section 4.6 in the PDARP/PEIS; See DOI lands in Mississippi, Table 4.6-18, page 4-397). Portions of the Mississippi barrier islands are managed for the public by Gulf Islands National Seashore and include more than 62 miles of beach and shoreline, much of which was directly impacted by the Deepwater Horizon oil spill and cleanup activities. Injuries from oiling and response-related activities occurred on federally managed lands on barrier island sections of the Gulf Island National Seashore, Mississippi Unit including portions of Petit Bois, Horn, Ship, and Cat Island. Currently there are no projects using NRDA Restoration Type funding that address habitat injuries on federally managed lands in the Mississippi Restoration Area.

Sea Turtles: All five species of sea turtles that inhabit the Gulf (loggerhead, Kemp's ridley, green, leatherback, and hawksbill) are listed as threatened or endangered under the Endangered Species Act of 1973 (ESA). They are long-lived, travel widely, and use a variety of habitats across the Gulf and beyond. Four of the five species of sea turtles that inhabit the Gulf were injured by the DWH oil spill: loggerhead, Kemp's ridley, green, and hawksbill.

Sea turtles were injured by oil or response activities in open ocean, nearshore, and shoreline environments, and the resulting mortality spanned multiple life stages. The Trustees estimated that between 4,900 and up to 7,600 large juvenile and adult sea turtles (Kemp's ridleys, loggerheads, and hard-shelled sea turtles not identified by species) and between 56,000 and up to 166,000 small juvenile sea turtles (Kemp's ridleys, green turtles, loggerheads, hawksbills, and hard-shelled sea turtles not identified by species) were killed by the DWH oil spill. Nearly 35,000 hatchling sea turtles (loggerheads, Kemp's ridleys, and green turtles) were injured by response activities, and thousands more Kemp's ridley and loggerhead hatchlings were lost because of unrealized reproduction by adult sea turtles that were killed by the DWH oil spill. Additional injuries were determined to have occurred, but were not formally quantified, such as injuries to leatherback turtles (DWH Trustees 2017a).

Marine Mammals: Contamination of habitat in the nearshore and offshore waters of the northern Gulf resulted in marine mammals inhaling, ingesting, aspirating, and possibly absorbing oil. As a result, thousands of animals suffered physical injury and toxic effects to organs and tissues, including lung disease, adrenal disease, poor body condition, and other adverse health effects. Animals that experienced these adverse health effects contributed to the largest and longest marine mammal unusual mortality event (UME) on record in the Gulf. Bottlenose dolphins were the most impacted species in this UME. The Mississippi Sound bottlenose dolphin stocks were one of the most severely injured populations, with a 62 percent maximum reduction in their population sizes. Marine mammal populations that overlap with the footprint of the DWH oil spill still have demonstrable, quantifiable

injuries. Because cetaceans are long-lived animals, give birth to only one calf every few years, and are slow to reach reproductive maturity, injured marine mammal stocks would take many decades to recover without active restoration (Section 4.9 in the PDARP/PEIS). Currently there are no projects using MS TIG NRDA Marine Mammal Restoration Type funding that address marine mammal injuries in the Mississippi Restoration Area.

Birds: At least 93 species of birds, including both resident and migratory species across all five Gulf Coast states, were exposed to DWH oil in multiple northern Gulf habitats, including: open water, islands, beaches, bays, and marshes. Laboratory studies showed that exposure to DWH oil led to injuries, including: feather damage, abnormal blood attributes, organ damage, and death (Section 4.7 in the PDARP/PEIS). The Trustees estimated that between 51,600 and 84,500 birds died because of the DWH oil spill. Of those quantified dead birds, breeding-age adults would have produced an estimated 4,600 to 17,900 fledglings. The Trustees recognize that additional injury occurred that is unquantified; true bird mortality is likely closer to the upper ranges than the lower (PDARP/PEIS, Section 4.7.5).

Although the precise number of birds injured and killed in the Mississippi Restoration Area was difficult to quantify during the assessment, impacts did occur as a result of exposure to oil and from the effects of response activities. Bird injury in the Mississippi Restoration Area has been partially addressed through land acquisition and habitat projects funded in MS TIG RP II (Portal IDs 112 and 113) and through secondary benefits from other projects.

Recreational Opportunities: The DWH oil spill resulted in losses to the public's use of natural resources for outdoor recreation. The Trustees estimated that more than 16 million boating, fishing, and other shoreline activity user-days were lost across the five affected Gulf states. Total recreational use injuries attributable to the DWH oil spill are estimated at $693.2 million (with an uncertainty range of from $527.6 million to $858.9 million). The PDARP/PEIS indicates that recreational uses have recovered. The purpose of the recreational use alternatives in this RP3/EA is to provide compensatory restoration for losses that occurred between April 2010 and November 2011, after which recreational use returned to baseline levels (Section 4.10 in the PDARP/PEIS). Recreational use injury in the Mississippi Restoration Area has been partially addressed through Early Restoration projects (Portal IDs 44, 47, and 48).

2.3 Screening for a Reasonable Range of Alternatives for this RP3/EA

In developing a reasonable range of alternatives for this RP3/EA, the MS TIG reviewed the Restoration Goals, Types, Approaches, and techniques described in the PDARP/PEIS. The MS TIG also considered other criteria identified in the PDARP/PEIS, including the six evaluation standards from the OPA NRDA regulations (15 CFR § 990.54), input from the public, the current and future availability of funds under the DWH NRDA settlement payment schedule, as well as projects already funded or proposed to be funded by other TIGs (e.g., Regionwide TIG [RW TIG]) or other DWH funding sources (e.g., NFWF-GEBF, RESTORE). A summary of the OPA evaluation criteria is provided in Section 3.1. The MS TIG's screening process is described in Sections 2.4.1 through 2.4.5.

2.3.1 Identification of Restoration Alternatives and Eligibility Screening

On October 30, 2020, the MS TIG requested that the public submit project ideas related to the following Restoration Types: Habitat Projects on Federally Managed Lands, Sea Turtles, Marine Mammals, Birds,

and Provide and Enhance Recreational Opportunities.[3] The MS TIG screened projects that were submitted by November 30, 2020, to either the Trustee Council Project Submission Portal[4] or the MDEQ Restoration Project Idea Portal[5]. Consistent with Section 9.4.1.4 of the Trustee Council's SOPs, the MS TIG also considered project ideas developed by MS TIG Trustees and project ideas from Gulf restoration reports, management plans, and/or related efforts. The MS TIG identified the below proposed Restoration Types and Approaches in the October 30, 2020 request. The MS TIG collaborated and decided on specific restoration techniques as part of the screening process.

Habitat Projects on Federally Managed Lands: Projects that focus on the habitats that were injured on lands managed by federal agencies with particular interest in the Gulf Islands National Seashore in Mississippi.

Sea Turtles: Projects that (i) make direct contributions to reducing sea turtle bycatch in commercial fisheries in Mississippi; or (ii) enhance state enforcement efforts to reduce bycatch in commercial fisheries; or (iii) increase survival through actions to investigate and respond to anthropogenic threats to sea turtles and emergency incidents; or (iv) fill knowledge or data gaps specific to sea turtles and their habitats in Mississippi. The MS TIG requested projects that specifically address the following approaches for the Sea Turtle Strategic Framework for Restoration Activities (DWH Trustees 2017a):

Approach 1: Reduce Sea Turtle Bycatch in Commercial Fisheries through Identification and Implementation of Conservation Measures

Approach 5: Reduce Sea Turtle Bycatch in Commercial Fisheries through Enhanced State Enforcement Efforts to Improve Compliance with Existing Sea Turtle Conservation Requirements

Approach 6: Increase Sea Turtle Survival through Enhanced Mortality Investigation, and Early Detection of and Response to Anthropogenic Threats and Emergency Events.

Marine Mammals: Projects that address stressors that cause mortality (death) and morbidity (illness that reduces fitness) to marine mammal stocks. The MS TIG requested projects that specifically addressed the following approaches from the Strategic Framework for Marine Mammal Restoration Activities (DWH Trustees 2017b) and collaborated on specific techniques of interest for this RP3/EA:

Approach 1: Reduce commercial fishery bycatch through collaborative partnerships

- Technique: Evaluate, Develop, and Implement Conservation Measures in the Shrimp Trawl Fishery (otter and skimmer trawls)

Approach 3: Increase Marine Mammal Survival through Better Understanding of Causes of Illness and Death, as Well as Early Detection and Intervention of Anthropogenic and Natural Threats

- Techniques:
  - Address Gaps and Enhance Capacity in the Current Capabilities of the MMSN throughout the Northern GOM to Improve Timeliness of Response, and Diagnosis of Illness and Cause of Death
  - Develop and Increase the Technical and Infrastructure Capabilities to Respond to Major Stranding Events or Disasters

[3] The invitation to submit project ideas can be found at www.gulfspillrestoration.noaa.gov/2020/10/mississippi-trustee-implementation-group-welcomes-publics-project-ideas.

[4] Trustee Council Project Submission Portal: www.gulfspillrestoration.noaa.gov

[5] MDEQ Restoration Project Idea Portal: www.restore.ms/submit-project-idea/

Birds: Projects that enhance bird reproductive success and survival. The MS TIG requested projects that specifically addressed the following restoration approaches from the Strategic Framework for Bird Restoration Activities (DWH Trustees 2017c) and collaborated on specific techniques of interest for this RP3/EA:

Approach 1: Restore and Conserve Bird Nesting and Foraging Habitat
- Techniques:
  Enhance habitat through vegetation management
  Nesting and foraging area stewardship
  Develop and implement management actions in conservation areas

Approach 3: Preventing Incidental Bird Mortality
- Technique: Remove derelict fishing gear

Provide and Enhance Recreational Opportunities: Provides recreational opportunities through public access and education. The MS TIG requested projects that specifically addressed the following Restoration approaches from the PDARP/PEIS and collaborated on specific techniques of interest for this RP3/EA:

Approach 1: Enhance Public Access to Natural Resources for Recreational Use
- Technique: Enhance public access to natural resources for recreational use

Approach 2: Enhance Recreational Experiences
- Technique: Reduce and Remove Land-Based Debris

Approach 3: Promote Environmental Stewardship, Education and Outreach
- Technique: Create or enhance natural resource-related education facilities
- Technique: Create or enhance natural resource related education programs

In late 2020, the MS TIG compiled all of the project ideas from the Trustee Council Project Submission Portal and the MDEQ Restoration Project Idea Portal for a total of 1,293 projects. The MS TIG used a series of key words to identify projects related to each Restoration Type from the call for project ideas and binned the projects into their appropriate Restoration Types. The MS TIG excluded projects that would not directly benefit the resources addressed by each Restoration Type included in this RP3/EA, projects that were already being implemented or were fully funded, and/or duplicative project ideas.

This resulted in a total of 612 projects being considered including: 18 Habitat Projects on Federally Managed Lands, 100 Sea Turtles, 160 Marine Mammals, 196 Birds, and 138 Provide and Enhance Recreational Opportunities projects (Figure 2-1).[6]

2.3.2 Eligibility Screening

The MS TIG completed Step 1, eligibility screening of the 612 projects. The MS TIG screened out projects that did not address PDARP goals and priority restoration approaches and techniques identified, or in the case of Habitat Projects on Federally Managed lands, geography as described in Section 2.4.1; projects that were already funded; and projects that were duplicative. This step resulted in a total of 210 projects remaining after screening criteria were applied (18 Habitat Projects on Federally Managed

[6] Some projects indicated multiple resource benefits and were binned under multiple Restoration Types.

Lands, 56 Sea Turtles, 28 Marine Mammals, 21 Birds, and 87 Provide and Enhance Recreational Opportunities projects; Figure 2-1).

2.3.3 Initial Project Screening

The MS TIG completed Step 2, initial project screening, of the 210 projects. The MS TIG applied a number of screening criteria in Step 2 including:

- Project is more appropriately conducted by the MS TIG than by the RW TIG or could be conducted by the MS TIG to supplement Region-wide restoration projects;
- Project has a reasonable likelihood of success;
- Available information was sufficient or could be made sufficient in a reasonable amount of time to permit screening of the project;
- Whether the project was consistent with the MS TIG Trustees' goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses; and
- Whether the project focused on active measures to meet the PDARP goals as opposed to research, program management, planning or monitoring activities.

This step resulted in a total of 126 projects (3 Habitat Projects on Federally Managed Lands, 21 Sea Turtles, 17 Marine Mammals, 16 Birds, and 69 Provide and Enhance Recreational Opportunities projects; Figure 2-1).

2.3.4 Project Specific Screening

- The MS TIG completed Step 3, project specific considerations, on the 126 projects remaining from Step 2. The following criteria were applied to this project list:
- Can the project be implemented within the budget available for this restoration plan or is there a source of other funds that can be leveraged in conjunction with NRDA funds available to allow implementation?
- Is the restoration benefit commensurate with the cost of the project?
- Can the project be implemented in a reasonable time frame?
- Does the project have a significant potential to result in adverse environmental or human health impacts?
- Are there any other impediments to carrying the project forward as part of the reasonable range of alternatives designated for more detailed OPA and NEPA analysis (e.g., compliance issues)?
- Is the project consistent with the DWH Trustee's Strategic Frameworks (e.g., Birds, Marine Mammals) or existing management plans (e.g., habitat management plans, species recovery plans)?
- For Marine Mammals, is other data collection necessary to inform data gaps before implementing this project?

Decisions of the MS TIG to move projects from Step 3 to the reasonable range of alternatives were based on a balancing of the considerations outlined above and in the context of the full suite of restoration alternatives being advanced for analysis in this RP3/EA. As a result, a project considered in Step 3 may have received a generally favorable review, but a decision was made not to move it to the reasonable range of alternatives for this plan (See Section 2.4.5).

The MS TIG eliminated duplicate projects ideas, further developed projects of similar or overlapping scope, used components of submitted projects, utilized information in regional management plans, relied on resource expertise within the MS TIG, and consulted with relevant resource agencies in order to develop the reasonable range of alternatives. Ultimately, a total of 12 projects moved forward to become the reasonable range of alternatives presented in RP3/EA (Figure 2-1 below). Numbers represent projects remaining after each screening step.

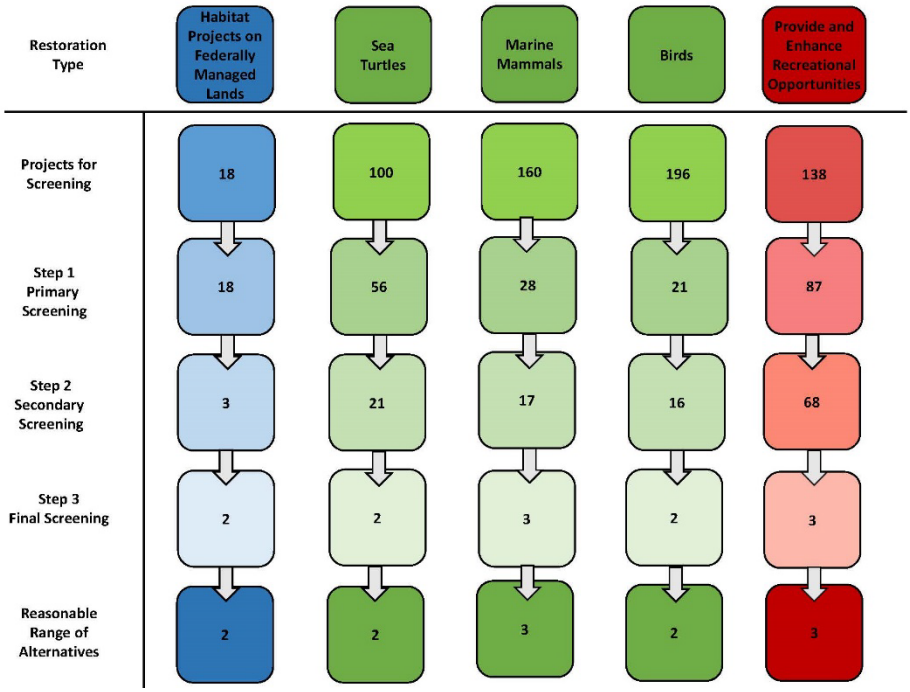

Figure 2-1 The MS TIG Screening Process to Develop the Reasonable Range of Alternatives Included in RP3/EA

2.3.5 Alternatives not Considered for Further Evaluation in this RP3/EA

The MS TIG's decisions to advance projects to the reasonable range of alternatives are based on balancing the considerations outlined above and the context of the full suite of restoration alternatives being advanced for analysis in this RP3/EA. For example, for the Provide and Enhance Recreational Opportunities Type, a large number of projects (68 in Step 2; See Figure 2-1) that included educational programs and public access were not further evaluated due to the limited funds for this Restoration Type ($5 Million). The MS TIG made a decision to focus on projects that met some or all of the following criteria:

1) The project was at an appropriate stage of development;
2) The project could be completed for a cost appropriate for this RP3/EA, and/or;
3) Project proponents could provide some level of funding outside of DWH NRDA to supplement MS TIG-approved Recreational Opportunities Type funding.

As a result, some projects which received generally favorable reviews in the Step 2 screening did not advance to the reasonable range of alternatives for this RP3/EA. While these projects have restoration potential and may be evaluated and potentially selected in a future restoration plan, they are not considered for further evaluation in this RP3/EA.

2.4 Reasonable Range of Alternatives

Based on the screening process described in Section 2.4, the MS TIG identified a reasonable range of alternatives for further evaluation in this RP3/EA (Table 2-1). The alternatives considered in this RP3/EA are consistent with four of the PDARP/PEIS Restoration Types.

Table 2-1 The reasonable range of restoration alternatives for this RP3/EA by Restoration Type

Reasonable Range of Restoration Alternatives	Estimated Project Costs
Restoration Type: Habitat Projects on Federally Managed Lands (FM)	
FM1. Improve Native Habitats by Removing Marine Debris from Mississippi Barrier Islands	$3,000,000
FM2. Habitat Management on the Mississippi Barrier Islands	$2,000,000
Restoration Type: Sea Turtles (ST)	
ST1. Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities – 3 Years	$2,500,000
ST2. Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities – 5 Years	$4,166,670
Restoration Type: Marine Mammals (MM)	
MM1. Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities	$2,350,000
MM2. Marine Mammal Health Assessments to Monitor Population Health	$3,000,000
MM3. Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements	$3,090,000
Restoration Type: Birds (B)	
B1. Bird Stewardship and Enhanced Monitoring in Mississippi	$6,105,500
B2. Bird Stewardship on the Mississippi Barrier Islands	$4,105,500
Restoration Type: Provide and Enhance Recreational Opportunities (REC)	
REC1. Clower Thornton Nature Trail Improvement	$630,000
REC2. Environmental Education and Stewardship at Walter Anderson Museum of Art	$1,356,000
REC3. Mississippi Gulf Coast Pier Improvements	$1,500,000

2.4.1 Project Descriptions: Habitat Projects on Federally Managed Lands

This RP3/EA identifies two restoration alternatives consistent with the Restore and Conserve Habitat Restoration Goal (PDARP/PEIS Section 5.3.1) and underlying Habitat Projects on Federally Managed Lands Restoration Type (PDARP/PEIS Section 5.5.3).

2.4.1.1 FM1 Improve Native Habitats by Removing Marine Debris from Mississippi Barrier Islands

FM1 Improve Native Habitats by Removing Marine Debris from Mississippi Barrier Islands
Restoration approach
Create, restore, and enhance barrier and coastal islands and headlands.
Restoration techniques
Debris removal
Project location
The project would occur on the Mississippi barrier islands (Petit Bois, Horn, Ship, and Cat). Portions of the Mississippi barrier islands are managed for the public by Gulf Islands National Seashore and include more than 62 miles of beach and shoreline, much of which was directly impacted by the Deepwater Horizon oil spill and cleanup activities (Figure 2-2). These islands are critically important areas for shorebirds, sea turtles, beach invertebrates, functioning coastal habitat, and visitor use, and include congressionally designated wilderness. Site-specific debris removal activities would be based on debris inventories and whether the area is designated as wilderness.
Project background and summary
This project would remove marine debris on Mississippi barrier islands managed by the National Park Service's Gulf Islands National Seashore (including all of Petit Bois, Horn, and Ship islands and a portion of Cat Island). Marine debris arrives on the islands from a range of sources, including visitors to the island, mainland sources, offshore oil rigs and services, commercial and recreational activities, as well as debris generated by damage from hurricanes and storms. Marine debris impacts are widespread to both people and ecosystems. Debris represents a threat to a wide range of terrestrial and aquatic wildlife species from entanglement, ingestion, transport of invasive species, and toxicity. Debris can also have impacts to humans including but not limited to: aesthetic impacts of a fouled beach; health and safety concerns from medical, hazardous, or sewage-based debris; cutting and impalement hazards; impacts to vessels from fouling intakes and propellers; and boats hitting marine debris that has been mobilized into marine environments. Marine debris ranges in size from cigarette butts to entire sailboats. Methods to remove debris would be similarly varied and could include activities such as contract marine salvage crews removing large debris which may need to be dismantled in place and crews, NPS staff, and potentially volunteers on foot collecting and aggregating small- and medium-size debris for transport and disposal.
Project implementation methodology and timing
The Implementing Trustees for this project would be DOI, EPA, and MDEQ. Marine debris inventory and cleanup tasks and objectives could be as follows: • Implement surveys to target marine debris on each island using Unmanned Aerial Systems (UASs)[7],. foot surveys and/or high-resolution aerial imagery. Surveys would cover all habitats but focus on beach – dune – meadow habitats and lagoon – pond – wetland mosaic habitat. • Use survey and collection information to create a database of debris, and to conduct pre-treatment planning and post treatment monitoring. Debris field character information would consist of: type of debris; approximate size of debris; number of pieces of debris (more appropriate for larger debris); GPS location (including terrestrial, shoreline and inland), partially submerged, totally submerged); area covered; and habitat impacted. • Target any identified hazardous waste (fuel jugs, oil drums, etc.) for removal, coordinating with U.S. Coast Guard (USCG), NPS (National Park Service), and contractors as appropriate. • Prepare scope of work for removal of large marine debris (pilings, pontoons, boats, tanks, etc.). Evaluate appropriate methods of removal utilizing contractors or NPS personnel. Coordinate cleanup. • Prepare scope of work for removal of concentrated debris areas, including debris "mats". Coordinate cleanup utilizing contractors, volunteers, and NPS employees as appropriate. • Comply with all applicable laws and regulations, including the National Historic Preservation Act (NHPA) and Endangered Species Act (ESA); acquire all applicable permit(s), including those from Mississippi Department of Marine Resources (MDMR) and/or U.S. Army Corps of Engineers (USACE). • Identify potential partners to assist in implementing and facilitating volunteer cleanup efforts (e.g., Mississippi State University (MSU) Coastal Extension office – coordinators of the Mississippi Coastal Cleanup initiative). • Coordinate annual beach (entire shoreline) cleanups utilizing volunteering public with NPS support. This cleanup would target small to medium size debris. Debris would be staged for systematic pick up by National Park Service (NPS) personnel or contractor. • Coordinate and conduct systematic interior cleanup and small debris removal of each island utilizing NPS personnel and equipment or, if appropriate, contractors and/or volunteers. • Manually clean up scattered and concentrated debris sites, particularly in wilderness areas, wetland, seagrass, and dune/meadow habitats, avoiding adverse effects to the habitats to the extent practicable. Evaluate these areas for need of vegetation restoration plantings or substrate stabilization. • Evaluate collected debris for possible recycling or reuse potential.

[7] Mainly due to cybersecurity concerns, in January 2020 the Department of the Interior issued Secretarial Order #3379 restricting drone use by all bureaus with the exception of use for emergency operations such as Search and Rescue and wildfire response. However, that policy could change during the course of project implementation, and therefore the environmental impacts from drone use for data gathering are analyzed in this RP/EA. NPS would use drones for this project only if drone use was consistent with all laws, regulations, and policies applicable on NPS lands at the time of use.

FM1 Improve Native Habitats by Removing Marine Debris from Mississippi Barrier Islands
The project would last three years. Fieldwork would be performed opportunistically throughout each year. The initial year could include debris mapping, staffing, environmental compliance, awarding a contract for debris removal, and coordination of volunteer efforts. Years two and three could focus on continuing volunteer cleanup efforts, additional contracting removal needs, additional staff cleanup efforts, and annual progress reporting.
Operations and maintenance
Debris would be staged for systematic pick up by NPS personnel and a contractor. Operations and Maintenance would include project staff for GUIS to coordinate and oversee clean-up operations, and maintenance and upkeep of park vessels and equipment utilized for the project.
Monitoring summary
Project monitoring details can be found in the project's MAM plan located in Appendix A.
Costs
The total estimated cost of this project is $3,000,000.

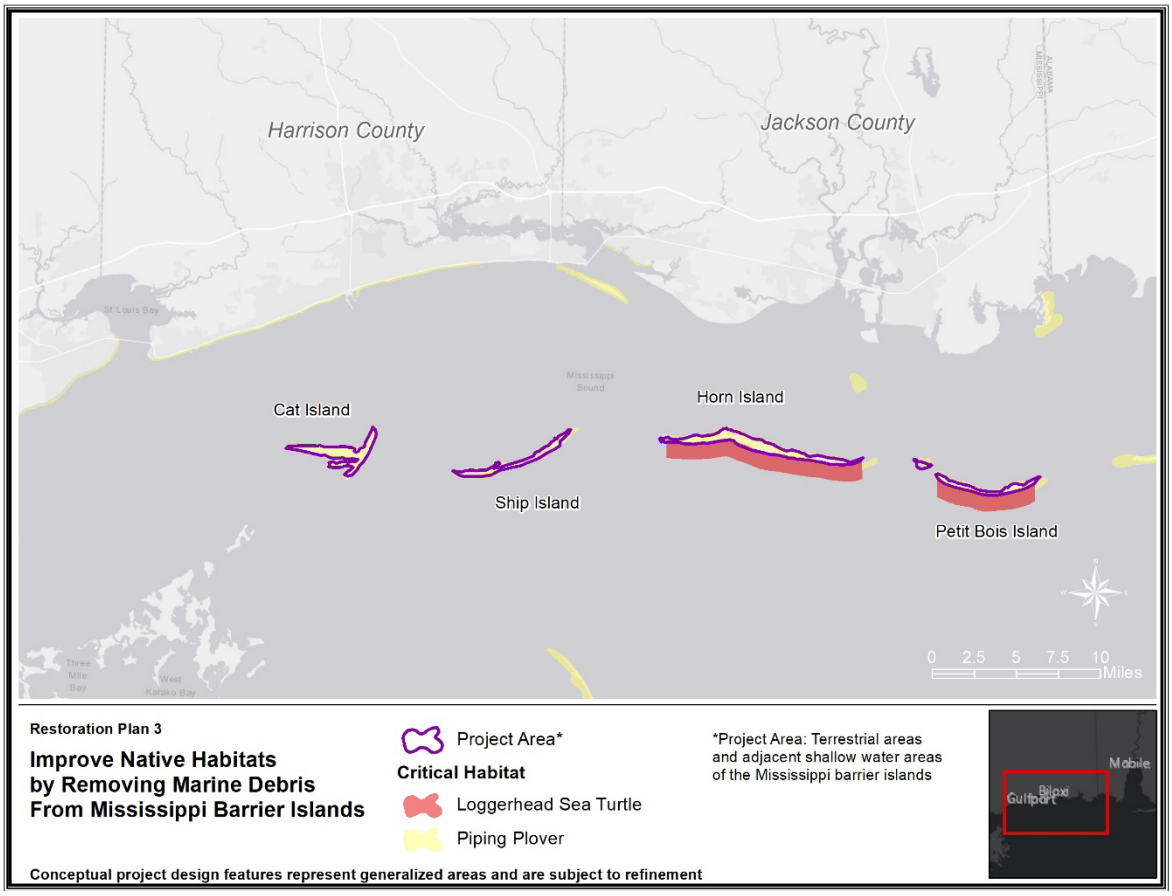

Figure 2-2 Project area FM1 Improve Native Habitats by Removing Marine Debris from Mississippi Barrier Islands

2.4.1.2 FM2 Habitat Management on the Mississippi Barrier Islands

FM2 Habitat Management on the Mississippi Barrier Islands
Restoration approach
Protect and Conserve Marine, Coastal, Estuarine, and Riparian Habitats
Restoration techniques
Develop and implement management actions in conservation areas and/or restoration projects
Project location
The project would occur on the Mississippi barrier islands managed by the Gulf Islands National Seashore. Federal lands on the Mississippi barrier islands are managed by the National Park Service and include more than 62 miles of beach and shoreline, much of which were directly impacted by the Deepwater Horizon oil spill and cleanup activities. (Figure 2-3) These islands are critically important areas for shorebirds, sea turtles, beach invertebrates, functioning coastal habitat, and visitor enjoyment, and include congressionally designated wilderness.
Project background and summary
Gulf Islands National Seashore (GUIS) coastal habitats were directly affected by the spill either through direct oiling or response injury (e.g., clean-up crews, machinery, boom placement, staging areas). Injury has been documented within GUIS as part of the Natural Resource Damage Assessment process. The project would include habitat protection to address priority habitats that were injured by the spill and are threatened due to rising sea levels, coastal erosion, and increased visitor traffic. Restoration can help address these threats and align with the existing management priorities on the Gulf Islands National Seashore. Habitat management measures for the project would include implementation of Phase II of the NFWF GEBF funded Habitat Restoration: Federal Lands Program (MS) - NPS-Gulf Islands National Seashore. Restoration would include invasive and nuisance species management on Ship, Horn, Petit Bois, West Petit Bois, and Cat islands. Mammalian nuisance species (nutria, rabbits, and rats) on the Mississippi barrier islands are reducing the fecundity and productivity of native plants, specifically sea oats. The reduction of sea oats on the dune fronts results in wind and wave erosion of these dune habitats and eventual loss of ecosystem and storm surge protection function of these systems. Similarly, the invasive plant species occupy niches that would normally be occupied by native plants. These invasive plant species do not provide the needed ecosystem services of the barrier islands, result in mono-specific stands of vegetation; in some cases, the density is so high that it results in potential fire hazards and reduction in bird nesting habitat. The following is a description of the proposed habitat management measures: Mammalian Nuisance Species Control: Continued monitoring for nuisance mammalian species (e.g., nutria, rabbits, and rats) on established transects on all islands. Continued removal of nuisance mammals impacting the native barrier island habitats. Established treatment methods, which may include traps, nets, and/or firearms would be applied to reduce populations of nuisance mammalian species. Vegetation management: This task would include continued removal and control of invasive plant species infesting the native barrier island habitats of Petit Bois, West Petit Bois, Horn, Ship and Cat Islands. Invasive species of focus would include but not be limited to Chinese tallow tree (*Triadica sebifera*), Cogongrass (*Imperata cylindrica*), Phragmities (*Phragmites australis*) and Torpedo grass (*Panicum repens*). Widely accepted mechanical and chemical control methods would be used.
Project implementation methodology and timing
The Implementing Trustees for this project would be DOI and MDEQ. The implementation schedule for invasive and nuisance species management would be as follows: Years 1-2 Mapping and baseline monitoring of invasive plant and nuisance mammalian species locations Years 2-5 Invasive plant species control via mechanical and/or chemical treatment, removal of mammalian nuisance species, and continued mapping and monitoring of invasive and nuisance species locations
Operations and maintenance
Maintenance of equipment and vehicles used in predator and nuisance species control operations.
Monitoring summary
This project has not been identified at this time as a preferred alternative by the MS TIG, therefore, a project MAM plan has not been developed.
Costs
The total estimated cost of this project is $2,000,000.

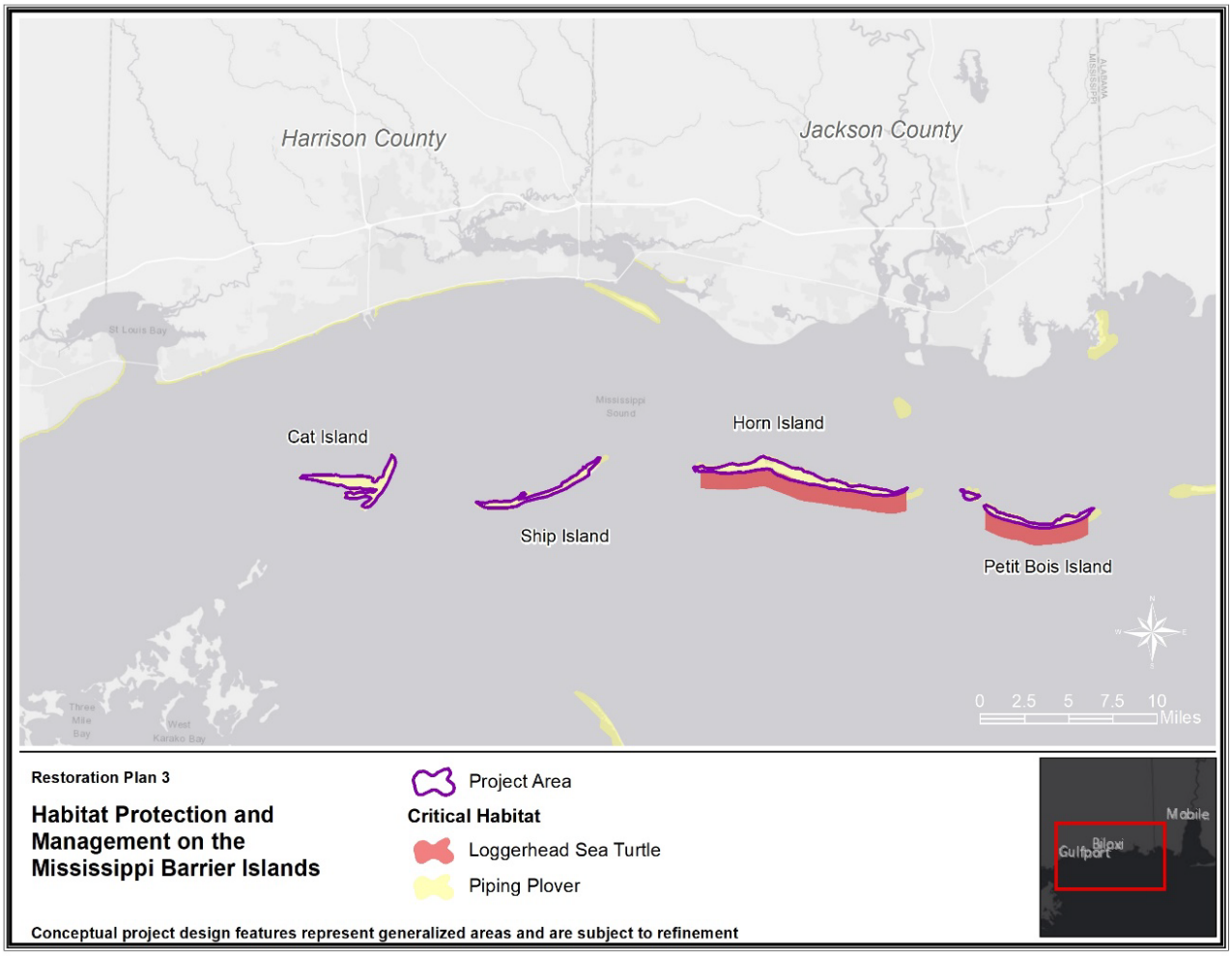

Figure 2-3 Project area for FM2 Habitat Protection and Management on Federally Managed Lands on the Mississippi Barrier islands

2.4.2 Project Descriptions: Sea Turtles

This RP3/EA identifies two restoration alternatives consistent with the Replenish and Protect Living Coastal and Marine Resources Restoration Goal (PDARP/PEIS Section 5.3.1) and underlying Sea Turtle Restoration Type (PDARP/PEIS Section 5.5.10).

2.4.2.1 ST1 Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities – 3 Years

ST1 Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities - 3 Years
Restoration approach
Increase sea turtle survival through enhanced mortality investigation and early detection of and response to anthropogenic threats and emergency events
Restoration techniques
Enhance network response and coordination Enhance preparedness and response capacity for emergency events Enhance investigation of mortality sources Enhance rehabilitation capability where necessary

ST1 Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities - 3 Years
Project location
The project would occur in Mississippi coastal waters and adjacent bays and estuaries in the Mississippi Restoration Area (Figure 2-4). The rehabilitation and necropsy activities will occur at permitted facilities. The Mississippi Sound, which encompasses approximately 213,000 hectares or 758 square miles, provides essential habitat for several endangered and threatened species including Kemp's ridley (*Lepidochelys kempii*), loggerhead sea turtle (*Caretta caretta*), and green sea turtle (*Chelonia mydas*).
Project background and summary
To address the injury to sea turtles, this proposed project would focus on maintaining the enhanced capacity of the Mississippi stranding network in order to provide an enhanced ability to respond to stranded, sick, injured, or dead sea turtles. Since the oil spill in 2010 the Mississippi Stranding Network has been operating in an enhanced capacity as described below. The project objective is to maintain the current enhanced capacity for 3 years. The project is composed of three main components, Maintaining Enhanced Stranding Network Capacity, Assessment of Health and Mortality, and Maintaining Enhanced Rehabilitation Capacity. These program components are imperative in gaining information about life history, understanding environmental conditions, returning rehabilitated turtles back to sea, and in aiding to determine cause-of-death. This proposed project would build upon the NFWF-GEBF Mississippi Marine Mammal and Sea Turtle Conservation, Recovery, and Monitoring Program - Phase I that is anticipated to be completed in 2022.
Project implementation methodology and timing
The Implementing Trustee for this proposed project would be MDEQ. The anticipated project duration is 3 years. The proposed project would be implemented under three primary tasks: **Maintain Enhanced Stranding Network Response Capacity** This task would seek to continue the enhanced response and data collection efforts to further understand mortality, inform population studies, as well as enhance potential for species conservation and recovery and rehabilitation. Stranding response and diagnostic follow-up of stranded animals maintained at the enhanced capacity would allow for current stranding response and data collection efforts in the Mississippi Restoration Area to be continued. The project may include funding multiple seasonal responders, per the appropriate need for Mississippi, based on a review of historic stranding and incidental capture response needs. Personnel would work to ensure efficient and timely response to sea turtle strandings during peak times are maintained. The organization-level stranding lead would ensure the enhanced coordination with the MS State Coordinator and fellow response organizations within the state are maintained. This task includes but is not limited to increases in stranding network personnel, equipment and supplies; and data enhancement and coordination. Specific enhancements that are currently on-going and would be maintained by this project include: • Increased response above baseline for Mississippi- IMMS and MSU responding 7 to 10 times the number of dead and live strandings of sea turtles compared to pre-2010. • Emergency 24/7 call; response times have been reduced compared to pre-2010. • Searches using various platforms (ATVs, boats, and drones) in a variety of habitats to locate turtles in bays, bayous, islands and beaches. **Assessment of Health and Causes of Mortality** This task would serve to maintain the timeliness, efficiency, and number of cases analyzed to provide more cause of death information. Having the local stranding network partner involved in the stranding response team along with enhancing diagnostics and monitoring would continue to allow real time adaptation to changing conditions and the pursuit of diagnoses that would otherwise not be possible. This task includes but is not limited to: field and laboratory necropsies; histopathology examinations; toxicological, bacterial, viral, and parasitic exams; stomach content analysis; diagnostic imaging; and genetic analysis. The project would fund the continued participation of MSU veterinary staff per the current MSU/IMMS/NOAA Agreement, to continue to enhance MS sea turtle necropsy capacity. Specific enhancements that are currently on-going and would be maintained by this project include: • Enhanced expertise to assess mortality trends: The program would enhance health and mortality assessment by using highly qualified board-certified veterinary pathologists and trained veterinary students to conduct necropsies. • Enhanced tissue analysis to assess mortality trends. Tissue analysis includes toxicologic analysis, including polycyclic aromatic hydrocarbons and biological toxins, microplastics, and heavy metals. The tissue analyses during the GEBF-funded program, as well as data collected for this project, would enable evaluation of mortality trends, especially as it relates to conditions in the Mississippi Sound. **Maintaining Enhanced Rehabilitation Capacity** This task would seek to maintain the increased capacity to rehabilitate sea turtles as a result of stranding or incidental take and ultimately return them to the Mississippi Sound. Any incidental take of sea turtles, whether by boat or hook and line from recreational piers, would be reported to the stranding network and would also allow for a greater chance of rehabilitation and return of those taken. Veterinary staff operating under USFWS and NOAA protocols for rehabilitation would allow for quicker diagnosis and rehabilitation of captured turtles. The decision to release immediately or admit for rehabilitation and possible future release would be made by an attending veterinarian. Specific enhancements that are currently on-going and would be maintained by this project include: • Advanced veterinary care: Live sea turtles (incidental captures) brought for rehabilitation are provided care by veterinarians that are well experienced treating sea turtles and marine wildlife. The primary care veterinarians are supported by MSU CVM board-certified veterinary specialists (internal medicine, ophthalmology, radiology, and clinical pathology). These enhanced efforts resulted in an over 95% survival rate of rehabilitated turtles contributing to the restoration and recovery of the endangered species. To achieve this success rate, rehabilitation of sea turtles is often time-consuming and expensive. Some animals have had to be rehabilitated for many months with multiple veterinary procedures and diagnostic testing. In the past 10-years, IMMS

ST1 Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities - 3 Years
has rehabilitated and released over 1,000 Kemp's ridley sea turtles that have contributed significantly to the restoration and recovery of the species. • Enhanced diagnostics: The program would support enhanced diagnostic analysis of tissues and samples to inform veterinary care and identify trends affecting health of the animals (toxicology and microbiome analysis). • Health status trends of sea turtles: Turtles brought into rehabilitation serve as a good sample of the Mississippi Sound population to monitor their health. Threats from both natural and anthropogenic factors continue to occur, which could affect the habitat and the sea turtle population.
Operations and maintenance
Maintenance on stranding network vehicles and equipment associated with this project.
Monitoring summary
Project monitoring details can be found in the project's MAM plan located in Appendix A.
Costs
The total estimated cost of this project is $2,500,000.

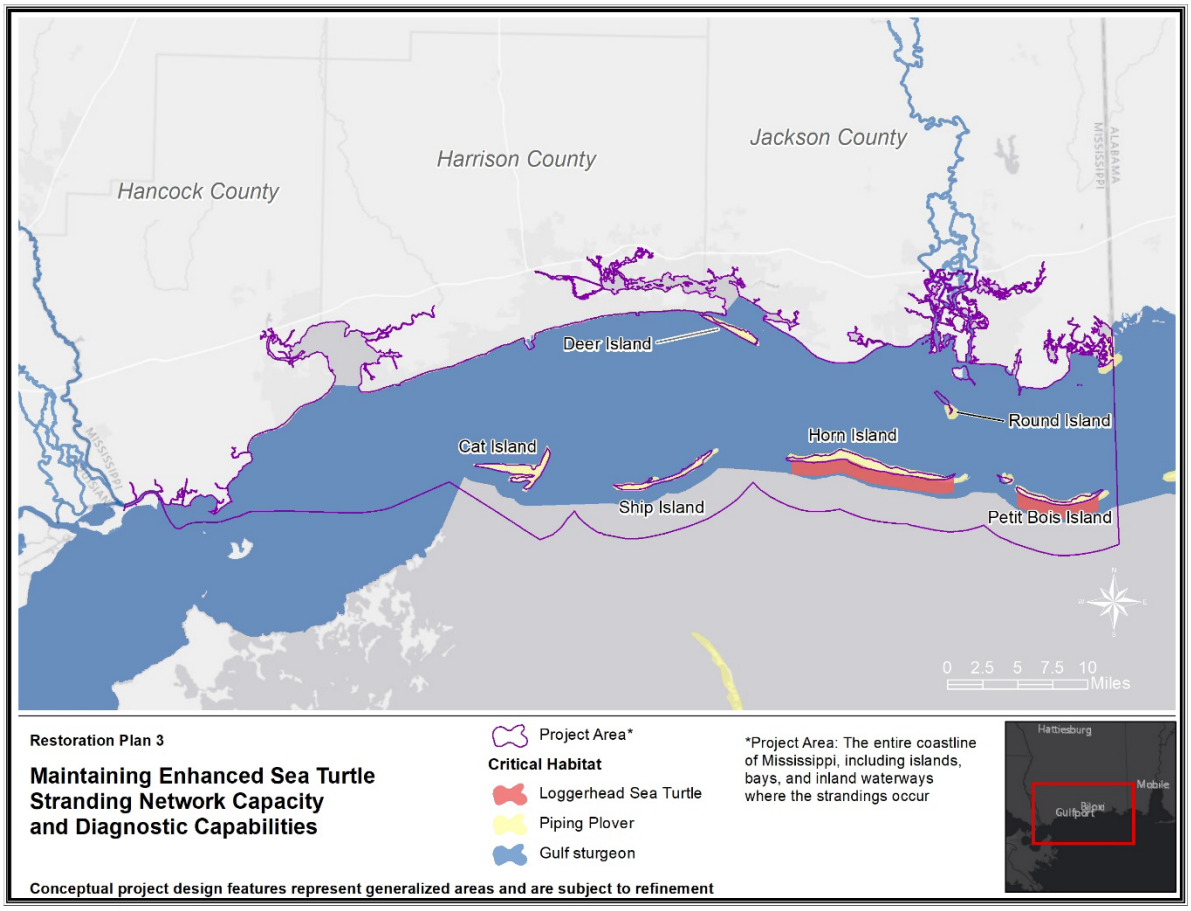

Figure 2-4 Project area for ST1 Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities-3 years and 5 years

2.4.2.2 ST2 Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities – 5 Years

ST2 Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities – 5 Years
Restoration approach
Increase sea turtle survival through enhanced mortality investigation and early detection of and response to anthropogenic threats and emergency events
Restoration techniques
Enhance network response and coordination Enhance preparedness and response capacity for emergency events Enhance investigation of mortality sources Enhance rehabilitation capability where necessary
Project location
The project would occur in Mississippi coastal waters and adjacent bays and estuaries in the Mississippi Restoration Area (Figure 2-4). The rehabilitation and necropsy activities will occur at permitted facilities. The Mississippi Sound, which encompasses approximately 213,000 hectares or 758 square miles, provides essential habitat for several endangered and threatened species including Kemp's ridley (*Lepidochelys kempii*), loggerhead sea turtle (*Caretta caretta*), and green sea turtle (*Chelonia mydas*).
Project background and summary
To address the injury to sea turtles, this proposed project would focus on maintaining the enhanced capacity of the Mississippi stranding network in order to provide an enhanced ability to respond to stranded, sick, injured, or dead sea turtles. Since the oil spill in 2010 the Mississippi Stranding Network has been operating in an enhanced capacity as described below. Similar to ST1 (3 years), the project objective is to maintain the current enhanced capacity for 5 years. The project is composed of three main components, Maintaining Enhanced Stranding Network Capacity, Assessment of Health and Mortality, and Maintaining Enhanced Rehabilitation Capacity. These program components are imperative in gaining information about life history, understanding environmental conditions, returning rehabilitated turtles back to sea, and in aiding to determine cause-of-death. This proposed project would build upon the NFWF-GEBF Mississippi Marine Mammal and Sea Turtle Conservation, Recovery, and Monitoring Program - Phase I that is anticipated to be completed in 2022.
Project implementation methodology and timing
The Implementing Trustee for this proposed project would be MDEQ. The anticipated project duration is 5 years. The proposed project would be implemented under three primary tasks: **Maintain Enhanced Stranding Network Response Capacity** This task would seek to continue the enhanced response and data collection efforts to further understand mortality, inform population studies, as well as enhance potential for species conservation and recovery and rehabilitation. Stranding response and diagnostic follow-up of stranded animals maintained at the enhanced capacity would allow for current stranding response and data collection efforts in the Mississippi Restoration Area to be continued. The project may include funding multiple seasonal responders, per the appropriate need for Mississippi, based on a review of historic stranding and incidental capture response needs. Personnel would work to ensure efficient and timely response to sea turtle strandings during peak times are maintained. The organization-level stranding lead would ensure the enhanced coordination with the MS State Coordinator and fellow response organizations within the state are maintained. This task includes but is not limited to increases in stranding network personnel, equipment and supplies; and data enhancement and coordination. Specific enhancements that are currently on-going and would be maintained by this project include: • Increased response above baseline for Mississippi- IMMS and MSU responding 7 to 10 times the number of dead and live strandings of sea turtles compared to pre-2010. • Emergency 24/7 call; response times have been reduced compared to pre-2010. • Searches using various platforms (ATVs, boats, and drones) in a variety of habitats to locate turtles in bays, bayous, islands and beaches. **Assessment of Health and Causes of Mortality** This task would serve to maintain the timeliness, efficiency, and number of cases analyzed to provide more cause of death information. Having the local stranding network partner involved in the stranding response team along with enhancing diagnostics and monitoring would continue to allow real time adaptation to changing conditions and the pursuit of diagnoses that would otherwise not be possible. This task includes but is not limited to: field and laboratory necropsies; histopathology examinations; toxicological, bacterial, viral, and parasitic exams; stomach content analysis; diagnostic imaging; and genetic analysis. The project would fund the continued participation of MSU veterinary staff per the current MSU/IMMS/NOAA Agreement, to continue to enhance MS sea turtle necropsy capacity. Specific enhancements that are currently on-going and would be maintained by this project include: • Enhanced expertise to assess mortality trends: The program would enhance health and mortality assessment by using highly qualified board-certified veterinary pathologists and trained veterinary students to conduct necropsies. • Enhanced tissue analysis to assess mortality trends. Tissue analysis includes toxicologic analysis, including polycyclic aromatic hydrocarbons and biological toxins, microplastics, and heavy metals. The tissue analyses during the GEBF-funded program, as well as data collected for this project would enable evaluation of mortality trends, especially as it relates to conditions in the Mississippi Sound. **Maintaining Enhanced Rehabilitation Capacity** This task would seek to maintain the increased capacity to rehabilitate sea turtles as a result of stranding or incidental take and ultimately return them to the Mississippi Sound. Any incidental take of sea turtles, whether by boat or hook and line from recreational piers, would be reported to the stranding network and would also allow for a greater chance of rehabilitation and return of those taken. Veterinary staff operating under USFWS and NOAA protocols for rehabilitation would allow for quicker diagnosis and rehabilitation of captured turtles. The decision to release immediately or admit for rehabilitation and possible future release would be made by an attending veterinarian. Specific enhancements that are currently on-going and would be maintained by this project include:

ST2 Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities – 5 Years
• Advanced veterinary care: Live sea turtles (incidental captures) brought for rehabilitation are provided care by veterinarians that are well experienced treating sea turtles and marine wildlife. The primary care veterinarians are supported by MSU CVM board-certified veterinary specialists (internal medicine, ophthalmology, radiology, and clinical pathology). These enhanced efforts resulted in an over 95% survival rate of rehabilitated turtles contributing to the restoration and recovery of the endangered species. To achieve this success rate, rehabilitation of sea turtles is often time-consuming and expensive. Some animals have had to be rehabilitated for many months with multiple veterinary procedures and diagnostic testing. In the past 10-years, IMMS has rehabilitated and released over 1,000 Kemp's ridley sea turtles that have contributed significantly to the restoration and recovery of the species. • Enhanced diagnostics: The program would support enhanced diagnostic analysis of tissues and samples to inform veterinary care and identify trends affecting health of the animals (toxicology and microbiome analysis). • Health status trends of sea turtles: Turtles brought into rehabilitation serve as a good sample of the Mississippi Sound population to monitor their health. Threats from both natural and anthropogenic factors continue to occur, which could affect the habitat and the sea turtle population.
Operations and maintenance
Maintenance on stranding network vehicles and equipment associated with this project.
Monitoring summary
If this proposed project is selected, a detailed Monitoring and Adaptive Management Plan (MAM) plan would be developed. Monitoring metrics could include # samples analyzed, # of strandings per year or season, # of turtles rehabilitated, monitoring tracking data/habitat use post-rehab, and/or # of employees and volunteers trained to carry out conservation activities. In addition, standardized data collected by project partners would be provided to NOAA.
Costs
The total estimated cost of this project is $4,166,670.

2.4.3 Project Descriptions: Marine Mammals

This RP3/EA identifies three restoration alternatives consistent with the Replenish and Protect Living Coastal and Marine Resources Restoration Goal (PDARP/PEIS Section 5.3.1) and underlying Marine Mammal Restoration Type (PDARP/PEIS Section 5.5.11).

2.4.3.1 MM1 Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities

MM1 Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities
Restoration approach
Increase marine mammal survival through better understanding of causes of illness and death as well as early detection and intervention for anthropogenic and natural threats.
Restoration techniques
Address Gaps and Enhance Capacity in the Current Capabilities of the MMSN throughout the Northern Gulf of Mexico (GOM) to Improve Timeliness of Response, and Diagnosis of Illness and Cause of Death
Project location
The project would occur in Mississippi coastal waters and adjacent bays and estuaries in the Mississippi Restoration Area. The Mississippi Sound, which encompasses approximately 213,000 hectares or 758 square miles, is essential habitat for marine mammals and is a vital foraging area and nursery ground for young dolphins during birthing in the spring and summer season (Figure 2-5).
Project background and summary
To address the injury to marine mammals, this proposed project would focus on maintaining the enhanced capacity of the Mississippi stranding network in order to provide an enhanced ability to respond to stranded, sick, injured, or dead marine mammals. Since the oil spill in 2010 the Mississippi Stranding Network has been operating in an enhanced capacity as described below. The project objective is to maintain the current enhanced capacity for 3 years. The project is composed of two main components: Maintaining Enhanced Stranding Network Capacity and Assessment of Health and Mortality. These program components are imperative in gaining information about life history, understanding environmental conditions, and in determining cause-of-illness and death. This proposed project would build upon the NFWF-GEBF Mississippi Marine Mammal and Sea Turtle Conservation, Recovery, and Monitoring Program - Phase I that is anticipated to be completed in 2022.
Project implementation methodology and timing
The Implementing Trustee for this project would be the Mississippi Department of Environmental Quality. The anticipated project duration is 3 years. The project would be implemented under two primary tasks: **Maintaining Enhanced Stranding Network Capacity and Data Collection, Reporting, Collaboration, and Consistency for Marine Mammal Conservation** This task would focus on maintaining the enhanced capacity of the Mississippi MMSN in order to continue an enhanced ability to respond to stranded, sick, injured, or deceased marine mammals. Responding to live strandings in a timely manner increases the animal's likelihood of

MM1 Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities
survival. If the response is to a deceased animal, it is also important to respond quickly because data from tissue samples are lost as the decomposition process occurs. These data are imperative to determine causes of illness and death, provide essential information about an animal's life history, and document natural and anthropogenic threats to marine mammal populations. This task includes but is not limited to increases in stranding network personnel, equipment and supplies; and data enhancement and coordination. Specific enhancements that are currently on-going and would be maintained by this project include: • Maintaining response times, coverage areas, and capacity and training in order to conduct thorough necropsies. This includes personnel, equipment, supplies, training, vehicle fuel, and maintenance of vehicles/vessels/trailers to federally permitted MS MMSN organizations to rapidly respond to live and dead stranded marine mammals along the Mississippi coast. It also includes maintaining the quality and quantity of Level A, B, and C data collected by MS MMSN organizations and entering the data into regional marine mammal health and stranding databases (e.g., GulfMAP, CETACEAN) to inform data-driven management actions aimed at reducing marine mammal mortality (e.g., stock assessments, conservation actions, recovery plans, restoration plans). In addition, the funds could be used to maintain MMSN capacity to respond to unusual natural or anthropogenic events (e.g., oil spills, harmful algal blooms, freshwater events, hurricanes) if funding is available. **Assessment of Health and Mortality Dynamics of Marine Mammals** This task would serve to maintain the timeliness, efficiency, and number of marine mammal stranding cases analyzed to provide more cause of illness and death information. This task may include but is not limited to: field and laboratory necropsies; histopathology examinations; toxicological, bacterial, viral, and parasitic exams; stomach content analysis; diagnostic imaging; and genetic analysis. The project would fund the continued participation of MSU veterinary staff per the current MSU/IMMS Agreement, to continue to enhance MS marine mammal necropsy and diagnostic capacity. Specific enhancements that are currently on-going and would be maintained by this project include: • Enhanced expertise to assess mortality trends: The program would enhance health and mortality assessment by using highly qualified board-certified veterinary pathologists and trained veterinary students to conduct necropsies. • Enhanced timing of case analyses: Continue the increased timeliness, efficiency, and number of cases analyzed to provide more cause of illness and death information. • Enhanced tissue analysis to assess mortality trends. Tissue analysis includes toxicologic analysis, including polycyclic aromatic hydrocarbons and biological toxins, microplastics, and heavy metals. The tissue analyses during the GEBF-funded program, as well as data collected for this project, would enable evaluation of mortality trends, especially as it relates to conditions in the Mississippi Sound. • Enhanced Data Reporting: Maintain current level of reporting, database entry, and necropsy reports, and increase the number of publications and metadata records relative to cetaceans responded to, necropsies conducted, and samples processed.
Operations and maintenance
Operations and maintenance would include stranding network vehicle maintenance and the upkeep of other equipment used for various stranding network activities.
Monitoring summary
Project monitoring details can be found in the project's MAM plan located in Appendix A.
Costs
The total estimated cost of this project is $2,350,000.

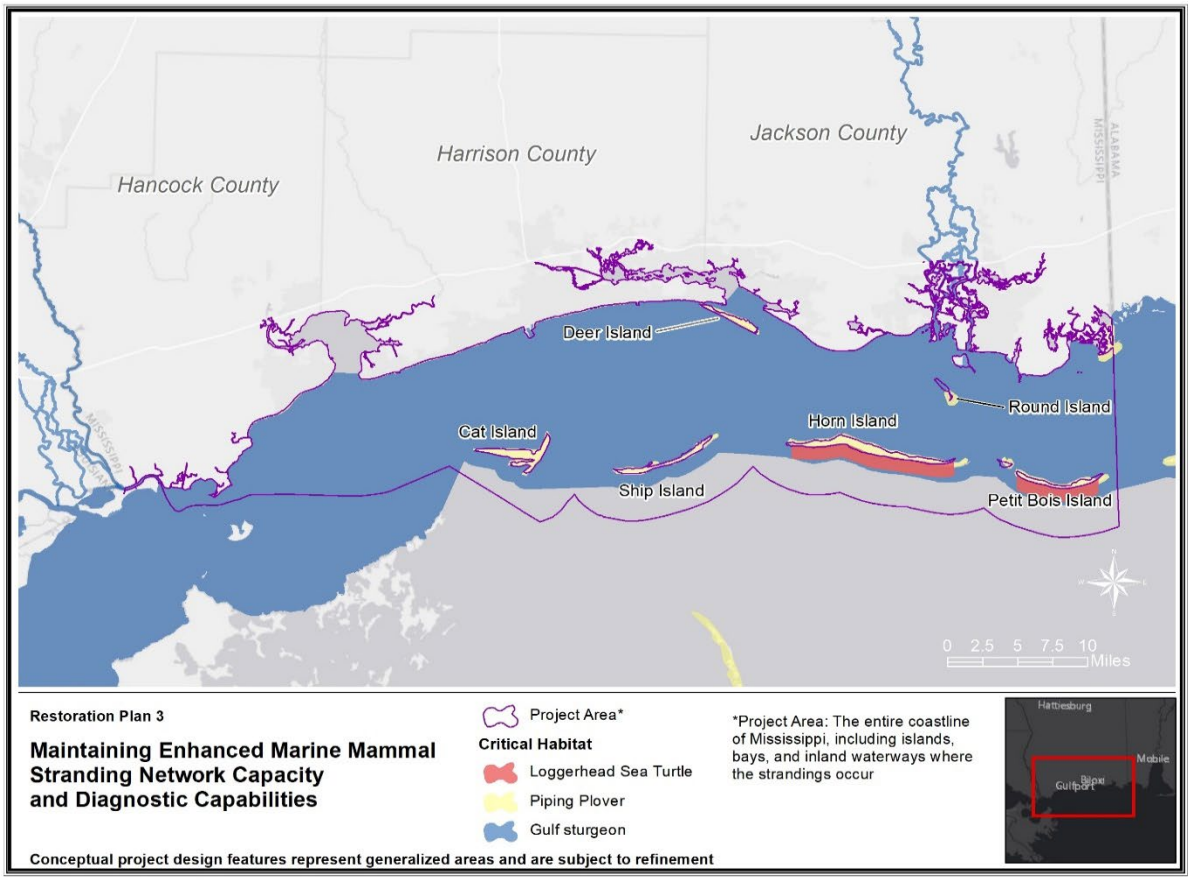

Figure 2-5 Project area for MM1 Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities

2.4.3.2 MM2 Marine Mammal Health Assessments to Monitor Population Health

MM2 Marine Mammal Health Assessments to Monitor Population Health
Restoration approach
Increase marine mammal survival through better understanding of causes of illness and death as well as early detection and intervention for anthropogenic and natural threats.
Restoration techniques
Enhance capabilities to rapidly diagnose causes of marine mammal morbidity and mortality to identify threats and mitigate impacts.
Project location
The project would occur in the Mississippi Sound and adjacent bays and estuaries in the Mississippi Restoration Area. The Mississippi Sound, which encompasses approximately 213,000 hectares or 758 square miles, is essential habitat for marine mammals and is a vital foraging area and nursery ground for young dolphins during birthing in the spring and summer season (Figure 2-6).
Project background and summary
Cetacean stocks in all Gulf of Mexico habitats were injured by the DWH oil spill. Common bottlenose dolphin (*Tursiops truncatus truncatus*) stocks impacted by oil were found to have reduced survival and reproductive rates and suffered negative health effects. As a result, these stocks were predicted to have population declines ranging from 31% to 62%. There is a continued need to monitor the health of live bottlenose dolphins in the Mississippi Sound Restoration Area, particularly when done alongside a control or reference site, to identify and understand animal health as it relates to population stressors, to identify risks for illness and death, mitigate potential impacts, and/or plan more effective conservation measures in response to management drivers. To address this need, this project would conduct health assessments on live bottlenose dolphins using capture and release methods and photo-identification surveys with biopsy sampling. By identifying, monitoring, and mitigating natural and man-made threats to bottlenose dolphins, this project could minimize the number of animals that become ill or die due to these threats and lead to increased recovery of coastal and bay, sound and estuary (BSE) bottlenose dolphins. Activities under this project would serve to increase understanding of marine mammal health and reproductive success. The work would be a large collaborative effort with Federal and State partners most of whom were involved in the DWH NRDA and have experience with these techniques.
Project implementation methodology and timing
The Implementing Trustee for this project would be MDEQ and NOAA. The anticipated project duration is 5 years. Live dolphin capture and release health assessments would follow the same protocols and procedures that have been developed and implemented previously in Gulf waters at both the project site (MS Sound) and a reference site (Sarasota, Florida) (e.g., Fair et al. 2006). All activities would follow NOAA's Capture-Release Standard Operating Protocols. Up to three live dolphin capture and release health assessments are anticipated over the 5-year project duration. These health assessments involve large teams of trained veterinarians and researchers using multiple vessels to locate, safely capture, assess, and release wild bottlenose dolphins. A large net would be used to encircle one or more dolphins in shallow water. Personnel then enter the water in efforts to safely restrain the dolphin(s) following the series of protocols designed for different situations. Once safely restrained, vital signs are assessed on the dolphins by designated marine mammal veterinarians. If stable, blood is collected and an in-water exam is performed. The dolphin may then be brought up onto a specially designed boat for further examination and the collection of morphometrics, diagnostics, and biological samples. Some samples would be processed in the field on an additional boat for timeliness and quality control purposes, others would be prepared in the field for shipping to pre-determined labs for analysis. Standard morphometrics and diagnostics include an external physical exam, body measurements (length and girth), ultrasound to assess reproductive status and blubber thickness, complete blood count (CBC)/blood chemistry/blood gases, serology, pathogens, endocrinology, immunology, urinalysis, skin and oral assessment, biotoxin and contaminant measures, blowhole and genital swabs, and aging if appropriate. Capture and release assessments include some risk to dolphins and to the assessment team, as well as complex logistics. Photo-identification surveys with biopsy sampling would also be conducted to follow up on individual animal reproductive success and to remotely evaluate animal health. Up to 5 dedicated, 2 week long, photo-identification and biopsy survey efforts would be conducted before, in between, and after the live dolphin capture and release health assessments. Photo-identification surveys allow remote monitoring of animal health to evaluate changes in body condition or identify lesions and calving events. Biopsy sampling will be used for genetics and reproductive hormone analyses, as well as other health indicators. The project includes coordinated data management, mapping, and spatial/temporal analysis to maximize the information gained from available samples.
Operations and maintenance
Operations and maintenance could include the upkeep of equipment used for health assessment activities.
Monitoring summary
This project has not been identified at this time as a preferred alternative by the MS TIG, therefore, a project MAM plan has not been developed.
Costs
The total estimated cost of this project is $3,000,000

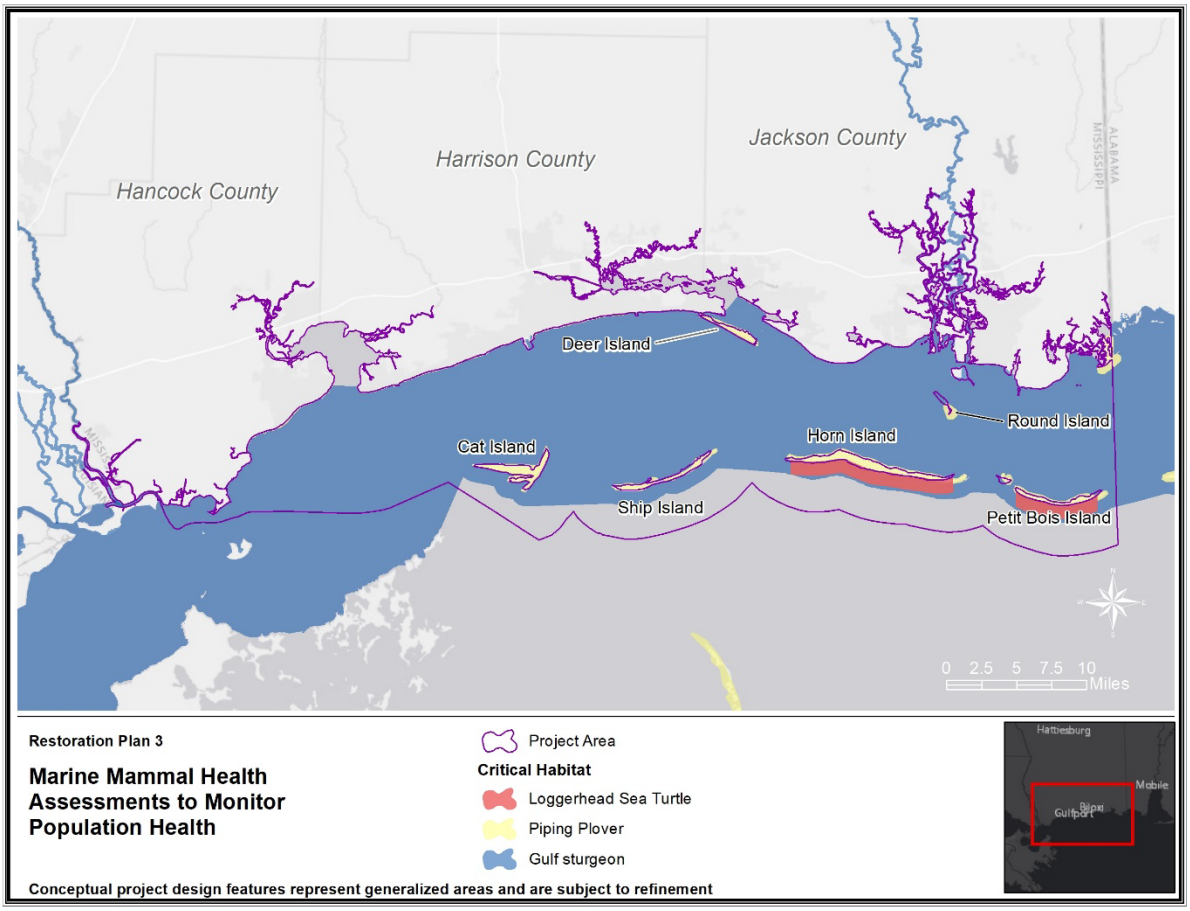

Figure 2-6 Project area for MM2 Marine Mammal Health Assessments to Monitor Population Health

2.4.3.3 MM3 Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Improvements

MM3 Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements
Restoration approach
Reduce Commercial Fishery Bycatch through Collaborative Partnerships
Restoration techniques
Evaluate, Develop, and Implement Conservation Measures in the Shrimp Trawl Fishery
Project location
Mississippi Coastal Waters and Bay County, Florida (Figure 2-7 and 2.7.1)
Project background and summary
Dolphins interacting with shrimp trawls are occasionally captured or entangled while depredating on fish gilled in trawl meshes. Hundreds of dolphin mortalities are estimated each year in the GOM shrimp otter trawl fishery (Soldevilla et al. 2015, Soldevilla et al. 2016). The majority of shrimp trawls in the GOM are constructed of polyethylene webbing, which dolphins are capable of biting through. Fish are commonly gilled in the small meshes of the trawl, which dolphins feed on during trawl operations. This results in numerous bite holes in the net that may cause shrimp loss, net repairs, and net replacement (Hataway and Foster 2015). Fishermen often have to repair their nets daily due to damage caused by dolphins. Some fishermen, out of frustration, have been known to shoot at dolphins to prevent depredation (DOJ 2013). The overall goal of this project is to provide restoration benefits to Gulf of Mexico (GOM) common bottlenose dolphins (*Tursiops truncatus truncatus*) by decreasing the number of interactions and associated mortality of dolphins in commercial shrimp skimmer trawls in Mississippi state waters (Figure 2-6), while maintaining catch efficiency and fishing performance/usability. Commercial fishermen want to avoid interactions with dolphins and have been proactive in their attempts to modify gear to prevent interactions. In recent years, stronger net materials such as Dyneema and Spectra have been introduced into the fishery. Because these materials are much stronger, dolphins are less likely to damage gear. However, these materials have yet to be adopted on a large scale due to their increased cost. As an alternative, a few shrimp fishermen have put different types of protective coverings on their trawls (e.g., webbing socks) to help prevent dolphin (and shark) access to fish

gilled in the netting (Hataway and Foster 2015). When towed, the protective covering is intended to create space between the inner trawl and outer covering, creating a deterrent for depredation and resulting in decreased trawl damage.

Specific project objectives include:

- Phase 1: Conduct in-water testing to determine the most effective trawl materials, trawl coverings, and fishing practices to be implemented in Phase 2 to meet the project goal.
- Phase 2: Partner with Mississippi shrimp trawl fleet stakeholders to develop and implement a plan for voluntary adoption of alternative trawl materials and configurations identified during Phase 1.

Project implementation methodology and timing

MDEQ and NOAA would be the Implementing Trustees. The project would proceed in two phases. A refined work plan and budget would be developed for review by the MS TIG prior to proceeding with Phase 2 of the project.

Stronger webbing materials and protective net coverings have not been evaluated to determine both the effectiveness of reducing dolphin interactions and maintaining catch, performance, and usability. Therefore, this project would seek to determine both the optimal trawl material type(s) and covering configuration(s) (i.e., experimental treatments) to reduce interactions with dolphins when compared to the standard polyethylene webbing (i.e., control). The project would also compare shrimp catch rates and operational aspects between each of the experimental treatments compared to the control (i.e., protective coverings vs control, stronger net materials vs control). Net maintenance for each treatment type would also be compared. Additionally, fishing techniques that may decrease dolphin interactions would be noted and passed along to the industry and related entities. Drones, optical cameras, and acoustic cameras (ARIS/DIDSON) would also be explored for use in observing dolphin behavior during trawling operations in an effort to identify behavior modifications directly caused by changes in trawl configuration.

The project would be conducted collaboratively with researchers and the fishing community cooperatively evaluating the performance and usability of both trawl covers and trawls constructed of alternative materials. Testing would occur aboard chartered commercial shrimp trawl vessels and NOAA research vessels. After testing is complete, the project team would evaluate data and identify the preferred trawl configuration(s) that minimize dolphin interactions while maintaining catch and operations (performance and usability).

The preliminary project schedule and scope are outlined below:

Phase 1 (Years 1 - 3):

1) Initial planning activities:
   Planning activities include forming an industry stakeholder working group to promote project participation and solicit ideas for net covering designs and stronger net webbing materials. In this phase the team would also acquire equipment, establish vessel contracts, develop a study design and standardize protocols, identify and train personnel, and develop timelines.
2) Finalize gear prototype designs for in-water testing:
   Prototype net covers would be built with an approximation of what will be efficient, however movement, placement, and effectiveness cannot be evaluated until the gear is in-water tested. In-water evaluations of net designs made with high strength materials and trawls equipped with trawl coverings would be conducted by NOAA SCUBA divers from NMFS Pascagoula Laboratory. The dive team is composed of fishing gear experts that specialize in mobile fishing gear observations. The dive work would be conducted during the dive teams annual gear evaluations in Panama City Beach, Florida. The gear evaluations are conducted annually in coastal waters near Shell Island because of the warm, clear water conditions that facilitate safe mobile gear observations and collection of underwater video. On-site modifications would be performed to develop optimal gear designs. Proof of concept testing aboard R/V Caretta in Florida coastal waters and Mississippi state waters would evaluate the operational feasibility, and shrimp catch rates of both the trawl coverings and trawls constructed with alternative materials.
3) Identification of effective gear configuration components (trawl covering design and/or stronger webbing materials) that show promise to reduce dolphin interactions compared to gear currently used in shrimp fishery:
   Mississippi commercial shrimp skimmer trawl vessels would be contracted to conduct collaborative testing in Mississippi waters to compare control experimental net designs. The comparisons would include shrimp catch rates and trawl damage from dolphin interactions (e.g., number of holes in each net) and potential assessment of dolphin behaviors around nets with drones/cameras.
4) Reporting of key findings from in-water testing and potential future implementation actions:
   Initial report would be completed at the end of Phase I.

Phase 2 (Years 4 – 5):

Develop a plan for voluntary gear modifications in the MS skimmer trawl fleet based on comparative testing results, which may include but is not limited to incentivized use of alternate gear, installing gear on vessels voluntarily using the gear, and/or compensating vessels for gear use. NOAA gear specialists would be utilized to install gear on shrimp vessels.

Implement an outreach plan cooperatively with partners and stakeholders to educate Mississippi shrimp fishermen regarding the benefits of alternate fishing gear use and methods to minimize dolphin interactions. Outreach would be conducted through training, workshops, and gear distribution.

Operations and maintenance

Operations and maintenance would include vehicle and vessel maintenance and the upkeep of equipment used for concept testing of gear materials and comparative testing.

Monitoring summary

Project monitoring details can be found in the project's MAM plan located in Appendix A.

Costs

Total Project Cost: $3,090,000

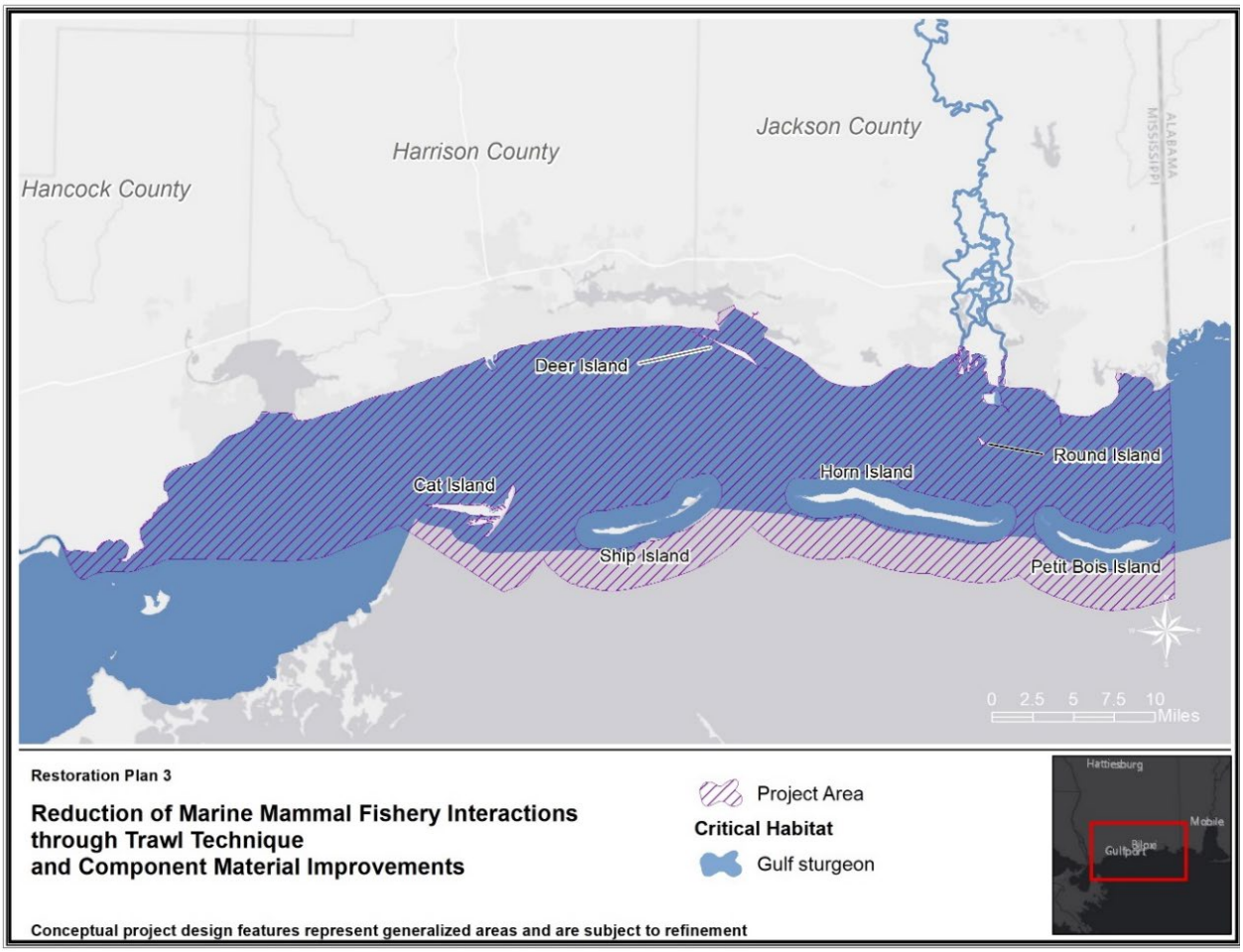

Figure 2-7 Project area for MM3 Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements

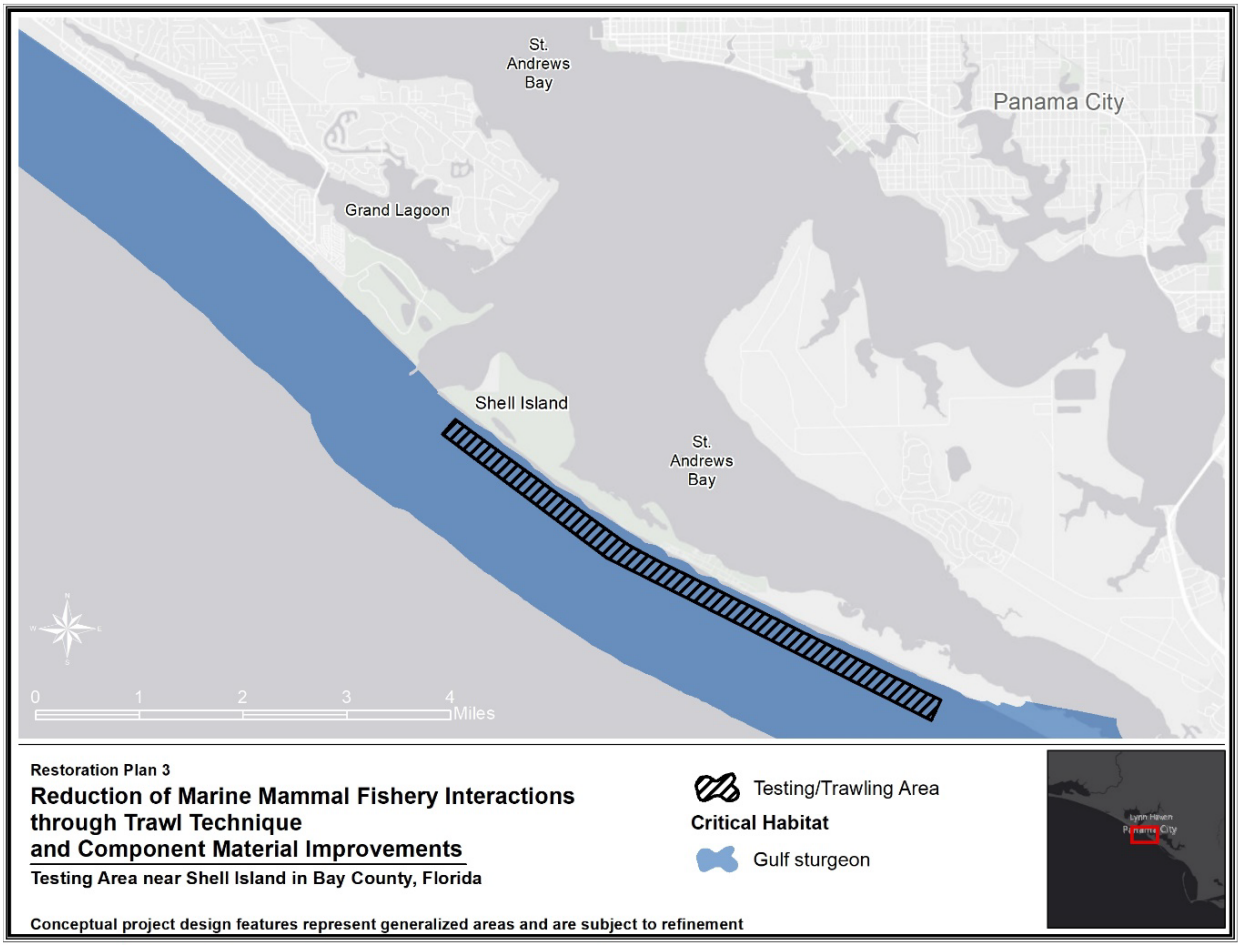

Figure 2-7.1 Testing Area (Shown as "trawl area") near Shell Island in Bay County, Florida, in close vicinity of the NMFS facility in Panama City Beach, Florida.

2.4.4 Project Descriptions: Birds

This RP3/EA identifies two restoration alternatives consistent with the Replenish and Protect Living Coastal and Marine Resources Restoration Goal (PDARP/PEIS Section 5.3.1) and underlying Birds Restoration Type (PDARP/PEIS Section 5.5.12).

2.4.4.1 B1 Bird Stewardship and Enhanced Monitoring in Mississippi

B1 Bird Stewardship and Enhanced Monitoring in Mississippi
Restoration approach
Restore and Conserve Bird Nesting and Foraging Habitat
Restoration techniques
Enhance habitat through vegetation management. Improve nesting and foraging area stewardship
Project location
The project would be located along the mainland beaches and coastal islands off the Mississippi coast and Mississippi's barrier islands (Figure 2-8).
Project background and summary
The Gulf of Mexico (GOM) coast supports a diversity of coastal bird species throughout the year, as nesting grounds during the breeding period, as a stopover for migrating species in the spring and fall, and as wintering habitat for numerous species that breed elsewhere. This project would help restore coastal nesting shorebird species injured by the DWH oil spill by implementing stewardship activities that would

B1 Bird Stewardship and Enhanced Monitoring in Mississippi
reduce human disturbance of birds and predation of nests and chicks by wildlife (e.g., racoons, coyotes) and address critical information gaps for populations of colonial waterbirds breeding along the Mississippi coast to better inform restoration planning. Stewardship Activities: This project would increase the acreage of habitat under stewardship and management on the Mississippi barrier islands which are managed by the National Park Service (Petit Bois, West Petit Bois, Horn, Ship, and Cat) and includes more than 62 miles of beach and shoreline, much of which were directly impacted by the Deepwater Horizon oil spill and response actions. Stewardship and management could provide a number of benefits, including, but not limited to: increasing bird nesting success, survival, and production; increasing public awareness; establishing and implementing an adaptive management framework to assess threats; implementing strategies to address those threats; and, monitoring success within season, where appropriate, and across seasons. Information Gaps: The project would also address information gaps for populations of breeding colonial waterbirds along the Mississippi coast and on the Mississippi barrier islands to better inform restoration planning. The project would track individual target seabird species including Black Skimmers (*Rynchops niger)* and Least Terns (*Sternula antillarum)* to help understand their movements, habitat use during both breeding and non-breeding seasons, and other critical information about these species. There is a need for more information for both species in Mississippi regarding site fidelity, colony dynamics, breeding-season foraging habitat, and migratory connectivity. In addition, given the extensive foraging and migration range of nearshore species in the area, it is critical to understand whether declines observed at a colony are due to on-colony factors or are a function of environmental conditions in other locations where birds forage and loaf (Jodice et.al. 2019). Data collected through the project would provide insights into factors affecting colonial waterbird survival and reproduction in addition to ongoing monitoring and stewardship efforts in Mississippi, thus furthering the Trustees' Bird restoration goals to inform and enhancing future restoration planning (e.g., habitat creation, management, and stewardship) for colonial waterbird species injured by the DWH oil spill.
Project implementation methodology and timing
The Implementing Trustees for this project would be MDEQ. Project implementation is anticipated to occur over a period of 7 years. The project could be categorized into two tasks: 1) Stewardship and 2) Biological Monitoring. **Years 1-2 (Stewardship and Biological Monitoring)** Planning activities, including siting, planning, coordination, and logistics/design, would occur during Years 1 to 2. **Years 2-7 Stewardship** *Site Assessments:* Visits would include an assessment of the current environmental conditions, public and/or private uses of the site, plans for habitat management, habitat restoration, or other activities on the site or nearby which may affect the quality of the site for nesting birds. *Site Management:* Vegetation management and predator control *Site Protection - Signage and Symbolic Fencing:* As priority nesting species begin courtship and nest-site selection, stewardship teams could install signage and symbolic fencing at identified sites and create vegetative buffers. Temporary signage and roping would be removed at the end of nesting season. *Site Protection - Stewards:* During high beach-use days, trained stewards, volunteers, and/or law enforcement would work in shifts to oversee nesting birds within symbolic fencing, ensuring that visitors do not disturb nests. *Outreach and Engagement*- Increase beach visitor awareness of nesting birds by having stewards with spotting scopes and binoculars share views of incubating adults, cryptic eggs in nests, and hatchlings with interested visitors from a safe distance. **Years 2-7 Biological Monitoring** *Nest Site and Bird Monitoring*: For monitoring of breeding bird colonies, biological monitoring would be conducted weekly at each colony to estimate colony size and reproductive output and to determine colony survival rates for each year of the project during nesting season. Monitoring of winter migrants would be conducted annually along pre-determined survey routes and would occur in three survey pulses, corresponding to fall migration, winter (overwinter), and spring migration. *Tracking and Banding:* Year 1 is anticipated to include project planning including analyses of which colonies to select for banding and marking, determination of suitable transmitters, and other project logistics. The objectives below would be met by banding, marking, and placing transmitters on individual birds during the nesting season in Year 2. Years 2-7 would include monitoring, data analysis, and reporting. Objectives include documenting the following: residency time in specific habitats, patterns of movements among habitats and inter- and intra-individual variability in habitat use; explicit links between colonies and foraging or wintering sites; site fidelity to mainland and barrier island nesting colonies; and species' ranges at multiple time scales (e.g., daily, seasonally, annually).
Operations and maintenance
Symbolic fencing (post and rope) would require minor O&M during nesting season and would be removed at the end of the season in most cases. Tracking and banding equipment would require minor O&M during the project. Other O&M needs would be identified and designed during planning work for each restoration activity.
Monitoring summary
Project monitoring details can be found in the project's MAM plan located in Appendix A.
Costs
The total estimated cost of this project is $6,105,500.

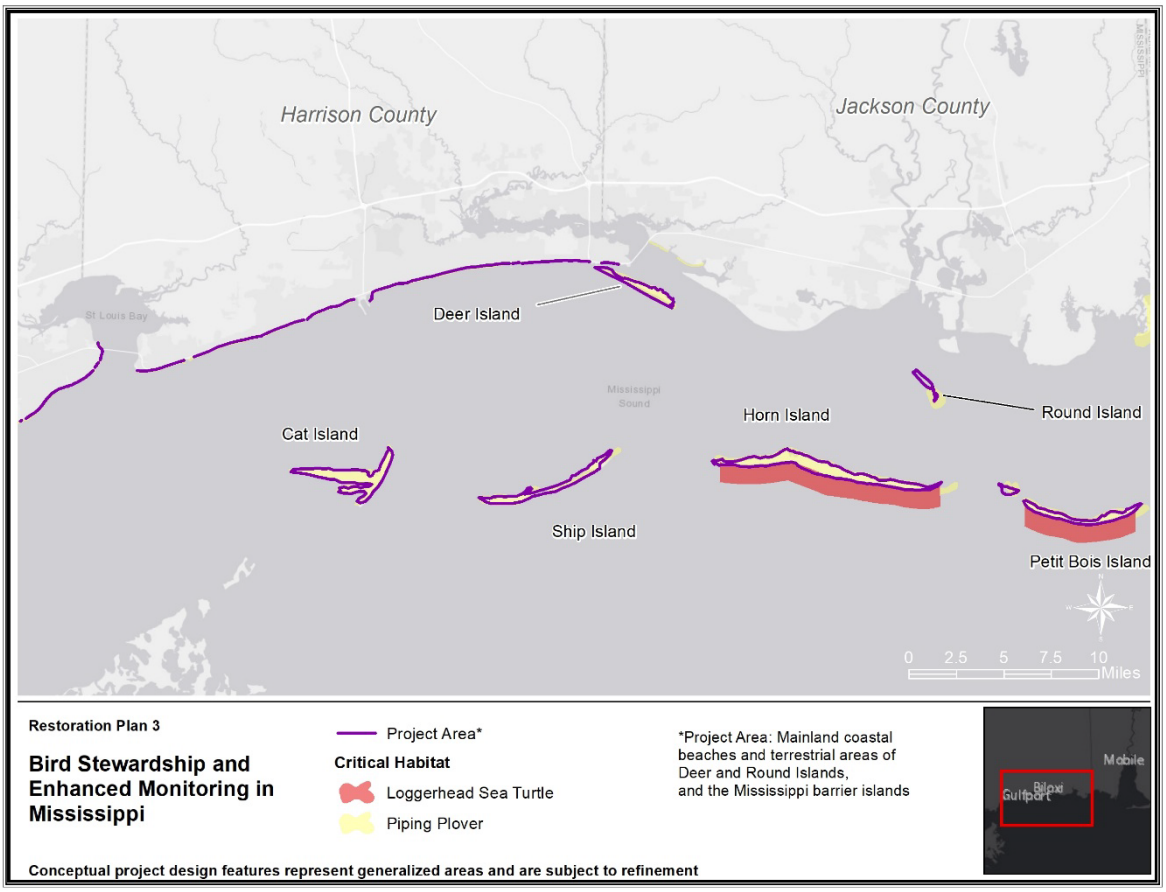

Figure 2-8 Project area for B1 Bird Stewardship and Enhanced Monitoring in Mississippi

2.4.4.2 B2 Bird Stewardship on Mississippi Barrier Islands

B2 Bird Stewardship on Mississippi Barrier Islands
Restoration approach
Restore and conserve bird nesting and foraging habitat.
Restoration techniques
Enhance habitat through vegetation management. Improve nesting and foraging area stewardship.
Project location
The project would occur on the Mississippi barrier islands, which are managed for the public by Gulf Islands National Seashore (Petit Bois, Horn, Ship, and Cat) and include more than 62 miles of beach and shoreline, much of which were directly impacted by the Deepwater Horizon oil spill and cleanup activities (Figure 2-9). These beaches are among the most natural in the state and include two islands (Horn and Petit Bois) designated as wilderness. These islands are critically important areas for shorebirds, seabirds, sea turtles, beach invertebrates, functioning coastal habitat, and visitor use. Specific activities and target locations may vary from year to year based on a number of factors including where nesting and/or foraging occurs, what management activities are most successful at each area, and where project implementers are supported by site land managers.
Project background and summary
The Gulf of Mexico (GOM) coast supports a diversity of coastal bird species throughout the year, as nesting grounds during the breeding period, as a stopover for migrating species in the spring and fall, and as wintering habitat for numerous species that breed elsewhere. This project would help restore coastal nesting shorebird species injured by the DWH oil spill by implementing stewardship activities that would reduce human disturbance of birds and predation of nests and chicks by wildlife (e.g., racoons, coyotes). Through its monitoring activities, the project would provide valuable data to inform future restoration efforts. This project would utilize various activities at multiple locations on federally managed lands on the barrier islands in Mississippi to conserve and enhance nesting and foraging habitats for birds. The activities would directly address anthropogenic and natural stressors that impact birds. This restoration project would complement and enhance ongoing efforts by Mississippi and partners to address habitat loss and degradation to nesting and foraging habitats through stewardship and monitoring of breeding bird and wintering bird populations. Stewardship may be implemented in several ways, depending on the location, and could include:

B2 Bird Stewardship on Mississippi Barrier Islands
Stewardship of nesting areas to reduce human disturbance (e.g., exclusion devices and vegetated buffers, symbolic fencing around nesting areas, signage, and/or beach wrack and distance buffers); Predator control; Vegetation management; Development and implementation of site management plans; Monitoring of nesting sites; reduced vehicular access; Patrols by wildlife stewards and/or law enforcement (including training and support); and Targeted community engagement, outreach, and education. This project would increase the acreage of habitat under stewardship and management and provide a number of benefits, including, but not limited to: increasing bird nesting success, survival, and production; increasing public awareness; establishing and implementing an adaptive management framework to assess threats; implement strategies to address those threats; and monitoring success within season, where appropriate, and across seasons.
Project implementation methodology and timing
The Implementing Trustees for this project would be DOI and MDEQ. Project implementation is anticipated to occur over a period of 7 years. Planning activities, including siting, design, and required procurement, would most likely occur during Years 1 to 6. Monitoring and stewardship implementation would also likely occur in Years 1 to 6, depending on the nature and scope of the individual activities. The project could be categorized into two tasks: 1) Stewardship and 2) Biological Monitoring. **Stewardship** Years 1-7. Stewardship activities would include: *Site Assessments:* Visits would include an assessment of the current environmental conditions, public and/or private uses of the site, plans for habitat management, habitat restoration, or other activities on the site or nearby which may affect the quality of the site for nesting birds. *Site Protection – Signage and Symbolic Fencing:* As priority nesting species begin courtship and nest-site selection, stewardship teams would help to install signage and symbolic fencing/roping at identified sites. Temporary signage and roping would be removed at the end of nesting season. *Site Protection – Stewards:* During high beach-use days, trained stewards, volunteers, and/or law enforcement would work in shifts to oversee nesting birds within symbolic fencing, ensuring visitors do not disturb nests. *Outreach and Engagement*- Increase beach visitor awareness of nesting birds by having stewards with spotting scopes and binoculars, share views of incubating adults, cryptic eggs in nests, and hatchlings with interested visitors from a safe distance. **Biological Monitoring** Years 1-7. Monitoring is an integral and effective management tool to develop and evaluate management and protective measures. For monitoring of breeding bird colonies, biological monitoring would be conducted weekly at each colony to estimate colony size and reproductive output and to determine colony survival rates for each year of the project during nesting season. Monitoring of winter migrants would be conducted annually along pre-determined survey routes and would occur in three survey pulses, corresponding to fall migration, winter (overwinter) and spring migration. Monitoring could include volunteers or staff from Non-Government Organizations (NGOs).
Operations and maintenance
Symbolic fencing (post and rope) would require minor O&M during nesting season and would be removed at the end of the season in most cases. Other O&M needs would be identified and designed during planning work for each restoration activity.
Monitoring summary
This project has not been identified at this time as a preferred alternative by the MS TIG, therefore, a project MAM plan has not been developed.
Costs
The total estimated cost of this project is $4,105,500.

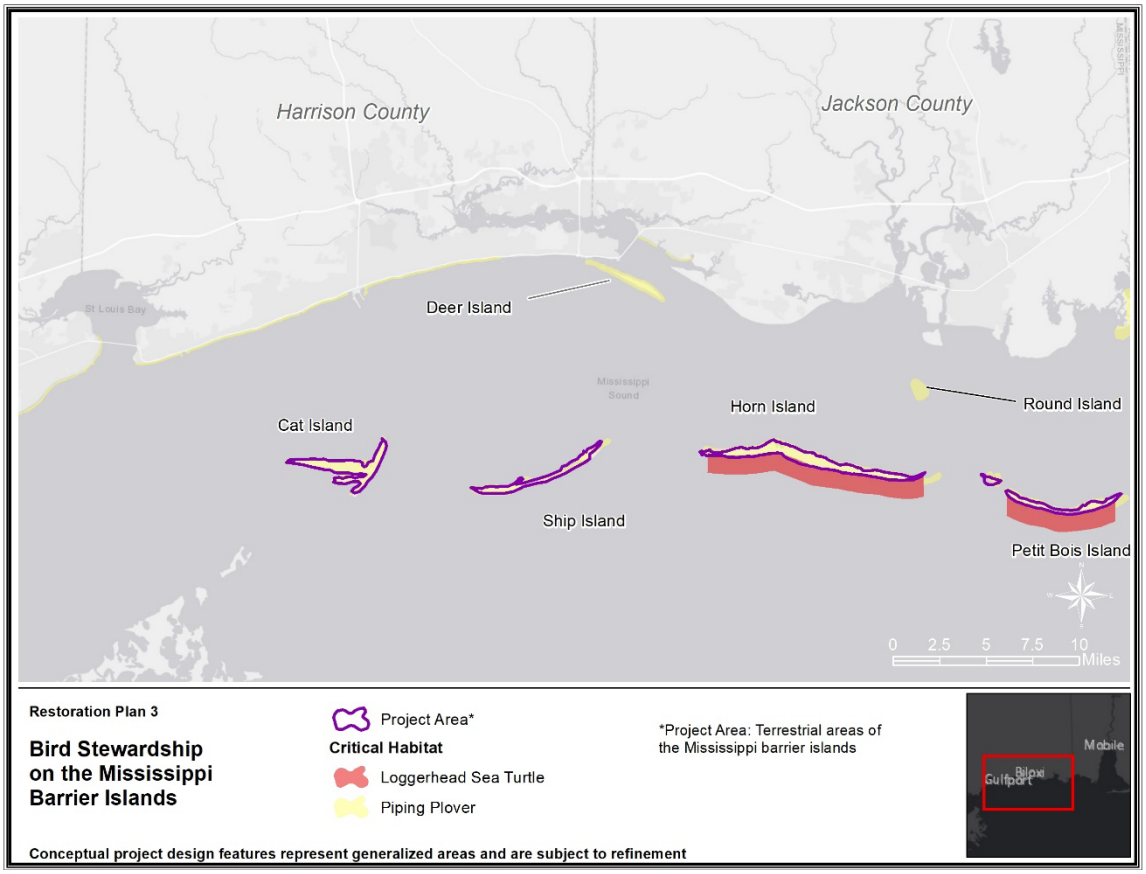

Figure 2-9 Project Area for B2 Bird Stewardship on Mississippi Barrier Islands

Note: This project would be implemented on federally managed lands on the islands.

2.4.5 Project Descriptions: Provide and Enhance Recreational Opportunities

This RP3/EA identifies four restoration alternatives consistent with the Provide and Enhance RecreationalOpportunities Restoration Goal (PDARP/PEIS Section 5.3.1) and the underlying Provide and Enhance Recreational Opportunities Restoration Type (PDARP/PEIS Section 5.5.14).

2.4.5.1 REC1 Clower Thornton Nature Park Trail Improvement

REC1 Clower Thornton Nature Park Trail Improvements
Restoration approach
Enhance Public Access to Natural Resources for Recreational Use
Restoration techniques
Enhance public access to natural resources for recreational use
Project location
The Clower Thornton Nature Area is an approximate 17.5-acre remnant patch of coastal habitat within the urban setting located on East Railroad Street in Gulfport, Mississippi. The property is bounded to the west by a 1,598-foot segment of Coffee Creek, a tidally influenced coastal stream that flows south into the Mississippi Sound. An unnamed tributary of Coffee Creek flows east-west across the northern portion of site (Figure 2-10). It has long been a favorite site for coast birders, with more than 200 species recorded on the property. This site is owned by the City of Gulfport and is managed by the Gulfport Parks and Recreation Department. This renowned birding site is listed on the Audubon Mississippi Coastal Birding Trail and currently has a paved walkway around the entire perimeter of the park and additional unimproved trails throughout the park's interior.

REC1 Clower Thornton Nature Park Trail Improvements
Project background and summary
The Clower Thornton Nature Park has a long and storied history dating back to 1942 when the Chamberlin Tract was sold as an addition to the City of Gulfport for a rail expansion to transport supplies to the Gulfport Army Airfield. Many years later in 1986, this public nature park was dedicated to the perpetual conservation and preservation of plants and wildlife, with the deeding of acreage by Aida Clower Yates to the Garden Clubs of Mississippi, Inc. This acreage is named in memory of J.C. Clower and Mary Thornton Clower, parents of Aida Clower Yates. Additional acreage was privately contributed in 1994, including a portion of Coffee Creek. In 2011, The Garden Clubs of Mississippi, Inc. deeded the park to the City of Gulfport to continue development and maintenance as a city park dedicated to the study of nature and enjoyment of coastal habitats. The old rail bed was paved and now serves as a portion of the perimeter walkway surrounding the park. Using GOMESA funding, an invasive species management plan was developed and has been partially implemented on the site. The management plan includes characterization of native habitat types, invasive plant species, and potential restoration opportunities. Eight management units were delineated and include magnolia forest, pine forest, live oak forest, bottomland forest, bottomland forest with a dense infestation of invasive species, stream and associated streambank. In addition, vegetation was characterized on an artificial mound (Coffee Creek spoil bank), and the trail berm. Invasive plant treatment and eradication measures are currently underway and will facilitate interior trail development and boardwalk replacement. Restoration actions that enhance recreational experiences and draw new participants to Gulf recreational activities are intended to partially compensate for the lost human uses that occurred as a result of the spill. The project would improve the connection between communities and natural resources and would ultimately strengthen the community's stewardship of coastal Gulf resources that were injured and, therefore, inaccessible during the DWH oil spill and response activities. The enhancements to the Clower Thornton Nature Park would help restore lost recreational uses by improving recreational access to Gulf natural resources and enhancing recreational experiences for visitors. The project would include installation of new trail/boardwalk(s), and installation of other amenities as budget allows (e.g., educational kiosks, signage). In addition to the existing paved perimeter trail, new eco-friendly interior walking trails would intersect and traverse the interior of the park. Trails would connect visitors to the bottomland hardwoods along the banks of Coffee Creek and would traverse maritime coastal forests (Magnolia/Live Oak and Pine forests). Pedestrians using the Clower Thornton Nature Park have access and connectivity to the Mississippi Sound via off-site trails and pedestrian routes.
Project implementation methodology and timing
MDEQ would be the Implementing Trustee. A preliminary project implementation schedule is provided here: Years 1-2 (2022-2023) Engineering and design and permitting; Construct interior trails Years 2-6 (2023-2028)- Interior Trail open to public access/Monitoring
Operations and maintenance
Trail maintenance and upkeep will be completed by the City of Gulfport Parks and Recreation department.
Monitoring summary
Project monitoring details can be found in the project's MAM plan located in Appendix A.
Costs
The total estimated cost of this project is $630,000.

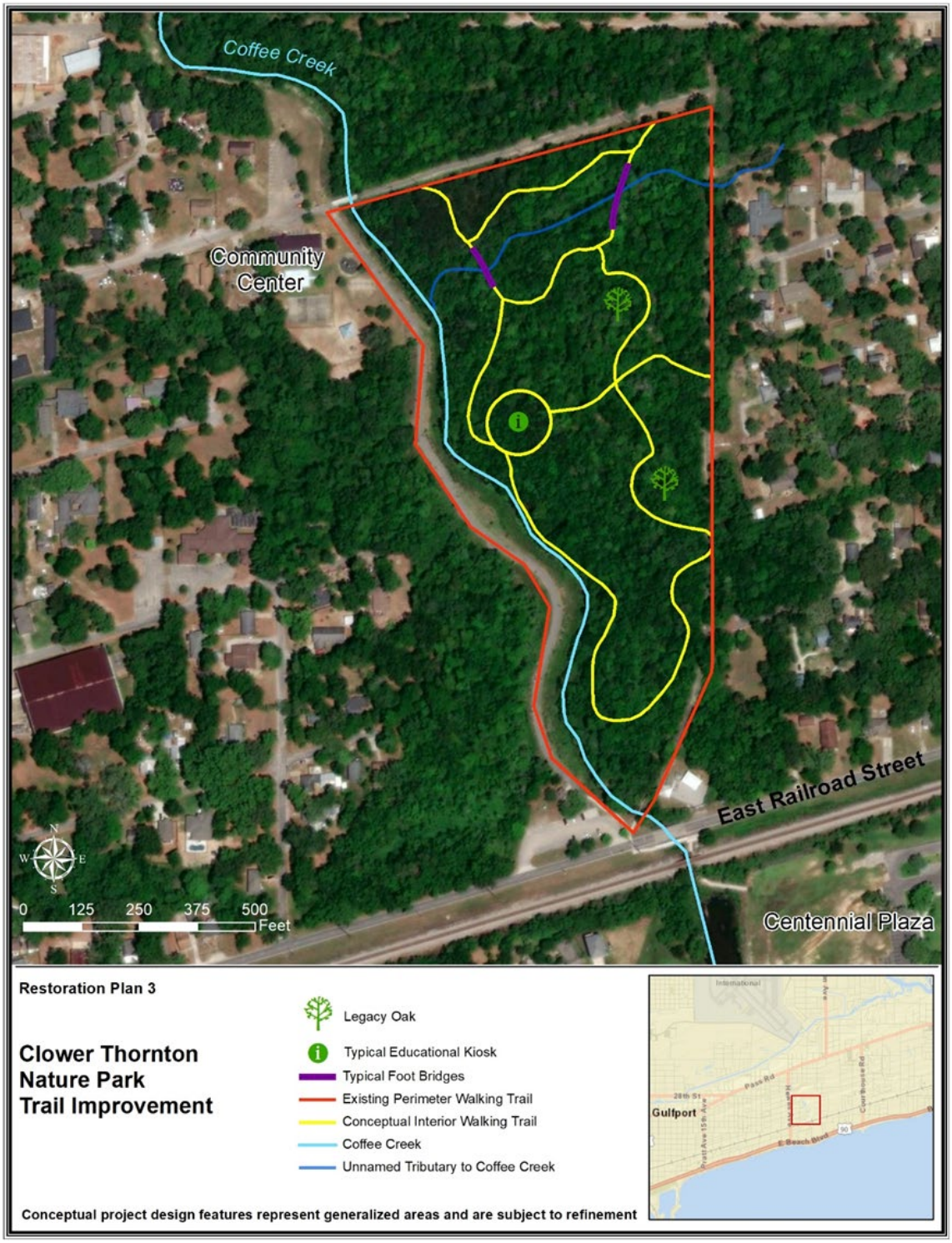

Figure 2-10 Project area for REC1 Clower Thornton Nature Park Trail Improvement

2.4.5.2 REC2 Environmental Education and Stewardship at Walter Anderson Museum of Art

REC2 Environmental Education and Stewardship at Walter Anderson Museum of Art
Restoration approach
Enhance Public Access to Natural Resources for Recreational Use Promote Environmental Stewardship, Education, and Outreach
Restoration techniques
Enhance public access to natural resources for recreational use Create or enhance natural resource-related education facilities Create or enhance natural resource related education programs
Project location
Walter Anderson Museum of Art, Ocean Springs, MS; See Figure 2-11.
Project background and summary
The Creative Complex at the Walter Anderson Museum of Art (Creative Complex) is an expansion of the Museum's campus with a total 15,000 square feet of indoor and outdoor spaces and gardens connecting to coastal landscapes and applications such as those in science, recreation, and restoration (Figure 2-11). The expansion would include development of a hub for interdisciplinary discovery and STEM education informed by the life and art of pioneering artist Walter Inglis Anderson (1903-1965). The Creative Complex would facilitate coastal education and recreation to promote engagement in restoration and stewardship of natural resources. In addition, the project would foster public access, coastal discovery and innovation, and quality of life resulting from immersive visitor experiences in the natural world. Improving the connection between communities and natural resources, through education and cultural appreciation, would ultimately strengthen environmental stewardship of resources in the Gulf of Mexico and help compensate for human use losses. The facility would provide a location in which environmental education and outreach would occur, including educational features for both the public and students through coastal exhibits and collections, hands-on activities, education outreach programs related to coastal resources, and other interactive activities. Educational activities would provide additional recreational activities such as bird watching, hiking, and fishing that improve the connectedness of the public to the environment, including excursions to barrier islands and other coastal habitats. The project includes partial funding for the following facilities and programs: **Education Pavilion:** The Education Pavilion is a natural resource educational facility consisting of approximately 3,000 square feet of new construction that would enable STEM workshops and interdisciplinary instruction with artists, authors, scientists, and scholars. **The Shoreline Garden:** The Shoreline Garden would enhance public access to natural resources by showcasing native flora from the mainland and the barrier islands, much of which was rendered through art by Walter Anderson. **Participants and Programs** Several tiers of programs would incorporate participants of all ages, including K-12 students, lifelong learners, visitors to the region, and students and researchers from regional Institutions of Higher Learning and partnering agencies. Research- and recreation-based programs and ongoing educational engagements would be delivered to students, visitors, and community members who frequent the Museum each year from over 30 states as well as visitors from other countries. The project would provide additional funding to continue development of programs that are already in their pilot phases but require additional funding for scaling and continuation. Flagship pilot programs that would be continued at the Creative Complex include: **Arts & Environmental Action**, an initiative with students from public high schools that empowers student-led environmental action through film production, art making, citizen science, and multimedia dialogue targeting the root causes of microplastics and Styrofoam use within the school cafeterias that negatively impact coastal ecosystems. The Museum is currently piloting this program with St. Martin High School and the Mississippi State University Extension Service through its Plastic Free Gulf Coast program, with funding from the National Geographic Foundation, South Arts, the Sierra Club, and the Mississippi Department of Marine Resources. **Horn Island Excursions**, held at various times throughout the year, transport participants (both students and adults) to the federally-designated wilderness site frequented by Walter Anderson. These programs include both day trips connecting art to oceanography, marine science, and geology, as well as recreational camping and fishing trips to introduce participants to the natural conditions of the island. **Nature-based Artist Residencies** would be held annually with artists, who would work with communities to draw inspiration from coastal landscapes. In a recent pilot project in this series, the Museum collaborated with acclaimed self-taught African-American artist Lonnie Holley to take students from underserved districts into various coastal environments, sourcing material for collaborative sculpture that spoke to the past, present, and future of the region.
Project implementation methodology and timing
The Mississippi Department of Environmental Quality would be the Implementing Trustee. The preliminary project schedule is: Years 1-2 (2022-2023) Construction/Existing Program Development/Public and Student Participation Years 2-6 (2023-2028)- Continued Program Development/Public and Student Participation/Monitoring
Operations and maintenance
Operations and maintenance would include facilities maintenance including Education Pavilion(s) and Shoreline Gardens during the project timeframe.
Monitoring summary
Project monitoring details can be found in the project's MAM plan located in Appendix A.

REC2 Environmental Education and Stewardship at Walter Anderson Museum of Art
Costs
Total Project Cost: $3,027,558 **NRDA Funding** $1,356,000; The NRDA funding would provide partial funding for program development, contract educators, design, facility construction (Creative Complex) and landscape construction (Shoreline Garden), and supplies. **Other funding sources**: Funding sources include $1,386,000 committed from the State of Mississippi through the Gulf Coast Restoration Fund and $556,558 from Walter Anderson Museum of Art Funding, Non-Federal Matching. These funds would be used to pay for WAMA educators, design, facility construction and landscape construction, and operational expenses. Note: To increase access, the majority of programs would be funded through on-going external grants and contributions (rather than admission fees), including those from public sources, private foundations, corporate philanthropy, private donation, and a dedicated endowment.

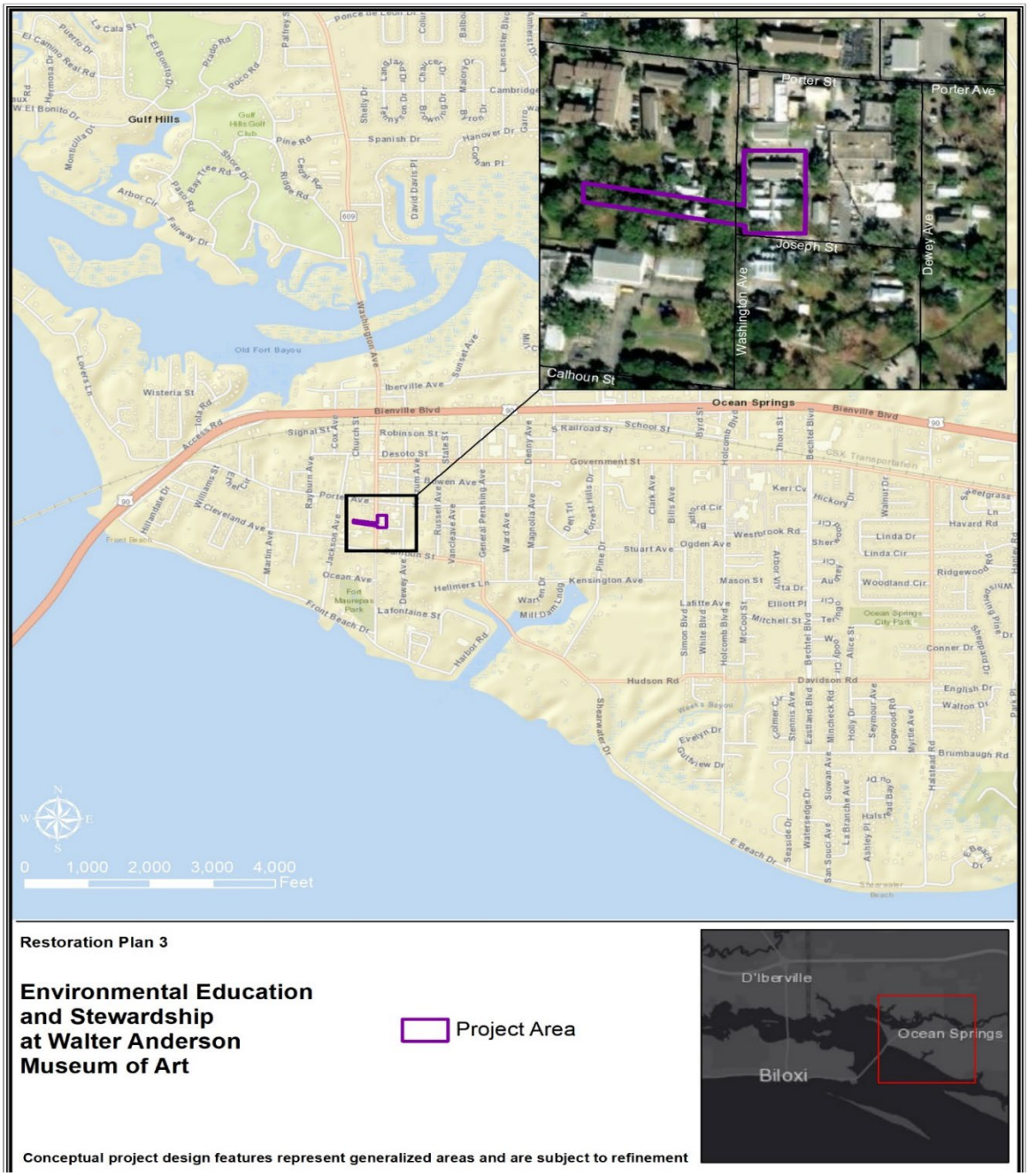

Figure 2-11 Project Area for REC2 Environmental Education and Stewardship at Walter Anderson Museum of Art

2.4.5.3 REC4 Mississippi Gulf Coast Pier Improvements

REC4 Mississippi Gulf Coast Pier Improvements
Restoration approach
Enhance Public Access to Natural Resources for Recreational Use
Restoration techniques
Enhance public access to natural resources for recreational use
Project location
Coastal bays and Mississippi Sound shorelines in Hancock, Harrison and Jackson Counties, Mississippi (Figure 2-12).
Project background and summary
Throughout the three coastal counties on the Mississippi Gulf Coast there are numerous municipally and county owned waterfront piers that are used by the public for recreational activities such as fishing and enjoying the coastal viewshed. These piers range in size and vary greatly in their age, structural design, and material condition. The proposed Mississippi Gulf Coast Pier Improvement project would fund the implementation of construction retrofit measures to improve the resiliency of piers that routinely sustain damage from high wind/wave conditions which occur on the Gulf Coast. Pier construction generally involves the installation of support pilings attached to a substructure that provides the foundation for the decking and the handrails. The materials used for traditional pier construction have proven over the years to be insufficient to withstand the typical Mississippi coastal environment and are particularly vulnerable to wave energy from tropical storms and hurricanes. Seasonal conditions on the Gulf Coast have a deleterious effect on standard galvanized nuts, bolts, and screws, while the daily wet and dry cycles of wind, waves and rain also deteriorate the wooden members used in pier framing. Horizontal wooden members (e.g., pier decking; tops of handrails) deteriorate much faster than the vertical substructure due to the daily UV exposure and pedestrian traffic. Warping, cupping and splintering of the decking and handrails detract from the overall recreational experience of the general public and present safety concerns due to potential tripping and splinter risks. Resiliency measures could include the replacement of wooden handrails and deck boards with weather-resistant composite materials which are resistant to staining, cracking, chipping, warping, cupping, etc. Once the existing deck boards are pulled up, the exposed substructure could be closely inspected and fortified with stainless steel hardware at all bolted connections. Blocking and clip angles could be added between the joists, and selective replacement of any support members showing signs of premature stress and/or possible failure could be implemented. Additional construction measures could include improving the grade of hardware and lumber and adding additional bracing to fortify the structure. The proposed project would enhance access to natural resources and enhance recreational experiences to compensate for the lost recreational uses that occurred as a result of the Spill by implementing resiliency measures (structural maintenance) of publicly owned piers. The public's enjoyment of the improved piers would increase due to safer and more comfortable conditions, and their access to piers would increase due to less down time for post-storm repairs. The proposed project upgrades could be leveraged with FEMA funding for storm damage repair which typically pays only for in-kind replacement. Funds would not be spent on operations and maintenance required by existing permits.
Project implementation methodology and timing
MDEQ would be the Implementing Trustee. A preliminary project implementation schedule is provided here: Year 1-2 Project development; conduct outreach to cities and counties, review and determine viable projects; review current research on design and sustainability; minimal engineering & design/permitting work/commence construction. Year 2-5 Piers open to public access/monitoring.
Operations and maintenance
New pier designs that upgrade and improve structures would potentially reduce damage that typically results from storm events. Post construction operation and maintenance of upgraded piers would be the responsibility of the public entity that owns/manages the pier.
Monitoring summary
This project has not been identified at this time as a preferred alternative by the MS TIG, therefore, a project MAM plan has not been developed.
Costs
Costs for the project is 1.5 million dollars and is scalable. Based on approximately $200,000 per location, we would anticipate 5 to 6 locations could be upgraded and improved.

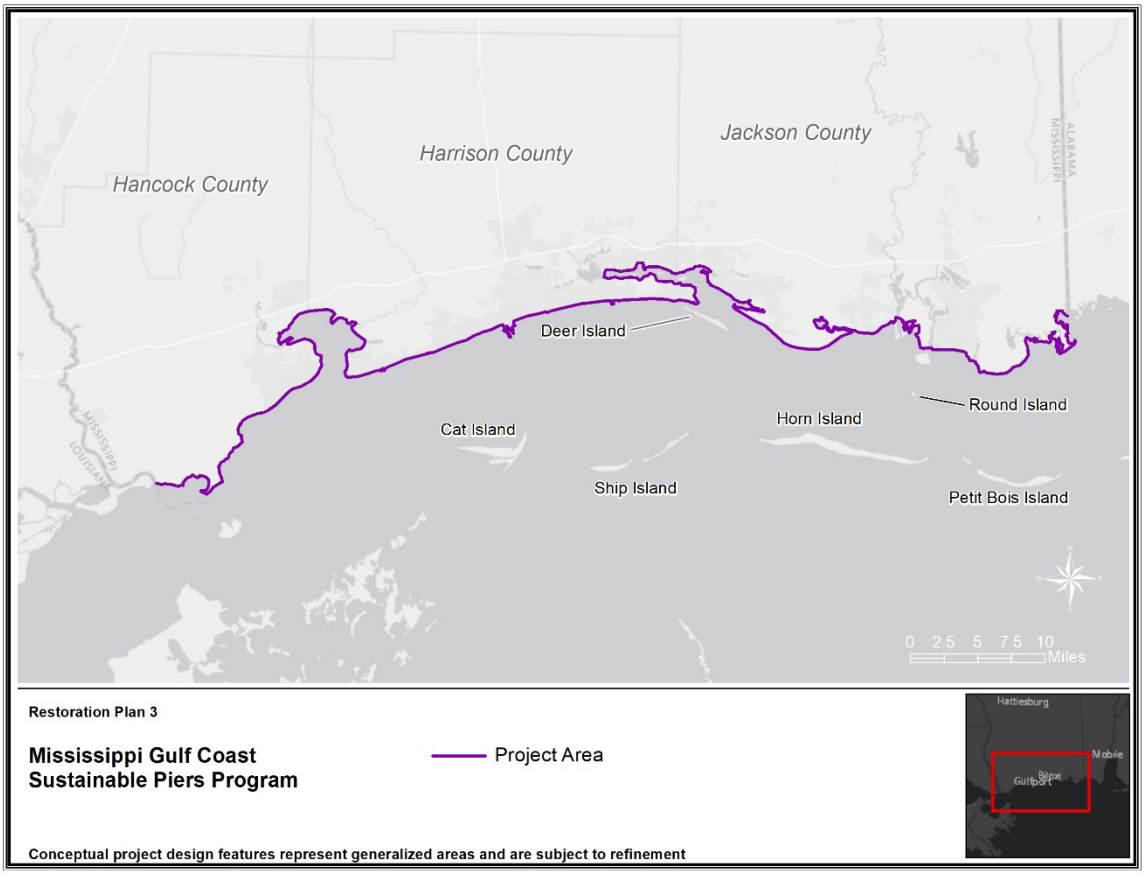

Figure 2-12 Project Area for REC4 Mississippi Gulf Coast Pier Improvements

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3.0 OPA EVALUATION OF REASONABLE RANGE OF ALTERNATIVES

This chapter provides an OPA analysis of each restoration project in this RP3/EA including an evaluation of the project's consistency with OPA NRDA regulatory criteria. OPA evaluations for each project by Restoration Type, are found in the following sections of this chapter:

- Habitat Projects on Federally Managed Lands: two alternatives (Section 3.2);
- Sea Turtles: two alternatives (Section 3.3);
- Marine Mammals: three alternatives (Section 3.4);
- Birds: two alternatives (Section 3.5); and
- Provide and Enhance Recreational Opportunities: four alternatives (Section 3.6).

Based on the OPA evaluation in this Chapter, the MS TIG identified preferred restoration alternative(s) which are the Proposed Action for this RP3/EA.

3.1 Overview of OPA Evaluation of Restoration Alternatives

Consistent with the OPA NRDA regulations, the MS TIG considered a reasonable range of alternatives (15 CFR § 990.53(a)(2)) to be evaluated according to OPA NRDA evaluation standards (15 CFR § 990.54). The MS TIG identifies its preferred restoration alternatives in this RP3/EA. This chapter includes the MS TIG's evaluation of the alternatives in accordance with the OPA NRDA regulations, which include:

- **The cost to carry out the alternative.** This criterion considers whether the cost to carry out the alternative is reasonable, appropriate, and comparable to other similar restoration alternatives. The MS TIG considered the estimated cost of the alternative, including, if appropriate, the costs for design, planning, permitting, construction, oversight and management, and monitoring and maintenance. If two or more alternatives are equally preferable based on these factors, the Trustees select the most cost-effective alternative.
- **Trustees' goals and objectives (Goals and objectives).** This criterion considers the extent to which each alternative is expected to meet the Trustees' goals and objectives in returning the DWH-injured natural resources and services to baseline and/or compensating for interim losses. This encompasses the PDARP/PEIS programmatic Restoration Goals and Types (Section 5.3.1 of the PDARP/PEIS).
- **Likelihood of success.** This criterion includes consideration of each project's likelihood of success such as whether the alternative proposes approaches or techniques that have been executed successfully in the past; whether the approach or technique is routinely employed; and whether there are significant impediments to successful implementation and/or realization of the project benefits (e.g., local support for a project, potential regulatory compliance issues).
- **Prevents future injury and avoids collateral injury**. This criterion evaluates the extent to which an alternative would prevent future injury as a result of the incident, and/or avoid collateral injury as a result of implementing the alternative. None of the alternatives considered in this RP3/EA prevent future injuries from the incident. Instead, for this OPA evaluation, the MS TIG focused on whether the restoration alternative had the potential to cause collateral environmental injuries. For projects proposing more than E&D activities (i.e.,

implementation), these considerations are covered in more detail in the environmental consequences sections of Chapter 4.

- **Benefits multiple natural resources/services (Benefits to multiple resources).** This criterion evaluates the extent to which an alternative would provide benefits to more than one natural resource and/or service.This includes whether the project benefits would make the alternative more valuable (e.g., by providing both recreational and ecological benefits).
- **Effects on public health and safety (Public Health and safety).** This criterion evaluates whether any aspect of the alternative could affect public health and/or safety. This evaluation includes consideration of both positive and negative impacts that cannot be mitigated.

3.2 OPA Evaluation: Habitat Projects on Federally Managed Lands Alternatives

The MS TIG identified two alternatives for detailed analysis in this RP3/EA and evaluated these alternatives consistent with the OPA NRDA regulations in 15 C.F.R. 990.54(a). The following sections summarize the OPA evaluation results for each alternative.

3.2.1 FM1 Improve Native Habitats by Removing Marine Debris from Mississippi Barrier Islands

This alternative would remove marine debris on Mississippi barrier islands managed by the National Park Service's Gulf Islands National Seashore (including all of Petit Bois, Horn, and Ship islands and a portion of Cat Island). Methods to remove debris would be varied and could include activities such as contract marine salvage crews removing large debris which may need to be dismantled in place, and crews, NPS staff, and potentially volunteers on foot collecting and aggregating small- and medium-size debris for transport and disposal. The total estimated project cost is $3.0 million (See Section 2.4.1.1).

Table 3-1 OPA Evaluation of FM1 Improve Native Habitats by Removing Marine Debris from Mississippi Barrier Islands

OPA Criterion	OPA Evaluation
Cost to Carry out the Alternative	The MS TIG found the project cost to be reasonable, appropriate and comparable to other similar restoration projects considering the additional costs to access the Mississippi barrier islands[1]. A phased approach (planning followed by implementation) would enhance cost-effectiveness. This alternative is designed to increase the efficiency and effectiveness of restoration actions over its duration through development of a prioritization process during initial planning activities. In order to identify areas where removal of abandoned, lost, or discarded fishing gear and other debris and trash pose a threat to native habitats, marine debris would be targeted on each island by systematic surveys using unmanned aerial systems (UAS)[2], foot surveys, and/or high-resolution aerial imagery. These surveys would help achieve cost efficiencies by reducing the amount of time required to locate debris for removal operations.
Trustees' Goals and Objectives	This project would restore a variety of interspersed but ecologically connected coastal habitats, maintain ecosystem diversity, and maximize ecological functions for the range of resources injured by the spill (e.g., birds, sea turtles). The project would protect beach and dune habitat at GUIS by removing marine debris from native habitats that were directly injured by oiling and/or response activities associated with the spill.
Likelihood of success	This alternative would utilize proven, established techniques (see DWH Trustees 2017d, NOAA's Marine Debris Removal Program, EPA's Trash-Free Waters Program). The likelihood of success is increased by coordinating efforts among key partners to address prevention, removal, data collection, and management of marine debris. The Implementing Trustees (MDEQ, DOI, EPA) would also implement a MAM plan (see Appendix B) that would assess progress toward project goals, help minimize risk, and address key uncertainties on an ongoing basis.
Avoid collateral injury	The MS TIG does not expect this alternative to cause collateral injury to natural resources. All vessels and equipment used to survey and remove debris would be operated in a manner designed to avoid adverse impacts to natural resources. While the removal of marine debris could lead to collateral injury to organisms residing in the sediment below the debris or that have settled onto the debris, such impacts would be minor and short-lived. The Implementing Trustees would take all appropriate coordination and protective measures to avoid collateral injury.
Benefits to Multiple Resources	This alternative would benefit multiple species and habitats, including colonial waterbirds, solitary beach-nesting birds, osprey, and sea turtles, that utilize the nearshore habitat in the project area and were injured by the DWH oil spill. The removal of marine debris from beaches and dunes would directly benefit these habitats by preventing marine debris related damage to vegetation, soils, and sediments.
Public Health and safety	The MS TIG does not anticipate impacts to public health and safety from the implementation of this alternative. All vessels and equipment used as a part of the effort for removal and prevention of marine debris would be operated according to standard safety protocols to avoid any public health and safety impacts. The project would be implemented with the assistance of appropriately trained personnel, and participants would be made aware of the potential for injury in collecting marine debris through disclaimers and waivers (as necessary).
Summary	Based on the OPA evaluations, this project was identified by the MS TIG as a preferred restoration alternative in this RP3/EA.

3.2.2 FM2 Habitat Management on the Mississippi Barrier Islands

This alternative includes habitat management and continued implementation of restoration approaches and techniques currently utilized in the NFWF GEBF funded Habitat Restoration: Federal Lands Program (MS) - NPS-Gulf Islands National Seashore, which includes invasive plant species management on Ship, Horn, Petit Bois, West Petit Bois, and Cat islands. The TIG is proposing to increase the scale of on-going work. The project includes nuisance mammalian species control and eradication as well as vegetation management. The total estimated project cost is $2.0 million (See Section 2.5.2.1).

[1] Comparable projects include the Open Ocean "Reduce the Impacts of Ghost Fishing by Removing Derelict Fishing Gear from Marine and Estuarine Habitats" and Regionwide TIG "Reduce Marine Debris Impacts on Birds and Sea Turtles" projects.

[2] Mainly due to cybersecurity concerns, in January 2020 the Department of the Interior issued Secretarial Order #3379 restricting drone use by all bureaus with the exception of use for emergency operations such as Search and Rescue and wildfire response. However, that policy could change during the course of project implementation, and therefore the environmental impacts from drone use for data gathering are analyzed in this RP/EA. NPS would use drones for this project only if drone use was consistent with all laws, regulations, and policies applicable on NPS lands at the time of use.

Table 3-2: OPA Evaluation of FM2 Habitat Management on the Mississippi Barrier Islands

OPA Criterion	OPA Evaluation
Cost to Carry out the Alternative	The costs to carry out this alternative are found to be reasonable, appropriate, and comparable to similar projects. Costs for invasive species management activities are reasonable and are comparable and based on management activities that are currently being implemented under the NFWF GEBF funded Habitat Restoration: Federal Lands (MS)-NPS-Gulf Islands National Seashore project.
Trustees' Goals and Objectives	This project would restore a variety of interspersed but ecologically connected coastal habitats, maintain ecosystem diversity, and maximize ecological functions for the range of resources injured by the spill (e.g., birds, sea turtles). The project would restore habitats and resources through the implementation of invasive species management. Specifically, mammalian nuisance species removal would eradicate mammals (e.g., nutria, rabbits, and rats) which are reducing the fecundity and productivity of native plants, specifically sea oats, on the Mississippi Barrier Islands. The reduction of sea oats on the dune fronts results in wind and wave erosion of these dune habitats and eventual loss of ecosystem and storm surge protection function of these systems. In addition, the project would implement vegetation management measures including chemical and mechanical treatment to increase native plant diversity, reduce potential fire hazards, and restore bird nesting habitat.
Likelihood of success	This project utilizes standard approaches to protect beach and dune habitat such as dune crossovers and equipment-control measures to protect sensitive habitats and resources. DOI has a long history of successfully managing impacts on sensitive habitats at GUIS and other federally managed lands. DOI has also implemented invasive species control measures for plants and mammals on the MS barrier islands. Habitat management is currently being implemented as a NFWF-GEBF funded invasive species management project on Horn and Petit Bois islands, which will continue through 2nd quarter 2023. At that time, more information will be available to evaluate the NFWF-GEBF project outcomes, lessons learned, and to better optimize and budget based on actual expenditures.
Avoid collateral injury	Established protocols and methods for invasive species management would be used to avoid incidental mortality and collateral injury to native species of plants and wildlife.
Benefits to Multiple Resources	Species that could benefit include colonial waterbirds, solitary beach-nesting birds, and osprey that utilize the nearshore habitat in the project area and were injured by the DWH oil spill. This alternative could also benefit sea turtles that may utilize the area for nesting.
Public Health and safety	The MS TIG does not anticipate negative impacts to public health and safety. The Implementing Trustees would comply with all relevant safety measures, practices, and regulations during implementation of mammalian species control, and vegetation management. The Implementing Trustees would maintain a safe, protective environment for those involved with the project.
Summary	Based on the OPA evaluation, specifically for likelihood of success, this project was not identified as a preferred alternative by the MS TIG in this RP3/EA at this time. NFWF-GEBF funded invasive species management will continue through 2nd quarter 2023. At that time, more information will be available to evaluate the project outcomes, lessons learned, and to better optimize and budget based on actual expenditures.

3.3 OPA Evaluation: Sea Turtle Alternatives

The MS TIG identified two sea turtle alternatives for detailed analysis in the RP3/EA and evaluated these alternatives consistent with the OPA NRDA regulations in 15 C.F.R. 990.54(a). The following sections summarize the OPA evaluation results for each sea turtle alternative.

3.3.1 ST1 Maintaining Enhanced Sea Turtle Stranding and Salvage Network Capacity and Diagnostic Capabilities-3 Years

This alternative would focus on maintaining the enhanced capacity of the Sea Turtle Standing and Salvage Network. This project would build on the NFWF-GEBF Mississippi Marine Mammal and Sea Turtle Conservation, Recovery, and Monitoring Program - Phase I that is anticipated to be completed in 2022. The total estimated project cost for this alternative is $2.5 million with a duration of 3 years (See Section 2.5.2.1).

Table 3-3 OPA Evaluation of ST1 Maintaining Enhanced Sea Turtle Salvage and Stranding Network Capacity and Diagnostic Capabilities-3 Years

OPA Criterion	**OPA Evaluation**
Cost to Carry out the Alternative	The MS TIG determined that the estimated project costs were reasonable. The costs to carry out this alternative are based upon current expenditures from the NFWF-GEBF "Mississippi Marine Mammal and Sea Turtle Conservation, Recovery, and Monitoring Program - Phase I Project" that is currently scheduled to be completed in 2022.
Trustees' Goals and Objectives	Implementation of this alternative would contribute to the Trustees' goal of restoring sea turtles by increasing survival through improving understanding of causes of sea turtle mortality to inform future restoration efforts. The project would do this by continuing to enhance the capacity of two Mississippi Sea Turtle Stranding and Salvage Network partners, as was established by the NFWF-GEBF project. More specifically, it would maintain the current capacity to provide a timely response to stranded, sick, injured, or deceased sea turtles. Timely collection of data is important because data from tissue samples become less valuable as the decomposition process occurs. The project would also allow network partners to continue current tissue analysis levels (e.g., toxicological analysis including chemical, microplastics and heavy metal analysis). These data are imperative in gaining essential information about life history and environmental conditions in the Mississippi Sound and in helping determine cause of death. The project would also maintain the increased capacity to rehabilitate sea turtles and contribute to sea turtle survival. Rehabilitation, which includes advanced veterinary care, has resulted in 95% survival for live turtles treated and cared for.
Likelihood of success	The alternative would utilize proven techniques, and established methods of the successful National STSSN program. The alternative would build on the success of NFWF-GEBF's Mississippi Marine Mammal and Sea Turtle Conservation, Recovery, and Monitoring Program - Phase I project.
Avoid collateral injury	Proposed stranding response and data collection activities would be conducted under the NOAA-coordinated National STSSN using well-established STSSN protocols, which are designed to minimize collateral injuries.
Benefits to Multiple Resources	Stranding network searches could also provide benefits to marine mammals which could strand in areas where responders are looking for sea turtles. Additional data collection and necropsy results could improve early detection and mitigate threats and improve understanding of sea turtle morbidity and mortality.
Public Health and safety	The MS TIG does not anticipate any adverse impacts on public health and safety. Relevant safety measures and practices for handling and responding to sea turtle stranding incidents would be followed.
Summary	Based on the OPA evaluations, this project was identified by the MS TIG as a preferred restoration alternative in this RP3/EA.

3.3.2 ST2 Maintaining Enhanced Sea Turtle Stranding and Salvage Network Capacity and Diagnostic Capabilities-5 Years

This alternative would focus on maintaining the capacity of the Sea Turtle Standing and Salvage Network. This project would build on the NFWF-GEBF Mississippi Marine Mammal and Sea Turtle Conservation, Recovery, and Monitoring Program - Phase I that is anticipated to be completed in 2022. The total estimated project cost for this alternative is $4.2 million with a duration of 5 years (See Section 2.5.2.2).

Table 3-4 OPA Evaluation of ST2 Maintaining Enhanced Sea Turtle Salvage and Stranding Network Capacity and Diagnostic Capabilities-5 Years

OPA Criterion	**OPA Evaluation**
Cost to Carry out the Alternative	The costs to carry out this alternative are based upon current expenditures from the NFWF-GEBF "Mississippi Marine Mammal and Sea Turtle Conservation, Recovery, and Monitoring Program - Phase I Project" that is currently scheduled to be completed in 2022. The project cost is over 80% of the Sea Turtle Restoration Type allocation for the Mississippi Restoration Area ($4.1 million). The MS TIG does not intend to expend more than 50% of the Sea Turtle allocation on any one sea turtle restoration technique, acknowledging there are other known threats to sea turtles in MS waters that would benefit from future sea turtle restoration funding. Additionally, the $2.5 million preferred project is sufficient to achieve restoration goals for this restoration technique. The TIG determined that while a commitment of funding for a three-year project is reasonable and that the project data could be used to inform future restoration planning, the additional cost to implement five years is too great of a commitment from the limited Sea Turtle RT funds ($5 million).
Trustees' Goals and Objectives	Implementation of this alternative would contribute to the Trustees' goal of restoring sea turtles by increasing survival through improving understanding of causes of sea turtle mortality to inform future restoration efforts. However, the Trustees acknowledge that there are other known threats to sea turtles in MS waters that would benefit from future sea turtle restoration funding. As mentioned above, implementation of this alternative would use over 80% of the Sea Turtle Restoration Type allocation for the Mississippi Restoration Area and would not leave sufficient funding for other Trustee priority restoration approaches. The Trustees' objective for the Sea Turtle Restoration Type is to implement a robust and diverse portfolio of projects that works to restore the injured resource through multiple different restoration approaches and techniques. The selection of this alternative would limit the Trustees ability to pursue restoration under other approaches.
Likelihood of success	The alternative would utilize proven techniques, and established methods of the successful nationwide STSSN program. The alternative would build on the success of NFWF-GEBF's Mississippi Marine Mammal and Sea Turtle Conservation, Recovery, and Monitoring Program - Phase I project.
Avoid collateral injury	Proposed stranding response and data collection activities would be conducted under well-established STSSN protocols which are designed to minimize collateral injuries.
Benefits to Multiple Resources	Stranding network searches could also provide benefits to marine mammals which could strand in areas where responders are looking for sea turtles. Additional data collection and necropsy results could improve early detection and mitigate threats and improve understanding of sea turtle morbidity and mortality.
Public Health and safety	The MS TIG does not anticipate any adverse impacts on public health and safety. Relevant safety measures and practices for handling and responding to sea turtle stranding incidents would be followed.
Summary	Based on the OPA evaluation, specifically the cost to carry out the alternative (also see Trustees' Goals and Objectives), this project was not identified as a preferred alternative by the MS TIG in this RP3/EA at this time. The TIG determined that a commitment of funding for a three-year project is reasonable and that the project data could be used to inform any future restoration planning and commitment of future sea turtle funding.

3.4 OPA Evaluation: Marine Mammals Alternatives

The MS TIG identified three marine mammal alternatives for detailed analysis in this RP3/EA and evaluated these alternatives consistent with OPA NRDA regulations in 15 C.F.R. 990.54(a). The following sections summarize the OPA evaluation results for each marine mammal alternative.

3.4.1 MM1 Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities

This alternative would focus on maintaining the enhanced capacity of the Mississippi Marine Mammal Stranding Network. This project would build on the NFWF-GEBF Mississippi Marine Mammal and Sea Turtle Conservation, Recovery, and Monitoring Program - Phase I that is anticipated to be completed in 2022. The total estimated project cost for this alternative is $2.3 million (See Section 2.5.2.1).

Table 3-5 OPA Evaluation of MM1 Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities

OPA Criterion	**OPA Evaluation**
Cost to Carry out the Alternative	The MS TIG determined that the estimated project costs were reasonable. The costs to carry out this alternative are based upon current expenditures from the NFWF-GEBF "Mississippi Marine Mammal and Sea Turtle Conservation, Recovery, and Monitoring Program - Phase I Project" that is currently scheduled to be completed in 2022.
Trustees' Goals and Objectives	Implementation of this alternative would contribute to the Trustees' goal of restoring marine mammals by increasing marine mammal survival through improving understanding of causes of illnesses and death. The project would continue the enhanced capacity of the MS MMSN, including maintaining the capacity to respond and timeliness of response to stranded sick, injured, or deceased marine mammals. Timely collection of data is important because data from tissue samples become less valuable as the decomposition process occurs. These data are imperative in gaining essential information about life history and environmental conditions in the Mississippi Sound and helping to determine cause of illness and death.
Likelihood of success	The alternative would utilize proven techniques and established methods of the successful nationwide MMSN program. The alternative would build on the success of NFWF-GEBF's Mississippi Marine Mammal and Sea Turtle Conservation, Recovery, and Monitoring Program - Phase I project.
Avoid collateral injury	Proposed stranding response and data collection activities would be conducted under well-established MMSN protocols which are designed to minimize collateral injuries.
Benefits to Multiple Resources	Stranding network activities could also provide benefits to sea turtles which could strand in areas where personnel are looking for marine mammals. Additional data collection and necropsy results could improve early detection, mitigate threats, and improve understanding of marine mammal morbidity and mortality.
Public Health and safety	The MS TIG does not anticipate any adverse impacts on public health and safety. Relevant safety measures and practices for handling and responding to marine mammal incidents would be followed.
Summary	Based on the OPA evaluation, this project was identified by the MS TIG as a preferred restoration alternative in this RP3/EA.

3.4.2 MM2 Marine Mammal Health Assessments to Monitor Population Health

Health assessments are used to identify and understand animal health as it relates to population stressors, identify risks for illness and death, mitigate potential impacts, and/or plan more effective conservation measures in response to management drivers. Activities under this project would serve to increase understanding of marine mammal health and reproductive success. The total estimated cost of this project is $3.0 million (See Section 2.5.2.2).

Table 3-6 OPA Evaluation of MM2 Marine Mammal Health Assessments to Monitor Population Health

OPA Criterion	**OPA Evaluation**
Cost to Carry out the Alternative	The costs to carry out this alternative are based on similar projects. The MS TIG reviewed similar projects with similar project components including the Alabama TIG Assessment of Alabama Estuarine Bottlenose Dolphin Populations and Health and the Louisiana TIG Region-wide Marine Mammal Conservation Medicine and Health Program. Subject matter experts estimate that the project could be implemented at a cost of approximately $1 million per live dolphin capture and release health assessment field effort, similar to the implementation of the Alabama project and approximately $100,000 per photo-identification and biopsy sampling survey effort. The MS TIG determined that the costs for the alternative are reasonable and appropriate.
Trustees' Goals and Objectives	This alternative would increase marine mammal survival through improving understanding of causes of illnesses and death. The alternative would obtain health information from live bottlenose dolphins using capture and release methods and photo-identification surveys with biopsy sampling. The alternative would improve understanding of population health and identify restoration activities and monitoring to mitigate natural and man-made threats to bottlenose dolphins. Therefore, future mitigation actions identified from the information collected during health assessment activities could minimize the number of animals that become ill or die due to these threats and lead to increased recovery of coastal and bay, sound, and estuary (BSE) bottlenose dolphins. The Trustees determined that prior to implementation of this alternative, it could be beneficial to obtain the additional illness and cause of death information that could be provided by the "Maintaining the Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities" project, and the "Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements" project proposed in this RP3/EA. The data collected in these projects could assist in identifying threats, stressors, and health conditions to allow for more targeted health assessments in the future.
Likelihood of success	Health assessments would follow the same protocols and procedures that have been developed and implemented previously in Gulf waters at both the project site (MS Sound) and a reference site (Sarasota, Florida). The alternative would be implemented by large teams of trained technical personnel that have experience conducting capture and release health assessments and data collection. The MS TIG determined that the project would have a high likelihood of success, however implementing RP3 preferred alternatives could allow for more efficient health assessments. The Trustees determined that this project should be reconsidered after the RP3 projects are implemented.
Avoid collateral injury	Proposed stranding response and data collection activities would be conducted under well-established protocols which are subject to regulatory requirements, permits, and vetted BMPs. Should any potential collateral effects be identified, MS and NOAA as Implementing Trustees would follow BMPs to minimize these effects.
Benefits to Multiple Resources	Benefits to multiple resources are not anticipated. The project is focused on obtaining health assessment information from capture and release methods and photo-identification/biopsy sampling to gain information that would be useful in marine mammal restoration planning.
Public Health and safety	The MS TIG does not expect that this project would result in negative impacts to public health and safety. Data collection and analysis activities that include field assessments would be conducted by trained scientists with no involvement from the public. However, capture and release assessments would include some risk to the assessment team, as well as complex logistics which would be carried out by teams that are experience in this type of field work.
Summary	Based on the OPA evaluation (Likelihood of Success), this project was not identified as a preferred alternative by the MS TIG in this RP3/EA due to sequencing considerations. The data collected in the preferred RP3/EA alternatives could assist in identifying threats, stressors and health conditions to allow for more targeted health assessments in the future.

3.4.3 MM3 Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements

This alternative would test stronger net materials such as Dyneema and Spectra for use in the shrimp skimmer trawl fishery and techniques such as trawl coverings. Specific project objectives include:

Phase 1: Collaborative in-water testing with fishermen and researchers to determine the most effective trawl materials, trawl coverings, and fishing practices to meet the project goal, and

Phase 2: Developing a plan for voluntary implementation of alternative trawl materials, use of protective coverings, and new fishing practices in the shrimp trawl fleet, and implementing their voluntary use. The total estimated project cost is $3.1 million (See Section 2.5.2.3).

Table 3-7 OPA Evaluation of MM3 Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements

OPA Criterion	**OPA Evaluation**
Cost to Carry out the Alternative	The project cost was estimated based on similar past projects and knowledge of the shrimp fishery and its gear requirements. The MS TIG found the costs to be appropriate and reasonable. The phased approach of this alternative would also help keep costs reasonable by allowing adjustments to be made based on the outcomes of Phase I before implementing Phase II.
Trustees' Goals and Objectives	Implementation of this alternative would contribute to the Trustees' goal of restoring marine mammals by decreasing the number of interactions and associated mortality of bottlenose dolphins in commercial shrimp skimmer trawls in Mississippi state waters, while maintaining catch efficiency and fishing performance/usability. The project would contribute direct benefits to marine mammals by reducing impacts from a known stressor. This alternative would result in use of improved techniques and materials for constructing trawl components in the shrimp skimmer trawl fishery in Mississippi. The project would collaborate with shrimp skimmer trawl industry practitioners, to identify key approaches to mitigate stressors to dolphins in the shrimp trawl fishery (i.e., exploring the potential for the adoption of an alternative material to reduce dolphin interaction and mortality in commercial shrimp skimmer trawls). The project would also address fisheries interactions with dolphins by promoting the adoption of alternative net materials/components. If the materials identified are effective, viable, and adopted, then dolphin mortality associated interactions in the shrimp trawl gear would be reduced.
Likelihood of success	There are uncertainties about whether stronger webbing materials and protective net coverings would be effective in reducing dolphin interactions, maintaining catch, performance and usability. However, in-water testing of alternative gear collaboratively with commercial fishermen is a well-established process that is technically feasible and known to succeed (DWH Trustees 2016a). In addition, Phase 1 of the project would include forming an industry stakeholder group, prototype designs, and comparative testing. After Phase 1 is completed, a refined work plan and budget would be developed for approval by the MS TIG prior to proceeding with Phase 2 of the project.
Avoid collateral injury	The MS TIG does not expect this project to cause collateral injury to natural resources. It is unlikely that the new materials testing would lead to increased dolphin mortality compared to mortality with standard fishing gear currently used. Developing alternative materials and component techniques would also not change current fishing practices or locations. The materials would be designed specifically to reduce dolphin interaction with net gear. Collateral injuries would further be minimized by ongoing monitoring of the techniques used and adjusting activities as needed.
Benefits to Multiple Resources	The MS TIG does not anticipate benefits to multiple resources. The project would include development of stronger webbing materials and protective net coverings and in-water testing, specifically to reduce dolphin interactions.
Public Health and safety	Developing alternative materials would not affect public safety, and the testing and adoption of the materials is also unlikely to affect the public. While injuries can occur during fishing activities, the project's use of alternative materials or practices would not be expected to increase the safety risks associated with fishing (which occur without the project). Implementing Trustees would comply with all relevant safety measures, practices, and regulations during project implementation to maintain a safe, protective environment for fishermen, researchers and volunteers (if applicable) involved with the project.
Summary	Based on the OPA evaluation, this project was identified by the MS TIG as a preferred restoration alternative in this RP3/EA.

3.5 OPA Evaluation: Birds Alternatives

The MS TIG identified two alternatives for detailed analysis in this RP3/EA and evaluated these alternatives consistent with OPA NRDA regulations in 15 C.F.R. 990.54(a). The following sections summarize the OPA evaluation results for each alternative.

3.5.1 B1 Bird Stewardship and Enhanced Monitoring in Mississippi

This alternative includes two components: bird stewardship and data collection to address critical information gaps. Stewardship would reduce human disturbance of birds and predation of nests and chicks by wildlife (e.g., racoons, coyotes). The project would also address critical information gaps for populations of colonial waterbirds breeding along the Mississippi coast to better inform restoration planning. The estimated project cost is $6.1 million (See Section 2.5.3.1).

Table 3-8 OPA Evaluation for B1 Bird Stewardship and Enhanced Monitoring in Mississippi

OPA Criterion	**OPA Evaluation**
Cost to Carry out the Alternative	The MS TIG reviewed the estimated cost of this project and determined that it was reasonable and appropriate considering all activities and cost associated with remote work on the barrier islands (e.g., transport of personnel and equipment). The costs to carry out this alternative are based on similar projects, including bird stewardship in MS under the NFWF-GEBF Mississippi Coastal Bird Stewardship Project ($4.1 M), the Regionwide Plan 1 Bird Nesting and Foraging Area Stewardship Project (Project ID 173; $8.5 M) and the Enhanced Management of Avian Breeding Habitat Injured by Response Activities in the Florida Panhandle, Alabama, and Mississippi ($4.6 M; Project ID 9). In addition to stewardship activities, the project would also include data gathering activities involving tracking and banding of black skimmers and least terns on the barrier islands as well as the Mississippi nearshore beaches. Costs for this element of the project were based on the Colonial Nesting Wading Bird Tracking and Habitat Use Assessment –Two Species (Project ID 131; Project Cost is $1,547,500). This alternative would coordinate with existing state and regional monitoring programs to establish monitoring methods and share existing data and project experience/lessons learned. It would also consolidate and analyze monitoring data collected during the project to best leverage opportunities and maximize the impact of restoration funds.
Trustees' Goals and Objectives	This alternative would also complement the Regionwide Plan 1 Bird Nesting and Foraging Area Stewardship Project (Project ID 173) which, in Mississippi, would be implemented on the nearshore beaches. The stewardship and data gathering (banding and tracking) activities also complement the Regionwide TIG Colonial Waterbird Monitoring (Project ID 257) which would include aerial monitoring of waterbirds across the Gulf and compilation of field data collected by Trustees. This alternative would restore lost birds by facilitating additional production and/or reduce mortality of injured bird species. Specifically, the project would enhance nesting habitat for birds, which could lead to increases in nesting activity and/or success. The project would restore and protect habitats on which injured birds rely. Specifically, the project would protect bird nesting habitat through the placement of exclusion devices and vegetated buffers, lethal and nonlethal predator control, patrols by wildlife stewards and/or law enforcement, and targeted outreach and education. These efforts would increase bird nesting success, survival, and public awareness of important nesting areas throughout the proposed project area. This alternative would gather data (tracking and banding) to help understand bird movements and habitat use during breeding and non-breeding season and inform future restoration on coastal habitats throughout the GOM where DWH related injuries to birds occur.
Likelihood of success	This project would build off of work completed through the DWH NRDA Enhanced Management of Avian Breeding Habitat Injured by Response Activities in the Florida Panhandle, Alabama, and Mississippi (Project ID 9) project as well as the NFWF-GEBF project Mississippi Coastal Bird Stewardship Program. Based on the success of these implemented projects, there is a high likelihood of success.
Avoid collateral injury	This alternative would include limited, minor construction activities, and primarily would focus on habitat protection and stewardship, resulting in benefits to birds. For sites that would involve installation of exclusion devices/vegetated buffers, disturbance would be expected to be short-term (during construction). In all cases, construction would be designed, or required via applicable and relevant permits, to avoid impacts to resources such as the disturbance of birds/sea turtles during the nesting season. The Implementing Trustees would also use BMPs and protective measures to avoid collateral injury.
Benefits to Multiple Resources	Nesting and foraging area stewardship activities, such as installation of exclusion devices and controlling invasive predators, could also provide ancillary benefits to other species that use similar habitats (e.g., sea turtles), and could enhance recreational uses that were impacted by the DWH oil spill (e.g., bird watching).
Public Health and safety	Bird stewardship as well as habitat and nest enhancements rely on measures such as public education, symbolic fencing, and data gathering that pose no risks to the public. Sign placement similarly poses no risk to the general public. Predator management may involve electric fencing and other activities that could pose minor or temporary risks, but the Trustees would take appropriate measures to mitigate such risks (e.g., signage). The Implementing Trustees would comply with all relevant safety measures, practices, and regulations during implementation to maintain a safe, protective environment for those involved with the project.
Summary	Based on the OPA evaluation, this project was identified by the MS TIG as a preferred restoration alternative in this RP3/EA.

3.5.2 B2 Bird Stewardship on the Mississippi Barrier Islands

This alternative would help restore coastal nesting shorebird species by implementing stewardship activities on the Mississippi barrier islands which are managed by the National Park Service. Stewardship would reduce human disturbance of birds and predation of nests and chicks by wildlife (e.g., racoons, coyotes. The project cost is $4.1 million (See Section 2.5.3.2).

Table 3-9 OPA Evaluation for B2 Bird Stewardship on the Mississippi Barrier Islands

OPA Criterion	**OPA Evaluation**
Cost to Carry out the Alternative	The MS TIG reviewed the estimated cost of this project and determined that it was reasonable and appropriate considering all activities and cost associated with remote work on the barrier islands (e.g., transport of personnel and equipment). The costs to carry out this alternative are based on similar projects, including bird stewardship in MS under the NFWF-GEBF Mississippi Coastal Bird Stewardship Project ($4.1 M) and the Regionwide Plan 1 Bird Nesting and Foraging Area Stewardship Project ($8.5 M). This alternative would coordinate with existing state and regional monitoring programs to establish monitoring methods and share existing data and project experience/lessons learned. It would also consolidate and analyze monitoring data collected during the project to best leverage opportunities and maximize the impact of restoration funds.
Trustees' Goals and Objectives	This alternative would complement the Regionwide Plan 1 Bird Nesting and Foraging Area Stewardship Project which, in Mississippi, will be implemented on the nearshore beaches. The monitoring activities would also complement the Regionwide TIG Colonial Waterbird Monitoring (Project ID 257) which will include aerial monitoring of waterbirds across the Gulf and compilation of field data collected by Trustees. This alternative would enhance nesting habitat for birds, which could lead to increases in nesting activity and/or success. It would protect bird habitat through the placement of exclusion devices and vegetated buffers, lethal and nonlethal predator control, patrols by wildlife stewards and/or law enforcement, and targeted outreach and education. These efforts would increase bird nesting success, survival, and public awareness of important nesting areas throughout the proposed project area. This alternative is similar to B 1 Bird Stewardship and Enhanced Monitoring in Mississippi alternative; however, it does not include data gathering (banding and tracking) to address critical information gaps for colonial waterbirds.
Likelihood of success	This project would build off of work completed through the "DWH NRDA Enhanced Management of Avian Breeding Habitat Injured by Response Activities in the Florida Panhandle, Alabama, and Mississippi project" (Project ID 9) as well as the 2016 NFWF-GEBF project NFWF-GEBF Mississippi Coastal Bird Stewardship project. Based on the success of these implemented projects, there is a high likelihood of success.
Avoid collateral injury	This alternative would include limited, minor construction activities, and primarily would focus on habitat protection and stewardship, resulting in benefits to birds. For sites that would involve installation of exclusion devices/vegetated buffers, disturbance would be expected to be short-term (during construction). In all cases, construction would be designed, or required via applicable and relevant permits, to avoid impacts to resources, such as the disturbance of birds/sea turtles during the nesting season. The Implementing Trustees would use BMPs and protective measures to avoid collateral injury.
Benefits to Multiple Resources	Nesting and foraging area stewardship activities, such as installation of exclusion devices and controlling invasive predators, could also provide ancillary benefits to other species that use similar habitats (e.g., sea turtles), and could enhance recreational uses that were impacted by the DWH oil spill (e.g., bird watching).
Public Health and safety	Bird stewardship as well as habitat and nest enhancements rely on measures such as public education, symbolic fencing, and data gathering that pose no risks to the public. Sign placement similarly poses no risk to the general public. Predator management may involve electric fencing and other activities that could pose minor or temporary risks, but the Trustees would take appropriate measures to mitigate such risks (e.g., signage). The Implementing Trustees would comply with all relevant safety measures, practices, and regulations during implementation to maintain a safe, protective environment for those involved with the project.
Summary	Based on the OPA evaluation, specifically for Trustee goals and objectives, this project was not identified as a preferred alternative by the MS TIG in this RP3/EA.

3.6 OPA Evaluation: Provide and Enhance Recreational Opportunities Alternatives

Table 3.4 provides an evaluation of the consistency with OPA criteria for each of the projects in the reasonable range of alternatives consistent with the Provide and Enhance Recreational Opportunities Restoration Goal and the underlying Provide and Enhance Recreational Opportunities Restoration Type.

3.6.1 REC1 Clower Thornton Nature Trail Improvement

This alternative would construct new eco-friendly interior walking trails, boardwalks and other amenities (signage and kiosks) that would intersect and traverse the interior of the park, connecting to the existing paved perimeter walkway and complementing the ongoing invasive species management program at Clower Thornton Park. The project cost is $630,000 (See Section 2.5.3.1).

Table 3-10 OPA Evaluation for REC1 Clower Thornton Nature Trail Improvement

OPA Criterion	OPA Evaluation
Cost to Carry out the Alternative	The MS TIG reviewed the estimated cost of this project and determined that it was reasonable and appropriate based on current construction costs and the costs of recent successful recreational use projects in Mississippi. The MS TIG has completed comparable projects of with similar components including Restoration Initiatives at the INFINITY Science Center (trail component; Portal ID 48) and Popp's Ferry Causeway Park (interpretive sign components; Portal ID 47).
Trustees' Goals and Objectives	This project would increase recreational opportunities by creating infrastructure, access, and use opportunities though the construction of new pathways and boardwalks adjacent to coastal habitats. The project would promote engagement in stewardship of natural resources and includes the installation of educational signs and kiosks. This alternative would complement current invasive species management activities funded by GOMESA.
Likelihood of success	This project would utilize current standard construction practices and would be implemented in an existing urban park in a residential area that is bounded by the new 48-acre Centennial Plaza resort that is adjacent to the sand beach. The Clower Thornton Nature Park is well-utilized by the public. It has long been a favorite site for coast birders, with more than 200 species recorded on the property and is listed on the Audubon Mississippi Coastal Birding Trail. The project would build off recent and ongoing improvements efforts funded by GOMESA (See Section 2.4.4.1). Clower Thornton is owned and maintained by the City of Gulfport as a city park dedicated to the study of nature and enjoyment of coastal habitats.
Avoid collateral injury	This alternative would include construction activities which would be designed, or required via applicable and relevant permits, to avoid impacts to natural resources. The Implementing Trustees would use BMPs and protective measures to avoid collateral injury.
Benefits to Multiple Resources	Benefits to multiple resources are not anticipated for this project. Construction of infrastructure (e.g., trails, boardwalks) and educational kiosks would primarily restore recreational opportunities that were lost as a result of the spill.
Public Health and safety	Construction activities are not expected to negatively affect public health and safety. The Implementing Trustees would comply with all relevant safety measures, practices, and regulations during implementation to maintain a safe, protective environment for those involved with the project.
Summary	Based on the OPA evaluation, this project was identified by the MS TIG as a preferred restoration alternative in this RP3/EA.

3.6.2 REC2 Environmental Education and Stewardship at Walter Anderson Museum of Art

This alternative would provide partial funding for new construction of the Education Pavilion, a 3,000-square foot facility, educational workshops and interdisciplinary instruction, and construction of the Shoreline Garden to showcase native flora, at the Walter Anderson Museum of Art. The total project cost is $3,027,558, of which the NRDA funding request is $1.4 million (See Section 2.5.3.1).

Table 3-11 OPA Evaluation for REC2 Environmental Education and Stewardship at Walter Anderson Museum of Art

OPA Criterion	OPA Evaluation
Cost to Carry out the Alternative	The MS TIG reviewed the estimated cost of this project and determined that it was reasonable and appropriate based on current construction costs and the costs of recent successful recreational use projects in Mississippi. The MS TIG has completed comparable projects of with similar components including Popp's Ferry Causeway Park (landscaping and facilities components; Portal ID 47).
Trustees' Goals and Objectives	This alternative would increase recreational opportunities through creation of infrastructure, access, and recreational use opportunities. The project would also use education to promote engagement in restoration and stewardship of natural resources (See programs described in Section 24.5.2). Specifically, this alternative would include the construction of education pavilions with features including coastal exhibits and collections. In addition, there would be education outreach programs related to coastal resources and other interactive activities. Further, participants would have increased access to natural resources through the Shoreline Garden and excursions to Horn Island.
Likelihood of success	This project would utilize current standard construction practices and would be part of the popular and successful Walter Anderson Museum of Art, which opened in downtown Ocean Springs in 1991 and received support from the City of Ocean Springs, Jackson County, the Mississippi Arts Commission, and the National Endowment for the Arts. This project would supplement other funding sources, including $1,386,000 committed from the State of Mississippi through the Gulf Coast Restoration Fund and $556,558 from Walter Anderson Museum of Art Funding (Non-Federal Matching). There would be no fees for attendees to access educational programs and recreational facilities, which should increase visitor use. After the project is completed, the majority of programs would continue to be funded through on-going external grants and contributions, including those from public sources, private foundations, corporate philanthropy, private donation, and a dedicated endowment.
Avoid collateral injury	This alternative would include construction activities in an urban environment which would be required via applicable and relevant permits, or otherwise designed to avoid impacts to natural resources. The Implementing Trustees would use BMPs and protective measures to avoid collateral injury. Field trips and excursions to Horn Island would be designed to avoid injuries to natural resources in this federally-designated wilderness site.
Benefits to Multiple Resources	The MS TIG does not anticipate benefits to multiple resources. The project is primarily focused on construction of Educational Pavilions, Shoreline Line Gardens, and providing educational programs to visitors to restore recreational opportunities that were lost as a result of the spill.
Public Health and safety	The Implementing Trustee would comply with all relevant safety measures, practices, and regulations during implementation to maintain a safe, protective environment for those involved with the project.
Summary	Based on the OPA evaluation, this project was identified by the MS TIG as a preferred restoration alternative in this RP3/EA.

3.6.3 REC3 Mississippi Gulf Coast Pier Improvements

This alternative would provide funding for retro-fit construction of a number of municipally and county-owned waterfront piers to improve their resiliency. These piers range in size and vary greatly in their age, structural design and material condition, and they are routinely subject to damage from high wind/wave conditions which occur on the Gulf Coast. The total project cost is $1.5 million. (See Section 2.5.3.1).

Table 3-12 OPA Evaluation for REC3 Mississippi Gulf Coast Pier Improvements

OPA Criterion	OPA Evaluation
Cost to Carry out the Alternative	The total estimated project cost includes funding for construction retrofit for a number (approximately 5 to 6) publicly-owned waterfront piers on the Mississippi coast shoreline. The proposed project upgrades could be leveraged with other funding (e.g., FEMA), where applicable. Funds would not be spent on operations and maintenance required by existing permits. The MS TIG reviewed the estimated cost of this project and determined that it was reasonable and appropriate based on current construction costs and the costs of recent successful recreational use loss projects in Mississippi.
Trustees' Goals and Objectives	This alternative would increase recreational opportunities, enhance access to natural resources and would enhance recreational experiences by implementing resiliency measures (structural maintenance) of publicly owned piers.
Likelihood of success	This project would utilize current standard construction practices and after completion, the facilities would be maintained by the respective city or county owner. The public's enjoyment of the improved piers would increase due to safer and more comfortable conditions, and their access to piers would increase due to less down time for post-storm repairs. The Trustees cannot predict seasonal conditions that could occur during implementation. Projects, to the extent practicable with available funds, would include contingency funding to repair damages that could result from seasonal storms. The extent of damages could vary. While there is a high likelihood of success, there is uncertainty regarding locations where the work would be done and coordination/understanding of FEMA funding.
Avoid collateral injury	There could be minor, short term, adverse effects to nearshore habitats (e.g., beaches, marsh, dunes) if materials are displaced by seasonal storms/weather events after project construction, but these effects would be reduced as compared to existing conditions. Project owners would be responsible for cleanup of debris. This alternative would include construction activities which would be designed, or required via applicable and relevant permits, to avoid impacts to natural resources. The Implementing Trustees would use BMPs and protective measures to avoid collateral injury.
Benefits to Multiple Resources	Benefits to multiple resources are not anticipated. This alternative would focus on improvements to existing piers in order to restore recreational opportunities that were lost as a result of the spill.
Public Health and safety	Public safety would be enhanced due to the pier improvements. The Implementing Trustee would comply with all relevant safety measures, practices, and regulations during implementation to maintain a safe, protective environment for those involved with the project.
Summary	Based on the OPA evaluation, this project was not identified as a preferred alternative at this time. While there is a high likelihood of success (see analysis above), there is uncertainty regarding locations where the work would be done and a need for further understanding of how project funds could be leveraged with FEMA funding.

3.7 Natural Recovery/No Action

Pursuant to the OPA NRDA regulations, the PDARP/PEIS considered a "natural recovery alternative in which no human intervention would be taken to directly restore injured natural resources and services to baseline" (40 CFR § 990.53[b][2]). Under this alternative, no additional restoration would be done by the MS TIG to accelerate the recovery of habitat on federally managed lands, sea turtles, marine mammals, birds, or recreational losses in the Mississippi Restoration Area using DWH NRDA funding at this time. The MS TIG would allow natural recovery processes to occur, which could result in one of four outcomes for injured resources: (1) gradual recovery, (2) partial recovery, (3) no recovery, or (4) further degradation. Although injured resources could presumably recover to or near baseline conditions under this scenario, recovery would take much longer compared to a scenario in which restoration actions were undertaken. Given that technically feasible Restoration Approaches are available to compensate for interim natural resource and service losses, the Trustees rejected this alternative from further OPA evaluation within the PDARP/PEIS. Based on this determination, tiering this RP3/EA from the PDARP/PEIS, and incorporating that analysis by reference, the MS TIG did not find natural recovery to be an alternative under OPA. Natural recovery is not considered further in this RP3/EA. A No Action Alternative is included in the RP/EA analysis pursuant to NEPA as a "benchmark, enabling decisionmakers to compare the magnitude of environmental effects of the action alternatives." The No Action alternative is analyzed for each Restoration Type in Chapter 4 of this RP/EA.

3.8 OPA Evaluation and Determination of the Proposed Action for This RP3/EA

The MS TIG evaluated 12 alternatives under OPA across four Restoration Types. Based on the results of these analyses, the MS TIG identifies seven preferred alternatives for implementation (Table 3.5). All seven of the preferred restoration alternatives, collectively referred to as the Proposed Action, are consistent with the PDARP/PEIS Restoration Goals and Types and the six OPA evaluation criteria the Trustees utilized as set forth in 990.54(a)(1)-(6) and are the Proposed Action for this RP 3/EA (See Table 1.5).

Table 3-13 Preferred alternatives for each Restoration Type that make up the Proposed Action for this RP 3/EA

Restoration Type	Preferred Alternatives	Project Cost
Habitats Projects on Federally Managed Lands	FM1 Improve Native Habitat by Removing Marine Debris from Mississippi Barrier Islands	$3,000,000
Sea Turtles	ST1 Maintaining Enhanced Sea Turtle Stranding and Salvage Network Capacity and Diagnostic Capabilities	$2,500,000
Marine Mammals	MM1 Maintaining enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities	$2,350,000
	MM3: Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Improvements	$3,090,000
Birds	B1 Bird Stewardship and Enhanced Monitoring in Mississippi	$6,105,500
Provide and Enhance Recreational Opportunities	REC1 Clower Thornton Nature Park Trail Improvement	$630,000
	REC2 Environmental Education and Stewardship at Walter Anderson Museum of Art	$1,356,000

Project Costs: Costs of alternatives included in this RP3/EA reflect estimates based on the most current designs and information available to the MS TIG. Estimated costs reflect all costs associated with implementing the project, potentially including, but not limited to, E&D, permitting, studies, construction/implementation, monitoring, Trustee oversight, and contingencies.

Best Management Practices: The MS TIG incorporates appropriate BMPs into planning and design to avoid or minimize impacts on natural resources, including protected and listed species and their habitats. BMPs are identified in required permits, consultations, or environmental reviews, including those described in Appendix 6.A of the PDARP/PEIS (DWH Trustees 2016a).

Project Monitoring: MAM plans for each of the preferred alternatives can be found in Appendix A. These MAM plans outline the monitoring needed to evaluate each alternative's progress toward meeting site-specific objectives and the appropriate corrective actions and adaptive management, as applicable. The MAM plans are consistent with the requirements and guidelines set forth in the PDARP/PEIS (DWH Trustees 2016a), the Trustee Council SOPs (DWH Trustees 2021), and the Trustees' MAM Manual (DWH Trustees 2017d). The MAM plans are intended to be updated as needed to reflect changing conditions and to incorporate new information as it becomes available. Updates to MAM plans and any additional details concerning the status of monitoring activities would be made publicly available through DIVER.

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4.0 ENVIRONMENTAL ASSESSMENT

4.1 Overview of National Environmental Policy Act Approach

This chapter presents the affected environment and the analysis of the anticipated environmental impacts of the reasonable range of alternatives described in Section 2.5 of this RP3/EA. A No Action alternative is analyzed for each Restoration Type as a benchmark against which to compare the effects of the action alternatives. The NEPA analysis presented in this chapter is consistent with the PDARP/PEIS and tiers where applicable. Resources analyzed and impacts definitions (minor, moderate, major) align with the PDARP/PEIS (Section 6.3.2). The PDARP/PEIS is incorporated by reference. Sections 6.4, 6.6, and Appendix 6.B of the PDARP/PEIS (environmental consequences) are incorporated by reference and summarized below.

Relevant information from existing NEPA analyses and other applicable material (e.g., feasibility studies, land management plans) is incorporated by reference and summarized in the sections below to present a concise document that provides sufficient evidence and analysis for determining whether to prepare an environmental impact statement or finding of no significant impact (40 CFR § 1501.12, 40 CFR § 1501.6). All source documents relied upon for the NEPA analyses are available to the public in the Administrative Record and links are provided in the discussion of the environmental consequences where applicable.

This chapter addresses the affected environment in which the reasonable range of alternatives would occur (40 CFR 1502.15) as well as the anticipated effects (or impacts) to the human environment from the proposed alternatives (as described below in sections 4.2-4.5) and those reasonably foreseeable environmental trends and planned actions that occur in the affected area (40 CFR 1502.16, as described below in section 4.6). Effects (or impacts) are defined as "changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives."

"Adverse" is used in this RP3/EA only to describe the federal Trustees' evaluation under NEPA. That term is defined and applied differently in consultations conducted pursuant to the Endangered Species Act (ESA) and other protected resource statutes. Accordingly, there may be adverse impacts identified under NEPA; however, this does not necessarily mean that an action would be likely to "adversely affect" the same species because that term is defined and applied under protected resources statutes. The results of any completed protected resource consultations are included in the DWH Administrative Record.

This chapter is organized to avoid redundancy and unnecessary information by combining the discussion of resources with similar effects across alternatives (Section 4.2) and grouping projects with similar affected environments so as to describe those environments only once (Section 4.3.1). Brief project descriptions focusing on activities that would result in environmental impacts are provided in the sections below; complete project descriptions for each alternative are provided in Chapter 2. Table 4-1 provides the sections where the NEPA analysis for each alternative is located.

Table 4-1: Environmental Analysis of RP3/EA Alternatives

Restoration Alternative	Affected Environment (Section)	Environmental Consequences Analysis (Section)
FM1. Improve Native Habitats by Removing Marine Debris from Mississippi Barrier Islands (Preferred)	Section 4.3.1	Sections 4.2.1 and 4.3.2.1
FM2. Habitat Management on the Mississippi Barrier Islands (Non-Preferred)		Sections 4.2.1 and 4.3.2.2
Habitat Projects on Federally Managed Lands Restoration Type-No Action		Sections 4.2.1 and 4.3.2.3
ST1. Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities – 3 Years (Preferred)		Sections 4.2.1 and 4.3.3.1
ST2. Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities – 5 Years (Non-Preferred)		Sections 4.2.1 and 4.3.3.1
Sea Turtles Restoration Type-No Action		Section 4.3.3.3
MM1. Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities (Preferred)		Sections 4.2.1 and 4.3.4.1
MM2. Marine Mammal Health Assessments to Monitor Population Health (Non-Preferred)		Sections 4.2.1 and 4.3.4.2
MM3. Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements (Preferred)		Sections 4.2.1 and 4.3.4.3
Marine Mammals Restoration Type-No Action		Section 4.3.4.4
B1. Bird Stewardship and Enhanced Monitoring in Mississippi (Preferred) and B2. Bird Stewardship on the Mississippi Barrier Islands (Non-Preferred)		Sections 4.2.1 and 4.3.5.1
Birds Restoration Type-No Action		Section 4.3.5.2
REC1. Clower Thornton Nature Trail Improvement (Preferred)	Section 4.3.6.1	Sections 4.2.1 and 4.3.6.1
REC2. Environmental Education and Stewardship at Walter Anderson Museum of Art (Preferred)	Section 4.3.6.2	Sections 4.2.1 and 4.3.6.2
REC3. Mississippi Gulf Coast Pier Improvements (Non-Preferred)	Sections 4.3.1, 4.3.6.3	Sections 4.2.1 and 4.3.6.3
Recreational Opportunities Type-No Action	Section 4.3.6.4	Sections 4.2.1 and 4.3.6.4

4.2 Resource Analysis in RP3/EA

This section presents a combined discussion of resources with similar impacts common to all alternatives (Section 4.2.1). It also provides discussion of resources uniquely impacted by each alternative (Section 4.3). Alternatives included in the reasonable range in RP3/EA were reviewed to determine whether any resources would experience similar minor adverse impacts common to all alternatives, no impact, or negligible impacts not requiring detailed analysis. The subset of resource categories that experience no impacts to minor adverse impacts similarly across all alternatives are described in this section once rather than repeated throughout the sections applicable to each alternative (see list of resource categories below). Resource categories where impacts are distinct and specific to the individual alternative are described in their respective sections (see Section 4.3).

- **Physical Resources** – Floodplains and Wetlands, Air Quality and Greenhouse Gas Emissions, and Noise
- **Socioeconomic Resources** – Socioeconomics and Environmental Justice, Cultural Resources, Infrastructure, Land and Marine Management, Fisheries and Aquaculture, Marine Transportation, and Public Health and Safety

4.2.1 Resources with Impacts Common to All Alternatives

–Physical Resources

The physical resources analyses for floodplains and wetlands, air quality and greenhouse gas emissions, and noise are included in this section. Where applicable, there are distinct and specific effects for RP3/EA alternatives within these analyses. To summarize the relevant programmatic analysis from the PDARP/PEIS, in general depending on the types of recreation encouraged and the increase in usage of a land conservation site, long-term, minor adverse impacts to the physical environment are possible due to increased vehicle or boat usage in the vicinity of the site. Depending on the location and intensity of construction necessary to implement various improvements to infrastructure, short-term and long-term, minor to moderate adverse impacts on the physical environment could result from projects that enhance public access. Possible minor adverse effects could also include temporary, localized impacts on air and noise quality from increased vessel traffic during construction (PDARP/PEIS Section 6.4.13.1.1). Section 6.4.10.1.1 states minor adverse impacts are anticipated for activities associated with [bird] stewardship and enhancing nest sites. Impacts would be temporary and minor and limited to installation of signs, access, fences, or other means of reducing human trespass. Protecting bird habitat could have long-term benefits to geology, substrates, and water quality by preventing disturbance and loss of soil and reducing erosion. The sections below provide more detail.

4.2.1.1 Floodplains and Wetlands

Floodplains and wetlands are a subset of the hydrology and water quality resource category. Adverse effects to floodplains are defined as detectable changes to the natural and beneficial floodplain and increased risk of flood loss including impacts on human safety, health, and welfare. Adverse effects to wetlands are defined as measurable impacts on the size, integrity, or connectivity of wetlands and wetland function. Project activities proposed in RP3/EA would avoid wetland areas or, if applicable, would minimize impacts keeping fill to the minimal footprint, and/or using pile supported structures. For REC3, if budget allows, a new boardwalk may be constructed through wetlands. Effects for this project are described in Section 4.3.6.2. Project activities would not appreciably change the elevation of any project location and, where structures are being constructed, facilities would be designed to minimize negative impacts to floodplains.

4.2.1.2 Air Quality and Greenhouse Gas Emissions

USEPA defines ambient air in 40 C.F.R. Part 50 as “that portion of the atmosphere, external to buildings, to which the general public has access.” In compliance with the 1970 Clean Air Act and the 1977 and 1990 Clean Air Act Amendments, USEPA has promulgated National Ambient Air Quality Standards (NAAQS). The NAAQS include primary standards which set limits to protect public health, including the health of “sensitive” populations such as asthmatics, children, and the elderly. To date, USEPA has issued NAAQS for six criteria air pollutants: carbon monoxide, sulfur dioxide, particle pollution (for particles with a diameter less than or equal to a nominal 10 microns and with a diameter less than or equal to a nominal 2.5 microns), ozone, nitrogen dioxide, and lead.[1] Individual states may promulgate their own ambient air quality standards for these “criteria” pollutants, provided that they are at least as stringent as the federal standards. None of the projects are located in a county currently listed on USEPA’s nonattainment counties for any criteria pollutant (USEPA 2021).

[1] Information on the criteria air pollutants is available here: www.epa.gov/criteria-air-pollutants.

Greenhouse gases (GHGs) are chemical compounds found in the Earth's atmosphere that absorb and trap infrared radiation as heat. The principal GHGs emitted into the atmosphere through human activities are carbon dioxide, methane, nitrous oxide, and fluorinated gases.

The PDARP/PEIS (Chapter 6) found that short-term, minor to moderate adverse impacts to air quality caused by the use of construction equipment and additional trips to the project area may occur during construction associated with projects under the HPFML, Sea Turtles, Marine Mammals, Birds, and Provide and Enhance Recreational Opportunities Restoration Types. Past project-specific NEPA evaluations of DWH restoration projects in the Gulf similar to those proposed in RP3/EA found that project impacts would be consistent with the PDARP/PEIS findings.

Alternatives in RP3/EA are anticipated to involve construction activities (REC1, REC2, and REC3), local transport of personnel conducting project activities (FM1 and B1), and vehicle and vessel transportation for implementation and construction of all alternatives. Minor adverse air quality impacts would be expected to be localized and occur primarily during active construction activities from emissions generated by construction equipment and vehicles. Engine exhaust from construction equipment and other vehicles used in restoration/management activities would contribute to an increase in criteria air pollutants, GHGs, and other air pollutants. Because of the small scale and short duration of the construction/implementation of restoration and management activities, and the low level of increased vehicle traffic anticipated to be generated by all of the projects, short to long-term minor adverse effects are anticipated. For Enhance Recreational Opportunities (REC1, REC2, and REC3), long-term, minor, adverse effects are anticipated associated with increased visitor trips. These activities are not expected to cause an exceedance of the NAAQS, even when considered cumulatively with other area emissions. Therefore, air quality and greenhouse emissions for recreational opportunities projects included in RP3/EA would most likely result in minor, short to long-term, adverse impacts.

4.2.1.3 Noise

The PDARP/PEIS (Chapter 6) states the primary sources of terrestrial noise in the coastal environment are transportation and construction-related activities, which is consistent with areas affected by RP3/EA. The primary sources of ambient (background) noise in the project areas for RP3/EA are operation of vehicles, humans, recreational boating vessels, and natural sounds such as wind and wildlife. The level of noise in the project areas vary depending on the season, time of day, number and types of noise sources, and distance from the noise source.

The PDARP/PEIS (Chapter 6) found that adverse impacts to ambient noise associated with most Restoration Approaches relevant to RP3/EA would be minor to moderate in the short-term, caused by increased noise in the project area as construction occurs, with minor long-term adverse impacts caused by increased visitation and vehicle use. The PDARP/PEIS noted that there could be short-term, minor adverse impacts to ambient noise during construction. The severity of these adverse physical impacts was anticipated to depend to a large degree on the location of the project, the amount of disturbance that these activities would generate, and the distance to sensitive receptors such as recreational users or wildlife. Past project-specific NEPA evaluations of DWH restoration projects in Mississippi similar to those proposed in RP3/EA found that adverse project impacts would be consistent with the PDARP/PEIS findings.

Consistent with the PDARP/PEIS and past evaluations of restoration planning projects in the Gulf, projects in RP3/EA under "Provide and Enhance Recreational Opportunities Restoration Types" would result in minor (REC1 and REC2) to moderate (REC3), temporary and localized adverse impacts to ambient noise from construction, and minor, adverse, long-term ambient noise impacts associated with increased visitation to

particular sites and the distance to sensitive receptors such as recreational users or wildlife in the project area. Adverse impacts to biological resources from construction-related noise are analyzed in detail for each project. Long-term adverse impacts to ambient noise are not anticipated in association with HPFML, Sea Turtle, Marine Mammal, or Bird projects.

–Socioeconomic Resources

The analyses for socioeconomic and environmental justice, cultural resources, infrastructure, land and marine management, fisheries and aquaculture, marine transportation, and public health and safety resources are included in this section. To summarize the relevant programmatic analysis found in Section 6.4.13.1.3 of the PDARP/PEIS, the enhancement or construction of infrastructure would have long-term beneficial impacts on the socioeconomic resources of the surrounding area. This restoration approach would also improve socioeconomic resources by providing public access. Improvements in recreational opportunities that result from infrastructure enhancement have the potential to create localized increases in business opportunities and have long-term beneficial impacts. The sections below provide more detail.

4.2.1.4 Socioeconomics and Environmental Justice

Socioeconomics includes effects to the economy, employment, business, and industrial activities as well as population, property values, and tax revenues. Projects with construction components (REC1, REC2, and REC3) would benefit local economies by increasing jobs, income, sales, and tax receipts over the short- and potentially the long-term resulting from visitor use of constructed facilities. In the short-term, project design and construction would increase demand for employment and sales in localized areas. In the long-term, enhanced and expanded access to recreational opportunities are expected to benefit local economies. The distribution of economic benefits within the region would depend on the locations or sourcing of labor, supplies, materials, and equipment. For MM3, any potential net or net covering materials developed during the project that are effective at reducing dolphin net interaction would be strictly voluntary and would benefit commercial fishermen who want to avoid interactions with dolphins and have been proactive in their attempts to modify gear to prevent interactions. In addition, reducing net interactions increases successful fishing efforts/decreased shrimp loss from dolphin net interactions.

The intent of an environmental justice evaluation under Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority and Low-Income Populations” (1994), is to identify communities and groups that meet environmental justice criteria and suggest strategies to address potential adverse impacts of projects on affected groups. The purpose of Executive Order 12898 is to identify and address the disproportionate placement of adverse environmental, economic, social, or health impacts from federal actions and policies on minority and/or low-income communities. This order requires lead agencies to evaluate impacts on minority or low-income populations during preparation of environmental and socioeconomic analyses of projects or programs that are proposed, funded, or licensed by federal agencies. The projects in RP3/EA are anticipated to benefit natural resources or to provide and increase access to recreational uses over the long term. Implementation of the projects, particularly those including construction activities (REC1, REC2 and REC3) is anticipated to result in short-term increases in employment. Some short-term adverse impacts as a result from closures to localized areas could occur during project construction (REC1, REC2, REC3, and FM1), but long-term benefits would result from these project activities in Gulfport neighborhoods (REC1). For the alternatives evaluated in RP3/EA, there are no activities that would disproportionately impact or adversely affect minority and low-income populations.

4.2.1.5 Cultural Resources

Cultural resources are evidence of past human activity and encompass a range of traditional, archaeological, and built assets, including culturally important landscapes and present-day culturally significant uses of the environment. Cultural resources include historic properties listed in, or eligible for listing in the National Register of Historic Places (36 C.R.R 60 [(a-d]). The National Historic Preservation Act of 1966 (NHPA), as amended (NHPA; 16 U.S.C. 470(1)), defines a historic property as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register [of Historic Places]." Historic properties include built resources (bridges, buildings, piers, etc.), archaeological sites, and traditional cultural properties that are significant for their association with practices or beliefs of a living community that are both fundamental to that community's history and a piece of the community's cultural identity. Although often associated with Native American traditions, these properties also may be important for their significance to other ethnic groups or communities. Historic properties also include submerged resources.

As stated in the PDARP/PEIS, all projects implemented under subsequent restoration plans and tiered NEPA analyses consistent with the PDARP/PEIS would secure all necessary state and federal permits, authorizations, consultations, or other regulatory processes, and ensure the project is in accordance with all applicable laws and regulations concerning the protection of cultural and historic resources. For some projects included in this RP3/EA, the action would involve a study, analysis or program that would not have the potential to affect cultural resources. For any activities with the potential to affect cultural resources, all required NHPA Section 106 consultations would be completed before those activities would occur. All selected projects would be implemented in accordance with all applicable laws and regulations concerning the protection of cultural and historic resources.

Several project action areas include known or potential cultural resources. Coordination with the State Historic Preservation Office regarding the extent and nature of cultural resources at all of the locations for any project ultimately selected for implementation would be conducted, including with interested Tribes. The section below briefly highlights known sensitive cultural resources located on or near projects in RP3/EA:

Projects at Gulf Island National Seashore (GUIS) (FM1, FM2, ST1, ST2, MM1, B1, and B2): Cultural and historical features are major visitor attractions to some areas where proposed restoration projects are planned. Numerous terrestrial cultural resource surveys have been conducted at GUIS by NPS personnel and other public and private institutions. These surveys have identified archeological sites throughout GUIS that are associated with both the historic and prehistoric periods. One such national register-listed historic structure in GUIS in Mississippi is Fort Massachusetts on Ship Island. Several RP3/EA projects could be conducted on or adjacent to Ship Island (FM1, FM2, ST1, ST2, MM1, B1, and B2). All cultural resources would be avoided during project implementation and no impacts are anticipated. Information about cultural resources can be found in the "Cultural Resource Topics Considered and Analyzed in Detail" section of the GUIS Final General Management Plan/Environmental Impact Statement (GMP/EIS; NPS 2014c).

4.2.1.6 Infrastructure

Infrastructure includes public services and utilities. Adverse impacts are not anticipated in association with HPFML, Sea Turtle, Marine Mammal, or Bird projects, as those projects do not include any construction or changes to infrastructure. The PDARP/PEIS did not anticipate adverse impacts to infrastructure from the restoration techniques that would be employed for those restoration types. There could be short-term, minor adverse impacts to infrastructure from REC1, REC2, and REC3 due to utilities that may be temporarily disrupted during project construction or implementation. However, these projects are also expected to

result in long-term benefits to infrastructure. The potential for long-term benefits to infrastructure from these types of projects was discussed in the PDARP/PEIS in section 6.4.13.1.3.

4.2.1.7 Land and Marine Management

Project activities proposed in RP3/EA do not involve changes in land and marine management. Project activities would not require variances or zoning changes or amendments to land use, area, comprehensive, or management plans; thus, no adverse impacts to overall use or management are expected. HPFML and Birds projects may result in some short-term, minor adverse impacts to current recreational activities, but these would be temporary restrictions that would be lifted shortly after restoration activities were completed. These impacts are consistent with those discussed in the PDARP/PEIS (Section 6.4.1.1.3). Restoration activities could include bird stewardship, enhanced monitoring, debris removal, and vegetation removal, and nuisance animal/predator control.

4.2.1.8 Fisheries and Aquaculture

While there are commercial fisheries and aquaculture operations in the project areas, commercial fisheries or aquaculture operations in project areas would not be adversely affected by the activities proposed in RP3/EA. Commercial fishing practices, level of effort, or location in which fishing is happening would not be altered by the implementation of projects in this RP3/EA.

4.2.1.9 Marine Transportation

One project (FM1) could have a minor, short-term adverse impact on marine transportation; it is possible that vessels would need to temporarily avoid areas where marine debris removal activities are occurring. Marine transportation is not anticipated to be affected by any of the RP3/EA alternatives in the long-term. For the same project, removal of marine debris would reduce the likelihood of vessels striking debris and would provide long-term benefits to marine transportation. No other projects would have impacts to marine transportation.

4.2.1.10 Public Health and Safety (Including Flood and Shoreline Protection)

The Implementing Trustee would comply with all relevant safety measures, practices, and regulations during implementation to maintain a safe, protective environment for those involved with the projects. All of the recreation projects (REC1, REC2, and REC3) could result in short-term, minor adverse impacts to public health and safety from the potential for hazards during construction. One of the RP3/EA projects (REC3) could result in long-term benefits to public safety due to the construction of improved decking, supports, and handrails on public piers. FM1 could result in long-term benefits to public safety by removing dangerous debris (e.g., broken glass, rusted metal) from barrier island beaches.

4.3 Resources with Impacts Unique to Each Alternative

Resources identified for consideration in the PDARP/PEIS that are not addressed in Section 4.2.1 and 4.2.2 are addressed in the remainder of this chapter. The following resources have the potential for differing degrees of impact across the alternatives and are, therefore, analyzed separately below for each project:

- **Physical Resources** – Geology and Substrates, Hydrology and Water Quality
- **Biological Resources** – Habitats, Wildlife Species, Marine and Estuarine Fauna, Protected Species
- **Socioeconomic Resources** – Tourism and Recreational Use, Aesthetics and Visual Resources

The description of the affected environment and evaluation of effects on the resources above is organized by Restoration Type as follows:

- Habitat Projects on Federally Managed Lands-Section 4.3.2
- Sea Turtles Restoration Type-Section 4.3.3
- Marine Mammals Restoration Type-Section 4.3.4
- Birds Restoration Type-Section 4.3.5
- Recreational Opportunities Restoration Type-Section 4.3.6
- Reasonably Foreseeable and Planned Actions-Section 4.3.7
- Summary of Effects for RP3/EA Alternatives-Section 4.3.8

4.3.1 Affected Environment for Mississippi Coastal Waters, Bays and Estuaries, and the Gulf Island National Seashore

Project activities for Sea Turtles and Marine Mammals Restoration Type alternatives would occur in Mississippi coastal waters and adjacent bays and estuaries in the Mississippi Restoration Area. Projects for Birds and HPFML would occur on the Mississippi barrier islands (Gulf Island National Seashore), coastal islands and nearshore beaches in Mississippi. This section presents a brief description of physical, biological and socioeconomic resources in Mississippi's coastal waters, bays and estuaries, and the Gulf Islands National Seashore, i.e., the affected environment, for Habitat Projects on Federally Managed Lands, Sea Turtles, Marine Mammals, and Birds, Restoration Type alternatives in RP3/EA (Figure 4-1). The localized affected environments for the Enhance Recreational Opportunities Restoration Type alternatives are discussed in section 4.3.6, below. Additionally, one of the marine mammal projects (MM-3), would also include a gear testing component that would occur in coastal waters of the Gulf of Mexico off Shell Island in Bay County, Florida. That affected environment is summarized in section 4.3.4, below.

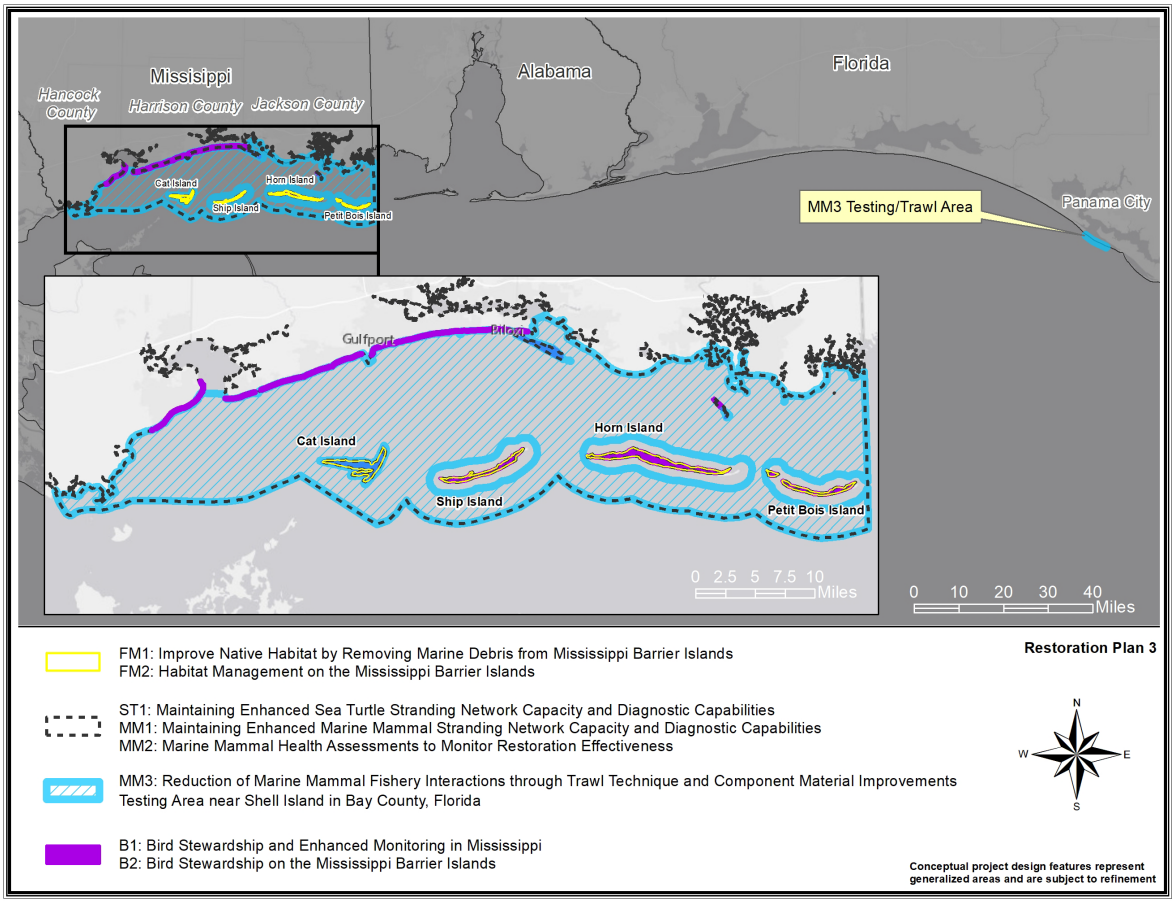

Figure 4-1 HPFML, Sea Turtles, Marine Mammals and Birds Alternatives in RP3/EA.

–*Physical Resources*

Geology and Substrates

Geology and substrates resources in nearshore subtidal areas, dunes, beaches, and marsh substrates as well as resources on the GUIS that could be affected by project activities are discussed below.

Nearshore Subtidal Substrates

Landforms and substrates within the Gulf Coastal Plain and the Mississippi Alluvial Plain are generally comprised of Holocene sediments. These sediments are composed of sand, silt, and clay with comparatively high organic matter content. The coastal estuaries of Mississippi are composed of mostly sandy fine-grained sediment, silt and clays (Schmid 2015). In general, the nearshore subtidal habitat is composed mostly of unconsolidated bottom types including sand, muddy sand, and mud bottom.

Dunes, Beaches and Marsh Substrates

Geology and substrates in dunes, beaches, and marshes on the Mississippi coastline consist of gently sloping areas associated with active and ancient sand dunes and sand hills interspersed within an otherwise level land surface. Dune and beach soils are excessively drained quartz sands and water is only available to vegetation from the surficial groundwater table. Soils are greatly weathered and leached, with little organic material, low natural fertility and high acidity, and beach deposits are mostly quartz sand with varying

amounts of clay, silt, and shell fragments. In marshes and interdunal swales, the soils have weathered and accumulated organic matter, resulting in wetland soils and corresponding plants. Further information about geology and substrates can be found in the Soils section in Chapter 3 of the GUIS GMP (NPS 2014c).

Mainland Beaches

The majority of the shoreline in coastal Mississippi consists of man-made beaches waterward of concrete seawalls. These beaches were built to reduce risk of storm damage to the roadways and seawalls and also to provide recreation and aesthetic benefits. These artificial beaches are intensively managed through regular grading and renourishment efforts and are often less than 200 feet wide. Wind and wave action gradually work the sand back into the Mississippi Sound. The slope is relatively flat from the mean high waterline to the seawall.

Coastal Islands

Mississippi's coastal islands include Deer Island and Round Island. Deer Island is a mixture of high, mid-elevation and low tidal saltmarshes that make up approximately fifty percent of the island. Most of the remainder is Slash Pine maritime forest with smaller areas dominated by Live Oak. Other habitats include beach/dune, salt flats, and freshwater ponds/marshes. Similarly, Round Island is composed primarily of narrow sand beaches, Slash pine maritime forest, and an herbaceous layer dominated by *Spartina patens*. Erosion is the primary threat to Round Island, although efforts have been made to slow erosion through breakwaters on the south side of the island. Located northwest of Round Island is a 220-acre dredge spoil island created in 2017 by the state of Mississippi. The island berms are composed primarily of sandy materials; Dredge disposal obtained from the East Pascagoula River Channel is in the interior of islands and is composed mainly of unconsolidated sediments.

Barrier Islands

The Mississippi barrier islands form the southern boundary of the Mississippi Sound and are located approximately 6–12 miles offshore. From east to west, they include Petit Bois Island, Horn Island, Ship Island, and Cat Island. While located within the administrative boundaries of GUIS Mississippi unit under the jurisdiction of the National Park Service (NPS), portions of Cat Island and Horn Island are privately and state-owned. Petit Bois and Horn Islands also have been designated by the U.S. Congress as the Gulf Islands Wilderness under the Wilderness Act. Generally, the islands feature broad, sandy beaches to the north with dunes on the southern Gulf side. The typical island profile includes: an average width of less than a half-mile; a Gulf-side broad beach backed by dunes; intermittent beach and marsh zones in the interior of the island; and an additional dune bank on the mainland side. With the exception of Cat Island, the barrier islands have migrated westward over time. These islands will continue to migrate as a result of the longshore littoral drift that moves sand from east to west across the barrier island chain. Relevant hydrologic and coastal processes associated with the barrier islands relate primarily to the effects of waves and longshore currents on island stability over time. As noted, the prevailing winds and resultant longshore currents are the drivers behind the net east-to-west sand transport for any given island, as well as for the overall island system under evaluation. Wave energy is a key factor in sediment resuspension and promotion of lateral transport through longshore water movements.

Hydrology and Water Quality

The Mississippi Sound receives freshwater drainage from three basins on the Mississippi coastal plain: the Pascagoula River basin, the Coastal Streams basin, and the Pearl River basin. Of the three basins, the Pascagoula River basin is the largest contributor of fresh water directly to the Sound. Approximately half of the total freshwater that flows into the Mississippi Sound does so through the Pascagoula River basin, and the remainder comes from the combined contributions of the Coastal Streams and Pearl River basins (MsCIP 2016).

The hydrology of the Mississippi Sound is strongly influenced by wind-driven currents and the tides of the Gulf of Mexico. Tides across the northeastern Gulf of Mexico approach the coast from the south and enter the Sound through the natural passes between the barrier islands. Tidally based circulation in the eastern portion of the Mississippi Sound has a strong clockwise rotation, whereas the western parts of the Sound have a weaker counterclockwise rotation. These circulation patterns will drive how the sediments used in the barrier island restoration will be distributed within the Sound (MsCIP 2016).

Major rivers carry high sediment loads into the Mississippi Sound. Inland freshwater drainage from these and other smaller rivers, as well as St. Louis Bay and Back Bay of Biloxi, create an estuarine environment in the Sound. Variable salinity levels can affect the productivity and survival of organisms living in the Sound, as well as economic and recreational activities. Pollution from agriculture, improperly treated sewage, roadways, accidental spills, industry discharges, and other sources also affect the health of the Mississippi Sound. Further information about hydrology and water quality can be found in the Water Quality section in Chapter 3 of the GUIS GMP (NPS 2014c).

–Biological Resources

Habitats

An array of habitat types supports a large number of species and various life stages. The diverse habitats include the estuarine intertidal zone, submerged aquatic vegetation (SAV), mollusk reefs, estuarine embayments, tidal creeks, Mississippi Sound unconsolidated bottom substrate (sand, soft mud, and mixes), artificial reefs, and barrier island passes.

The affected environment also includes nearshore habitat in the Mississippi Sound and within adjacent bays and estuaries (St. Louis Bay, Biloxi Bay, Back Bay, Graveline Bay and Grand Bay). These areas range in depth from one to ten feet, except in minor channel segments where the depth reaches 30 feet. The textures of bottom substrates range from muddy sand to sandy mud. Bays are partially-mixed to well-mixed systems depending on the season, and experience tidal surges of one to one and one-half feet on average, but occasionally reach four feet. Salinity levels are in a constant state of flux depending on the ebb and flow of the tides and weather systems impacting the region and season. Intertidal ecological communities/habitats include sand beach, mesohaline marsh, and oligohaline marsh.

Terrestrial habitats in the project areas include beach and dune habitats on the barrier islands. The beach and dune systems of the islands consist of well-sorted, fine to coarse sand containing large quantities of quartz and minor amounts of shell and heavy minerals. Both shorelines experience erosion and accretion on an on-going basis, as prevailing currents move sand westward. Sand movement and storms have caused the islands to decrease in size over the past century. The backshore is the area of the beach between the high tide line and the dunes and serves as a transition zone to the vegetated landscape. The wrack line forms at the edge of the high tide mark and seaborne debris and dead animals accumulate, creating foraging grounds

for many species. Beach vegetation is usually very sparse and confined to the upper edges of the backshore. Sea oats (*Uniola paniculata*), beach morning glory (*Ipomoea pes-carpae*) and gulf bluestem (*Schizachyrium maritimum*) are the most capable of tolerating the harsh conditions of the backshore. A few animals, such as the ghost crab (*Ocypode quadrata*), amphipods, and various insects, are permanent residents.

The health and coverage of SAV beds have been declining across the Gulf for the past 60 years. All SAV beds within the GUIS and other marine environment have extensively declined or in some cases disappeared due to increased turbidity caused by harbor and Intracoastal Waterway dredge-and-fill activities, boat traffic, shoreline modification, adjacent development leading to reduced water quality, and natural events such as tropical storms, hurricanes, and changes in salinity. SAV beds provide important habitat for wildlife, including vital nursery areas for Gulf fisheries. Dominant SAV species include shoal grass (*Halodule wrightii),* turtle grass (*Thalassia testudinum*), and manatee grass (*Cymodocea filiformis*). Other brackish water species include widgeongrass (*Ruppia maritima*), star grass (*Halophila engelmannii*), and tape grass (*Vallisneria americana*).

Numerous invasive terrestrial and aquatic vegetation species are present. Invasive plants of particular concern include torpedo grass (*Panicum repens*), cogon grass (*Imperata cylindrica*), lantana (*Latana spp.*), Chinese tallow (*Sapium sebiferum*), and Japanese privet hedges (*Ligustrum japonicum*). New occurrences such as kudzu (*Pueraria montana*), Japanese climbing fern (*Lygodium japonicum*), rattle box (*Sesbania punicea*), and water hyacinth (*Eichhornia crassipes*) are actively managed to control the size of emerging infestations. Repeated disturbance from recent hurricanes has exacerbated the persistence of many invasive plants, especially torpedo grass, cogon grass, and Chinese tallow. Boats and visitor activities are also sources of new infestations. Additional information about habitats in Mississippi sections of GUIS can be found in the Wetlands and Terrestrial Vegetation and Wildlife sections in Chapter 3 of the GUIS GMP (NPS 2014c).

Wildlife Species (Including Birds)

Common smaller native mammal species found on coastal islands, GUIS, or mainland beaches in Mississippi include marsh rabbit (*Sylvilagus palustris*), eastern cottontail rabbit (*Sylvilagus floridanus*), opossum (*Didelphis virginiana*), squirrels, skunks, gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), eastern woodrat (*Neotoma floridana*), hispid cotton rats (*Sigmodon hispidus*), eastern mole (*Scalopus aquaticus*), southeastern pocket gopher (*Geomys pinetis*), short-tailed shrews, and a variety of bats. Invasive and/or nuisance mammalian species found in the project area include Norway rat (*Rattus norvegicus*), armadillo (*Dasypus novemcinctus*), nutria (*Myocastor coypus*), coyotes (*Canis latrans*), wild hogs (*Sus scrofa*), red fox (*Vulpes vulpes*), and black rat (*Rattus rattus*). Nutria, rats and rabbits have been targeted for control because they reduce sea oat fecundity which can affect dune stability. Nutria, raccoons, and foxes are also considered nuisance species due to shorebird nest predation. Additional information about wildlife and invasive and/or nuisance species in the GUIS can be found in Chapter 3 of the GUIS GMP (NPS 2014).

There are more than 280 species of birds that use the islands and beaches for loafing, nesting, feeding, wintering, or migratory rest stops. These birds include songbirds, waterfowl, wading birds, birds of prey, seabirds, and shorebirds. Sandpipers, herons, egrets, ospreys (*Pandion haliaetus*), marsh wrens (*Cistothorus palustris*), terns, gulls, and several species of rails are just a few species that use the island habitats. Shorebird nesting, foraging, and loafing areas occur along the shorelines of coastal islands, GUIS, and on mainland beaches.

Marine and Estuarine Fauna (fish, shellfish, benthic organisms)

More than 200 species of fish occur within the Mississippi coastal waters, bays and estuaries including several commercially and recreationally important species. Speckled sea trout (*Cynoscion nebulosus*) spawn around the coastal and barrier islands and are often the most sought-after sport fish. Waters surrounding GUIS, coastal islands and beaches provide essential fish habitat (EFH) for shrimp, reef fish (e.g., snapper, groupers, tilefishes, and amberjacks), red drum (*Sciaenops ocellatus*), and coastal migratory pelagics (Spanish mackerel [S*comberomorus maculatus*], cobia [*Rachycentron canadum*], and king mackerel [*Scomberomorus cavalla*]) (NOAA 2018).

Oysters are important as both organisms and habitat with an integral role in the functioning of the ecosystem. The aggregations of oysters that comprise an oyster reef result in a complex and hard substrate that provides habitat for multiple benthic organisms and fish, increasing biodiversity in estuaries. Within an oyster reef community more than 300 other macrofauna species may also be present.

Nearshore benthic communities in the Mississippi Sound are largely composed of macroinvertebrate groups such as mollusks, sponges, polychaetes, corals, and crustaceans. Benthic fauna are often habitat forming and provide habitat and nursery areas for fish and crevices for mobile invertebrates to seek shelter; they also harbor diverse microbial communities (Taylor et al. 2007). Mollusks and crustaceans, including both shrimp and crab, are important ecologically and commercially in the Mississippi Sound.

Non-native aquatic wildlife species found in the project area include various jellyfish, clams, crabs, fish, and snails. These are potentially invasive or harmful and are therefore managed if necessary. Additional information about wildlife, vegetation, and invasive species in the GUIS can be found in Chapter 3 of the GUIS GMP (NPS 2014).

Protected Species

Federally protected species and critical habitat that could occur in the project area and have the potential to be affected by RP3/EA alternatives include: piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), five sea turtle species, Gulf sturgeon (*Acipenser oxyrinchus desotoi*), West Indian manatee (*Trichechus manatus latirostris*), and Giant Manta Ray (*Mobula birosris*).

Piping Plover, Piping Plover Critical Habitat, and Red Knot: The piping plover does not nest in Mississippi; however, this species uses Gulf Coast beaches and barrier islands for wintering (MDWFP 2001). Plovers use sparsely vegetated sand beaches, mudflats, and salt marshes for roosting and foraging. Piping plover critical habitat includes units MS-1 through MS-13 in Mississippi. In coastal Mississippi, the red knot is mainly a migratory species that uses coastal beaches and marine intertidal areas as stopover feeding locations or staging areas on the way to and from their wintering grounds in South America and breeding areas in the Arctic. Foraging on ocean beaches, mud and sand flats, and salt marshes occurs from March to April during the northward spring migration and September and October during the southward autumn migration (Niles et al. 2007). Red knots and piping plover have been observed wintering on the Gulf Coast and are observed in Mississippi from October to March (USFWS 2019).

West Indian Manatee: The West Indian manatee is listed as threatened under the ESA. Between October and April, manatees concentrate in areas of warmer water. During summer months, the species may migrate as far west as the Louisiana and Texas coasts on the Gulf of Mexico. Manatees inhabit both salt and fresh water of sufficient depth (about 5 feet to usually less than 18 feet). Manatees will consume any aquatic vegetation

available to them including sometimes grazing on the shoreline vegetation. The project location does not intersect with any identified critical habitat for the West Indian manatee. This species uses both fresh and saltwater habitats such as coastal rivers, bays, bayous, and estuaries. The manatee is an occasional visitor to Mississippi's coasts. After wintering in Florida, and perhaps Mexico, manatees migrate northward during spring, including to Mississippi and Alabama waters, although these migrations are not well understood (Fertl et al. 2005). Manatees frequently seek out freshwater sources such as rivers and river mouths and have been known to be found near estuaries (Fertl et al. 2005). SAVs are the typical manatee forage material; however, manatees can also consume other aquatic vegetation, algae, and terrestrial vegetation (Fertl et al. 2005). Manatee occurrence is expected to be transitory.

Gulf sturgeon, Gulf sturgeon critical habitat: This anadromous species migrates from coastal bays and estuaries to large coastal rivers in the spring for spawning and then returns to brackish and marine environments from October through March for foraging. The riverine spawning habitats for sturgeon in the State of Mississippi include the Mississippi, Pearl, and Pascagoula rivers (Ross et al. 2009; MDWFP 2001) but not the Biloxi and Tchoutacabouffa rivers (USFWS, GSMFC, and NMFS 1995). The marine wintering areas where individuals have been observed are nearshore and barrier island habitats from the Pearl River east to the barrier islands (Ross et al. 2009). Winter habitat is mainly around Cat, Ship, Horn, and Petit Bois islands with nearshore observations likely due to migratory movements to and from these offshore islands (Rogillio et al. 2007; Ross et al. 2009). The coastal Mississippi Sound waters of the State of Mississippi are designated as critical habitat.

There is critical habitat for Gulf sturgeon (Unit 8) in the project area. Critical habitat was designated in 2003 by the National Marine Fisheries Service (NMFS) and was based on seven primary constituent elements (PCEs) essential for its conservation. The proposed project component areas contain four PCEs: The MS TIG is working with NMFS to ensure that the project would not adversely affect any of the Gulf Sturgeon critical habitat.

Hawksbill Sea Turtle (*Eretmochelys imbricata*): Although this species uses various habitats such as open ocean, bays, and estuaries throughout different life stages, it is mainly associated with coral reefs. This species nests in Florida from April to November (NOAA Fisheries 2021a). It likely does not nest in Mississippi and observations are rare in the state (MDWFP 2001; NOAA Fisheries 2021a). The main dietary items of this species are sponges and other invertebrates (NOAA Fisheries 2021a).

Leatherback Sea Turtle (*Dermochelys coriacea*): This species mainly inhabits the offshore open ocean; however, it does use nearshore coastal waters during nesting or feeding. Nesting for this species occurs in Florida from April through November. Their main forage item is jellyfish. This species migrates long distances from nesting to feeding areas. While not common, there have been sporadic observations of leatherback sea turtles in Mississippi waters (MDWFP 2001, NOAA Fisheries 2021b).

Kemp's Ridley Sea Turtle (*Lepidochelys kempii*): Typical habitat for this species includes nearshore and inshore coastal waters and often salt marshes and neritic zones with muddy or sandy substrate (NOAA Fisheries 2021c). This species has been observed in nearshore waters of the Mississippi Sound during migration and foraging and has been accidentally caught by shore-based fishermen (MDWFP 2001; Shaver and Rubio 2008). Females typically nest from May through July (NOAA Fisheries 2021c). Males potentially use Gulf of Mexico habitats all year and females presumably use the Mississippi Sound and barrier island habitats for foraging when not nesting (NOAA Fisheries 2021c). Kemp's ridley sea turtles do not nest in Mississippi (MDWFP 2001).

Green Sea Turtle (*Chelonia mydas*): This species typically prefers shallow coastal waters with SAVs and algae for foraging and nests on open beaches (NOAA Fisheries 2021d). Nesting typically does not occur on mainland beaches and there is likely no Mississippi nesting at all (MDWFP 2001; NOAA Fisheries 2021d). This species migrates long distances in the open ocean from nesting to feeding areas. Observations of this species in Mississippi are rare (MDWFP 2001).

Loggerhead Sea Turtle (*Caretta caretta*), Loggerhead Sea Turtle critical habitat: Loggerhead habitat for foraging and migration includes open ocean, inshore areas, bays, salt marshes, ship channels, and mouths of large rivers. This sea turtle feeds on mollusks, fish, crustaceans, and other marine organisms. This species typically nests at night from late April through September (NOAA Fisheries 2021e). Although loggerheads occasionally use barrier islands for nesting, mainland nesting is rare (MDWFP 2001). Preferences for nesting beaches include high-energy coarse-grained beaches adjacent to the ocean that are narrow and steeply sloped (NOAA Fisheries 2021e). This species has been observed in nearshore waters of the Mississippi Sound during migration and foraging and has been accidentally caught by shore-based fishermen (MDWFP 2001).

There is critical habitat for Loggerhead Sea Turtle (Units LOGG-N-35 and N-36) in the project area. Critical habitat was designated in 2014 by the USFWS. The MS TIG is working with USFWS to ensure that the project would not adversely affect any of the PCEs identified.

Marine mammals found within the Gulf of Mexico include 21 species of cetaceans (whales and dolphins) and the West Indian manatee. The Marine Mammal Protection Act (MMPA) prohibits the "taking" of marine mammals incidental to a specified activity, unless such taking is appropriately authorized. The common bottlenose dolphin (*Tursiops truncatus*), and the Atlantic spotted dolphin (*Stenella frontalis*), are the two most common marine mammals found in the Gulf of Mexico. Both species feed primarily on fish, squid and crustaceans. While *S. frontalis* spends the majority of its life offshore, *T. truncatus* inhabits coastal bays and inlets for feeding and reproduction.

–Socioeconomic Resources

Tourism and Recreation

Tourism and Recreational activities on the mainland include beach visitation, wildlife viewing (including birds), pier and kayak fishing, crabbing, camping, hiking and others. In the Mississippi Sound, tourism and recreational activities include but are not limited to recreational boating and fishing. These activities provide economic benefits and sources of employment for local communities.

GUIS is the most heavily visited seashore and one of the most visited park units in the national park system. Most visitors come from within a 500-mile radius, including the states of Georgia, Alabama, Florida, Mississippi, Tennessee, Louisiana, Texas, and Arkansas. Changes in annual visitation are influenced by hurricanes and other strong coastal storms. Hurricanes can close bridges and destroy piers, beaches, and visitor facilities. Currently, GUIS, coastal islands, and mainland beaches are used for recreational activities such as camping, hiking, fishing, biking, swimming, boating, and bird watching. More information about tourism and recreation can be found in the “Visitor Use and Experience Topics Analyzed in Detail” and “Social and Economic Environment Topics Analyzed in Detail” sections of Chapter 3 in the GUIS GMP (NPS 2014).

Aesthetic and Visual Resources

Visual resources in the affected environment are characterized by a mosaic of island shoreline, beaches, and marsh wetlands. Unobstructed views of open water exist generally from the shoreline, piers, or from boats and other watercraft. Visual receptors include boaters in the Mississippi Sound, bays, and estuaries. Fort Massachusetts, located on the western side of Ship Island, is an aesthetic resource within GUIS. Fort Massachusetts has a round face oriented toward the deep-water harbor. Originally the fort was located 500 feet from the west end of Ship Island. It is now more than 1 mile from the west end of the island, and sand has been dredged and placed to protect the north side of the fort from erosion. Rangers and volunteers give free guided tours of Fort Massachusetts during the spring, summer, and fall (Coastal Mississippi 2021).

4.3.2 Habitat Projects on Federally Managed Lands

There are two HPFML Restoration Type alternatives that would occur on the Mississippi Barrier Islands (See Figure 4-1). The following sections includes the environmental consequences for:

- FM1, Improve Native Habitat by Removing Marine Debris from Mississippi Barrier Islands (Preferred)
- FM2, Habitat Management on the Mississippi Barrier Islands (Non-Preferred)

4.3.2.1 FM1, Improve Native Habitat by Removing Marine Debris from Mississippi Barrier Islands (Preferred)

This alternative would remove marine debris on Mississippi barrier islands managed by the National Park Service's Gulf Islands National Seashore (including all of Petit Bois, Horn, and Ship islands and a portion of Cat Island). The project would reduce threats to terrestrial and aquatic wildlife species from entanglement, ingestion and toxicity, reduce transport of invasive species, and reduce effects to humans. Project activities considered in the assessment of the environmental consequences include:

- Surveys including ground surveys or Unmanned Aerial Systems (UASs) such as drones[2], to conduct pre-treatment planning and post treatment monitoring.
- Removal of large marine debris (pilings, pontoons, boats, tanks, etc.) including the use of marine salvage crews to dismantle large debris in place.
- Removal of large debris using barge-mounted grapplers, cranes or track loaders.
- Annual beach clean ups (entire shoreline) using volunteers.
- Use of pedestrian crews/hand tools to manually clean up scattered and concentrated debris sites, particularly in wilderness areas and wetland, seagrass, and dune/meadow habitats.
- Transporting crews to location by boat, specifically areas accessed by foot or light equipment.
- Coordination, as needed, with U.S. Coast Guard and NPS for hazardous waste removal (fuel jugs, oil drums, etc.)

[2] Mainly due to cybersecurity concerns, in January 2020 the Department of the Interior issued Secretarial Order #3379 restricting drone use by all bureaus with the exception of use for emergency operations such as Search and Rescue and wildfire response. However, that policy could change during the course of project implementation, and therefore the environmental impacts from drone use for data gathering are analyzed in this RP/EA. NPS would use drones for this project only if drone use was consistent with all laws, regulations, and policies applicable on NPS lands at the time of use.

Table 4-2 identifies the potentially affected resources and sections in which they are analyzed for this alternative.

Table 4-2: NEPA Assessment of Resources for FM 1, Improve Native Habitats by Removing Marine Debris from Mississippi Barrier Islands

Resource	Location of Environmental Consequences Analysis in Chapter 4
Physical Resources	
Geology and Substrates	Analyzed in Section 4.3.2.1
Hydrology and Water Quality	
Floodplains and Wetlands, Air Quality and GHG Emissions, Noise	Analyzed in Section 4.2.1.1 to 4.2.1.3
Biological Resources	
Habitats	Analyzed in Section 4.3.2.1
Wildlife Species (including birds)	
Marine and Estuarine Fauna (fish, shellfish, benthic organisms)	
Protected Species	
Socioeconomic Resources	
Tourism and Recreational Use	Analyzed in Section 4.3.2.1
Aesthetics and Visual Resources	
Socioeconomics and Environmental Justice, Cultural Resources, Infrastructure, Land and Marine Management, Fisheries and Aquaculture, Marine Transportation, and Public Health and Safety	Analyzed in Section 4.2.1.4 to 4.2.1.10

Environmental Consequences

This project analysis incorporates by reference appropriate portions of the Environmental Consequences of debris removal projects from the following restoration plans:

- DWH Trustees 2016a. Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement (PDARP/PEIS). Section 6.4.5.1, pp 6-44 to 6-46. https://www.fws.gov/doiddata/dwh-ar-documents/1138/Chapter-6_Environmental-Consequences_508.pdf
- Regionwide TIG 2021. Regionwide Trustee Implementation Group Final Restoration Plan/Environmental Assessment 1: Birds, Marine Mammals, Oysters, and Sea Turtles. Section 4.3.2.1.1, pp 146-147. DWH-ARZ008721.pdf. Available: https://www.gulfspillrestoration.noaa.gov/sites/default/files/FINAL.RP_.EA-2021.09.16-TIG.approved_0.pdf

Section 6.4.5.1 of the PDARP/PEIS describes the potential effects of restoration techniques which include "implement contract and volunteer removal programs to collect existing derelict fishing gear". This alternative falls within the scope of the activities and potential environmental consequences analyzed in the PDARP/PEIS. The Regionwide TIG RP/EA1 describes the potential effects of marine debris removal for the Birds Alternative 1: Reducing Marine Debris Impacts on Birds and Sea Turtles (Section 4.3.2.1.1) which includes terrestrial and marine debris removal. Both of these plans anticipated short-term, minor, adverse impacts to physical and biological resources from these activities as a result of disturbance to sediment and vegetation, and long-term benefits to physical, biological, and socioeconomic resources as conditions are improved. The information included in the PDARP/PIES Section 6.4.5.1 and RW TIG RP/EA1 Birds Alternative 1 informs the effects analysis described below. Environmental consequences including physical, biological and socioeconomic resources are summarized below.

–Physical Resources

Geology and Substrates: There would be no impacts to geology from this project. There would be short-term, minor adverse effects to substrates as the area is disturbed during removal of large marine debris/dismantling in place by salvage crews (pilings, pontoons, boats, tanks, etc.), foot traffic from pedestrian crews, use of light equipment and hand tools to manually clean up debris/trash, foot traffic from annual beach clean-ups and removal of other materials (fuel jugs, oil drums, etc.). Dredging and digging may occur in the marine environment to remove large or embedded structures such as structural debris or derelict vessels. However, if removal of marine debris would cause more harm than benefit, the marine debris would be left as-is in the environment. After removing large debris, soils would be restored to the original contour to the extent practicable. Care would be taken to clean up any incidental spills that could occur from removal of hazardous materials when encountered. There would be long-term, beneficial effects to substrates from removal of debris, trash, hazardous materials, and degrading plastics and the return of the area to a more natural condition. The removal of gear such as blue crab traps from the estuarine floor would likely benefit substrates in the long-term by reducing the damage associated with trap movement over the ground.

Hydrology and Water Quality: There would be no impacts to hydrology from this project. Short-term, minor, adverse effects to water quality could result from barge operations and resulting increases in turbidity during large debris removal using barge mounted equipment. There could be short-term, minor adverse effects to water quality caused by increased turbidity resulting from assessment surveys and removal of debris, derelict fishing gear, trash and hazardous waste. Hazardous waste removal operations would be identified as such during assessment and coordinated with the U.S. Coast Guard. Care would be taken to avoid spills or release of any hazardous materials.

This alternative would provide benefits to water quality in the project areas by removal of derelict fishing gear, hazardous waste, plastics, trash, and other marine debris originating from land-based sources. Trash and hazardous waste leak pollutants that would be removed through this project. Water quality would be expected to improve after removal of derelict fishing gear and other debris from the land-based sources that pollute marine and estuarine habitats. For example, plastic debris does not decompose through microbial processes, but eventually breaks down into smaller particles (i.e., microplastics). Marine debris can also potentially act to transport pathogens and chemical contaminants of concern. Thus, reducing the volume of marine debris would lead to long-term improvements in water quality (Florida TIG, 2021; Regionwide TIG 2021).

In summary, there would be short-term, minor adverse effects to substrates and water quality. There would also be long-term beneficial effects to both resources.

–Biological Resources

Habitats: There could be short-term, minor, adverse effects to various habitats (wetlands, seagrass beds, benthos, beach-dune-meadow habitats) from temporary disturbance occurring during project implementation include activities to assess and remove debris. These disturbances would be caused by movement of people and equipment in the area, and use of equipment, vehicles, and vessels associated with land and water-based project efforts. Onshore and in-water work could involve pre-removal activities such as scoping and aerial or foot surveys, removal of debris (including associated personnel, vehicles, vessels, and equipment) and transporting removed debris to upland disposal sites. Onshore removal may

involve personnel on foot removing debris manually or using equipment such as tongs, trash cans, dumpsters, utility vehicles for collecting bags of debris, and for larger debris, tracked vehicles such as backhoes and excavators. In-water removal may involve the use of individuals walking in the water or SCUBA divers using dive knives to free entanglements, or hooks, floats, and lift bags to bring heavy debris to the surface. Heavy equipment (e.g. cranes, barge-mounted excavators, track loaders) may be necessary and would be staged on barges in water or in existing land-based access points and areas. The level of impact to habitats and species would depend on the type of debris being removed and the method of removal. Potential impacts to habitats and wildlife species would be avoided and minimized to the maximum extent practical. Generally, if the type of equipment necessary or physical removal of onshore or in-water marine debris would cause more harm than benefit, the debris would be left as-is in the environment. Additionally, equipment and the removal of debris could temporarily disturb dunes and benthos before recontouring occurred. To the extent practicable, use of light equipment would be avoided in sensitive habitats and would instead be accessed on foot. Once project activities cease, these disturbances would also cease. Removal of marine debris would result in long-term benefits by improving habitat quality from the removal of debris from the natural environment.

Wildlife: There could be minor, short-term adverse effects to wildlife that are utilizing island habitats from disturbances caused by noise of people and equipment, vehicles, and vessels in the area during project efforts as described above in the Habitats section. The presence of and associated noise of people and equipment, including UASs, could disturb wildlife and cause them to leave the areas during project activities, but they would be expected to return once disturbances cease. NPS staff familiar with nesting shorebird and colonial bird presence on the islands would be present for all project activities. Contractors, staff, and volunteers would be informed of current nesting areas to avoid throughout nesting season (March 1 - September 1). NPS' Best Practices for Avoiding Impacts to Natural, Cultural, and Historic Resources when Using Unmanned Aircraft Systems (NPS 2017) would be followed. Other guidelines such as the FWS Unmanned Aerial Systems Resource Guide (FWS 2017) on wildlife disturbance would be followed where applicable. Wildlife would be expected to temporarily move away from the area while operations are underway. Removal of debris and trash would bring long-term benefits to wildlife, including protected species, by restoring more natural conditions to their habitats and reducing the risk of entanglement, entrapment or ingestion of marine debris, and associated injury and mortality.

Marine and Estuarine Fauna: There could be short-term, minor, adverse effects to marine and estuarine fauna from barge operations, boat operations, UAS activity, and removal of in-water debris at or near shorelines as described above in the habitat and wildlife sections. The presence of project-related vessels and equipment could temporarily disturb marine and estuarine habitats and species that use or transit through areas identified for debris removal. Boat operators associated with the project components would follow Vessel Strike Avoidance Measures, NOAA Fisheries Southeast Regional Office (NMFS 2021), which would also minimize potential harm to nekton species in the construction areas, including marine mammals and sea turtles. The combination of the mobility of nekton species, the implementation of BMPs, and the short duration of debris removal activities suggest that the alternatives would have short-term, minor adverse effects to marine and estuarine resources. In-water operations would be localized to the footprint of the debris/trash and the area needed for access and removal. Removal of marine debris, trash and plastic or land-based debris that could be mobilized to the marine environment would cause long-term benefits to marine and estuarine fauna including sea turtles, finfish, and shellfish, by reducing the risk of their entanglement, entrapment and ingestion, and associated injury and mortality.

Protected Species: As described above in the habitat, wildlife, and marine and estuarine fauna sections, there could be short-term, minor, adverse effects to protected species resulting from disturbance as the areas they occur in experience barge operations, boat operations, UAS activities, elevated noise levels, increased human activity from crews removing debris/trash, and an increase in suspended sediments in the water column from barge-mounted equipment removing land or water-based debris from any in-water activities. These activities could result in short-term, minor, adverse effects to protected species if they are present in the vicinity of the project area, potentially causing them to leave the project area until the activities cease. There would be a long-term benefit to protected species from removal of marine debris in the project area, as the project would reduce the risk of entanglement, entrapment and ingestion of marine debris, and associated injury and mortality. Specific conservation measures would also be implemented during construction to avoid and minimize disruption and overall adverse effects to protected species. Below is a list of potential protected species at the project area and potential conservation measures that would be considered. Project implementation would comply with all conditions to avoid and minimize effect to protect species included in completed permits and consultations (see Table 5-1).

Sea Turtles: Loggerhead, green, leatherback, hawksbill, and Kemp's ridley sea turtles could be present in the area. Vehicle use along the beaches would be restricted during sea turtle nesting season (May 1st to October 31st) which would allow for nesting/hatchling occurrence. BMPs that will be implemented during periods of in-water work include the Protected Species Construction Conditions, NOAA Fisheries Southeast Regional Office (NMFS 2021), Measures for Reducing the Entrapment Risk to Protected Species (NMFS 2012), and Vessel Strike Avoidance Measures, NOAA Fisheries Southeast Regional Office (NMFS 2021).

Gulf Sturgeon, Gulf Sturgeon Critical Habitat: There is critical habitat for Gulf sturgeon (Unit 8) in the project area. Sturgeon are highly mobile and can avoid any disturbances in that area by swimming away. BMPs that will be implemented include Protected Species Construction Conditions, NOAA Fisheries Southeast Regional Office (NMFS 2021), and Measures for Reducing the Entrapment Risk to Protected Species (NMFS 2012). There would be no affect to gulf sturgeon critical habitat from implementation of the project.

Piping Plover, Piping Plover Critical Habitat, and Red Knot: Project activities could coincide with piping plover and red knot wintering seasons in Mississippi. NPS staff would be present for all project activities. If piping plovers and red knots are present within the buffer, project work would stop until the birds move away from the area of their own volition. There would be no affect to piping plover or red knot from the implementation of the project.

Marine Mammals Including West Indian Manatee: Marine mammals are affected by vibrations and noise resulting from in-water activities (e.g., boats, on-board generators, barge-mounted grapplers). BMPs that will could be implemented include Vessel Strike Avoidance Measures, NOAA Fisheries Southeast Regional Office (NMFS 2021), and the Standard Manatee Conditions for In-water Work (USFWS 2011).

In summary this project would have short-term, minor adverse impacts, but also long-term benefits, for habitats, wildlife species, marine and estuarine fauna, and protected species.

–Socioeconomic Resources

Tourism and Recreation: There would be short-term, minor adverse impacts to tourism and recreation during debris removal operation including: increased noise levels, increased human activity from crews removing debris/trash, and in-water activities from barge mounted equipment removing land or water-

based debris. Debris removal operations could result in temporary access restriction in the vicinity of the debris removal site(s). There would be long-term benefits to tourism and recreation from debris removal including but not limited to: cleanup of fouled beaches; removal of medical or hazardous debris; and removal of cutting and impalement hazards. In addition, a reduction in marine debris would increase visitor enjoyment for boaters by reducing the abundance of marine debris that could foul intakes and propellers. There would also be a reduced chance of boats hitting marine debris.

Aesthetic and Visual Resources: There would be short-term minor adverse impacts to aesthetic and visual resources during debris removal operations including the presence of equipment (barge operated cranes) and barriers protecting the public from debris removal operations, and from increased human presence in the wilderness area. There would be long-term benefits to aesthetic and visual resources from removing debris, trash, and hazardous waste. Aesthetic and visual resources would be enhanced to a more natural state as a result of cleanup of fouled beaches; removal of medical or hazardous debris; and removal of debris in marine environments.

In summary, there would be short-term minor adverse effects and long-term benefits to tourism and recreation and aesthetics and visual resources.

4.3.2.2 FM2, Habitat Management on the Mississippi Barrier Islands (Non-Preferred)

Habitat management measures for the project would include nuisance and/or invasive species management on Ship, Horn, Petit Bois, West Petit Bois, and Cat islands described below (Figure 4-1).

Vegetation Management

Vegetation management activities for the project include chemical and mechanical treatment to increase native plant diversity and to reduce potential fire hazards and restore bird nesting habitat. Target species are all non-native and include but are not limited to: Chinese tallow, cogon grass, Cuban bulrush (*Oxycaryum cubense*), common reed (*Phragmites australis*), beach vitex (*Vitex rotundifolia*), rattlebox (*Sesbania punicea*), lantana, and torpedo grass.

Project activities considered in the assessment of the environmental consequences include:

- Surveys including ground surveys and Unmanned Aerial Systems (UASs) such as drones to conduct pre-treatment planning and post-treatment monitoring for invasive plant species.
- Chemical treatment with herbicide application methods including foliar spraying, girdle, hack and squirt, basal bark, and cut stump.
- Mechanical clearing by hand-pulling or use of small equipment (e.g., hand saws, chain saws) to clear tree seedlings. Pulled seedlings would be left hanging on the native vegetation, piled, or disposed of in trash bags and placed in dumpsters where appropriate.
- Transport of crews to boat; specific areas would be access by foot or by motorized UTVs/light equipment.

Mammalian Nuisance Species Control: The project would also eradicate nuisance mammalian species (nutria, rabbits, and rats). Nuisance species reduce the fecundity and productivity of native plants, specifically due to herbivory on sea oats. Herbivory and the resulting reduction of sea oats on the dune fronts results in wind and wave erosion of these dune habitats and eventual loss of ecosystem and storm surge protection function of these systems. Mammalian nuisance species control activities for the project include lethal and nonlethal methods. This analysis includes all practices that could potentially be utilized,

even in limited situations. Project activities considered in the assessment of the environmental consequences include:

- Mammalian Nuisance Species Control Surveys including ground surveys and Unmanned Aerial Systems (UASs) such as drones to conduct pre-treatment planning and post treatment monitoring for mammalian nuisance species.
- Monitoring transects for tracks and scat to detect presence and estimate population levels.
- Non-lethal methods include live traps and nets.
- Lethal methods (with the animal they are primarily used for) could include body grip traps (nutria); snares (rabbits); cage traps (all species); and corral traps (feral hogs); and shooting (all species); (NPS, Southeast Regional Office, 2018).
- Collection and transporting of carcasses to a USDA facility for incineration.
- Transport of NPS staff or contractors by boat to the barrier islands. Site access by foot only in wilderness areas (Petit Bois and Horn) or by motorized vehicles (UTVs) on non-wilderness islands.

Table 4-3 identifies the potentially affected resources and sections in which they are analyzed for this alternative.

Table 4-3: NEPA Assessment of Resources for FM 2, Habitat Management on the Mississippi Barrier Islands

Resource	Location of Environmental Consequences Analysis in Chapter 4
Physical Resources	
Geology and Substrates	Analyzed in Section 4.3.2.2
Hydrology and Water Quality	
Floodplains and Wetlands, Air Quality and GHG Emissions, Noise	Analyzed in Section 4.2.1.1 to 4.2.1.3
Biological Resources	
Habitats	Analyzed in Section 4.3.2.2
Wildlife Species (including birds)	
Marine and Estuarine Fauna (fish, shellfish, benthic organisms)	
Protected Species	
Socioeconomic Resources	
Tourism and Recreational Use	Analyzed in Section 4.3.2.2
Aesthetics and Visual Resources	
Socioeconomics and Environmental Justice, Cultural Resources, Infrastructure, Land and Marine Management, Fisheries and Aquaculture, Marine Transportation, and Public Health and Safety	Analyzed in Section 4.2.1.4 to 4.2.1.10

Environmental Consequences

This project analysis incorporates by reference appropriate portions of the Environmental Consequences of nuisance species control projects from the following restoration plans:

- DWH Trustees 2016a. Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement (PDARP/PEIS). Section 6.4.5.1, pp 6-44 to 6-46. https://www.fws.gov/doiddata/dwh-ar-documents/1138/Chapter-6_Environmental-Consequences_508.pdf
- DWH Trustees. 2017d. Mississippi Trustee Implementation Group 2016-2017 Restoration Plan/Environmental Assessment. https://www.fws.gov/doiddata/dwh-ar-documents/1272/DWH-ARZ000488.pdf.

- Florida TIG 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. https://www.fws.gov/doiddata/dwh-ar-documents/4004/DWH-ARZ009338.pdf
- NPS (National Park Service), Southeast Regional Office, Coastal Species of Concern Predation Management Plan and Programmatic Environmental Assessment, September 2018.
- EA - Aquatic Rodent Damage Management in Mississippi, USDA-APHIS-WS in cooperation with: Tennessee Valley Authority, February 2015.

Section 6.4.1.5 of the PDARP/PEIS describes the potential effects of restoration approaches intended to restore wetlands, coastal, and nearshore habitats including techniques such as vegetation management and mammalian nuisance species control. This alternative falls within the scope of the activities and potential environmental consequences analyzed in the PDARP/PEIS. Potential effects from vegetation management activities in the Graveline Bay Land Acquisition and Management Project (Section 3.3.1, pp. 51 to 97) and the Grand Bay Land Acquisition and Habitat Management project (Section 3.4.1, pp. 99 to 152) in the MS TIG RP/EA 1 would also be similar to those for RP 3 projects (FM1, B1 and B2). Mammalian nuisance species control activities have been previously analyzed by the DWH Trustees through the Phase II Enhanced Management of Avian Breeding Habitat Injured by Response Activities in the Florida Panhandle, Alabama and Mississippi (Early Restoration Plan II; DWH Trustees 2012) and in the FL TIG RP2/EA Northeast Florida Coastal Protection Management project (Section 4.8.3; PP 4-62 to 4-67). The NPS analyzed mammalian nuisance species control methods that could be used on NPS managed lands in the Coastal Species of Concern Predation Management Plan and Programmatic Environmental Assessment. Additionally, USDA-Animal and Plant Health Inspection Service (APHIS)-Wildlife Services (WS) has completed NEPA analysis for similar activities for each of the five Gulf of Mexico states. This includes an EA addressing aquatic rodents in Mississippi to include nutria (EA - Aquatic Rodent Damage Management in Mississippi, USDA-APHIS-WS in cooperation with: Tennessee Valley Authority, February 2015). The material regarding predators and nuisance animals incorporated by reference above is summarized in the section “Discussion on Non-Lethal and Lethal Mammalian Nuisance Species Control Methodologies and BMPs”, below. Environmental consequences including physical, biological and socioeconomic resources for all activities in this project are also described below.

–Physical Resources

Geology and Substrates: This project would have no impacts to geology. For vegetation management, there could be short-term, minor adverse effects to substrates from disturbance caused by survey crews traversing the area while conducting treatment planning/monitoring, and from work crews completing chemical treatments, mechanical clearing (including hand pulling of vegetation), and other management activities that may uproot vegetation or otherwise disturb soil. Foot traffic would cause minimal compaction to the area and the impacts would abate after the foot traffic ceased. Crews accessing wilderness areas are restricted to access on foot, however, for areas in GUIS that do not have a wilderness area designation, crews’ access could include motorized utility vehicles for monitoring and treatment activities which could result in short-term minor adverse impacts to substrates, including compaction and erosion from vehicles driving on sand. Vehicle use would be minimized to the extent necessary to reach remote areas, and would occur for only as long as the project activities are ongoing. There would be long-term benefits to substrates, including increased dune stabilization and dune resiliency to wind and wave erosion, as a result of reduction or elimination of herbivores that forage on native plants and disturb the soil around them, specifically sea oats on dune fronts.

Hydrology and Water Quality: This project would have no impacts to hydrology. There could be short-term, minor, adverse effects to water quality as a result of sedimentation into nearby waters caused by survey crews and their vehicles traversing the area while conducting treatment planning/monitoring, and from inadvertently exposing nearby waterways to chemical treatments and herbicide applications, and from sedimentation caused by mechanical clearing, including hand pulling of vegetation. Chemical treatments are only used when other methods cannot be used or are not feasible. Care would be taken to obtain permits and handle chemicals according to the manufacturer's instruction, particularly near bodies of water. There would be long-term benefits to substrates from the project as dune vegetation becomes more stable after herbivory, and its resultant sedimentation, is reduced.

In summary, there would be short-term, minor adverse effects to substrates and water quality. There would be long-term beneficial effects to substrates.

–Biological Resources

Habitat: There could be short-term, minor adverse impacts to habitat caused by trampling of vegetation and soil compaction as workers traverse the area, on foot and using vehicles, during nuisance and/or invasive species management activities (plants and animals). There would be long-term beneficial effects including increased habitat diversity, improved native plant growth, including increased fecundity and productivity of sea oats, and improved dune formation. These effects would accrue as non-native plants that out-compete native plants - and nuisance animals that eat native plants - are removed from the project area and native plants are better able to grow. Removal of these negative forces that currently hamper native plant growth, and thus also hamper dune formation, would allow native plant and dune growth to improve.

Wildlife: Vegetation management activities would result in short-term, minor, adverse effects to wildlife due to the noise disturbance of crews carrying out the activities, and potentially from UASs. Wildlife may react to these disturbances by hiding, flushing, or leaving the area entirely. Wildlife would be expected to return to the area once the crews leave. NPS' Best Practices for Avoiding Impacts to Natural, Cultural, and Historic Resources when Using Unmanned Aircraft Systems (NPS 2017) would be followed if UASs are employed for project activities. Other guidelines such as the FWS Unmanned Aerial Systems Resource Guide (FWS 2017) on wildlife disturbance would be followed where applicable. There would be long-term beneficial effects to wildlife as a result of increased habitat quality and diversity from project activities. These benefits would accrue through the improvements of their habitats as described in the section above (i.e., improved native plant growth and dune formation).

Discussion on Non-Lethal and Lethal Mammalian Nuisance Species Control Methodologies and BMPs:

While this project specifically targets mammalian nuisance species that affect vegetation at GUIS, rather than predators that prey on eggs and animals, in practice nuisance mammal and predator control methods are equivalent (i.e., either non-lethal or lethal removal of animals from the area). Predator management activities have been previously analyzed by the DWH Trustees in other plans, and across the region by the USDA APHIS and NPS, and those plans and EAs were incorporated by reference above. What follows is a summary of those methods and their anticipated effects.

Mammalian nuisance species control activities could adversely impact non-target wildlife, but steps would be taken to mitigate these potential negative outcomes. For example, removal of animals by shooting is nearly 100 percent selective for target species, so other wildlife would not be affected by this population management method. Live traps and nets restrain wildlife once captured; therefore, those methods would be considered live-capture methods. Live traps would have the potential to capture non-target species. Trap

and net placement in areas where target species were active, and the use of target-specific attractants, would likely minimize the capture of non-targets. While there is a risk that non-target wildlife would be captured in traps meant for target species, the risk is greatly reduced by using appropriate trap sizes and bait, selecting proper sites to set traps, and checking traps frequently. Trapping would be carried out by qualified personnel during specific timeframes, which would reduce the risk of trapping other wildlife. The NPS Coastal Species of Concern Predator Management Plan (incorporated by reference above, NPS 2018), noted that the tools and methods included in their plan were designed to decrease the amount of stress experienced by the targeted animals. This FM2 project uses only a subset of the tools and methods discussed in the NPS plan. The NPS plan also found that lethal and non-lethal management of the target species[3] would have a slight adverse impact on the species by causing direct mortality and potentially contributing to local population declines in areas where they are damaging environmental resources. However, the actions were not expected to contribute to substantial population declines. Additionally, the NPS plan found the impacts to coastal species concern from planned activities to be primarily beneficial, but with some adverse impacts expected to result from disturbance and displacement from noise and human presence during installation and implementation of nonlethal and lethal tools and methods. These activities could temporarily disturb foraging and nesting habitats. However, while individuals might be temporarily displaced during implementation of project activities, they would return after the activities were completed.

Restoration activities would not utilize visible lights on nesting beaches during bird and sea turtle nesting seasons. Visible lights on nesting beaches at night could potentially discourage female sea turtles from nesting or disorient turtle hatchlings and prevent them from reaching the sea. To avoid such consequences, night vision and Forward-Looking Infrared Devices would be used during nighttime predator control activities. Vehicle operators would follow NPS BMPs to minimize vehicle impacts on nesting beaches, which is especially relevant for migratory birds.

While every precaution would be taken to safeguard against taking non-targets during operational use of methods and techniques for resolving damage and reducing threats caused by mammals, the use of such methods could result in the incidental removal of unintended species. Those occurrences would be rare and should not affect the overall populations of any species under the proposed action. Regionally consistent BMPs and mitigation measures could be implemented to reduce the likelihood of adverse impacts associated with the implementation of mammalian nuisance species management tools. This includes minimizing human disturbance near coastal species of concern and ensuring proper training and experience of personnel authorized to lethally remove a nuisance species. NPS staff or their contractors would be present for all mammalian nuisance species control operations.

Species that are causing damage to native dune vegetation (e.g., rabbits, nutria, and rats) could be targeted for lethal removal, removing that individual from the population. Staff would follow American Veterinary Medical Association and American Association of Zoo Veterinarians guidelines on euthanasia (American Association of Zoo Veterinarians 2006; American Veterinary Medical Association 2020). Nuisance mammalian species would be closely monitored to avoid reducing populations to an extent that a species would be extirpated (NPS, 2018). Lethal methods available for use to manage damage caused by mammals under this alternative would include foothold traps; snares; walk-in cage traps; dog-proof traps; box, cage, and corral traps; shooting; and manual removal. The use of firearms would essentially be selective for target

[3] Targeted species in the NPS Coastal Species of Concern Predation Management Plan (2018), included coyote, feral swine, armadillo, red and gray fox, mink, opossum, raccoon, corvids, gulls, and ghost crabs.

species since animals would be identified prior to application; therefore, no adverse effects would be anticipated from use of this method. Similarly, the use of euthanasia methods would not result in non-target removal since identification would occur prior to euthanizing an animal.

Marine and Estuarine Fauna: There are no anticipated adverse effects to marine or estuarine fauna as this project would not include any in-water work. The transport of NPS staff to the islands is an ongoing activity that occurs regularly, observing best practices and vessel operations plans. The addition of these project activities to these ongoing operations would result in a negligible number of additional trips.

Protected Species: The MS TIG anticipates these types of management actions would not adversely affect any listed species or designated critical habitat as BMPs (e.g., not using visible lights on nesting beaches at night) would be utilized. Project implementation would comply with all conditions to avoid and minimize effect to protect species included in completed permits and consultations (see Table 5-1). The presence of and associated noise of people and equipment, including UASs, could disturb wildlife, including protected species and cause them to leave the areas during project activities, but they would be expected to return once disturbances cease. The proposed restoration activities provide benefits to habitats and natural resources by addressing known causes of habitat degradation and/or mortality of threatened and imperiled species and migratory birds. There would be no effects to in-water sea turtles or marine mammals as a result of mammalian nuisance species control activities as they do not include any in-water work.

In summary, vegetation management and mammalian nuisance species control activities could result in short-term, minor adverse impacts to habitats and wildlife. The MS TIG does not anticipate adverse effects to protected species. There would be no effect on marine and estuarine fauna. Vegetation management and predation control would have long-term benefits for habitats, wildlife (including birds) and protected species.

–Socioeconomic Resources

Tourism and Recreation: This project has the potential to result in short-term, minor adverse effects to tourism and recreation during vegetation management and mammalian nuisance species control activities as tourists may be prohibited from entering areas where work occurs, and/or their experience may be negatively affected by being in the area when project activities are occurring. The adverse effects to tourism and recreation would be mitigated by conducting trapping or lethal mammalian nuisance species management activities and vegetation management at times of the day or in locations where human presence would be minimal (USDA-APHIS-WS 2013). Additionally, all lethal and non-lethal methods and vegetation management practices that could negatively affect visitor safety would be performed by trained and permitted personnel in order to minimize the safety risk to visitors. This project would also have long-term benefits to tourism as the habitats are improved, making for a higher quality visitor experience.

Aesthetics and Visual Resources: As analyzed in the USDA EA, mammalian nuisance species control activities would likely have long-term, minor adverse effects to viewing barrier island habitats and wildlife (USDA-APHIS-WS 2003, 2013). This is because viewing mammalian nuisance species could be desirable to some visitors. While nuisance species control does not seek to eradicate any species from a localized area, it may result in a noticeable decrease in populations and negatively affect wildlife viewing. However, mammalian nuisance species control should also provide long-term benefits by restoring natural environments (e.g., dunes) and biodiversity that enhance the natural habitat and aesthetics of the area (USDA-APHIS-WS 2003, 2013).

In summary, there would be short-term, minor adverse effects to tourism and recreation and long-term minor adverse effects to aesthetics and visual resources.

4.3.2.3 Habitat Projects on Federally Managed Lands Restoration Type-No Action

Under the No Action alternative, this project would not occur. These improvements to habitat on federally managed lands would not occur and potential short-term, minor adverse effects to physical and biological resources associated with debris removal and habitat management would not occur. Under the No Action alternative, a continuation of current conditions would be expected including minor to moderate adverse effects to habitats and species including: disturbance to bird and potential sea turtle nesting visitors, trash accumulation leading to animal entanglement and entrapment, and non-native vegetation and mammalian nuisance species proliferation. While there is an on-going NFWF-GEBF project underway for non-native vegetation and mammalian nuisance species control, but when funding for that project expires and without implementing FM2, non-native vegetation and mammalian nuisance species control would cease to occur in the area. In summary, under the No Action alternative, no short-term and temporary adverse effects to physical and biological resources would occur, but also no long-term benefits to habitats and nesting waterbird species would be realized.

4.3.3 Sea Turtles

The sea turtle alternatives in this RP3/EA are listed below (See Figure 4-1):

- ST1, Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities – 3 Years
- ST2, Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities – 5 Years

4.3.3.1 ST1 and ST2, Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities – 3 Years (Preferred) and – 5 Years (Non-Preferred)

Two potential alternatives for this project are evaluated in this RP/EA based on two implementation timelines. The preferred 3-year project would provide a total of 3 years of funding for project activities. The non-preferred 5-year project would fund the project for 5 years. Both of these projects would focus on maintaining the increased capacity of the Mississippi Sea Turtle Stranding and Salvage Network (MS STSSN) in order to continue an enhanced ability to respond to stranded, sick, injured, or dead sea turtles as well as rehabilitation activities. The difference in the projects is the number of years they would occur, which also makes the total costs differ.

Project activities considered in the assessment of the environmental consequences include:

- Providing personnel, equipment, stranding, training, or other project-related travel, vehicle fuel, and maintenance of vehicles/vessels/trailers to federally permitted MS STSSN organizations to rapidly respond to live and dead stranded sea turtles in Mississippi;
- Performing field necropsies on carcasses, where applicable;
- Maintaining current average response time to live or dead stranded sea turtles; and
- Maintaining STSSN's capacity to respond to unusual natural or anthropogenic events (e.g., oil spills, harmful algal blooms, freshwater events, hurricanes).

Table 4-4 identifies the potentially affected resources and sections in which they are analyzed for this alternative.

Table 4-4: NEPA Assessment of Resources for ST1, ST2, Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities (3 and 5 years)

Resource	Location of Environmental Consequences Analysis in Chapter 4
Physical Resources	
Geology and Substrates	Analyzed in Section 4.3.3.1
Hydrology and Water Quality	
Floodplains and Wetlands, Air Quality and GHG Emissions, Noise	Analyzed in Section 4.2.1.1 to 4.2.1.3
Biological Resources	
Habitats	Analyzed in Section 4.3.3.1
Wildlife Species (including birds)	
Marine and Estuarine Fauna (fish, shellfish, benthic organisms)	
Protected Species	
Socioeconomic Resources	
Tourism and Recreational Use	Analyzed in Section 4.3.3.1
Aesthetics and Visual Resources	
Socioeconomics and Environmental Justice, Cultural Resources, Infrastructure, Land and Marine Management, Fisheries and Aquaculture, Marine Transportation, and Public Health and Safety	Analyzed in Section 4.2.1.4 to 4.2.1.10

Environmental Consequences

This project analysis incorporates by reference appropriate portions of the Environmental Consequences of sea turtle stranding and salvage network activities from the following restoration plans:

- DWH Trustees 2016a. Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement (PDARP/PEIS). Section 6.4.7.6 p 6-62. https://www.fws.gov/doiddata/dwh-ar-documents/1138/Chapter-6_Environmental-Consequences_508.pdf
- Regionwide TIG 2021. Regionwide Trustee Implementation Group Final Restoration Plan/Environmental Assessment 1: Birds, Marine Mammals, Oysters, and Sea Turtles. Section 4.3.2.5.5.1 pp. 188 to 189). DWH-ARZ008721.pdf (fws.gov). Available: https://www.gulfspillrestoration.noaa.gov/sites/default/files/FINAL.RP_.EA-2021.09.16-TIG.approved_0.pdf

Section 6.4.7 of the PDARP/PEIS describes the potential effects of restoration techniques which include "Increase Sea turtle survival through enhanced mortality investigation and early detection of and response to anthropogenic threats and emergency events". This alternative falls within the scope of the activities and potential environmental consequences analyzed in the PDARP/PEIS. The RW RP/EA1 describes the potential effects of Regionwide Enhancements to the Sea Turtle Stranding and Salvage Network and Enhanced Rehabilitation Project (Section 4.3.2.5.5, pp 188-189). Both of these plans anticipated localized, short- to long-term minor adverse effects to physical, biological, and socioeconomic resources from human activities and equipment use during response events, as well as long-term benefits to biological and socioeconomic resources. The information included in the PDARP/PEIS and RW RP/EA1 informs the effects analysis described below, as applicable. A summary of environmental consequences including physical, biological and socioeconomic resources are described below.

–Physical Resources

Geology and Substrates: This project would have no impact on geology. Project implementation would include MS STSSN responding to stranded or out-of-habitat sea turtles along the Mississippi Gulf Coast, and

may result in short-term, minor adverse effects to substrates in coastal and nearshore habitats (DWH Trustees 2016a; RW TIG 2021). These effects would result from increased human foot traffic during response, performing field necropsies on carcasses, carcass burial, and vessel or vehicle use. They would be temporary in nature and restricted to the stranding/recovery site. The resources would be expected to return to baseline once response activities are complete.

Hydrology and Water Quality: This project would have no impact on hydrology. There would be short-term, minor adverse impacts to water quality as a result of increased turbidity from sediment disturbance during response activities.

In summary, this project would result in short-term, minor adverse effects to substrates and water quality.

–Biological Resources

Habitats: Project activities may lead to short-term, minor adverse impacts to habitats such as seagrasses and submerged aquatic vegetation (SAV) because of the potential for increased disturbance from boats and vehicles. However, responders would seek to avoid SAVs and would otherwise keep their motor propeller elevated so as not to scar the bottom or uproot algae and sea grasses. These impacts would be localized to specific areas and disturbance would resolve in the short-term after response operations cease (RW TIG 2021).

Wildlife Species: An increase in STSSN activities may lead to short-term, minor adverse impacts to wildlife species (e.g., birds) because of the potential for increased disturbance due to boats and vehicles. However, these impacts would be restricted to the stranding/recovery site, and disturbance would likely resolve soon after response operations cease.

Marine and Estuarine Fauna: The implementation of this component would result in an increase in STSSN activities which may result in short-term, minor adverse impacts to marine and estuarine fauna because of the potential for increased interactions with boats and vehicles when operations were occurring. Boat operators associated with the alternative would follow Vessel Strike Avoidance Measures, NOAA Fisheries Southeast Regional Office (NMFS 2021)., which would minimize potential harm to marine mammals and sea turtles. There would be long-term benefits to sea turtles as a result of implementation of the project including rehabilitation of live sea turtles recovered and additional data on causes of death from sea turtle carcasses that are necropsied.

Protected Species: There could be short-term, minor adverse impacts to protected species (marine mammals, sea turtles; see Appendix A) because of the potential for increased interactions with boats and vehicles associated with increases in STSSN activities (RW TIG 2021). Protected species may experience short-term minor adverse impacts because of the potential for increased interactions with boats and vehicles. There would be long-term benefits to sea turtles as a result of implementation of the project including rehabilitation of live sea turtles recovered and additional data on causes of death from sea turtle carcasses that are necropsied.

In summary, this project would result in short-term, minor adverse impacts to habitats, to ESA-listed species, and to wildlife, marine, and estuarine fauna, but would provide long-term benefits to sea turtles and may also benefit injured birds or marine mammals which could strand in areas where responders are looking for sea turtles (See Section 3.3 of the RP3/EA).

–Socioeconomic Resources

Tourism and Recreation: Short-term, minor adverse effects could be created by the slight increase of human and vehicular traffic during stranding responses, which could adversely affect boater or beachgoer experiences (Section 6.4.7.7.3 of the PDARP/PEIS).

Aesthetics and Visual Resources: There would be no effects to aesthetic and visual resources resulting from stranding response activities.

In summary, this project is anticipated to result in periodic short-term, minor adverse impacts to tourism and recreational use as a result of increases in human and vehicular traffic in popular recreational areas.

4.3.3.2 Sea Turtle Restoration Type-No Action

Under the No Action alternative, the sea turtle restoration projects would not occur. Potential short-term minor adverse effects to physical, biological, and socioeconomic resources associated with responding to stranded or out-of-habitat sea turtles would not occur. Under the No Action alternative, there would be a decrease in the current enhanced stranding network response and rehabilitation capacity. In summary, under the No Action alternative, there would be a decrease in long-term benefits to sea turtles (stranding response and rehabilitation).

4.3.4 Marine Mammals

This section includes the environmental consequences for Marine Mammals Restoration Type projects in this RP3/EA (See Figure 4-1) including:

- MM1, Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities.
- MM2, Marine Mammal Health Assessments to Monitor Population Health
- MM3, Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements
- Marine Mammals Restoration Type-No Action

4.3.4.1 MM1, Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities (Preferred)

This project would focus on maintaining the enhanced capacity of the Mississippi Marine Mammal Stranding Network (MMSN) in order to continue an enhanced ability to respond to stranded, sick, injured, or deceased marine mammals. Project activities considered in the assessment of the environmental consequences include:

- Funding personnel, equipment, stranding, training, or other project-related travel, vehicle fuel, and maintenance of vehicles/vessels/trailers to federally permitted MS MMSN organizations to rapidly respond to live and dead stranded marine mammals in Mississippi;
- Performing field necropsies on carcasses, where applicable;
- Maintaining current average response time to live or dead stranded marine mammals; and
- Maintaining MMSN's capacity to respond to unusual natural or anthropogenic events (e.g., oil spills, harmful algal blooms, freshwater events, hurricanes).

Table 4-5 identifies the potentially affected resources and sections in which they are analyzed for this alternative.

Table 4-5: NEPA Assessment of Resources for MM1, Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities

Resource	Location of Environmental Consequences Analysis in Chapter 4
Physical Resources	
Geology and Substrates	Analyzed in Section 4.3.4.1
Hydrology and Water Quality	
Floodplains and Wetlands, Air Quality and GHG Emissions, Noise	Analyzed in Section 4.2.1.1 to 4.2.1.3
Biological Resources	
Habitats	Analyzed in Section 4.3.4.1
Wildlife Species (including birds)	
Marine and Estuarine Fauna (fish, shellfish, benthic organisms)	
Protected Species	
Socioeconomic Resources	
Tourism and Recreational Use	Analyzed in Section 4.3.4.1
Aesthetics and Visual Resources	
Socioeconomics and Environmental Justice, Cultural Resources, Infrastructure, Land and Marine Management, Fisheries and Aquaculture, Marine Transportation, and Public Health and Safety	Analyzed in Section 4.2.1.4 to 4.2.1.10

Environmental Consequences

This project analysis incorporates by reference appropriate portions of the Environmental Consequences of marine mammals stranding network projects from the following restoration plans:

- DWH Trustees 2016a. Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement (PDARP/PEIS). Section 6.4.9.3 pp 6-67 to 6-68. https://www.fws.gov/doiddata/dwh-ar-documents/1138/Chapter-6_Environmental Consequences_508.pdf
- Alabama TIG 2018. Final Restoration Plan II and Environmental Assessment: Restoration of Wetlands, Coastal, and Nearshore Habitat; Habitat projects on Federally Managed Lands; Nutrient Reduction (Nonpoint Source); Sea Turtles; Marine Mammals; Birds; and Oysters. Section 11, pp 11-1 to 11-16. https://www.fws.gov/doiddata/dwh-ar-documents/1805/DWH-ARZ001374.pdf
- Florida TIG 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. Section 4.7.1, pp 4-48 to 4-51. https://www.fws.gov/doiddata/dwh-ar-documents/4004/DWH-ARZ009338.pdf

Section 6.4.9.3 of the PDARP/PEIS describes the potential effects of restoration techniques which include "expand the Marine Mammal Stranding Network's (MMSN's) capabilities along the coast of the Gulf of Mexico." This alternative falls within the scope of the activities and potential environmental consequences analyzed in the PDARP/PEIS. The AL TIG RP2/EA describes the potential effects of Enhancing Capacity for the Alabama Marine Mammals Stranding Network (Section 11, pp 11-1 to 11-16). The FL TIG RP2/EA describes the potential effects of Florida Gulf Coast Marine Mammal Stranding Network Project (Section 4.7.1, pp 4-48 to 4-51). All of these plans anticipated localized, short- to long-term minor adverse effects to physical, biological, and socioeconomic resources from human activities and equipment use during response events, as well as long-term benefits to biological resources. The information included in the PDARP/PEIS, AL TIG RP2/EA and FL TIG RP2/EA informs the effects analysis described below. Environmental consequences including physical, biological and socioeconomic resources are described below.

–Physical Resources

Geology and Substrates: This project would have no impacts to geology. There would be short-term, minor, adverse impacts to substrates as a result of mobilizing equipment, responding to live or dead marine mammals, burying carcasses, increased human foot traffic during response, and from vessel or vehicle use. Conditions would return to baseline once response activities are complete (Florida TIG 2021).

Hydrology and Water Quality: Mobilizing equipment, responding to live or dead marine mammals, burying carcasses, and administering medication or other triage may result in short-term, minor adverse impacts to physical resources including geology and substrates and hydrology and water quality in coastal and nearshore habitats (DWH Trustees 2016a; NOAA 2009). Adverse impacts would be temporary in nature, would result from increased human foot traffic during response, carcass burial, or vessel or vehicle use, but would be temporary and would return to baseline once response activities are complete. Increased vessel/vehicle use or foot traffic may increase the potential for temporary localized erosion during response activities. This erosion may increase localized turbidity in nearshore marine or estuarine waters. Additionally, vessels and vehicles could leak contaminants into nearshore waters during response activities. The carcasses of marine mammals euthanized using chemical methods may contain environmental contaminants that can re-release into the water during decomposition. For this reason, any marine mammals euthanized using chemical injection would not be buried on-site (NOAA 2009). Other marine mammal carcasses (non-euthanized) may be buried on site, which would require minor digging in nearshore and coastal sediments.

In summary, this project would result in short-term, minor adverse impacts to substrates and water quality (DWH Trustees 2016a; FL TIG 2021).

–Biological Resources

Habitats: Project activities would result in short-term, minor adverse effects to coastal habitats including beaches and dunes, intertidal marshes, or other habitats where strandings occur (FL TIG 2021). However, disturbances would be minor, would only occur during response activities, and would cease once vessels, vehicles, and responders have left the area. Additionally, MS MMSN responders would take extra caution to avoid SAV or other sensitive habitats to minimize adverse effects. Federally designated EFH for shrimp, red drum, coastal migratory pelagics, and reef fish within these habitats may also experience short-term, minor localized adverse effects that would cease once response activities are complete (FL TIG 2021).

Wildlife Species: An increase in MS MMSN activities may lead to short-term, minor adverse impacts to wildlife species (e.g., birds) because of the potential for increased disturbance due to boats and vehicles. However, these impacts would be restricted to the stranding/recovery site, and disturbance would likely resolve soon after response operations cease. All appropriate BMPs would be followed to minimize disturbance of wildlife species during response activities (RW TIG 2021).

Marine and Estuarine Species: Highly mobile fish species would be disturbed by increased human, vessel, and/or vehicle presence during response activities but can move away during activities and return once response activities are complete. Sessile benthic species such as benthic invertebrates may experience short-term, minor adverse effects (FL TIG 2021). Marine mammals (specifically cetaceans) would experience minor short-term adverse effects associated with increased stress from response activities. However, these short-term stressors would be balanced with the long-term benefits (increased marine mammal survival and an improved understanding of causes of illness/mortality) provided by an enhanced stranding network (FL TIG 2021).

Protected Species: ESA-listed species that inhabit nearshore and coastal habitats where strandings occur (such as Gulf sturgeon and sea turtles) may experience temporary displacement related to response activities. In 2016, NMFS issued a biological and conference opinion concluding that MMSN activities were likely to adversely affect but would not jeopardize the continued existence of non-targeted species that may be incidentally taken (specifically, green, hawksbill, Kemp's ridley, loggerhead,and leatherback sea turtles, smalltooth sawfish, and Gulf sturgeon; NMFS 2016). Based on these determinations and consistent with the PDARP/PEIS, this project would have minor, short-term adverse impacts on protected species (DWH Trustees 2016a; NMFS 2009). This project could occur on designated critical habitat within Mississippi's nearshore and coastal habitats. It is not likely that project activities would alter the PCEs of Gulf sturgeon critical habitat (FL TIG 2021). Loggerhead sea turtle critical habitats include beaches on the barrier islands. Any disturbance to the critical habitat would be localized and disturbance would likely return to natural conditions in a relatively short timeframe. There would be no affect to loggerhead sea turtle or Gulf sturgeon critical habitat. Project implementation would comply with all conditions to avoid and minimize effect to protect species included in completed permits and consultations (see Table 5-1).

In summary, this project would result in short-term, minor adverse impacts to habitats, to ESA-listed species, and to wildlife, marine, and estuarine fauna, but would provide long-term benefits to marine mammals.

–Socioeconomic Resources

Tourism and Recreation: To the extent that stranding response occurs around popular coastal recreational sites and causes disruptions to visitors, project activities could result in short-term negligible to minor adverse effects to tourism and recreational use. Responders may also need to temporarily restrict public access around stranded marine mammals to increase public health and safety. Section 6.4.9.3.3 of the PDARP/PEIS describes impacts to socioeconomic resources from MMSN activities and are incorporated by reference. Minor adverse effects could be created by the slight increase of human and vehicular traffic during stranding responses, which could adversely affect boater or beachgoer experiences. However, these minor adverse impacts would be short-term, only lasting for the duration of the response activities and would occur only in very limited geographic areas (FL TIG 2021).

Aesthetics and Visual Resources: Marine mammal carcasses may also create temporary visually unappealing consequences for recreators (NMFS 2009). There would be short-term benefits resulting from the implementation of the project because stranding response activities would reduce the time the aesthetic and visual impairment is present.

In summary, this project is anticipated to result in short-term, minor adverse impacts to tourism and recreational use and aesthetics as a result of increases in human and vehicular traffic in popular recreational areas; it would also have some short-term benefits to aesthetics and visual resources.

4.3.4.2 MM2, Marine Mammal Health Assessments to Monitor Population Health (Non-Preferred)

This project would increase marine mammal survival through better understanding of causes of illness and death as well as early detection and intervention for anthropogenic and natural threats. Project activities considered in the assessment of the environmental consequences include (See Figure 4-1):

- Photo-identification (photo-ID) surveys - with biopsy sampling - and capture release health assessments;
- Mobilization of large teams of trained researchers using multiple vessels to locate, safely capture, assess, and release wild bottlenose dolphins;

- Deployment of a large net to encircle one or more dolphins in shallow water;
- Restraint of dolphin(s) to complete veterinarian assessment/determine whether to proceed with further examination(s) on a boat platform;
- Further dolphin examination and the collection of morphometrics, diagnostics, and biological samples;
- Field processing of samples; and
- Standard morphometrics and diagnostics include an external physical exam, body measurements (length and girth), ultrasound to assess reproductive status and blubber thickness, complete blood count (CBC)/blood chemistry/blood gases, serology, pathogens, endocrinology, immunology, urinalysis, skin and oral assessment, biotoxin and contaminant measures, and blowhole and genital swabs, and aging if appropriate.

Table 4-6 identifies the potentially affected resources and sections in which they are analyzed for this alternative.

Table 4-6: NEPA Assessment of Resources for MM2, Marine Mammal Health Assessments to Monitor Restoration Effectiveness

Resource	Location of Environmental Consequences Analysis in Chapter 4
Physical Resources	
Geology and Substrates	Analyzed in Section 4.3.4.2
Hydrology and Water Quality	
Floodplains and Wetlands, Air Quality and GHG Emissions, Noise	Analyzed in Section 4.2.1.1 to 4.2.1.3
Biological Resources	
Habitats	Analyzed in Section 4.3.4.2
Wildlife Species (including birds)	
Marine and Estuarine Fauna (fish, shellfish, benthic organisms)	
Protected Species	
Socioeconomic Resources	
Tourism and Recreational Use	Analyzed in Section 4.3.4.2
Aesthetics and Visual Resources	
Socioeconomics and Environmental Justice, Cultural Resources, Infrastructure, Land and Marine Management, Fisheries and Aquaculture, Marine Transportation, and Public Health and Safety	Analyzed in Section 4.2.1.4 to 4.2.1.10

Environmental Consequences

This project analysis incorporates by reference appropriate portions of the Environmental Consequences of marine mammals stranding network projects from the following restoration plans:

- DWH Trustees 2016a. Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement (PDARP/PEIS). Section 6.4.9.3 pp 6-67 to 6-68. https://www.fws.gov/doiddata/dwh-ar-documents/1138/Chapter-6_Environmental-Consequences_508.pdf
- Alabama TIG 2018. Deepwater Horizon Oil Spill: Alabama Trustee Implementation Group 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. Section 11, pp 11-1 to 11-16. https://www.fws.gov/doiddata/dwh-ar-documents/1805/DWH-ARZ001374.pdf

- Louisiana TIG 2020. Louisiana Trustee Implementation Group Final Restoration Plan/Environmental Assessment #5: Living Coastal and Marine Resources (LCMR)- Marine Mammals and Oysters. Section 4.4, pp 94 to 103. https://www.fws.gov/doiddata/dwh-ar-documents/3004/DWH-ARZ004917.pdf

Section 6.4.9.3 of the PDARP/PEIS describes the potential effects of restoration techniques which include "Enhance capabilities to rapidly diagnose causes of marine mammal morbidity and mortality to identify threats and mitigate impacts (conservation medicine)." This alternative falls within the scope of the activities and potential environmental consequences analyzed in the PDARP/PEIS. The AL TIG RP2/EA describes the potential effects of Assessment of Alabama Estuarine Bottlenose Dolphin Populations and Health (Section 11, pp 11-1 to 11-16). The LA TIG RP5/EA describes the potential effects of Region-wide Marine Mammal Conservation Medicine and Health Program (Section 4.4, pp 94 to 103). The information included in the PDARP/EIS, AL TIG RP2/EA and LA TIG RP5/EA informs the effects analysis described below. All of these plans anticipated short-term, minor adverse effects to physical and biological resources (including SAV, EFH, and marine wildlife) from human activities and equipment use during health assessments, as well as long-term benefits to biological resources. Environmental consequences including physical, biological and socioeconomic resources are described below.

–Physical Resources

Geology and Substrates: This project would have no impact on geology. There could be short-term, minor adverse impacts on substrates resulting from personnel standing and moving, and from vessel anchors. Adverse impacts would be temporary in nature and would return to baseline once assessment activities are complete (DWH Trustees 2016a).

Hydrology and Water Quality: This project would have no impact on hydrology. There could be short-term, minor adverse impacts water quality from increased turbidity caused by researchers entering the water and encircling the dolphins. Adverse impacts would be temporary in nature and would return to baseline once assessment activities are complete (DWH Trustees 2016a).

In summary, this project is anticipated to result in minor, short-term adverse impacts to substrates and water quality.

–Biological Resources

Habitats: SAV impacts would be minimal because researchers would seek to avoid the habitat and would otherwise keep their motor propeller elevated so as not to scar the bottom or uproot algae and sea grasses. Federally designated EFH for shrimp, red drum, coastal migratory pelagics, and marine and estuarine fauna may experience short-term, minor localized adverse impacts that would cease once the health assessment activities are complete.

Wildlife Species/Marine and Estuarine Fauna: Adverse impacts to wildlife (primarily birds) would be short-term and minor due to boat engine noise and human disturbance. These impacts would be temporary, and most birds would return to their normal behavior once project researchers were gone from the area. There would be short-term minor adverse impacts to marine and estuarine fauna from temporary disturbance to benthic communities that could result from in-water health assessment activities.

Due to the intermittent and temporal nature of the data collection activities, no adverse impacts to marine and estuarine fauna (other than short-term, minor adverse effects to individual dolphins being assessed) are anticipated.

Protected Species: Potential direct impacts on sea turtles and West Indian manatee include possible collision or disturbance from boat traffic, noise, and human presence during health assessment activities, but due to the limited frequency of the health assessment events, the probability of direct impacts on these ESA-listed species is extremely low, so there would be no overall adverse effect on sea turtles or manatees (AL TIG 2018). Marine mammals and/or other species incidental to the health assessment activities may experience short term, minor adverse impacts, due to habitat disturbance, incidental harassment of non-target animals during captures/surveys, or accidental injury from vessel strikes. The individual wild bottlenose dolphins which are assessed would experience adverse effects associated with capture, restraint, handling, sampling and other health program activities that could increase stress and shock (LA 2020). However, due to the intermittent and temporal nature of the data collection activities, these short-term stressors (which would only affect a small percentage of the Mississippi dolphin population) would be considered minor when balanced against the long-term benefits of minimizing the number of bottlenose dolphins that become ill or die due to natural and anthropogenic threats and the potential for increased recovery of the species.

In summary, this project would result in temporary, short-term, minor adverse impacts to habitats including SAV and EFH, to marine mammals (especially bottlenose dolphin), to wildlife, and to marine and estuarine fauna, and would provide long-term benefits to marine mammals.

–Socioeconomic Resources

Tourism and Recreation: No impacts to tourism or recreation are anticipated, because the project would not involve activities with possible effects to tourism or recreational uses (AL 2018).

Aesthetics and Visual Resources: No impacts to aesthetics and visual resources are anticipated, because the project would not alter the existing aesthetic or visual resources in the area over the long term (AL 2018).

In summary, this project does not include activities that would adversely affect socioeconomic resources.

4.3.4.3 MM3, Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements (Preferred)

This project would provide restoration benefits to Gulf of Mexico (GOM) common bottlenose dolphins by decreasing the number of interactions and associated mortality of dolphins in commercial shrimp skimmer trawls in Mississippi state waters while maintaining catch efficiency and fishing performance/usability (See Figure 4.-1). Project activities considered in the assessment of the environmental consequences include:

Phase 1-Initial Equipment Development and Testing:

- In-water observational testing of net designs would be conducted from the R/V Caretta in Florida coastal waters with NOAA researchers using SCUBA divers.
- Operational in-water testing would be conducted from the R/V Caretta in Mississippi coastal waters based on proximity to known commercial shrimp trawl activity and the occurrence of a representative sample of various bottlenose dolphin stocks.
- Operational comparative testing on chartered commercial shrimp vessels in Mississippi coastal waters.
- Installation of gear/conduct comparative volunteer or incentivized testing on commercial shrimp vessels to compare control and experimental net/net covering designs.

Phase 2 - Voluntary Gear Modification:

- Develop a plan for voluntary gear modifications in the MS skimmer trawl fleet based on comparative testing results.
- Implement an outreach plan cooperatively with partners and stakeholders to educate Mississippi shrimp fishermen regarding the benefits of alternate fishing gear use and methods to minimize dolphin interactions.

Research and gear testing conducted by the NMFS Southeast Fisheries Science Center as part of this project would follow conditions outlined in their ESA permit (No. 20339) and all other applicable federal, state, and local permits. Some of Phase I activities are desktop-based and administrative. Consistent with PDARP/PEIS 6.4.14, as such these activities have no effect on resources and are not further evaluated in context of environmental consequences in Chapter 4.

Table 4-7 identifies the potentially affected resources and sections in which they are analyzed for this alternative.

Table 4-7: NEPA Assessment of Resources for MM3, Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements

Resource	Location of Environmental Consequences Analysis in Chapter 4
Physical Resources	
Geology and Substrates	Analyzed in Section 4.3.4.3
Hydrology and Water Quality	
Floodplains and Wetlands, Air Quality and GHG Emissions, Noise	Analyzed in Section 4.2.1.1 to 4.2.1.3
Biological Resources	
Habitats	Analyzed in Section 4.3.4.3
Wildlife Species (including birds)	
Marine and Estuarine Fauna (fish, shellfish, benthic organisms)	
Protected Species	
Socioeconomic Resources	
Tourism and Recreational Use	Analyzed in Section 4.3.4
Aesthetics and Visual Resources	
Socioeconomics and Environmental Justice, Cultural Resources, Infrastructure, Land and Marine Management, Fisheries and Aquaculture, Marine Transportation, and Public Health and Safety	Analyzed in Section 4.2.1.4 to 4.2.1.10

Affected Environment

This project would primarily occur within Mississippi Coastal Waters, Bays, and Estuaries, as described above in section 4.3.1. However, one component, in-water observational testing of net designs, would be conducted from the NOAA research vessel (R/V) Caretta in the vicinity of Shell Island in Bay County, Florida (See Figure 2-7.1). The affected environment of the coastal waters of the Florida Panhandle, including Bay County, Florida, was recently described in Section 4.6.2.2 of the 2021 "Deepwater Horizon Oil Spill Florida Trustee Implementation Group's Final Restoration Plan 2 and Environmental Assessment: Habitat Projects on Federally Managed Lands; Sea Turtles; Marine Mammals; Birds; and Provide and Enhance Recreational Opportunities", and is incorporated by reference and summarized below.

–Physical Resources

Florida's shoreline consists of beaches and dunes, coastal strands, coastal uplands, and maritime hammock. Along the shoreline are many miles of barrier islands, tidal bays and estuaries, and vast acres of nearshore

continental shelf environment. Maximum depths in this area of the continental shelf range from 20-30 meters.

Substrates along the Florida coastline consist primarily of unconsolidated fine sand and shells and include the following complexes: Mandarin sand, Canaveral-Beaches complex, Newhan-Corolla complex, Matlacha and St. Augustine soils, and Corolla-Duckston sands (USDA-NRCS 2020). The nearshore benthic substrates generally consist of sand, silt, clay, hard bottom substrates, and vegetation. The predominant sediment grain size in nearshore areas is typically sand that becomes increasingly finer with increasing distance from the shore.

The Florida coastline and nearshore environment is strongly influenced by coastal watersheds and drainage systems, which includes rivers and freshwater springs. Turbidity off the coast of Florida is relatively low due to the carbonate sediments. The substrate in the testing area is generally sandy and free of obstructions, artificial reefs, or habitat features that would increase the likelihood of gear snagging.

–Biological Resources

Bays, estuaries, nearshore, and continental shelf marine waters provide habitat for a very large and diverse number of plant and animal species. The intertidal zone, shallow subtidal, and nearshore coastal shelf provide habitat from several species of seagrass and a large diversity of algal species. Vast areas of unconsolidated sediments further support diverse assemblages of epibenthic and infaunal organisms. Areas with hardbottom provide substrate for oysters and coral, both of which are reef building and can develop complex reef communities. Pelagic Sargassum, which floats on the surface of the Gulf, also supports high diversity of invertebrates, pelagic fish, birds, and sea turtles. Each of these habitat types provide immense value to Gulf animals for refuge, nursery, nesting, and foraging.

More than 200 species of fish occur within Florida's Gulf Coast nearshore waters including several commercially and recreationally important species. Gulf Coast waters include federally designated EFH for shrimp, red drum, coastal migratory pelagics, reef fish, and swordfish (*Xiphias gladius*) (NOAA 2018). Federally protected fish species such as Gulf sturgeon and smalltooth sawfish also inhabit nearshore coastal waters. Nearshore waters along the Florida Panhandle are designated critical habitat for Gulf sturgeon. All five sea turtle species that inhabit Gulf Coast waters (green, hawksbill, Kemp's ridley, leatherback, and loggerhead) are present in Florida. Various nearshore and beach sites along Florida's Gulf Coast are designated critical habitat for loggerhead sea turtles.

Numerous cetacean species are present in Florida Gulf Coast waters, specifically, the Northern Gulf of Mexico Stock of Atlantic spotted dolphin (*Stenella frontalis*) and all bay, sound, and estuary stocks of bottlenose dolphins along Florida's Gulf Coast and the Gulf of Mexico Eastern Coastal, Northern Gulf of Mexico Continental, and Gulf of Mexico Northern Coastal Stocks of bottlenose dolphins (Hayes et al. 2020). West Indian manatee also occur throughout Florida's nearshore waters.

–Socioeconomic Resources

Population and housing density along the shoreline in Florida are almost three times larger than inland counties, and coastal counties support over 30 percent of Florida's statewide employment and wages (Kildow 2008). Tourism and recreation contribute substantially to coastal economies in Florida, contributing over $17 billion to the State in 2013 (NOEP 2016). Recreational activities in nearshore areas include beach visitation, boating, fishing, swimming, snorkeling and scuba diving, among others. These activities provide economic benefits and sources of employment for local communities. Marine transportation and marine construction also contribute substantially to the coastal economy.

Environmental Consequences

This project analysis incorporates by reference appropriate portions of the Environmental Consequences of marine mammal entanglement reduction projects from the following restoration plans:

- DWH Trustees 2016a. Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement (PDARP/PEIS). Section 6.4.9.3 pp 6-67 to 6-68. https://www.fws.gov/doiddata/dwh-ar-documents/1138/Chapter-6_Environmental-Consequences_508.pdf
- Regionwide TIG 2021. Regionwide Trustee Implementation Group Final Restoration Plan/Environmental Assessment 1: Birds, Marine Mammals, Oysters, and Sea Turtles. Section 4.3.2.2 pp. 159 to 162). Available: https://www.gulfspillrestoration.noaa.gov/sites/default/files/FINAL.RP_.EA-2021.09.16-TIG.approved_0.pdf

Section 6.4.9.3 of the PDARP/PEIS describes the potential effects of restoration techniques which include "Improve the ability to detect and rescue free-swimming dolphins that are entangled, entrapped (e.g., due to levee construction), or out of habitat (e.g., due to hurricane displacement)." This alternative falls within the scope of the activities and potential environmental consequences analyzed in the PDARP/PEIS. The RW TIG analyzed a project in RW RP/EA1 (Marine Mammals Alternative 1: Voluntary Modifications to Commercial Shrimp Lazy Lines to Reduce Dolphin Entanglements) (Section 4.3.2.2 pp. 159-162). The RW MM Alternative 1 project focuses on testing lazy line gear to avoid dolphin entanglement. RP3/EA MM3 would test net coverings and net materials to avoid dolphin interactions. While project outcomes are different, testing and phasing are similar and comparable for the purposes of this NEPA analysis. In addition, both the RW MM Alternative 1 and RP3/EA MM3 would involve similar activities in Mississippi. MM3 includes one gear testing activity in Florida coastal waters. Both of the plans anticipated short-term, minor adverse effects to physical and biological resources (including benthic habitat and marine wildlife) from human activities and equipment use, as well as long-term benefits to biological and socioeconomic resources. Environmental consequences including physical, biological and socioeconomic resources are described below.

–Physical Resources

Geology and Substrates: No adverse impacts are anticipated.

Hydrology and Water Quality: This project would have no impacts on hydrology. Normal fishing practices for shrimp trawl involve deploying and hauling of gear. These routine practices may cause temporary, minor disruption of the water column. However, due to the limited frequency of the gear testing activities, these adverse impacts to water quality would be minor and short-term. Commercial fishing practices and level of effort would not be altered during this project nor would the locations in which fishing is happening. Various aspects of net components would be modified and existing best management practices for commercial shrimp trawl vessels and NOAA research vessels would be followed during operations.

In summary, this project is anticipated to result in short-term, minor adverse impacts to water quality.

–Biological Resources

Habitats, Wildlife Species, and Marine and Estuarine Fauna: Normal fishing practices for shrimp trawl involve deploying and hauling of gear. These routine practices may cause temporary, minor disruption of benthic habitat and marine and estuarine fauna. Changing net and net covering materials are not expected to affect birds or terrestrial wildlife, as these resources do not interact with net or net covering materials.

Marine and Estuarine Resources: No adverse impacts are expected to marine and estuarine resources. Although commercial shrimping can adversely impact shrimp and other bycatch fish species, implementation of this alternative would not intensify or reduce shrimping activities.

Protected Species: Potential direct impacts on sea turtles and West Indian manatee include possible collision or disturbance from boat traffic, but due to the limited frequency of the gear testing activities, the probability of direct impacts on these protected species is extremely low. Proposed changes in gear are expected to reduce marine mammal net interactions.

In summary, this project would result in short-term, minor adverse impacts to benthic habitat and ESA-listed species and would provide long-term benefits to bottlenose dolphin.

–Socioeconomic Resources

Tourism and recreation and aesthetic and visual resources for the MM3 project would be similar to those for the Regionwide MM Alternative 1 and are discussed in detail in RW RP/EA1 Sections 4.3.1.2.4 and 4.3.1.2.5. Some activities for RP 3/EA MM 3 could be located in areas with high levels of recreational visitation (e.g., in-water gear testing near Shell Island/St. Andrews Bay, Florida). These impacts would only occur during the testing period and are likely to be short-term, minor adverse impacts to recreation. Most aesthetic and visual resources for the MM 3 project would be located on the coast or in coastal waters. Activities such as in-water gear testing near Shell Island/St. Andrews Bay, Florida or use of gear by shrimp trawls in Mississippi would have negligible impacts on aesthetics and visual resources, as these vessels are typical in coastal waters.

In summary, there would short-term minor impacts to tourism and recreation and negligible impacts to aesthetics and visual resources as a result of this project.

4.3.4.4 Marine Mammals Restoration Type-No Action

Under the No Action alternative, the marine mammal restoration projects would not occur. Potential short-term minor adverse effects to physical, biological, and socioeconomic resources associated with responding to stranded or out-of-habitat marine mammals, conducting marine mammal health assessments, and testing/implementation alternative trawl materials and practices would not occur. Under the No Action alternative, there would be a decrease in the current enhanced stranding network response to marine mammals, and a continuation of current health issue conditions and potential harm to dolphins caused by commercial shrimpers as a result of net interactions. In summary, under the No Action alternative, there would be a decrease in long-term benefits to marine mammals due to the other funding streams that support the stranding network also running out.

4.3.5 Birds

There are two HPFML Restoration Type alternatives that would occur on the Mississippi Barrier Islands (See Figure 4-1). The following sections includes the environmental consequences for:

- B1, Bird Stewardship and Enhanced Monitoring in Mississippi (Preferred)
- B2, Bird Stewardship on the Mississippi Barrier Islands (Non-Preferred)

In practice, the nuisance animal management activities in FM2 and the predator control activities in B1 and B2 would have similar actions and environmental consequences. Therefore, the following environmental consequences analysis refers to FM2 with respect to activities included in vegetation management and predator control.

4.3.5.1 B1 and B2, Bird Stewardship and Enhanced Monitoring in Mississippi (Preferred), and Bird Stewardship on the Mississippi Barrier Islands (Nonpreferred)

There are two RP3/EA Birds Restoration Type alternatives with overlapping restoration measures and activities. B1 and B2 projects would employ strategies such as reducing human disturbance, improving habitat quality, reducing predation on shorebird nests, and improving regulatory coordination to increase populations of black skimmers, least terns, American oystercatchers, Wilson's plovers, and snowy plovers. B1 also includes data gathering including banding and tracking. The environmental consequences for B1 and B2 are analyzed collectively here. The environmental consequences for vegetation management and mammalian nuisance species management are discussed in FM2 (Section 4.3.2.2) and are applicable to B1 and B2 restoration. Project activities considered in the assessment of the environmental consequences for B1 and B2 broadly include reducing human disturbance, data gathering, vegetation management, and predator control. Specific activities for each of these categories are described in more detail below.

Reducing Human Disturbance

- Implementing strategies such as posting symbolic fencing and/or signage in nesting, brood-rearing, and sensitive feeding habitats. Fencing and signage would be installed around nesting sites by hand or with light equipment. Temporary fencing would be removed at the end of nesting season.

Data Gathering (B1 only)

- Banding and tagging individual birds during the nesting season (Years 2-7);
- Installing receivers on the barrier islands, mainland beaches or coastal islands (e.g., Round Island, Deer Island) to record bird passage in the vicinity. Receivers would be mounted on existing structures to facilitate data collection during the course of the project;
- Bird handling during banding and tracking would be kept to the minimal times allowed; and
    - Monitoring of nest sites:
        - Weekly monitoring of breeding bird colonies (e.g., colony size, reproductive output, survival rates), during nesting season.
        - Monitoring of winter migrants would be conducted annually along pre-determined survey routes and would occur in three survey pulses corresponding to fall migration, winter (overwinter) and spring migration.

Vegetation Management (See Also FM2)

- Surveys including ground surveys and Unmanned Aerial Systems (UASs) such as drones to conduct pre-treatment planning and post treatment monitoring for invasive plant species.
- Chemical treatment would consist of herbicide application methods, to include foliar spraying, girdle, hack and squirt, basal bark, and cut stump.
- Mechanical clearing would include hand-pulling of nuisance vegetation or use of small equipment (e.g., hand saws, chain saws) to clear tree seedlings. Pulled seedlings would be left hanging on the native vegetation, piled, or disposed of in trash bags and placed in dumpsters where appropriate.
- Transport of NPS staff or contractors by boat to the barrier islands. Site access by foot only in wilderness areas (Petit Bois and Horn) or by motorized vehicles (UTVs) on non-wilderness islands.

Predator Control-(See Also FM2)

Target species for bird stewardship predator control include raccoons, opossum, nutria, and other species that prey on bird eggs and chicks. Project activities considered in the assessment of the environmental consequences include:

- Surveys including ground surveys and Unmanned Aerial Systems (UASs) such as drones to conduct pre-treatment planning and post treatment monitoring for predators.
- Monitoring transects for tracks and scat to detect presence and estimate population levels.
- Non-lethal methods include live traps and nets.
- Lethal methods (with the animal they are primarily used for) could include, but are not limited to: body grip traps (nutria); cage traps (all species); and shooting (all species); (NPS, Southeast Regional Office, 2018).
- Collection and transporting of carcasses to a USDA permitted facility for incineration.
- Transport of NPS staff or contractors by boat to the barrier islands. Site access by foot only in wilderness areas (Petit Bois and Horn) or by motorized vehicles (UTVs) on non-wilderness islands.

Table 4-8 identifies the potentially affected resources and sections in which they are analyzed for this alternative.

Table 4-8: NEPA Assessment of Resources for B1, Bird Stewardship and Enhanced Monitoring in Mississippi and B2, Bird Stewardship on the Mississippi Barrier Islands

Resource	Location of Environmental Consequences Analysis in Chapter 4
Physical Resources	
Geology and Substrates	Analyzed in Section 4.3.5.1
Hydrology and Water Quality	
Floodplains and Wetlands, Air Quality and GHG Emissions, Noise	Analyzed in Section 4.2.1.1 to 4.2.1.3
Biological Resources	
Habitats	Analyzed in Section 4.3.5.1
Wildlife Species (including birds)	
Marine and Estuarine Fauna (fish, shellfish, benthic organisms)	
Protected Species	
Socioeconomic Resources	
Tourism and Recreational Use	Analyzed in Section 4.3.5.1
Aesthetics and Visual Resources	
Socioeconomics and Environmental Justice, Cultural Resources, Infrastructure, Land and Marine Management, Fisheries and Aquaculture, Marine Transportation, and Public Health and Safety	Analyzed in Section 4.2.1.4 to 4.2.1.10

Environmental Consequences

The following restoration and management plans provide NEPA analyses for bird stewardship activities:

- DWH Trustees 2016a. Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement (PDARP/PEIS). https://www.fws.gov/doiddata/dwh-ar-documents/1138/Chapter-6_Environmental-Consequences_508.pdf
- Deepwater Horizon Oil Spill Phase II Early Restoration Plan and Environmental Review (DWH Trustees 2012): Early Restoration RP II/EA; Enhanced Avian Breeding Habitat Injured by Response Activities in

the Florida Panhandle, Alabama, and Mississippi. Section 4.3.3 Page 37-41. https://www.fws.gov/doiddata/dwh-ar-documents/1009/DWH-AR0227183.pdf

- Florida TIG 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. B4 and B5, Florida Shorebird and Seabird Stewardship and Habitat Management – 5 Years (Preferred) and – 10 Years; Section 4.8.4; PP 4-69 to 4-72. https://www.fws.gov/doiddata/dwh-ar-documents/4004/DWH-ARZ009338.pdf
- Regionwide TIG 2021. Regionwide Trustee Implementation Group Final Restoration Plan/Environmental Assessment 1: Birds, Marine Mammals, Oysters, and Sea Turtles.; Section 4.3.2.1.1. PP 146-147. DWH-ARZ008721.pdf. Available: https://www.gulfspillrestoration.noaa.gov/sites/default/files/FINAL.RP_.EA-2021.09.16-TIG.approved_0.pdf

Section 6.4.10.1 of the PDARP/PEIS describes the potential effects of restoration approaches intended to restore and conserve bird nesting and foraging habitat including bird stewardship. This alternative falls within the scope of the activities and potential environmental consequences analyzed in the PDARP/PEIS. The Phase II Early Restoration Enhanced Avian Breeding Habitat Injured by Response Activities in the Florida Panhandle, Alabama, and Mississippi conducted similar activities in the project area. The Florida Shorebird and Seabird Stewardship and Habitat Management project and RW Plan 1 Birds alternative 1 analyze similar effects to those proposed in these RP3/EA projects. These plans anticipate minor, short-term, adverse effects to physical resources from ground disturbance activities associated with foot traffic, minor construction (signage, fencing) and from predator control activities. The plans also anticipate short-term minor adverse effects to wildlife populations and potentially long-term to moderate adverse effects to wildlife species from predator control activities. The plans anticipate short to long term adverse effects to socioeconomic resources where predator control would require changes to land management policies. There could be long term benefits to biological and socioeconomic resources resulting from predator control and stewardship activities. Environmental consequences including physical, biological, and socioeconomic resources for bird stewardship activities are described below.

–Physical Resources

Geology and Substrates: This project would have no impact on geology. There would be short-term, minor adverse effects to soils from installation and removal of fencing/signage around nesting colonies, foot or UTV traffic associated with evaluating habitat management needs, and physical and chemical removal of invasive vegetation using hand tools. There would be short-term, minor adverse effects to physical resources from vegetation management and predator control activities as described in Section 4.3.2.2.

There would be long-term benefits to physical resources that would result from establishing protected areas and reducing dispersed foot traffic, which can help reduce erosion and otherwise benefit localized soils and sediments. Long-term benefits to dunes that would result from vegetation management and predator control are described in Section 4.3.2.2.

Hydrology and Water Quality: Placing symbolic fencing around bird colonies may have minor, short-term, adverse effects on hydrology and water quality as a result of minor erosion from installation/removal around nesting colonies, foot traffic associated with evaluating habitat management needs, and physical and chemical removal of invasive vegetation using hand tools. Short-term, minor adverse effects to hydrology and water quality from vegetation management and predator control activities are described in Section 4.3.2.2.

In summary there would be short-term, minor adverse impacts to geology and substrates and hydrology and water quality. There would be long-term benefits to geology and substrates.

–Biological Resources

Habitats: There would be short-term, minor, adverse impacts to habitats from installation and removal of fencing/signage around nesting colonies, foot traffic associated with evaluating habitat management needs, and physical and chemical removal of invasive vegetation using hand tools. Installation of fencing and signage in colonial waterbird nesting habitat would avoid nesting birds to the extent practicable, maintaining the maximum distance from nesting birds and completing removals after birds have left the area. There would be short-term benefits to colonial waterbird nesting habitat by installation of fencing and signage that would assist in minimizing human disturbance to facilitate more successful nesting. The long-term benefits to dune habitats from vegetation management and predator control are described in Section 4.3.2.2, and include increased fecundity and productivity of sea oats, and improved dune formation.

Wildlife: There would be short-term, minor adverse effects to wildlife from banding and tagging of birds, installation and removal of fencing/signage around nesting colonies, foot traffic associated with evaluating habitat management needs, and physical removal of vegetation using hand tools and chemical treatment of invasive vegetation (See Section 4.3.2.2). Wildlife may react to the disturbance of workers in their vicinity, or of UASs, by hiding, flushing, or leaving the area entirely. Wildlife would be expected to return to the area once the crews leave. Staff completing banding and tagging activities would obtain pertinent federal and state permits required to handle birds. Bird handling times would be kept to the minimum handling time required. NPS' Best Practices for Avoiding Impacts to Natural, Cultural, and Historic Resources when Using Unmanned Aircraft Systems (NPS 2017) would be followed if UASs are employed for project activities. Other guidelines such as the FWS Unmanned Aerial Systems Resource Guide (FWS 2017) on wildlife disturbance would be followed where applicable. Section 4.3.2.2 also describes the short-term, minor adverse effects to target and non-target wildlife. Long-term benefits to birds (nest protection) would result from stewardship activities, vegetation management, and from predator control. The primary benefit to wildlife would be increased nest success.

Marine and Estuarine Fauna: There are no anticipated adverse effects to marine or estuarine fauna because there would be no in-water work. The transport of NPS staff to the islands is an ongoing activity that occurs regularly, observing best practices and vessel operations plans. The addition of these project activities to these ongoing operations would result in a negligible number of additional trips.

Protected Species: As with other wildlife as discussed above, there could be short-term, minor adverse effects to protected species from elevated noise levels, temporary disturbance to vegetation, and increased human activity due to installation of protective fencing, predator control, and vegetation management activities. Wildlife may react to the disturbance of workers in their vicinity, or of UASs, by hiding, flushing, or leaving the area entirely. Wildlife would be expected to return to the area once the crews leave. Piping Plover and Red Knot are protected species that could occur transiently in the project area during winter. National Park Service personnel would be present for all operations and would ensure that protected species would be avoided. See also Section 4.3.2.2 for a detailed discussion of vegetation management and predator control activities and BMPs. The proposed restoration activities provide long-term benefits to habitats and natural resources by addressing known causes of habitat degradation and/or mortality of threatened and imperiled species and migratory birds, reducing threats from predation and improving

habitat. There would be no effects to in-water sea turtles or marine mammals as a result of predator control activities as they do not include any in-water work.

In summary, bird stewardship, vegetation management and predator control activities could result in short-term, minor adverse impacts to habitats, wildlife, and protected species. There would be no effect on marine and estuarine fauna. Bird stewardship, vegetation management and predator control would have long-term benefits for habitats, wildlife (including birds) and protected species.

–Socioeconomic Resources

Tourism and Recreation: There would be minor, short-term, adverse effects to tourism and recreation from stewardship, vegetation management and predator control (See section 4.3.2.2) activities conducted as part of this project. Tourists would be temporarily restricted from colonial waterbird nesting areas and would be restricted from areas where vegetation management activities are being conducted. Predator control activities (trapping, lethal predator control) would be conducted at times of the day or in locations where human presence would be minimal. There would be short-term benefits to tourism and recreation, as visitors could undertake wildlife observation from close vantage points, specifically, colonial water birds that are nesting within fenced areas.

Aesthetics and Visual Resources: There would be short-term, minor, adverse impacts to aesthetics and visual resources from the fencing/signage around colonial waterbird nesting colonies. This would represent a disruption in the normal, undisturbed island viewshed. The demarcations provided by fencing and signage would provide a benefit to visitors by creating opportunities for visitors to observe colonial water birds that are nesting within fenced areas.

In summary, this project is anticipated to result in short-term, minor adverse effects and short-term benefits to tourism and recreation and aesthetics and visual resources.

4.3.5.2 Birds Restoration Type-No Action

Under the No Action alternative, the bird restoration alternatives proposed would not occur. Potential short-term and temporary adverse effects to physical, biological, and socioeconomic resources associated with the proposed bird restoration would not occur. If the projects are not implemented, a continuation of current conditions would be expected including poor quality habitat and reduced ecosystem function and bird mortality due to predation. In summary, under the No Action alternative, no short-term and temporary adverse effects would result from the project, but adverse impacts from current anthropogenic and nuisance species would continue. Also, no long-term benefits to birds would be realized.

4.3.6 Recreational Opportunities

Projects that would provide and enhance recreational opportunities include:

- REC1, Clower Thornton Nature Park Trail Improvement
- REC2, Environmental Education and Stewardship at Walter Anderson Museum of Art
- REC3, Mississippi Gulf Coast Pier Improvements
- Recreational Opportunities Restoration Type-No Action

The projects are depicted on Figure 4-2.

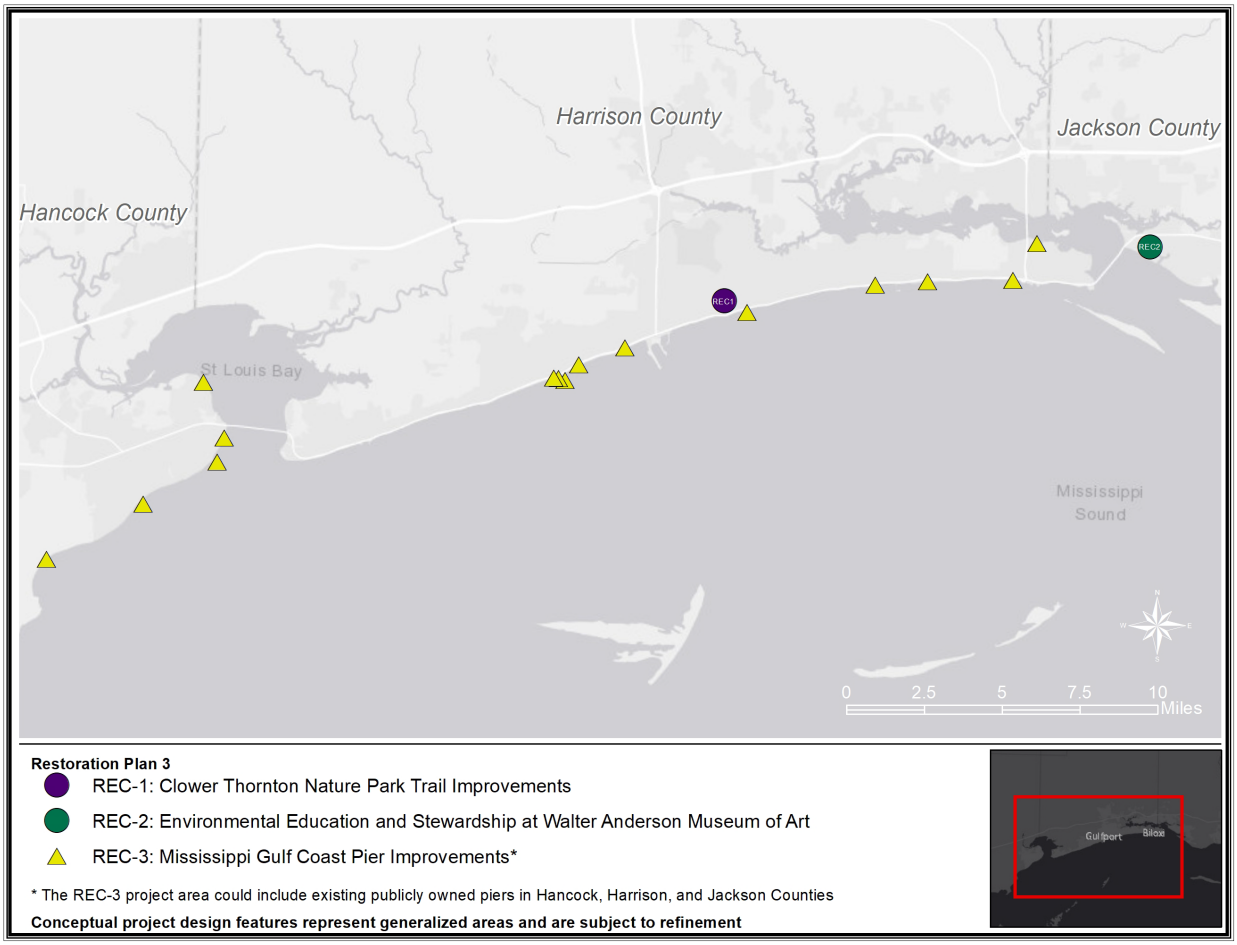

Figure 4-2: Recreational Opportunities Restoration Type Alternatives in RP3/EA

4.3.6.1 REC1, Clower Thornton Nature Park Trail Improvement (Preferred)

The enhancements to the 17.5-acre Clower Thornton Nature Park would help restore lost recreational uses by improving recreational access to Gulf natural resources and enhancing recreational experiences for visitors (Figure 4-2). The project would include installation of a new trail/boardwalk(s), and installation of other amenities as budget allows (e.g., educational kiosks, signage). Project activities considered in the assessment of the environmental consequences include:

- Installation of new mulch, gravel, or asphalt trails and boardwalks by mechanical clearing, preparation, and installation using small tractors, skid steers, and/or hand/power tools.
- Installation of educational kiosks and signage using hand/power tools or by an auger attachment to small tractors or skid steers.
- Access to the site by small tractors, skid steers, on foot, ATV, or truck.
- Extension of trail length by up to 5,000 linear feet of trail; up to 1.0 acre of the site could be converted to trail, boardwalk, or resurfaced area for kiosks, signs, and turnarounds areas, depending on available budget.

Table 4-9 identifies the potentially affected resources analyzed for this alternative.

Table 4-9: NEPA Assessment of Resources for REC-1 Clower Thornton Nature Park Trail Improvements

Resource	Location of Environmental Consequences Analysis in Chapter 4
Physical Resources	
Geology and Substrates	Analyzed in Section 4.3.6.1
Hydrology and Water Quality	
Floodplains and Wetlands, Air Quality and GHG Emissions, Noise	Analyzed in Section 4.2.1.1 to 4.2.1.3
Biological Resources	
Habitats	Analyzed in Section 4.3.6.1
Wildlife Species (including birds)	
Marine and Estuarine Fauna (fish, shellfish, benthic organisms)	
Protected Species	
Socioeconomic Resources	
Tourism and Recreational Use	Analyzed in Section 4.3.6.1
Aesthetics and Visual Resources	
Socioeconomics and Environmental Justice, Cultural Resources, Infrastructure, Land and Marine Management, Fisheries and Aquaculture, Marine Transportation, and Public Health and Safety	Analyzed in Section 4.2.1.4 to 4.2.1.10

Affected Environment

This alternative would occur within the existing Clower Thornton Nature Park, a 17.5-acre parcel adjacent to Coffee Creek. A brief description of physical, biological, and socioeconomic resources in the project area is provided here.

–Physical Resources

Geology and Substrates

Data from the Mississippi State Geological Survey (MSGS) indicates generally that surface soils consist of Holocene age, quaternary coastal deposits of loam, sand, gravel, and clay. The USDA Web Soil Survey indicates that the soils are mainly silt loams and fine sandy loams that are associated with tidal flats, coastal plains, terraces, stream terraces, and ridges.

Hydrology and Water Quality

The project area is bordered on its eastern side by Coffee Creek. This coastal stream flows south and enters the Mississippi Sound less than a mile from the project area. Downstream from the Clower Thornton Nature Park, the stream is tidally influenced for a distance of about 0.25 mile from the Mississippi Sound to the north side of Highway 90. On the Clower Thornton Nature Park site, a small tributary enters Coffee Creek from the east through the project area. Water quality samples were collected by the Mississippi Department of Environmental Quality in 2016 as part of a Nature Conservancy stream assessment project (https://www.nature.org/media/mississippi/tnc-cap.pdf). For Coffee Creek, no water quality impairments or potential areas of concern were identified though this sampling.

–Biological Resources

Habitats

The Clower Thornton Nature Area has eight habitat management units (Figure 4-3) that include magnolia forest, pine forest, live oak forest, bottomland forest, bottomland forest with a dense infestation of invasive species, stream, and associated streambank (Cypress Environmental and Infrastructure 2020).

Magnolia Forest: An estimated 0.65 acre of magnolia forest is located in the northeast portion of the site. This unit is dominated by native southern magnolia (*Magnolia grandiflora*)*, bitter pecan* (*Carya aquatica*)*,* Carolina cherry laurel (*Prunus caroliniana*)*,* saw palmetto (*Serenoa repens*), and huckleberry (*Vaccinium elliottii)*.

Pine Forest: An estimated 0.83 acre of pine forest is located in the northwest comer of the site. This unit is dominated by native slash pin (*Pinus elliottii)* with an open understory.

Live Oak Forest: An estimated 5.23 acres of live oak forest is located in the east portion of the site. There are several unimproved trails within this unit. An old, damaged boardwalk is located near the center of this unit and would need to be removed. The live oak forest is dominated by native southern magnolia, live oak (*Quercus virginiana*)*,* water oak (*Quercus nigra*)*,* longleaf pine (*Pinus palustris*), yaupon (*Ilex vomitoria*), cherry-laurel (*Prunus caroliniana*), saw palmetto, blackberry (*Rubus sp*.), and green briar (*Smilax spp*).

Bottomland Forest: An estimated 6.95 acre of bottomland forest is located in the west interior of the site. Surface water was observed in wetter areas in the southern portion and sporadically along the interior of the bottomland forest. A small stream runs east-west and connects with Coffee Creek within the north portion of this unit. The bottomland forest is dominated by native sweetbay (*Magnolia virginiana*), water oak, cypress (*Taxodium distichum*), black gum (*Nyssa biflora*), yaupon, American holly (*Ilex opaca*), and netted chain fern (*Woodwardia areolata*).

Bottomland Forest with a Dense Infestation of Invasive Species: An estimated 0.39 acres of bottomland forest are densely infested in the northwest area of the site. A small stream runs along the southern edge of the dense infestation. The bottomland forest is dominated by native sweetbay*,* water oak, cypress, black gum, yaupon, American holly, and netted chain fern. Invasive species include a high-density stand of small privet in the understory and small, medium, and large Chinese tallow tree trees in the subcanopy and canopy. Isolated occurrences of small camphor tree (*Cinnamomum camphora*) and the invasive vine, Japanese climbing fern, are present.

Stream and Associated Streambank: A 1,598-foot segment of the Coffee Creek is adjacent to the western park boundary. An estimated 0.76 acres of streambank run along the western park boundary. The streambank varies between 15 to 30 feet wide and has a steep slope along Coffee Creek. The streambank is densely vegetated. The native species include southern magnolia, overcup oak (*Quercus lyrata*), water oak, yaupon, and dwarf sumac (*Rhus copallinum*).

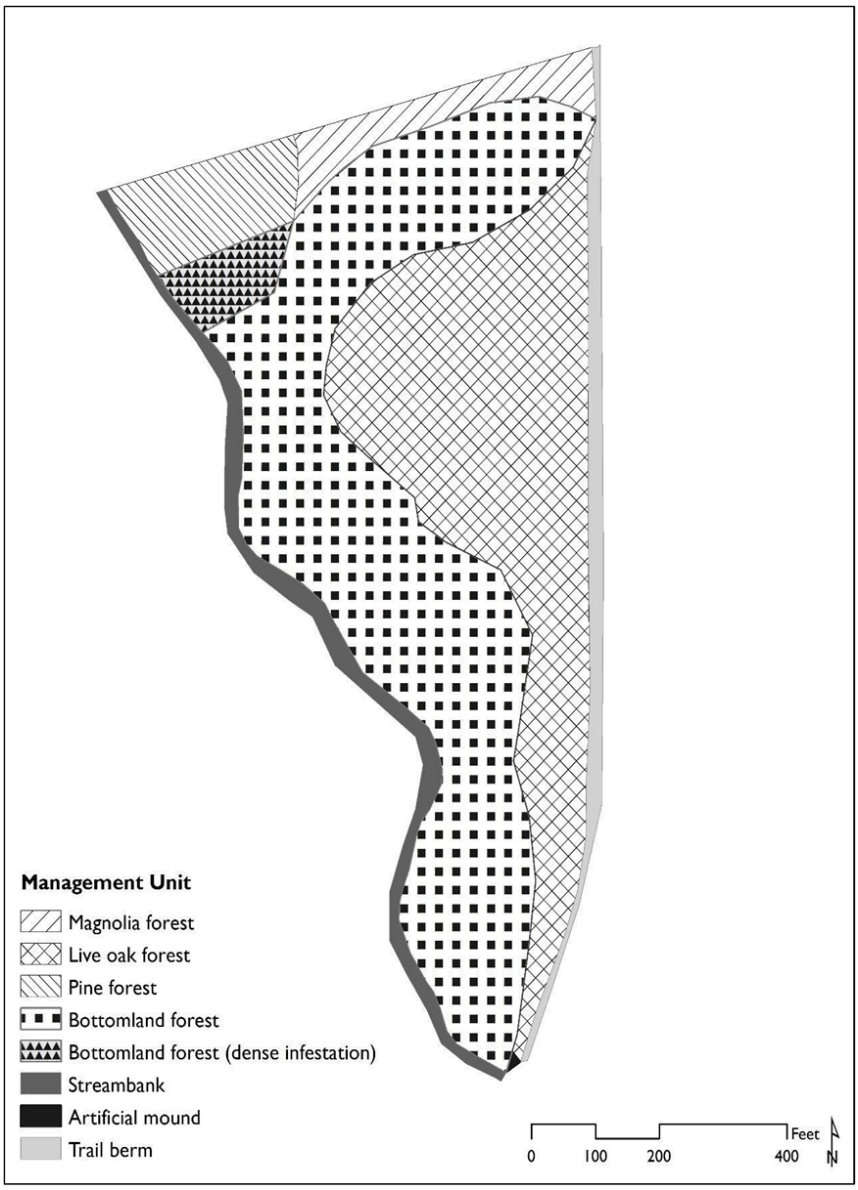

Figure 4-3: Clower Thornton Nature Park Habitat Management Units

Wildlife

This site is owned by the City of Gulfport and is managed by the Gulfport Parks and Recreation Department. This renowned birding site is listed on the Audubon Mississippi Coastal Birding Trail and currently has a paved walkway around the entire perimeter of the park and additional unimproved trails throughout the park's interior.

The project area consists of habitat suitable for deer (*Odocoileus virginianus*), turkey (*Meleagris gallopavo*), eastern cottontail rabbit, opossum, Eastern gray squirrels (*Sciurus carolinensis*), skunks (*Mephitis mephitis*), gray fox, raccoon (*Procyon lotor*), eastern woodrat, various species of bats, and quail (*Colinus virginianus*) in the woodlands and various songbirds in the transition areas such as forest edges. Amphibian species capable of inhabiting poorly drained lowlands with a vegetative cover of pine and mixed hardwood are likely to be found within the project areas. This could include ornate chorus frog (*Pseudacris ornate*), gopher frog (*Rana*

capito), river frog (*Rana heckscheri*), and eastern spadefoot (*Scaphiopus holbrooki*), spotted salamander (*Ambystoma maculatum*), mole salamander (*Ambystoma talpoideum*), small-mouthed salamander (*Ambystoma texanum*), southern dusky salamander (*Desmognathus auriculatus*), northern dusky salamander (*Desmognathus fuscus*), southern two-lined salamander (*Eurycea cirrigera*), four-toed salamander (*Hemidactylum scutatum*), red salamander (*Pseudotriton ruber*), mud salamander (*Pseudotriton montanus*), and lesser siren (*Siren intermedia*).

Reptile species that could occur include eastern worm snakes (*Carphophis amoenus amoenus*), scarlet snakes (*Cemophora coccinea*), Mississippi ring neck snakes (*Diadophis punctatus*), southern hognose snakes (*Heterodon simus*), mole snakes (*Pseudaspis cana*), scarlet king snakes (*Lampropeltis elapsoides*), pine woods snake (*Rhadinaea flavilata*), Gulf Coast ribbon snakes (*Thamnophis proximus*), eastern garter snakes (*Thamnophis sirtalis sirtalis*), rough earth snakes (*Haldea striatula*), smooth earth snakes (*Virginia valeriae*), eastern coral snakes (*Micrurus fulvius*), eastern diamondback rattlesnakes (*Crotalus adamanteus*), canebrake rattlesnakes (*Crotalus horridus*), eastern glass lizards (*Ophisaurus ventralis*), slender glass lizards (*Ophisaurus attenuatus*), and Mediterranean geckos (*Hemidactylus turcicus*). Aquatic snake species that could occur include mud snakes (*Farancia abacura*), rainbow snakes (*Farancia erytrogramma*), and midland water snakes (*Nerodia sipedon pleuralis*). Various species of turtle and fish could also be present in Coffee Creek.

Marine and Estuarine Fauna

There are no marine or estuarine fauna at the Clower Thornton Nature Park.

Protected Species

Relevant federally protected species and critical habitat are not known to occur in the project area. Protected species that could occur in Harrison County are listed and described in Appendix B.

–Socioeconomic Resources

Tourism and Recreation

The Clower Thornton Nature Park attracts local residents and tourists for hiking and bird watching activities. Centennial Plaza is a nearby resort complex that is a hub for tourists of the Mississippi Gulf Coast. Existing trails connect the Clower Thornton Nature Park to Centennial Plaza. Trails also connect the Clower Thornton Nature Park to the nearby Mississippi Sound and beach area.

Aesthetic and Visual Resources

Visual resources consist of upland pine, magnolia, and live-oak forests, bottomland hardwoods, and freshwater streams. The trail system provides visitors with access to nature viewing in these areas.

Environmental Consequences

The environmental consequences that would result from the implementation of this alternative to physical, biological, and socioeconomic resources are described in this section.

–Physical Resources

Geology and Substrates: This project would have no impacts to geology. There would be long-term, minor adverse effects on substrates resulting from site preparation activities (e.g., clearing, grubbing, minor

digging), trail construction, boardwalk and kiosk installation, and equipment movement on the property. The area of disturbed soils for each recreational improvement would include approximately 5,000 linear feet of trail; up to 1.0 acre converted to trails, boardwalk(s), kiosks, signs, and turnarounds areas. Staging areas for construction equipment would utilize existing development footprints and disturbed areas where possible (e.g., existing trails, existing roads, parking lots, paved areas).

Water Quality and Hydrology: There would be short-term, minor adverse effects on water quality resulting from temporary rutting, exposed soils, and increased turbidity in runoff resulting from on-site construction. The trail system would concentrate foot traffic and reduce dispersed adverse effects to soils in the long-term. During construction, erosion control measures (e.g., silt fences, seeding of exposed soils) would be implemented to minimize erosion and resulting turbidity in adjacent waterways. For REC1, if budget allows, a new boardwalk would be constructed through a FEMA Special Flood Hazard Area. This is not anticipated to negatively impact flood elevations since floodwaters would be allowed to flow through the structure.

In summary, the project is anticipated to result in short- and long-term, minor adverse effects to geology and substrates and short-term minor adverse effects to water quality and hydrology.

–Biological Resources

Habitats: There would be long-term, minor adverse effects to aquatic and terrestrial habitats (See Figure 4-3) that would be converted to trails or kiosks or traversed by boardwalks; the permanent footprint would be up to 1.0 acre. The boardwalk would be constructed near and crossing over a creek and bottomland forest. The release of sediments during construction would be controlled using BMPs (e.g., silt fences, planting of exposed soils) to protect aquatic habitat, prevent the transport of sediment into waterways, and confine adverse effects to construction sites. The trail system and boardwalk would concentrate human activity and reduce adverse effects to habitats in the area over the long-term. For REC1, if budget allows, a new elevated boardwalk may be constructed through wetlands. This would result in long-term, minor adverse impacts to wetlands. Coordination with the USACE and final authorization pursuant to CWA would be completed prior to project implementation (See Chapter 5.0). Construction would minimize the effects to wetlands to the extent practical and feasible.

Wildlife: This project would have long-term, minor adverse effects on wildlife. The proposed recreational improvements could result in an increase in visitors. Increased visitors could negatively affect wildlife due to increased noise and human activity. It is unlikely that wildlife would be permanently displaced from the project area as a result of increased visitor use in the project area.

Marine and Estuarine Fauna: There would be no effect on marine and estuarine fauna from the implementation of this project because the project would not occur in areas where marine and estuarine fauna occur.

Protected Species: There is no suitable habitat for any protected species in the project area. The project is expected to have no effect on protected species.

In summary, the project would have long-term, minor adverse effects on habitats and wildlife.

–Socioeconomic Resources

Tourism and Recreation: The project would enhance public recreation in the Gulfport area and thus provide a long-term benefit for tourism and recreation. During construction, as noted above, equipment and operations would be restricted to previously disturbed areas as much as feasible. The use of construction equipment and barriers enacted to protect public safety during construction, and possible short-term closures of the area, would result in short-term, minor adverse effects on recreational use of the site.

Aesthetics and Visual Resources: During the construction period, visible impediments (construction equipment, barriers) would detract from the natural landscape and would create short-term, minor adverse effects. There would be a long-term benefit to aesthetic and visual resources after the project is constructed by providing improved views from the interior of the forested habitat that were not easily accessible before project construction.

In summary, this project is anticipated to result in short-term, minor adverse effects to tourism and recreation and aesthetics and visual resources. The project would have a long-term benefit to tourism and recreation and visual and aesthetic resources.

4.3.6.2 REC2, Environmental Education and Stewardship at Walter Anderson Museum of Art (Preferred)

The Creative Complex at the Walter Anderson Museum of Art (Creative Complex) is an expansion of the Museum's campus with a total 15,000 square feet of indoor and outdoor spaces and gardens connecting to coastal landscapes and applications such as those in science, recreation, and restoration (Figure 4-2). The project includes partial funding for the construction of Education Pavilions, Shoreline Gardens and the implementation of educational and programs as described in Section 2.4.5.2. Project activities considered in the assessment of the environmental consequences include:

- Construction on the Education Pavilions and Shoreline Gardens would consist of necessary site grading and foundation preparation using a small skid steer and mini excavator.
- Landscape architecture includes a system of ADA-accessible walkways, elevated approximately thirty inches above ground level to allow animals and plants to retain ownership of the ground plane.
- New building construction would also be similarly elevated, using a steel pile foundation that is less invasive than typical chain wall or slab foundations.
- Main ingress/egress to the Creative Complex would employ environmentally-friendly pavers (such as Grasscrete) to facilitate drainage and necessary vehicle access, while limiting ground disturbance and allowing ground cover to grow in and around paved sections.
- The construction area is approximately 3,000 square feet; <0.10 acres.

Table 4-10 identifies how potentially affected resources are analyzed for this alternative.

Table 4-10: NEPA Assessment of Resources for REC2 Environmental Education and Stewardship at Walter Anderson Museum of Art

Resource	Location of Environmental Consequences Analysis in Chapter 4
Physical Resources	
Geology and Substrates	Analyzed in Section 4.3.6.2
Hydrology and Water Quality	
Floodplains and Wetlands, Air Quality and GHG Emissions, Noise	Analyzed in Section 4.2.1.1 to 4.2.1.3
Biological Resources	
Habitats	Analyzed in Section 4.3.6.2
Wildlife Species (including birds)	
Marine and Estuarine Fauna (fish, shellfish, benthic organisms)	
Protected Species	
Socioeconomic Resources	
Tourism and Recreational Use	Analyzed in Section 4.3.6.2
Aesthetics and Visual Resources	
Socioeconomics and Environmental Justice, Cultural Resources, Infrastructure, Land and Marine Management, Fisheries and Aquaculture, Marine Transportation, and Public Health and Safety	Analyzed in Section 4.2.1.4 to 4.2.1.10

Affected Environment

This alternative includes improvements to the on the Art Campus which is adjacent to the Walter Anderson Museum of Art in Ocean Springs, Mississippi. A brief description of physical, biological and socioeconomic resources in the project area is provided here.

–Physical Resources

Geology and Substrates

Data from the Mississippi State Geological Survey (MSGS) indicates generally that surface soils consist of Holocene age, quaternary coastal deposits of loam, sand, gravel, and clay. The USDA Web Soil Survey indicates that the soils are mainly silt loams and fine sandy loams that are associated with tidal flats, coastal plains, terraces, stream terraces, and ridges.

Hydrology and Water Quality

The project area is located in an urban setting. Hydrology in the area is directed toward a stormwater drainage system that flows into the Mississippi Sound to the south of the project site. There are no streams or ditches that intersect with the project area.

–Biological Resources

Habitats

Terrestrial habitats include maintained lawn in a wooded residential setting surrounded by residential, community, and commercial areas.

Wildlife

Wildlife in the project area would represent common species found in urban environments including raccoons, rabbits (*Sylvilagus floridanus*), squirrels (*Sciurus carolinensis*), and several species of birds. It is

expected that the wildlife would be transitory as the Walter Anderson Museum is in a residential area with nearly constant daily human activity.

Marine and Estuarine Fauna

There is no marine or estuarine fauna at in the Environmental Education and Stewardship at Walter Anderson Museum project area.

Protected Species

Relevant federally protected species and critical habitat are not known to occur in the project area. Protected species that could occur in Jackson County are listed and described in Appendix B.

–Socioeconomic Resources

Tourism and Recreation

The Walter Anderson Museum of Art is a nationally accredited art museum located in historic Ocean Springs on the Mississippi Gulf Coast. The museum is dedicated to the preservation and celebration of artist-philosopher Walter Anderson (1903-1965). The Walter Anderson Museum of Art collection is comprised of more than a thousand objects owned by the museum and another thousand on long-term loan from the family. In addition to showcasing the work of the Anderson family, WAMA displays art by visiting artists, chosen for exhibition based upon their connection with Walter Anderson's art or philosophies (Walter Anderson Museum of Art 2021). It attracts local residents and tourists for art viewing, educational programming, and limited hiking and bird watching.

Aesthetic and Visual Resources

The visual resources consist of maintained lawn area shaded by mature trees, surrounding residential and commercial buildings, and the Walter Anderson Museum of Art. The museum design, reminiscent of a cathedral, connects Walter Anderson's most public project, the Community Center murals, and his most private work, the Little Room mural, through a long galleria of southern yellow pine.

Environmental Consequences

The environmental consequences that would result from the implementation of this alternative to physical, biological, and socioeconomic resources are described in this section.

–Physical Resources

Geology and substrates: There would be long-term, minor adverse effects on geology resulting from site preparation activities (e.g., clearing, grubbing, minor excavation) to construct Education Pavilions and Shoreline Garden(s). In addition, there would soil compaction during the construction of steel pile foundations for elevated walkways and Education Pavilions. The area of disturbance would be limited to approximately 0.10 acres. Staging areas for construction equipment, would utilize existing development footprints and disturbed areas where possible (e.g., existing roads, parking lots, paved areas).

Water Quality and Hydrology: There would be short-term, minor adverse effects on water quality resulting from temporary rutting, exposed soils, and increased turbidity in runoff resulting from on-site construction. The elevated walkway system would concentrate foot traffic, reducing long-term impacts to soils. During

construction, erosion control measures (e.g., silt fences, seeding of exposed soils) would be implemented to minimize erosion and resulting turbidity in drainageways.

In summary, the project is anticipated to result in long-term, minor adverse effects on substrates and short-term minor adverse effects on water quality.

–***Biological Resources***

Habitats: There would be short-term, minor adverse effects on terrestrial habitat (shaded, maintained lawn) from the use of mini excavators and skid steers to remove vegetation, perform necessary site grading and foundation preparation to construct the Education Pavilion and Shoreline Garden. Site work would accommodate and preserve mature native trees, including southern magnolia, oak (*Quercus* sp.), and pecan (*Carya illinoinensis*). There are no wetlands in the project area. The construction footprint would be consistent with the purpose of the development itself, to preserve existing habitats while making it accessible and conducive for public use and educational programming. The construction of the shoreline garden would include the planting of native plants. The project would result in a long-term benefit to habitats.

Wildlife: Since the area has been previously disturbed to create a residential lawn, it is not likely the construction of the Education Pavilion or Shoreline Garden would further effect wildlife species. Elevated walkways have been incorporated in the design in order to allow passage of wildlife that could use the area.

Marine and estuarine fauna: There would be no effect to marine and estuarine fauna from the implementation of the project because there is no suitable habitat for marine and estuarine fauna in the project area.

Protected Species: There is no suitable habitat for any protected species in the project area. The project is expected to have no effect on protected species. The MS TIG has completed technical assistance with regulatory agencies related to potential adverse effects to protected species and habitats.

In summary, the project would have short-term, minor adverse effects as well as a long-term benefit to habitats.

–Socioeconomic Resources

Tourism and Recreation: There would be a short-term, minor effect on recreational use during project construction due to barriers established to protect public safety and short-term closures of the area. There would be a long-term benefit to tourism and recreation resulting from visitation of the newly constructed facilities.

Aesthetics and Visual Resources: There would be short-term, minor, adverse effects on aesthetics and visual resources due to temporary presence of equipment, barriers and construction-related dust and emissions. There would be a long-term benefit to aesthetics and visual resources. The architectural design of new facilities would complement the existing Art Cottage and the Walter Anderson Museum of Art.

In summary, this project is anticipated to result in short-term, minor adverse effects as well as long-term benefits to tourism and recreation and aesthetics and visual resources.

4.3.6.3 REC3, Mississippi Gulf Coast Pier Improvements (Non-Preferred)

The proposed Mississippi Gulf Coast Pier Improvement project would fund the implementation of construction retrofit measures to improve the resiliency of piers that routinely sustain damage from high wind/wave conditions which occur on the Gulf Coast throughout the coastal counties in Mississippi. This alternative would occur at existing piers (5 to 6 locations) in Hancock, Harrison, and Jackson Counties (See Figure 4-2). Project activities considered in the assessment of the environmental consequences include:

- Replacing materials used for traditional pier construction that are insufficient to withstand wave energy from tropical storms and hurricanes;
- Resiliency measures could include the replacement of wooden deck boards with weather-resistant composite materials (e.g., flow through) which are resistant to staining, cracking, chipping warping, cupping, etc.;
- Removal of existing deck boards and inspection of substructure;
- Fortification, where applicable, with stainless steel hardware at bolted connections;
- Adding blocking and clip angles between the joists;
- Selective replacement of any support members showing signs of premature stress and/or possible failure; and
- Improving the grade of hardware and lumber and adding additional bracing to fortify the structure.

Table 4-11 identifies the potentially affected resources and sections in which they are analyzed for this alternative.

Table 4-11: NEPA Assessment of Resources for REC 3, Mississippi Gulf Coast Pier Improvements

Resource	Location of Environmental Consequences Analysis in Chapter 4
Physical Resources	
Geology and Substrates	Analyzed in Section 4.3.6.3
Hydrology and Water Quality	
Floodplains and Wetlands, Air Quality and GHG Emissions, Noise	Analyzed in Section 4.2.1.1 to 4.2.1.3
Biological Resources	
Habitats	Analyzed in Section 4.3.6.3
Wildlife Species (including birds)	
Marine and Estuarine Fauna (fish, shellfish, benthic organisms)	
Protected Species	
Socioeconomic Resources	
Tourism and Recreational Use	Analyzed in Section 4.3.6.3
Aesthetics and Visual Resources	
Socioeconomics and Environmental Justice, Cultural Resources, Infrastructure, Land and Marine Management, Fisheries and Aquaculture, Marine Transportation, and Public Health and Safety	Analyzed in Section 4.2.1.4 to 4.2.1.10

Affected Environment

A brief description of physical, biological, and socioeconomic resources in the project area is provided here.

–Physical Resources

Geology and Substrates

Pier bases are typically situated near parking lots or roads, extend over sandy dunes, beaches, and marshes, and terminate in nearshore waters in the Mississippi Sound or adjacent bays. Substrates around and directly under the piers are primarily unconsolidated fine sand and shells. Typically, these substrates are highly disturbed, in locations where there are existing piers, as a result of development (including roads, parking lots, and buildings) and extensive foot traffic in and around developed pier locations.

Hydrology and Water Quality

Hydrology and water quality resources for the Mississippi Pier Coast Improvement alternative is described in Section 4.3.1.

–Biological Resources

Habitats

Habitats for the Mississippi Pier Coast Improvement alternative are described in Section 4.3.1. Undeveloped habitats around the fishing piers are primarily beach, marsh, and vegetated primary dunes. These habitats are subject to high levels of natural and human-caused disturbance from storms as well as visitation due to their proximity to highly developed commercial and recreational areas.

Wildlife/Marine and Estuarine Fauna

Wildlife and marine and estuarine fauna for the Mississippi Pier Coast Improvement alternative are described in Section 4.3.1.

Protected Species

Relevant federally protected species and critical habitat that are known to occur or could occur in Hancock County, Harrison County, or Jackson County or coastal waters are listed and described in Appendix B. However, only the piping plover, red knot, five sea turtle species, Gulf sturgeon, West Indian manatee are likely to occur in or near the project area or could pass through the project area.

–Socioeconomic Resources

Tourism and Recreation

Recreational activities associated with piers include visitation, wildlife viewing, and others uses. Some piers have amenities to facilitate fishing (e.g., cleaning stations, reefs in close proximity) that attract local residents and tourists. These activities provide economic benefits and sources of employment for local communities.

Aesthetic and Visual Resources

Visual resources include piers on a beaches, wetlands, and other shoreline settings in undisturbed or developed areas. Unobstructed views of open water exist generally from the pier. Visual receptors include pier users, boaters near the pier, and other buildings or traffic near the pier.

Environmental Consequences

The environmental consequences that would result from the implementation of this alternative to physical, biological, and socioeconomic resources are described in this section.

–Physical Resources

Geology and substrates: There would be long-term, minor, adverse effects on substrates from in-water removal and replacement of support members (e.g., pilings) including piling extraction or pile-driving; substrate displacement and compaction could occur. Selective replacement of any support members showing signs of premature stress and/or possible failure would use the least invasive techniques (e.g., jetting, pushing, or driving the piles) where possible, but could use impact hammers, depending on engineering and site considerations. Overwater pier improvements (removal/replacement of decking, fortification of substructure, and other improvements) would not affect physical resources. The project would be implemented at various locations where current piers exist.

Water quality and hydrology: There could be minor, short-term adverse effects on water quality due to turbidity during in-water removal and replacement of support members.

In summary, this project is anticipated to result in long-term, minor adverse effects to substrates and short-term, minor, adverse effects to water quality.

–Biological Resources

Habitats: There could be short-term, minor adverse effects to benthic habitat during support structure removal and replacement and by workmen standing in the water. Any work in waters of the U.S., including wetlands, associated with this alternative would be coordinated with the USACE pursuant to Section 404 of the CWA. Coordination with the USACE and final authorization pursuant to CWA/Rivers and Harbors Act (RHA) would be completed prior to replacement of support structures. USACE and NMFS construction guidelines regarding pier and dock construction would be followed where applicable (USACE/NMFS 2001). There could be short-term, minor adverse effects to habitats (beach) from construction equipment that would be stored at staging areas in the vicinity of the piers. Staging areas would be sited on existing development footprints where possible to minimize effects.

Wildlife: Elevated noise levels during construction could cause short-term, minor, adverse effects to terrestrial wildlife in the vicinity of the project. The wildlife in the vicinity of the project is highly mobile and would likely avoid the area during activities and return when activities cease.

Marine and Estuarine Fauna: Elevated noise levels and the presence of suspended sediments in the water column during removal/replacement of support structures which could cause short-term, minor adverse effects to marine and estuarine fauna. The marine and estuarine fauna in the vicinity of the project is highly mobile and would likely avoid the area during activities and return when activities cease.

Protected Species: There could be elevated noise levels and the presence of suspended sediments in the water column during removal/replacement of support structures which could cause short-term, minor adverse effects to wildlife in the vicinity of the project area, including protected species. Below is a list of potential protected species at the project site, effects from the project activities, and potential conservation measures. Project implementation would comply with all conditions to avoid and minimize effect to protect species included in completed permits and consultations (see Table 5-1).

Sea turtles: Loggerhead, green, leatherback, hawksbill, and Kemp's ridley sea turtles could be present in the area. Turtle nesting typically occurs on Gulf side sandy beaches during the months of May through August, with hatching occurring from late July through October. Fishing interaction with sea turtles are not expected to increase since the piers are existing and they are currently used for fishing.

West Indian manatee and marine mammals. The project area does not intersect with any identified critical habitat for the West Indian manatee. Marine mammals are affected by vibrations and noise resulting from construction activities (e.g., generators, pile drivers). As a result of construction related activities from these improvements, this project may have minor, short-term adverse effects on the West Indian manatee and other marine mammals.

Gulf sturgeon, Gulf sturgeon critical habitat: There is critical habitat for Gulf sturgeon (Unit 8) in the project area. There could be elevated noise levels and the presence of suspended sediments in the water column during removal/replacement of support structures. However, sturgeon are highly mobile and can avoid any disturbances in that area by swimming away. There could be short-term minor adverse impacts to essential fish habitat from boat operations to replace pier decking or from replacement from pilings.

In summary, this project is anticipated to result in short-term, minor adverse effects to habitats, wildlife, and marine and estuarine fauna.

–Socioeconomic Resources

Tourism and Recreational Use: There would be minor, short-term, adverse effects to tourism and recreational use during construction/renovations of existing piers. Closures of public areas for construction/staging of equipment, placement of materials and barriers to protect public safety, and construction-related dust, would adversely affect visitors. There would be a long-term benefit to tourism and recreational use from pier improvements which would increase pier resilience and durability of piers in future tropical storm events.

Aesthetics and Visual Resources: There would be minor, short-term adverse effects to aesthetics and visual resources during construction/renovations of existing piers. Staging of equipment and placement of materials and barriers to protect public safety would temporarily change the aesthetic and visual character of the area. During the construction period, visible impediments would detract from the natural landscape and create visual contrast for observers. There would be long-term benefits to the aesthetic and visual character of the area from pier renovations.

In summary, this project is anticipated to result in minor, short-term adverse impacts on tourism and recreation, and to aesthetics and visual resources. There would also be a long-term benefit to tourism and recreation, and aesthetic and visual resources.

4.3.6.4 Recreational Opportunities Restoration Type-No Action

Under the No Action alternative, the RP/EA alternatives would not occur, and new or enhanced recreational access or recreational opportunities would not be provided. Geology and Substrates, as well as water quality and hydrology would remain as they are in the project area. Ecological communities would not be disturbed or eliminated by construction of new or enhanced sites or facilities, amenities, or use of these areas. Benefits to other resources (e.g., recreation and tourism, aesthetics, and visual resources) that would result from the Recreational Opportunities alternatives would not be realized.

4.3.7 Reasonably Foreseeable Effects of Planned Actions

Sections 4.3-4.6 above describes the affected environment and the anticipated effects of the alternatives in this RP3/EA on that environment. This section describes the anticipated effects of reasonably foreseeable trends and planned actions, in conjunction with the alternatives in RP3/EA, on the affected environment.

4.3.7.1 Reasonably Foreseeable Trends and Planned Actions-Affected Environment

The affected environment is defined as "the environment of the area(s) to be affected or created by the alternatives under consideration, including the reasonably foreseeable environmental trends and planned actions in the area(s)" (40 CFR 1502.15) or, commonly, "cumulative impacts". Table 4-12 provides a summary of planned actions, their locations, and timing of implementation relative to RP3/EA alternatives. This section addresses those reasonably foreseeable environmental trends and planned actions that have a reasonably close causal relationship to the alternatives in this restoration plan, and their impacts on the affected environment for this plan (40 CFR 1502.15).

Table 4-12: Potential Planned Actions- MS TIG RP 3 Affected Environment for RP3/EA Alternatives

#	Planned Actions	Description	Potential Adversely Impacted Resources*	Related RP3/EA Projects/(Schedule)
Planned Action(s) in the Affected Environment for the HPFML, Sea Turtle, Marine Mammals and Birds Restoration Type Alternatives in RP3/EA				
PA-1	Regionwide Plan 1-Birds Alternative 1: Reducing Marine Debris Impacts on Birds and Sea Turtles (joint project with Sea Turtles Restoration Type)	The project involves removing marine debris including, but not limited to, derelict fishing gear. This project entails a coordinated effort among Trustees, NGOs, and other partners to compile data on marine debris to identify hotspots, conduct marine debris removal, engage in prevention through public outreach, and conduct monitoring. The schedule for implementation in Mississippi is between 2022 and 2027. The locations for the planned activity have not been identified.	Geology and substrates Hydrology and Water Quality Habitats Wildlife Marine and Estuarine Resources Protected Species	FM1 (2022-2025)
PA-2	Regionwide Plan 1-Birds Alternative 2: Conservation and Enhancement of Nesting and Foraging Habitat for Birds – Component 5: Round Island, MS	The project focuses on the following restoration measures in an approximately 90-acre area: colonial waterbird nesting enhancements; vegetation management; habitat creation; predator control, debris removal and restoration of any additional habitat created by beneficial use placements. The project would be implemented between 2022 and 2034 and would be restricted to Round Island.	Geology and Substrates Protected Species	B1 and B2 (2022-2031)
PA-3	Regionwide Plan 1-Birds Alternative 3: Bird Nesting and Foraging Area Stewardship	Specific activities and target locations may vary from year to year based on a number of factors (e.g., nesting locations, applicable activities, availability of resource managers). Examples of stewardship activities include: stewardship of nesting areas to reduce human disturbance (e.g., exclusion devices and vegetated buffers, virtual fencing around nesting areas, and/or beach wrack and distance buffers); vegetation management; predator control, signage, development of management plans, rooftop management, signage, development of site management plans; lowering vehicle speeds, law enforcement and patrol. The project would occur on Mississippi mainland beaches, and coastal islands (e.g., Deer Island, Round Island). The project would be implemented between 2022 and 2029.	Geology and Substrates Hydrology and Water Quality Habitats Marine and Estuarine Fauna Protected Species	B1 and B2 (2022-2031)
PA-4	Regionwide Plan 1-ST Alternative 2: Restore and Enhance Sea Turtle Nest Productivity	This project develops and implements restoration actions to improve hatchling production for loggerhead, Kemp's ridley, and green sea turtles on sandy beaches throughout the northern GOM (TX, MS, AL, FL), on high-density nesting beaches on the east coast of FL, and in northern Mexico. Phase 1) identifying the highest priority threats to key nesting beaches and gather and compile necessary information; Phase 2-implement actions to help nesting females succeed in nesting activities; enhance nest success; and enhance hatchling emergence and seaward migration. In Mississippi the project the work would occur primarily on the Barrier islands and would occur between 2022 and 2032.	Geology and Substrates Hydrology and Water Quality Habitats Marine and Estuarine Resources Protected Species	FM1 (2022-2025), FM2 (2022-2027), B1 and B2 (2022-2031)
PA-5	NFWF-GEBF Habitat Restoration: Federal Lands Program (MS) – NPS-Gulf Islands National Seashore NFWF Project ID #54431	The project includes habitat protection for priority habitats that were injured by the spill and are threatened due to rising sea levels, coastal erosion, and increased visitor traffic. Restoration activities are similar to MS TIG RP3/EA Alternative FM 2 and include non-native mammal control and eradication as well as non-native plant monitoring and control. The project would occur on Barrier islands of East Ship, West Ship, Horn, Petit Bois, Sand and Cat. The project is currently planned through 2023, however, it could be extended if a second phase of the NFWF funding is requested.	Geology and Substrates Hydrology and Water Quality Habitats Wildlife Protected Species Tourism and recreation Aesthetics and visual resources	FM1 (2022-2026), FM2 (2022-2028), B1 and B2 (2022-2030)

#	Planned Actions	Description	Potential Adversely Impacted Resources*	Related RP3/EA Projects/(Schedule)
PA-6	RESTORE Strategic Land protection, conservation and Enhancement of Priority Gulf Coast Landscapes in Mississippi	Lands will be acquired from willing sellers, under a land acquisition plan, using fee simple acquisition and/or conservation easements. The lands to be purchased will be acquired at fair market value, using Uniform Appraisal Standards for Federal Land Acquisitions (UASFLA) standards. The project funds acquisition of parcels within three focal areas where the requisite environmental review has been conducted. Acquisitions area(s) that would be relevant to the MS TIG RP3/EA is Gulf Islands National Seashore with the National Park Service (minimum 500 acres). The project is currently underway and would be completed in 2023.	None	FM1 (2022-2026), FM2 (2022-2028), B1, and B2 (2022-2030)
PA-7	RW Plan 1-MM Alternative 1: Voluntary Modifications to Commercial Shrimp Lazy Line to Reduce Dolphin Entanglements	This alternative has two phases with four total activities (three activities in Phase I; one activity in Phase II). Phase I would include (1) planning activities, (2) conducting collaborative in-water gear testing with researchers and industry members, and (3) developing a plan for voluntary gear modification throughout the GOM fleet. Cooperative testing of alternative lazy line materials could occur by chartering commercial shrimp trawl vessels and/or testing in a portion of the states' shrimp trawl fleet. The project would be implemented from 2022 to 2029.	None	MM1, MM2, and MM3 (all MM projects 2023-2028); ST1 (2023 -2026), ST2, (2023 to 2028)
PA-8	RW Plan 1-Alternative 6: Regionwide Enhancements to the Sea Turtle Stranding and Salvage Network and Enhanced Rehabilitation	This project would enhance the capabilities of project partners conducting stranding and rehabilitation activities in the GOM by supporting critical enhancement needs for STSSN response efforts that are not already being addressed through other funding sources (e.g., the Sea Turtle Early Restoration Project and NFWF-GEBF). Specific activities could include education and outreach, transporting live sea turtles for rehabilitation, implementing stranding surveys, and providing veterinary services. Stranding response and rehabilitation activities are ongoing along the GOM coast and emergency events can occur any time across the proposed project area. Maintaining the ability and readiness to respond to a periodic, large-scale stranding events resulting from anomalies (e.g., red tide, cold stun) can potentially improve the survival of stranded individuals depending on the factor(s) causing the stranding event. The project would be implemented from 2022 to 2025.	Hydrology and Water Quality Habitats Marine and Estuarine Resources Protected Species	ST1, (2023-2026) ST2; (2023-2028); MM1, MM2, MM3 (all MM projects 2023-2028)
Planned Actions in the Affected Environment for the Recreational Opportunities Restoration Type Alternatives in RP3/EA				
PA-9	Rehabilitation and Land Restoration of the Clower Thornton Nature Area	This proposed habitat management project would occur for a 3-year period from approximately 2021 to 2024 and would include mechanical mulching of the of the dense understory, selective removal of larger invasive and non-native trees and shrubs to create canopy openings, chemical herbicide treatment, the demolition and reconstruction of an existing wooden walkway, erosion control measures, manual clearing of nuisance species and planting of native vegetation. Both mechanical and chemical treatments are expected to occur at least once a year for three years in order to restore and re-establish native vegetation species. The project is currently funded using GOMESA funds. These activities could be extended using DWH Restoration funding.	Geology and Substrates Hydrology and Water Quality Habitats Wildlife Protected Species Tourism and recreation Aesthetics and visual resources	REC1 (2022-2028)
PA-10	Public Access Projects	Public Access projects including boat ramps, piers and other amenities which could be funded by a variety of sources including MDMR Tidelands Funding, FEMA, GOMESA, and Coastal Improvement Assistance Program (CIAP) funding (Exemplar project).	Geology and substrates Hydrology and Water Quality Habitats Wildlife	REC3 (2022-2028)

#	Planned Actions	Description	Potential Adversely Impacted Resources*	Related RP3/EA Projects/(Schedule)
			Marine and Estuarine Fauna Tourism and Recreation Aesthetics and Visual Resources	

*Impacted Resources are characterized as follows: Physical Resources-Geology and Substrates, Hydrology and Water Quality; Biological Resources-Habitats, Wildlife Species, Marine and Estuarine Fauna, Protected Species; Socioeconomic Resources-Tourism and Recreational Use and Aesthetic and Visual Resources (See Section 4.3.2 to 4.3.6 of this RP3/EA).

4.3.7.2 Reasonably Foreseeable Planned Actions-Environmental Consequences

This section provides a summary of the analysis of the anticipated effects (or impacts) to the human environment from the proposed alternatives as discussed earlier in this chapter, with the addition of the potential effects of those reasonably foreseeable environmental trends and planned actions. The analysis presented here does not include effects that the MS TIG has no ability to prevent or that would have occurred regardless of the RP3/EA proposed action and other alternatives. The environmental consequences analysis below focuses on adverse effects from planned actions and trends that would contribute to the environmental consequences resulting from the RP3/EA alternatives, with an emphasis on resources identified in Section 4.3.3 to 4.3.6 of this RP3/EA.

4.3.7.3 Physical Resources: Geology, Substrates, Hydrology, and Water Quality

Implementation of the RP3/EA alternatives would result in short- to long-term, minor adverse effects to physical resources. Geology, substrates, hydrology, and water quality would be impacted by alternatives for all Restoration Types. Impacts range from short-term to long-term, minor adverse impacts to physical resources. Short-term minor adverse effects to physical resources would result from removal of marine debris (FM1), habitat management (FM2, B1, B2), nuisance animal/predator control (FM2, B1, B2), bird stewardship (B1, B2), marine mammal stranding network activities (MM1), marine mammal health assessments (MM2), MM bycatch reduction activities (MM3) and sea turtle standing network activities (ST1, ST2). There would be long-term, minor adverse effects impacts from the construction of a new trails (REC1), education facilities (REC2), and piers (REC3). In most cases, physical resources would recover quickly, and the limited long-term adverse impacts would be localized to very small geographic areas. There would be long-term beneficial effects resulting from debris removal (FM1), habitat management (FM2, B1, B2), and predator control (B1, B2) activities on the barrier islands.

The actions in Table 4-12 have the potential to affect physical resources with varying intensity and duration. On-going implementation of the projects would cause short- to long-term, minor adverse effects to physical resources. There would be short-term, minor adverse effects to geology, substrates, hydrology, and water quality from marine debris removal (PA-1), bird habitat enhancement (PA-2), bird stewardship (PA-3), sea turtle habitat enhancement activities in Mississippi (PA-4), habitat management (PA-5, PA-9), and predator control (PA-5). There could be long-term minor adverse effects to geology and substrates from construction of public access projects (PA-10). In most cases, physical resources would recover quickly, and the limited long-term adverse impacts would be localized to very small geographic areas. There would be long-term beneficial effects resulting from debris removal (PA-1), habitat management (PA-2), and predator control activities (P-A2, PA-3, PA-5) for the planned actions.

When the adverse effects on physical resources from RP3/EA alternatives are considered in combination with the planned actions in the affected environment, there would be short-term minor to long-term minor adverse impacts in localized areas. There could also be long-term beneficial effects to physical resources from the implementation of RP3/EA alternatives and planned actions in combination.

4.3.7.4 Biological Resources: Habitats, Wildlife Species, Marine and Estuarine Fauna, and Protected Species

Implementation of the RP3/EA alternatives would result in short- to long-term, minor adverse effects to biological resources. Short-term, minor adverse effects to biological resources would result from removal of marine debris (FM1), habitat management (FM2, B1, B2), nuisance animal/predator control

(FM2, B1, B2), bird stewardship (B1, B2), marine mammal stranding network activities (MM1), marine mammal health assessments (MM2), marine mammal bycatch reduction activities (MM3), and sea turtle stranding network activities (ST1, ST2). There would be long-term, minor adverse effects to biological resources from the construction of a new trails (REC1) There would be long-term beneficial effects to biological resources from debris removal (FM1), habitat management (FM2, B1, B2), and predator control (B1, B2) activities on the barrier islands.

The actions in Table 4-12 have the potential to affect biological resources with varying intensity and duration. On-going implementation of the projects would cause short- to long-term, minor adverse effects to biological resources. There would be short-term, minor adverse effects to geology, substrates, hydrology, and water quality from marine debris removal (PA-1), bird habitat enhancement (PA-2), bird stewardship (PA-3), sea turtle habitat enhancement activities in Mississippi (PA-4), habitat management (PA-5, PA-9), and predator control (PA-5). There could be long-term minor adverse effects to biological resources from construction of public access projects (PA-10). In most cases, physical resources would recover quickly, and the limited long-term adverse impacts would be localized to very small geographic areas. There would be long-term beneficial effects resulting from debris removal (PA-1), habitat management (PA-2), and predator control activities (P-A2, PA-3, PA-5) for the planned actions.

When the adverse effects on biological resources from RP3/EA alternatives are considered in combination with the planned actions in the affected environment, there would be short-term minor to long-term minor adverse effects to biological resources in localized areas. Differences in timing of RP3/EA alternatives with planned actions would allow resources (e.g., habitats) that would be impacted by restoration activities to recover. There could also be long-term beneficial impacts to biological resources from the implementation of RP3/EA alternatives and planned actions in combination.

4.3.7.5 Socioeconomic Resources: Tourism and Recreational Use and Aesthetics and Visual Resources

Implementation of the RP3/EA alternatives would result in short-term, minor adverse effects to socioeconomic resources. Short-term minor adverse effects to socioeconomic resources would result from removal of marine debris (FM1), habitat management (FM2, B1, B2), nuisance animal/predator control (FM2, B1, B2), bird stewardship (B1, B2), and from the construction of a new trails (REC1), education facilities (REC2), and piers (REC3). There would be long-term beneficial socioeconomic effects (aesthetic and visual resources) resulting from debris removal (FM1), habitat management (FM2, B1, B2), and nuisance animal/predator control (B1, B2) activities on the barrier islands.

The actions in Table 4-12 have the potential to affect socioeconomic resources with varying intensity and duration. On-going implementation of the projects would cause short- long-term, minor adverse effects to socioeconomic resources. There would be short-term, minor adverse effects to tourism and recreational use and aesthetics and visual resources marine debris removal (PA-1), bird habitat enhancement (PA-2), bird stewardship (PA-3), sea turtle habitat enhancement activities in Mississippi (PA-4), habitat management (PA-5, PA-9), nuisance species control (PA-5) and from construction of public access projects (PA-10). There would be long-term beneficial effects resulting from debris removal (PA-1), habitat management (PA-2), predator control activities (P-A2, PA-3, PA-5) and public access (PA-10) planned actions.

When the adverse effects on socioeconomic resources from RP3/EA alternatives are considered in combination with the planned actions in the affected environment, there short-term minor adverse effects to socioeconomic resources in localized areas. There could also be long-term beneficial effects to socioeconomic resources from the implementation of RP3/EA alternatives and planned actions in combination.

4.3.8 Summary of Effects for RP3/EA Alternatives

The environmental analysis demonstrated that there may be short- and long-term minor adverse impacts and numerous environmental benefits from the restoration alternatives. The No Action Alternative largely would have short- and long-term minor adverse impacts. Under the No Action alternative, the action alternatives would not occur, and there would be no benefit from: marine mammal restoration measures including standing networks, shrimp trawl material improvements, marine mammal health assessments; debris removal; habitat restoration (vegetation management and predator control); bird stewardship and data gathering activities; or new or enhanced recreational access or recreational opportunities. Table 4-13 provides a summary of impacts.

Table 4-13: Summary of Effects for Reasonable Range of Alternatives

Restoration Alternative	Geology and Substrates	Hydrology and Water Quality	Air Quality and GHG Emissions	Noise	Habitats	Wildlife Species	Marine and Estuarine Fauna	Protected Species	Socioeconomics Environmental Justice	Cultural Resources	Infrastructure	Land and Marine Management	Tourism and Recreational Use	Fisheries and Aquaculture	Marine Transportation	Aesthetics and Visual Resources	Public Health and Safety
FM1	s, +	s, +	s	s	s, +	s, +	s, +	s, +	s, +	NE	NE	s	s, +	NE	s, +	s, +	+
FM2	s, +	s, +	s	s	s, +	s, +	NE	s, +	NE	NE	NE	s	s, +	NE	NE	l, +	NE
ST1	s	s	s	s	s	s	s, +	s, +	NE	NE	NE	NE	s	NE	NE	NE	NE
ST2	s	s	s	s	s	s	s, +	s, +	NE	NE	NE	NE	s	NE	NE	NE	NE
MM1	s	s	s	s	s	s	s	s, +	NE	NE	NE	NE	s	NE	NE	s, +	NE
MM2	s	s	s	s	s	s	s	s, +	NE	NE	NE	NE	NE	NE	NE	NE	NE
MM3	NE	s	s	s	s	NE	s	s, +	NE	NE	NE	NE	s	NE	NE	NE	NE
B1	s, +	s	s	s	s, +	s, +	NE	s, +	NE	NE	NE	s	s, +	NE	NE	s, +	NE
B2	s, +	s	s	s	s, +	s, +	NE	s, +	NE	NE	NE	s	s, +	NE	NE	s, +	NE
REC1	s, l	s	s, l	s, l	l	l	NE	NE	s, +	NE	s, +	NE	s, +	NE	NE	s, +	s
REC2	l	s	s, l	s, l	s, +	NE	NE	NE	s, +	NE	s, +	NE	s, +	NE	NE	s, +	s
REC3	l	s	s, l	S, l	s	s	s	s	s, +	NE	s, +	NE	s, +	NE	NE	s, +	s, +

Key:
+ Beneficial effect; NE No effect
s Short-term minor adverse effect; S Short-term moderate adverse effect **S** Short-term major adverse effect;
l Long-term minor adverse effect, L Long-term moderate adverse effect; **L** Long-term major adverse effect

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5.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

The MS TIG will ensure compliance with all applicable federal, state, and local laws and regulations relevant to the selected restoration alternatives. The MS TIG has completed technical assistance reviews with relevant agencies for protected species and their habitats under the ESA, Magnuson-Stevens Fishery Conservation and Management Act, Marine Mammal Protection Act, permits under Section 404 of the CWA and Section 10 of the RHA, consistency with the Coastal Zone Management Act (CZMA) for the preferred alternatives, and other state and federal statutes, where appropriate. Additionally, the MS TIG will complete technical assistance reviews for cultural resources under the National Historic Preservation Act prior to project implementation. The current compliance status by project at the time of release of RP 3/EA is provided below in Table 5-1.

Projects involving in-water work could require a Section 404 permit, pursuant to the CWA. Any work in waters of the U.S., including wetlands, associated with RP3/EA alternatives would be coordinated with the USACE pursuant to Section 404 of the CWA and Section 10 of the RHA as applicable. Coordination with USACE and final authorization pursuant to CWA and RHA would be completed prior to final design and construction. USACE and NMFS construction guidelines would be followed, where applicable, regarding pier construction.

Wherever existing consultations or permits are present, they will be reviewed to determine if the consultations/permits are still valid or if re-initiation of any consultations or permits are necessary. Implementing Trustees are required to implement alternative-specific mitigation measures (including BMPs) identified in the RP3/EA, BE forms, and completed consultations/permits. The Implementing Trustee(s) will provide oversight, including conducting due diligence to ensure no unanticipated effects to listed species and habitats occur and that BMPs are implemented and continue to function as intended. As noted above, pursuant to the CZMA, federal activities must be consistent to the maximum extent practicable with the federally approved coastal management programs for states where the activities would affect a coastal use or resource. The Federal Trustees submitted consistency determinations for state review and received concurrence.

Federal environmental compliance responsibilities and procedures will follow the Trustee Council's SOPs, which are laid out in Section 9.4.6 of that document. No projects would be implemented prior to completion of all relevant compliance requirements. Following these SOPs, the Implementing Trustees for each alternative will ensure that the status of environmental compliance (e.g. completed, in progress) is tracked through the Restoration Portal. The Implementing Trustees will keep a record of compliance documents (e.g. ESA letters, permits) and ensure that they are submitted for inclusion in the Administrative Record. Additional information specific to each preferred alternative regarding the environmental compliance requirements and their status are provided in the project-specific descriptions earlier in this chapter. Since the release of the Draft RP3/EA, the Trustees conducted additional environmental compliance for several projects.

Table 5-1: Current status of federal regulatory compliance reviews and approvals of preferred alternatives at release of RP3/EA

Preferred alternatives	Coastal Zone Management Act (CZMA)	Endangered Species Act - Section 7 (NMFS)	Endangered Species Act - Section 7 (USFWS)	Magnuson Stevens Act (EFH) (NMFS)	Marine Mammal Protection Act (MMPA) (NMFS)	Marine Mammal Protection Act (MMPA) (USFWS)	National Historic Preservation Act (NHPA)	Rivers and Harbors Act/Clean Water Act (USACE permit)	Bald and Golden Eagle Protection Act (BGEPA)	Migratory Bird Treaty Act (MBTA)	Coastal Barrier Resources Act (CBRA)
Restoration Type: Habitat Projects on Federally Managed Lands											
FM1, Improve Native Habitat by Removing Marine Debris from Mississippi Barrier Islands	C	C-NLAA	C-NLAA	C	C	C-NE	IP	N/A	C-NE	C-NE	C
Restoration Type: Sea Turtles											
ST1, Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities	C	C-EC	C-NLAA	C	C	C-EC	IP	N/A	C-NE	C-NE	C
Restoration Type: Marine Mammals											
MM1, Enhancing Marine Mammal Stranding Network Capacity and Diagnostic Capabilities	C	C-EC	C-NLAA	C	C	C-EC	IP	N/A	C-NE	C-NE	C
MM2, Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements	C	C- NE	C-NE	C	C	C-NE	IP	N/A	C-NE	C-NE	C
Restoration Type: Birds											
B1. Bird Stewardship and Enhanced Monitoring in Mississippi	C	C-NE	C-NLAA	C	C	C-NE	IP	N/A	C-NE	C-NE	C
Restoration Type: Provide and Enhance Recreational Opportunities											
REC1, Clower Thornton Nature Park Trail Improvement	C	N/A	C-NE	N/A	N/A	N/A	IP	IP	C-NE	C-NE	N/A
REC2. Environmental Education and Stewardship at Walter Anderson Museum	C	N/A	C-NE	N/A	N/A	N/A	IP	N/A	C-NE	C-NE	N/A
C: Complete C-EC: Complete, covered by existing compliance C-NE: Complete, no effect C-NLAA: Complete, not likely to adversely affect	IP: In progress IP-NLAA: In progress, not likely to adversely affect IP-LAA: In progress, likely to adversely affect N/A: Not applicable										

5.1 Additional Laws

Examples of applicable laws or executive orders that may be applicable to the selected project alternatives include, but are not necessarily limited to, those listed below. Additional detail on many of these can be found in the PDARP/PEIS (Chapter 6; DWH Trustees 2016a). Additional federal laws may apply to the alternatives selected in this RP3/EA. Legal authorities applicable to restoration alternative development were fully described in the context of the DWH restoration planning in the PDARP/PEIS, Section 6.9 Compliance with Other Applicable Authorities and Appendix 6.D Other Laws and Executive Orders. That material is incorporated by reference here.

Endangered Species Act (16 U.S.C. §§1531 *et seq.*)
Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§1801 *et seq.*)
Marine Mammal Protection Act (16 U.S.C. §§1361 *et seq.*)
Coastal Zone Management Act (16 U.S.C. §§1451 *et seq.*)
National Historic Preservation Act (16 U.S.C. §§470 *et seq.*)
Coastal Barrier Resources Act (16 U.S.C. §§3501 *et seq.*)
Migratory Bird Treaty Act (16 U.S.C. §§703 *et seq.*)
Bald and Golden Eagle Protection Act (16 U.S.C. §§668 *et seq.*)
Clean Air Act (42 U.S.C. §§7401 *et seq.*)
Federal Water Pollution Control Act (CWA, 33 U.S.C. §§1251 *et seq*.) and/or Rivers and Harbors Act (33 U.S.C. §§401 *et seq*.)
Marine Protection, Research and Sanctuaries Act (16 U.S.C. §§ 1431 *et seq*. and 33 U.S.C. §§ 1401 *et seq*.)
Estuary Protection Act (16 U.S.C. §§ 1221-1226)
Archaeological Resource Protection Act (16 U.S.C. §§ 470aa-470mm)
National Marine Sanctuaries Act (16 U.S.C. §§ 1431 et seq.)
Farmland Protection Policy Act (7 U.S.C. §§ 4201 – 4209)
Executive Order 11988: Floodplain Management (augmented by EO 13690)
Executive Order 11990: Protection of Wetlands, as amended.
Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, as amended.
Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks.
Executive Order 12962: Recreational Fisheries, as amended by Executive Order 13474, September 26, 2008.
Executive Order 13112: Safeguarding the Nation from the Impacts of Invasive Species, as amended by Executive Order 13751, Dec. 5, 2016.
Executive Order 13175: Consultation and Coordination with Indian Tribal Governments, as amended.
Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds, as amended.
Director's Order No.:225 Incidental Take of Migratory Birds; U.S. Department of Interior

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6.0 Response to Public Comments

Public comments received on the Draft RP3/EA were reviewed and categorized under relevant topics including General Support, as well as project-specific comments on Habitat Projects on Federally Managed Lands, Sea Turtles, Marine Mammals, Birds, Provide and Enhance Recreational Opportunities Restoration Types. Similar comments within each topic were grouped together, as appropriate, and the MS TIG prepared a collective response. The resulting comments and associated responses are provided below.

6.1 General Support

G1. **Comment**: Several commenters expressed support for preferred projects in the RP3/EA, stating the ability to make meaningful strides towards remedying harm and addressing chronic underlying stressors to injured resources and to improve native habitats, maintain and enhance capacity for sea turtle rehabilitation, release, and assessment; maintain and enhance marine mammal stranding network capacity and diagnostic capabilities; reduce marine mammal fishery interactions with shrimp trawls ; and enhance bird stewardship and monitoring. Commenters encouraged the Mississippi TIG to continue to complement and coordinate with the other TIGs and to strive for enhanced public engagement opportunities.

Response: The MS TIG acknowledges the support for RP3/EA.

6.2 Habitat Projects on Federally Managed Lands Restoration Type Project-Specific Comments

6.2.1 FM1 Improve Native Habitat by Removing Marine Debris from Mississippi Barrier Islands

F1. **Comment**: Commenter indicated a typo in Section 3.2.1 in which a reference to "Section 2.5.1.1" should read "Section 2.4.1.1".

Response: The correction has been made in this RP3/EA.

F2. **Comment:** Commenter asked about the amount of debris expected to be removed from the NPS managed islands.

Response: The amount of debris expected to be removed from the NPS managed lands on the barrier islands is not currently known. The Implementing Trustees will complete a survey of debris on the islands to assist in quantifying and locating the debris and prioritize debris removal.

F3. **Comment:** Commenter asked whether $3M will remove all the debris mapped.

Response: The current funding ($3 M) will not remove all of the debris mapped on the island. The Implementing Trustees do not anticipate being able to fully eliminate all debris accumulation from shorelines with the current funding. Funding from this

project will allow for 3 years of debris removal and the development of on-going annual cleanup after the 3-year project is complete.

F4. **Comment**: Commenter inquired about how the Implementing Trustees would handle removing any remaining debris when the $3M is spent.

Response: This funding will, in part, allow NPS to identify potential partners to assist in the development and implementation of an annual volunteer cleanup program along park shorelines. The development of this volunteer program will allow for continued annual cleanup efforts along Gulf Islands shorelines after project funds have been depleted. In addition, these initial removal efforts will provide the park with a useable baseline for the amount of annual accumulated debris along our shorelines, thus providing a better opportunity to estimate costs for subsequent debris removal efforts.

F5. **Comment**: Commenter asked how long the Implementing Trustees expect the islands to remain debris free after this project is complete.

Response: Currently, the rate of debris accumulation is not known. The Implementing Trustees will be conducting annual surveys (See Appendix A: FM1 Improve Native Habitats by Removing Marine Debris from Mississippi Barrier Islands: Monitoring and Adaptive Management Plan) which will help the Trustees better understand trends in the type of debris, how debris arrives on the islands, and the speed at which debris accumulates.

F6. **Comment**: Commenter asked whether this will this be a continual project for the TIG.

Response: This is not a continual project for the TIG. FM1 Improve Native Habitats by Removing Marine Debris from Mississippi Barrier Islands only provides funding for a 3-year project. There is no additional funding at this time, however the MS TIG may consider similar projects in future restoration planning.

F7. **Comment**: Commenter asked how the Implementing Trustees will work towards keeping the amount of debris at a minimum annually rather than allowing debris to collect and build up year after year making it a potential threat to visitors and wildlife.

Response: This project will allow NPS to develop partnerships to establish annual volunteer cleanup program along park shorelines. Ongoing annual volunteer removal efforts developed with this funding will aid greatly in keeping shorelines clean. Large or hazardous debris items washed ashore following storm events will likely require contractual removal using funding sources available at the time.

F8. **Comment:** Commenter mentioned that hurricanes and large storms wash debris into the barrier islands and questioned whether the Implementing Trustees have any plans to manage the debris into the future after the islands are “clean”.

Response: The accumulation of debris is dynamic and influenced by storm events. The Implementing Trustees do not anticipate being able to fully eliminate all debris accumulation from shorelines; marine debris has accumulated along the shorelines of the barrier islands over many years and storm events. Funding from this project will

allow for 3 years of debris removal and the development of a plan for on-going annual cleanup events after the 3-year project is complete.

F9. **Comment**: Commenter inquired who will implement the Marine Debris Removal project.

Response: As stated in Section 2.4.1.1 of the RP, DOI, EPA, and MDEQ are the implementing Trustees for the FM1 Improve Native Habitat by Removing Marine Debris from Mississippi Barrier Islands Project.

F10. **Comment**: Commenter expressed support for the FM1 Improve Native Habitat by Removing Marine Debris from Mississippi Barrier Islands and would benefit several native bird and marine species and has the potential to reduce ingestion and entanglement for marine mammals.

Response: The MS TIG acknowledges the support.

F11. **Comment:** Commenter expressed concerns on limiting or preventing disturbance to beach-nesting or wintering birds and to ensure compliance with the Migratory Bird Treaty Act (MBTA) during the project's debris removal and construction phases.

Response: Section 4.3.2.1 (Environmental Consequences/Biological Resources) describes the best practices to minimize impacts to wildlife including bird species. In addition, the Trustees have completed ESA consultations for the project including MBTA and will adhere to all conditions specified in the consultation (See Table 5-1).

F12. **Comment**: Commenter recommended the MS TIG collect data on the types, amounts, and areas where marine debris is removed.

Response: The Trustees' approach to data collection for the FM1 Improve Native Habitats by Removing Marine Debris from Mississippi Barrier Islands project is described in the project Monitoring and Adaptive Management Plan (Appendix A of this RP3/EA). It includes measures to collect data on the types, amounts, and areas where marine debris is removed during project implementation.

6.2.2 FM2 Habitat Management on the Mississippi Barrier Islands

F13. **Comment**: Commenter offered support for restoration techniques and plant species selection to benefit the project. As one example, commenter stated plant species should be selected to support high-quality habitat, promote food sources, and reduce predator abundance.

Response: The MS TIG acknowledges the support and the recommendation on plant species selection.

F14. **Comment:** Commenter expressed general support for this alternative due to the potential benefit to native shorebirds and other species.

Response: The MS TIG acknowledges the support. FM 2 is not a preferred alternative that is being selected for implementation in this RP3/EA, but the project may be considered in future restoration plans.

F15. **Comment**: Commenter expressed support for the project but listed several concerns: 1) methodologies such as traps, nets and/or firearms can present hazards to non-targeted native wildlife (e.g., noise pollution, lead contamination); 2) Noise pollution from activities such as firing a gun may impact shorebird behavior; 3) lead ammunition can contaminate tissue of target animals, harming or killing other, non-target animals that consume the flesh.

Response: The MS TIG acknowledges the support. FM 2 is not a preferred alternative that is being selected for implementation in this RP3/EA. Methodologies and best management practices for non-lethal and lethal mammalian species control are discussed in Section 4.3.2.2 (Discussion on Non-Lethal and Lethal Mammalian Nuisance Species Control Methodologies and BMPs). Predator control and removal is anticipated to be minimal and would only be accomplished through humane trapping techniques. NPS policy for work on the Gulf Islands dictates the use of non-toxic shot.

6.3 Sea Turtles Restoration Type Project-Specific Comments

6.3.1 ST1 Maintaining Enhanced Sea Turtle Stranding and Salvage Network Capacity and Diagnostic Capabilities-3 Years

S1. **Comment**: Multiple commenters expressed support for Maintaining Enhanced Sea Turtle Stranding and Salvage Network Capacity and Diagnostic Capabilities-3 Years. Specifically, one commenter expressed support to enhance the abilities of local veterinarians to treat and perform necropsies on recovered turtles. Another commenter stated that this program has demonstrably furthered sea turtle conservation by reducing mortality and collecting valuable data and that the diagnostics activities contemplated by this alternative will support enhanced capacity to assess mortality trends, producing valuable data to inform management and restoration strategies for the species. Another commenter stated that they were encouraged to see that continued coordination across sea turtle stranding networks is included as an objective in the monitoring and adaptive management plan for this project.

Response: The MS TIG acknowledges the support.

S2. **Comment**: Commenter provided documentation for best management practices (BMPs) for protecting nesting sea turtles in Harrison County for future sea turtle restoration planning.

Response: The MS TIG acknowledges the support. While the MS TIG is not pursuing a sea turtle nesting beach alternative in this RP, it appreciates and will review the documentation provided.

S3. **Comment**: Commenter encourages the MS TIG to consider other restoration approaches for addressing injuries to sea turtles, such as reducing bycatch through the development and implementation of conservation measures, enhanced education and outreach to the fishing community and restoring nesting beach habitat to enhance hatchling productivity in future restoration planning.

Response: The MS TIG acknowledges this suggestion. The Restoration Planning process includes consideration of the scope of restoration approaches for each Restoration Type. For the Sea Turtle Restoration Type, these approaches are described in the PDARP/PEIS and Strategic Framework for Sea Turtle Restoration Activities. Project suggestions submitted to the portal will be screened in the planning and development of future restoration plans. Additional sea turtle restoration approaches may be considered in future in the Mississippi Restoration Area.

6.3.2 ST2 Maintaining Enhanced Sea Turtle Stranding and Salvage Network Capacity and Diagnostic Capabilities-5 Years

S4. **Comment:** Commenter expressed support for either Sea Turtle alternative, and encouraged the MS TIG to continue this successful program beyond three years either by selecting alternative ST2 (5 years) or seeking commitments beyond this RP3/EA.

Response: The MS TIG acknowledges the support. The MS TIG determined that the commitment of funding for a 3-year project is reasonable, and will allow the Trustees to consider other restoration approaches in future restoration planning. For example, the Trustees have established seven Approaches for Restoration, which are described in detail in the PDARP/PEIS and the Strategic Framework for Sea Turtle Restoration Activities and include reducing bycatch in commercial and recreational fisheries, reducing risk of vessel strike, and reducing threats on nesting beaches. Future restoration projects for sea turtles may address one or more of these additional approaches.

6.4 Marine Mammal Restoration Type Project-Specific Comments

6.4.1 MM1 Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities

M1. **Comment**: Multiple commenters expressed support for the MM1 Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities project. One commenter noted the value of continued coordination of stranding networks throughout the Gulf. Another commenter supports the alternative because its activities will support marine mammal survival by increasing understanding of death and illness and supporting timely interventions to support survival of individual animals. The commenter also states that the understanding gained from this project could further illuminate conditions in the region and inform strategic management and protection strategies. Commenter supported the continued enhanced funding for this alternative.

Response: The MS TIG acknowledges the support.

M2. **Comment:** Commenter supports the implementation of MM1 as a means to improve decision making regarding care and treatment, enhance assessment and response and evaluate causes of impacts, illness, and mortality. The commenter encouraged the MS TIG to stress the importance of data standardization and data sharing amongst Gulf of Mexico stranding networks and institutions; timely submission of information gained

from stranding cases for peer review and publication; and continued development of strong collaborations with NMFS, academic institutions, and other organizations as appropriate to improve data collection methods and technologies, analytical capabilities, and network member training.

Response: MS TIG acknowledges the suggestions and agrees on the importance of data coordination. As stated in Section 2.4.3.1, this project includes enhanced data reporting and coordination activities by the network partners including entering data into regional marine mammal health and stranding databases (e.g., GulfMAP, CETACEAN) to inform data-driven management actions.

6.4.2 MM3 Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Improvements

M3. **Comment**: Commenter expressed concerns regarding the benefits to dolphin populations being geographically limited and suggested the project be pursued through the Regionwide TIG; or once the technology is developed and tested, the project be scaled to a regionwide level with voluntary implementation in order to maximize implementation opportunity.

Response: The MS TIG acknowledges this input. As stated in Section 2.4.3.3, the project would provide benefits to the MS Restoration Area by developing improvements in shrimp fishing gear that could lead to a decrease in the number of interactions with bottlenose dolphins in commercial shrimp skimmer trawls in Mississippi state waters. This is an interaction type that is known to occur between dolphins and skimmer trawls in Mississippi state waters (Hataway and Foster 2015). Project ideas on a Region-wide level can be submitted to the Suggest a Project | NOAA Gulf Spill Restoration. The public can sign up for email blasts at NOAA Fisheries (govdelivery.com) to know when the Regionwide TIG is considering their next planning cycle.

M4. **Comment**: Multiple commenters expressed support for the MM3 Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Improvements project. One commenter expressed appreciation for the consideration of innovative materials and technology to reduce harm to dolphins as well as the cooperative approach.

Response: The MS TIG acknowledges the support.

M5. **Comment**: Commenter stated that 1) the MS TIG should ensure the maximum steps feasible are taken to ensure that netting materials are not lost in the water resulting in potential hazards to wildlife; 2) more information is required to analyze the risk of nets and net covers potentially breaking down into microplastics and/or releasing other harmful material into the water; and 3) the MS TIG should ensure there are adequate financial and practical incentives and resources available to encourage adoption by the industry. Another commenter also recommended consideration of funding to alleviate the cost of adopting gear modifications in the skimmer trawl fishery.

Response: The MS TIG acknowledges the suggestions. The Implementing Trustee will ensure the maximum steps feasible are taken to ensure that netting materials are not lost in the water resulting in potential hazards to wildlife. As stated in Section 3.4.3, the project would collaborate with the MS skimmer trawl industry to identify the most effective trawl materials, trawl coverings, and fishing practices to decrease the number of interactions and associated mortality of bottlenose dolphins. As stated in Section 2.4.3.3, the project would also develop a plan for voluntary gear modifications which may include, but is not limited to incentivized use of alternate gear, installing gear on vessels voluntarily using the gear, and/or compensating vessels for gear use. While analysis of net material potentially breaking down into microplastics is beyond the scope of this project, the durability will be considered in the development of alternative gear.

M6. **Comment**: Commenter stated that gear modifications alone may not be sufficient considering the role of dolphin behavior in gear interactions and recommended the MS TIG conduct a more thorough analysis of existing observer data, fisherman interviews and/or workshops, and increased observer coverage of the shrimp trawl fishery in MS state waters, and on skimmer trawl vessels specifically, to achieve a better understanding of the factors associated with dolphin interactions with shrimp trawl gear. In addition, the commenter suggested approaches mentioned in the Hataway and Foster (2015) that should be investigated by the Implementing Trustees (e.g., ensuring that the trawl have a smooth taper design to prevent fish from bunching up and making the trawl net more visible to fish at night).

Response: The MS TIG acknowledges the suggestion. Specific details on the types and amount of data that will be reviewed will be determined during project implementation. As stated in Section 2.4.3.3, the project would be conducted collaboratively with researchers and the skimmer trawl fishing community cooperatively evaluating the performance and usability of both trawl covers and trawls constructed of alternative netting materials. Testing would occur aboard chartered commercial shrimp trawl vessels and NOAA research vessels. After testing is complete, the project team would evaluate data and identify the preferred trawl configuration(s) that minimize dolphin interactions while maintaining catch and operations (performance and usability). The approaches mentioned in Hataway and Foster (2015) will be considered as part of the implementation of the project. To view ongoing implementation activities for this project, please visit the NOAA.gulfspill.gov website. Note that increasing NMFS observer coverage is beyond the scope of this project.

M7. **Comment**: Commenter suggested using available data to evaluate other potentially beneficial gear modifications, and to investigate and implement, to the extent possible, fishing strategies to address factors such as minimizing at-sea discards of non-target catch by shrimp trawl vessels, particularly in the presence of dolphins or in areas with high rates of dolphin depredation. Additionally, the commenter suggested investigating strategies to reduce dolphins' association of shrimp trawling with access to prey, perhaps by limiting or preventing at-sea discards in areas frequented by dolphins. Commenter further stated the difficulty of assessing the effectiveness of gear modifications without first having a better understanding of how dolphins interact with skimmer trawl gear. Commenter provided reports for consideration.

Response: The MS TIG acknowledges the suggestions. The MS TIG utilized existing available data to form the basis of this project, such as the approaches mentioned in Hataway and Foster (2015). Evaluating strategies to minimize at-sea discards as well as other potentially beneficial gear modifications are beyond the scope of this project. Investigating strategies to reduce dolphins' association of shrimp trawling with access to prey is also beyond the scope of the proposed project. Project suggestions can be submitted to the Suggest a Project | NOAA Gulf Spill Restoration portal and will be screened in the planning and development of future restoration plans.

6.4.3 MM2 Marine Mammal Health Assessments to Monitor Population Health

M8. **Comment:** Multiple commenters encouraged this alternative to be reconsidered in future plans. One commenter believes that efforts to restore common bottlenose dolphin populations in MS would benefit greatly from the timely implementation of a well-designed photo-identification survey with remote biopsy sampling as the first component of a staged approach to implementing life history and health assessments. The commenter further recommended that the MS TIG work with NMFS to develop protocols and a plan for including photo-identification surveys with remote biopsy sampling as a restoration strategy for MS Sound common bottlenose dolphins in the near future. Commenter also recommended that MS TIG carefully evaluate the additional information that might be gained from catch-and-release health assessments and the costs and benefits associated with such a program to determine to what extent they should be included as a restoration strategy for MS common bottlenose dolphins in the future.

Response: The MS TIG acknowledges the suggestions. The described activities were evaluated in this RP as part of alternative MM-2 and determined to be a non-preferred project due to sequencing considerations. The data collected in the preferred RP3/EA alternatives could assist in identifying threats, stressors and health conditions to allow for more targeted health assessments in the future. Project suggestions can be submitted to the Suggest a Project | NOAA Gulf Spill Restoration portal and will be screened in the planning and development of future restoration plans.

6.5 Birds Restoration Type Project-Specific Comments

6.5.1 B1 Bird Stewardship and Enhanced Monitoring in Mississippi

B1. **Comment:** Commenter expressed support for the Bird Stewardship and Enhanced Monitoring project, and acknowledges the necessity of the planning efforts of this project to maximize natural resource investments, enhance coordination among agencies and stakeholders, leverage funding and best available science, and deliver lasting benefits for birds and coastal communities.

Response: The MS TIG acknowledges the support.

B2. **Comment**: Commenter expressed support for both B1 and B2 projects, but endorses preferred alternative B1 over B2 due to the research activities the commenter states

are critical to improving survival and nesting success for beach-nesting birds, and maximizing conservation efforts. Commenter expressed optimism for the prospect of addressing information gaps on both the mainland and barrier islands.

Response: The MS TIG acknowledges the support.

B3. **Comment**: Commenter expressed support for Bird Stewardship and Enhanced Monitoring in Mississippi and stated the draft objective and potential parameters outlined in the monitoring and adaptive management in this plan are appropriate for the project.

Response: The MS TIG acknowledges the support.

B4. **Comment**: Commenter expressed support for the project which includes the Mississippi mainland and the barrier islands and will provide benefits to the largest population of Least Terns in the Gulf.

Response: The MS TIG acknowledges the support.

B5. **Comment:** Commenter expressed support for this alternative, and urged that any lethal predator control contemplated incorporate best practices, including minimizing the use of poisons (such as rodenticides) and firearms, due to the risk of contaminating the ecosystem, harming non-target species through tissue contamination, or disrupting wildlife behavior with noise pollution.

Response: The MS TIG acknowledges the support. Section 4.3.3.2 (Discussion on Non-Lethal and Lethal Mammalian Nuisance Species Control Methodologies and BMPs) provides a detailed review of methodologies and best management practices to minimize effects to non-targeted species (including shorebirds) that could result from the implementation of mammalian nuisance species control. Predator control and removal, if applied, would be minimal and would only be accomplished through humane trapping techniques. Use of rodenticides is not planned for this project. NPS policy for Gulf Islands activities dictates the use of non-toxic shot.

6.5.2 B2 Bird Stewardship on the Mississippi Barrier Islands

B6. **Comment**: Commenter expressed support for both B1 and B2 projects as they both help fill gaps in current coverage to protect beach-nesting and foraging birds.

Response: The MS TIG acknowledges the support.

6.6 Provide Recreational Opportunities Restoration Type Project-Specific Comments

6.6.1 REC1 Clower Thornton Nature Trail Improvement

R1. **Comment**: Commenter expressed support for the Clower Thornton Nature Trail Improvement project due to the habitat provided for birds that migrate through coastal Mississippi each year.

Response: The MS TIG acknowledges the support.

R2. **Comment:** Commenter expressed support for the Clower Thornton Nature Trail Improvement project due to the increased access for recreational opportunities and increase nature-based tourism offerings that are ADA accessible.

Response: The MS TIG acknowledges the support.

6.6.2 REC2 Environmental Education and Stewardship at Walter Anderson Museum of Art

R3. **Comment**: A number of commenters expressed support for Environmental Education and Stewardship at Walter Anderson Museum of Art (WAMA). Commenters expressed that the project would help strengthen Gulf Coast resiliency by stressing the importance of culture. Commentors also expressed support for the project as a point of ignition for recreational and research-based programs that connect communities to their coastal landscapes, as well as to the urgent need to study and protect them. Multiple commenters expressed support for how this project promotes the collaboration of art, conservation, education, and culture. Several commenters were supportive of the positive effect this expansion would have on promoting Gulf Coast tourism. Commenters were also supportive of the access to Horn Island that would be provided by this alternative.

Response: The MS TIG acknowledges the support.

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8.0 List of Preparers and Reviewers

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APPENDIX A – MAM PLANS

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FM1, Improve Native Habitats by Removing Marine Debris from Mississippi Barrier Islands: Monitoring and Adaptive Management Plan

Table of Contents

1.0 Introduction

This project monitoring and adaptive management (MAM) plan identifies the monitoring needed to evaluate progress toward meeting project objectives and to support adaptive management of the restoration project, as needed. Where applicable, it identifies key sources of uncertainty and incorporates monitoring data and decision points that address these uncertainties. As not all projects would have the same sources and degree of uncertainty, this project-specific MAM plan is scaled according to level of uncertainty, scope, scale, and Restoration Type associated with this project.

This MAM plan is a living document and may be updated as needed to reflect changing conditions and/or new information. Any future revisions to this document would be made publicly available through the DIVER Portal (https://www.diver.orr.noaa.gov/web/guest/home) and accessible through the Trustee Council's website (https://www.habitat.noaa.gov/storymap/dwh/).

1.1 Project Overview

This project is being implemented to restore for injuries to habitats on lands managed by federal agencies resulting from the Deepwater Horizon (DWH) oil spill, consistent with the Programmatic Damage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS).

- Programmatic Goal: Restore and Conserve Habitat
- Restoration Type: Habitat Projects on Federally Managed Lands
- Restoration Approach: Create, restore, and enhance barrier and coastal islands and headlands
- Restoration Technique: Debris removal
- TIG: Mississippi Trustee Implementation Group (MS TIG)
- Restoration Plan: Mississippi Trustee Implementation Group Restoration Plan 3

This project would remove marine debris on Mississippi barrier islands managed by the National Park Service's Gulf Islands National Seashore (including all of Petit Bois, West Petit Bois, Horn, and Ship islands and a portion of Cat Island). Marine debris arrives on the islands from a range of sources, including visitors to the island, mainland sources, offshore oil rigs and services, commercial and recreational activities, as well as debris generated by damage from hurricanes and storms. Methods to remove debris would be varied and could include activities such as contracting of marine salvage crews for large debris and crews including NPS staff and potentially volunteers on foot collecting and aggregating small- and medium-size debris for transport and disposal.

1.2 Restoration Type Goals and Project Restoration Objectives

The overall goal for this Restoration Type relevant to this project, as identified in the PDARP/PEIS, are:

- Restore federally managed habitats that were affected by the oil spill and response actions through an integrated portfolio of restoration approaches across a variety of habitats.
- Restore for injuries to federally managed lands by targeting restoration on federal lands where the injuries occurred, while considering approaches that provide resiliency and sustainability.
- Ensure consistency with land management plans for each designated federal land and its purpose by identifying actions that account for the ecological needs of these habitats.

The project restoration objective is to remove marine debris on Mississippi barrier islands managed by the National Park Service's Gulf Islands National Seashore to enhance barrier island habitat and reduce threats to species that inhabit Mississippi's barrier islands.

Performance criteria would be used to determine restoration success or the need for corrective action in accordance with 15 Code of Federal Records 990.55(b)(1)(vii)). Specific, measurable performance criteria are defined, as applicable, for monitoring parameters associated with each of the restoration objectives in Section 3.0.

2.0 Adaptive Management

To increase the likelihood of achieving the project objective, the Implementing Trustees would conduct targeted monitoring and use the monitoring data to refine future management actions. Collecting data using the parameters described below may highlight differences between re-accumulation rates across locations and possible future opportunities for prevention. These data would inform adaptive management needed during implementation and future planning, such as adjusting the types and amount of effort invested in particular locations to enhance effective reduction of marine debris presence and impacts at hotspots. If project objectives are not being met, the Implementing Trustees would identify corrective actions as necessary.

3.0 Project Monitoring, Performance Criteria, and Potential Corrective Actions

The monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and potential corrective actions, if needed.

Information on each monitoring parameter is provided below in Table 1 and is organized by objective. The list of corrective actions provided below is not exhaustive; rather, it includes a list of potential actions to be considered if the project is not performing as expected once implemented. Other corrective actions maybe identified post-implementation, as appropriate.

Objective 1: Remove marine debris on Mississippi barrier islands and adjacent shallow water areas managed by the National Park Service's Gulf Islands National Seashore to enhance barrier island habitat and reduce threats to species that inhabit Mississippi's barrier islands.

Table 1 - Monitoring Parameters

Performance Monitoring Parameter	Purpose	Method	Timing, Frequency, Duration	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Completion of Debris Spatial Resolution Survey	To quantify and qualify marine debris in the project area	Implement systematic annual surveys using remote control drone aircraft (sUAV) as an observation platform.	Annually for up to two weeks	Petit Bois, West Petit Bois, Horn, Ship, and Cat Islands	Completion of annual hotspot analysis for prioritizing debris removal	None
Number and quantity [e.g., weight and/or volume] and type of debris removed	To quantify the type of debris removed	Data on events and number, quantity, and type, of debris removed	Collected during removal events and compiled annually during implementation	Collected at debris removal sites	Removal of marine debris from barrier island habitat at prioritized hotspots	Reassess where future removals will occur, and the type of equipment needed
Footprint of Debris Removed [area and miles]	To document the footprint [area and miles] of marine debris removed	Record shoreline length and area of habitat where debris removal activities occur using GPS equipment or web-mapping applications on cellular devices	Annually compiled and reported during project implementation	Hotspot locations on Petit Bois, West Petit Bois, Horn, Ship, and Cat Islands	Debris removed from the project areas	Using annual drone surveys, adjust the types and amount of effort invested in particular locations to effectively meet the project objective

4.0 Monitoring Schedule

The schedule for project performance monitoring is shown in Table 2 by monitoring parameter.

Table 2 - Monitoring Schedule

Monitoring Parameters	Year 0	Year 1	Year 2
Debris Spatial Resolution	x	x	x
Debris Removed [Number, Quantity, and Type]	x	x	x
Footprint of Debris Removed [Area and miles]	x	x	x

5.0 Evaluation

The MS TIG anticipates conducting an evaluation of the monitoring data collected (as described above) to help answer the following questions:

- Were the project restoration objectives achieved? If not, is there a reason why they were not met?
- Were there unanticipated events unrelated to the restoration project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?

6.0 Data Management

6.1 Data Description

Data would be compiled within 12 months after collection. To the extent practicable, data generated during monitoring activities would be documented using standardized field datasheets. If standardized datasheets are unavailable, then project-specific datasheets would be drafted prior to conducting any project monitoring activities. To help ensure consistency and comparability of the data collected on the number, quantity, and type of marine debris removed from this project and other DWH NRDA marine debris removal-related efforts (e.g. RW TIG), Implementing Trustees would utilize a standardized methodology for characterizing and quantifying debris. Original datasheets and notebooks and photographs would be retained by the implementing Trustee.

Relevant project data that are handwritten on hardcopy datasheets or notebooks would be transcribed (entered) into standard digital format as appropriate per protocols developed by the Implementing Trustee. Electronic data files should be named with the date on which the file was created and should include a ReadMe file that describes when the file was created and by whom and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved.

All data would have properly documented Federal Geographic Data Committee/International Organization for Standardization (FGDC/ISO) metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, Quality Assurance/Quality Control (QA/QC) procedures, other information about data such as meaning, relationships to other data, origin, usage, and format).

6.2 Data Review and Clearance

After transcription of the data, the electronic data sheets would be verified against the original hardcopy datasheets and/or notebooks and would make any corrections to transcription errors as appropriate before data are used for any analyses or distributed outside of the agency. Implementing Trustees would verify and validate MAM data and information and would ensure that all data are: i) entered or converted into agreed upon/commonly used digital format; and ii) labeled with metadata following FGDC/ISO standards to the extent practicable and in accordance with Implementing Trustee agency requirements.

After all identified errors are addressed, data are QA/QC'ed. The Implementing Trustees would give the other MS TIG members time to review the data before making such information publicly available (as described below).

6.3 Data Storage and Accessibility

Once all data has been QA/QC'ed it would be stored on MDEQ servers. Trustees would provide DWH NRDA MAM data and information to DIVER as soon as possible and no more than one year from when data are collected.

6.4 Data Sharing

Data would be made publicly available, in accordance with the Open, Public, Electronic and Necessary Government Data Act of 2019, through the DIVER Explorer Interface within one year of when the data collection occurred.

7.0 Reporting

All reporting would occur after field surveys are completed annually. This report would summarize the findings for the sampling period including all worksheets transferred into digital format and presented in tabular and graphical formats. The data should be summarized in such a way that it is meaningful to the reader. Additionally, an annual report would be completed that includes:

- Summary data –synthesized data for all efforts during the year.
- Graphics, if applicable, and associated interpretations of the data.
- Comparisons of pre- and post-project conditions, as applicable.
- Any uncertainties with management actions.
- Potential data collection issues.
- Reporting on general MAM activities in the DIVER Restoration Portal on an annual basis.
- Developing a Final MAM Report before a project is closed out.

8.0 Roles and Responsibilities

The MS TIG is responsible for addressing MAM objectives that pertain to their restoration activities and for communicating information to the public through DIVER. The Implementing Trustees for the project would be DOI, EPA, and MDEQ. DOI and MDEQ roles include coordination with contractors and volunteers and the MS TIG to track project progress, program management and oversight, and monitoring oversight.

ST1, Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities: Monitoring and Adaptive Management Plan

Table of Contents

1.0 Introduction

This project monitoring and adaptive management (MAM) plan identifies the monitoring needed to evaluate progress toward meeting project objectives and to support adaptive management of the restoration project, as needed. Where applicable, it identifies key sources of uncertainty and incorporates monitoring data and decision points that address these uncertainties. As not all projects would have the same sources and degree of uncertainty, this project-specific MAM plan is scaled according to level of uncertainty, scope, scale, and Restoration Type associated with this project.

This MAM plan is a living document and may be updated as needed to reflect changing conditions and/or new information. Any future revisions to this document would be made publicly available through the DIVER Portal (https://www.diver.orr.noaa.gov/web/guest/home) and accessible through the Trustee Council's website (https://www.habitat.noaa.gov/storymap/dwh/).

1.1 Project Overview

This project is being implemented to restore for injuries to sea turtles resulting from the Deepwater Horizon (DWH) oil spill, consistent with the ProgrammaticDamage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS).

- Programmatic Goal: Replenish and Protect Living Coastal and Marine Resources
- Restoration Type: Sea Turtles
- Restoration Approach: Increase Sea turtle survival through enhanced mortality investigation and early detection of and response to anthropogenic threats and emergency events
- Restoration Techniques:
  - Enhance network response and coordination
  - Enhance preparedness and response capacity for emergency events
  - Enhance investigation of mortality sources
  - Enhanced rehabilitation capability where necessary
- TIG: Mississippi Trustee Implementation Group (MS TIG)
- Restoration Plan: Mississippi Trustee Implementation Group Restoration Plan 3

This restoration project would focus on maintaining the increased capacity of the Mississippi Sea Turtle Stranding and Salvage Network (STSSN) in order to continue to enhance stranding response capacity, rehabilitation capacity, and mortality investigations. Necropsy data are imperative to determine cause-of-death, which provides essential information about life history threats and can help inform future restoration. The project would include four primary activities:

1) Maintain enhanced stranding network capacity;
2) Maintain and increase the quantity and quality of data available for management;
3) Assessment of health and causes of mortality; and
4) Maintain enhanced rehabilitation capacity.

1.2 Restoration Type Goals and Project Restoration Objectives

The overall goals for this Restoration Type relevant to this project, as identified in the PDARP/PEIS, are:

- Implement an integrated portfolio of restoration approaches to address all injured life stages (hatchling, juvenile, and adult) and species of sea turtles.
- Restore injuries by addressing primary threats to sea turtles in the marine and terrestrial environment such as bycatch in commercial and recreational fisheries, acute environmental changes (e.g., cold water temperatures), loss or degradation of nesting beach habitat (e.g., coastal armoring and artificial lighting), and other anthropogenic threats.
- Restore sea turtles in the various geographic and temporal areas within the Gulf of Mexico and Atlantic Ocean that are relevant to injured species and life stages.
- Support existing conservation efforts by ensuring consistency with recovery plans and recovery goals for each of the sea turtle species.

The project restoration objectives are:

- Objective 1: Maintain enhanced staff capacity for sea turtle stranding response
- Objective 2: Maintain data collection, reporting, collaboration, and consistency across the STSSN
- Objective 3: Maintain enhanced necropsy capabilities to collect, store, and analyze samples from stranded sea turtles
- Objective 4: Rehabilitate stranded sea turtles

Performance criteria would be used to determine restoration success or the need for corrective action in accordance with 15 C.F.R. 990.55(b)(1)(vii)). Specific, measurable performance criteria are defined, as applicable, for monitoring parameters associated with each of the restoration objectives in Section 3.0.

2.0 Adaptive Management

To increase the likelihood of achieving the project objective, MDEQ would conduct targeted monitoring and use the monitoring data to refine, as necessary, future management actions.

3.0 Project Monitoring, Performance Criteria, and Potential

The monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and potential corrective actions, if needed.

Information on each monitoring parameter is provided below and is organized by objective. The list of corrective actions provided below is not exhaustive; rather, it includes a list of potential actions to be considered if the project is not performing as expected once implemented. Other corrective actions may be identified post-implementation, as appropriate.

Objective 1: Maintain enhanced staff capacity for sea turtle stranding response

Table 1 - Monitoring Parameters for Objective 1

Performance Monitoring Parameter	Purpose	Method	Timing, Frequency, Duration	Sample Size and Sites	Performance Criteria	Potential CorrectiveAction(s)
Core Parameter: Stranding network personnel	To document that the number of stranding response personnel is appropriate for the number of strandings and is maintained during the peak stranding season	Document the number of trained personnel positions being maintained or added through this project	Throughout the life of the project; report annually	N/A	Maintain all positions that are filled by trained personnel	Hire trained personnel if need is not met
Core Parameter: Average response time	To document current enhanced program response times to strandings are maintained or improved	Provide summary of response actions and average response times	Throughout the life of the project; report annually	All response actions in a year	IMMS responds to all strandings according to STSSN standard protocol	Modify response protocols to obtain desired response times

Objective 2: Maintain data collection, reporting, collaboration, and consistency across the STSSN

Table 2 - Monitoring Parameters for Objective 2

Performance Monitoring Parameter	Purpose	Method	Timing, Frequency, Duration	Sample Size and Sites	Performance Criteria	Potential CorrectiveAction(s)
Core Parameter: Timeliness and efficiency of reporting	To continue to report and enter data into databases to provide more information to network partners	Data entry	Submit near real time reports according to MMS protocols	N/A	All records are entered per STSSN protocols, to the appropriate database	Update reporting protocols

Objective 3: Maintain enhanced necropsy capabilities, to collect, store, and analyze samples from stranded sea turtles.

Table 3 - Monitoring Parameters for Objective 3

Performance Monitoring Parameter	Purpose	Method	Timing, Frequency, Duration	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Core Parameter: Percent of biological samples collected that are analyzed	Document that the project is maintaining analysis and increasing knowledge of sea turtles in Mississippi	Record the percentage of sample that are analyzed from samples that are collected during response events	Samples would be collected during response events for the life of the project	All response events in a given year	samples collected analyzed, and documented to STSSN standard protocols	N/A
Core Parameter: Percent of stranded animals reported in Code 1 (fresh dead), Code 2 (moderate) and/or 3 (severe) condition that are necropsied	Document that the project is maintaining necropsy evaluations and increasing knowledge of sea turtles in Mississippi	Record the percentage of reported Code 1, 2, or 3 stranded animals that are necropsied	Annually compiled and reported during project implementation	All necropsies performed	100% of Code 1, 2 and early Code 3 animals for which a necropsy is feasible – Additional data could be compiled (e.g.) – % of total state-wide strandings by Codes	N/A
Code 1 – fresh dead Code 2 – moderate decomposition Code 3 – severe decomposition Code 4 – dried carcass Code 5 – skeleton/bones						

Objective 4: Rehabilitate stranded sea turtles

Table 4 - Monitoring Parameters for Objective 4

Performance Monitoring Parameter	Purpose	Method	Timing, Frequency, Duration	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Core Parameter: Rehabilitation outcomes	To continue to document and report the number of sea turtles rehabilitated and released	Data entry	Submit annual reports on sea turtle rehabilitation and release	All rehabilitation activities performed	Total Percentage of Sea Turtles Rehabilitated and Released. Could include: – % of Sea turtles dehooked and released immediately – % of sea turtles hooked and admitted to rehabilitation and released – % of cold stunned sea turtles admitted and released	N/A

4.0 Monitoring Schedule

The schedule for project performance monitoring is shown in Table 5 by monitoring parameter.

Table 5 - Monitoring Schedule

Monitoring Parameters	Year 1	Year 2	Year 3
Stranding network personnel	x	x	x
Average response time	x	x	x
Timeliness and efficiency of reporting	x	x	x
Percent of biological samples collected that are analyzed	x	x	x
Percent of stranded animals reported that are necropsied	x	x	x
Number of sea turtles rehabilitated and released	x	x	x

5.0 Evaluation

The MS TIG anticipates conducting an evaluation of the monitoring data collected (as described above) to help answer the following questions:

- Were the project restoration objectives achieved? If not, is there a reason why they were not met?
- Were there unanticipated events unrelated to the restoration project that potentially affectedthe monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?

6.0 Data Management

6.1 Data Description

Data from response events would be reported to the appropriate database(s) within 30 days of the reported stranding. All data collected for the project would be summarized within 12 months after collection for annual reporting. To the extent practicable, data generated during monitoring activities would be documented using standardized field datasheets. If standardized datasheets are unavailable, then project-specific datasheets would be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets and notebooks and photographs would be retained by MDEQ.

Relevant project data that are handwritten on hardcopy datasheets or notebooks would be transcribed (entered) into standard digital format as appropriate per protocols developed by the Implementing Trustee. Electronic data files should be named with the date on which the file was created and should include a ReadMe file that describes when the file was created and by whom and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved.

All data would have properly documented Federal Geographic Data Committee/International Organization for Standardization (FGDC/ISO) metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, Quality Assurance/Quality Control (QA/QC) procedures, other information about data such as meaning, relationships to other data, origin, usage, and format).

6.2 Data Review and Clearance

After transcription of the data, the electronic data sheets would be verified against the original hardcopy datasheets and/or notebooks and would make any correctionsto transcription errors as appropriate before data are used for any analyses or distributed outside of the agency. Implementing Trustee would verify and validate MAM data and information and would ensure that all data are: i) entered or converted into agreed upon/commonly used digital format; ii) labeled with metadata following FGDC/ISO standards to the extent practicable and in accordance with Implementing Trustee agency requirements.

After all identified errors are addressed, data are QA/QC'ed. The Implementing Trustee would give the other MS TIG members time to review the data before making such information publicly available (as described below).

6.3 Data Storage and Accessibility

Once all data has been QA/QC'ed it would be reported to the appropriate databases and stored on MDEQ servers. Trustees would provide DWH NRDA MAM data and information to DIVER as soon as possible and no more than 1 year from when data are collected.

6.4 Data Sharing

Data would be made publicly available, in accordance with the Open, Public, Electronic and Necessary Government Data Act of 2019, through the DIVER Explorer Interface within 1 year of when the data collection occurred.

7.0 Reporting

All reporting would occur on an annual basis. This report would summarize the findings for the sampling period including all worksheets transferred into digital format and presented intabular and graphical formats. The data should be summarized in such a way that it is meaningful to the reader. Additionally, an annual report would be completed that includes:

- Summary data – synthesized data for all efforts during the year.
- Graphics, if applicable, and associated interpretations of the data.
- Comparisons of pre- and post-project conditions, as applicable.
- Any uncertainties with management actions.
- Potential data collection issues.
- Reporting on general MAM activities in the DIVER Restoration Portal on an annual basis.
- Developing a Final MAM Report before a project is closed out.

8.0 Roles and Responsibilities

The MS TIG is responsible for addressing MAM objectives that pertain to their restoration activities and for communicating information to the public through DIVER. The Implementing Trustee for the project would be MDEQ. The Institute of Marine Mammal Studies (IMMS) and Mississippi State University (MSU) would be project partners. MDEQ's roles include coordination with the project partners and the MS TIG to track project progress, program management and oversight, monitoring oversight, and partnering with IMMS and MSU for project operations.

MM1, Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities: Monitoring and Adaptive Management Plan

Table of Contents

1.0 Introduction

This project monitoring and adaptive management (MAM) plan identifies the monitoring needed to evaluate progress toward meeting project objectives and to support adaptive management of the restoration project, as needed. Where applicable, it identifies key sources of uncertainty and incorporates monitoring data and decision points that address these uncertainties. As not all projects would have the same sources and degree of uncertainty, this project-specific MAM plan is scaled according to level of uncertainty, scope, scale, and Restoration Type associated with this project.

This MAM plan is a living document and may be updated as needed to reflect changing conditionsand/or new information. Any future revisions to this document would be made publicly available through the DIVER Portal (https://www.diver.orr.noaa.gov/web/guest/home) and accessible through the Trustee Council's website (https://www.habitat.noaa.gov/storymap/dwh/).

1.1 Project Overview

This project is being implemented to restore for injuries to marine mammals resulting from the Deepwater Horizon (DWH) oil spill, consistent with the Programmatic Damage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS).

- Programmatic Goal: Replenish and Protect Living Coastal and Marine Resources
- Restoration Type: Marine Mammals

- Restoration Approach: Increase marine mammal survival through better understanding of causes of illness and death as well as early detection and intervention for anthropogenic and natural threats
- Restoration Technique: Address Gaps and Enhance Capacity in the Current Capabilities of the MMSN throughout the Northern Gulf of Mexico (GOM) to Improve Timeliness of Response, and Diagnosis of Illness and Cause of Death
- TIG: Mississippi Trustee Implementation Group (MS TIG)
- Restoration Plan: Mississippi Trustee Implementation Group Restoration Plan 3

This restoration project would focus on maintaining the increased capacity of the Mississippi Marine Mammal Stranding Network (MMSN) in order to continue an enhanced ability to respond to stranded, sick, injured, or dead marine mammals. Responding to strandings in a timely manner increases the animal's likelihood of survival. If the response is to a dead animal, it is also important to respond quickly because data from tissue samples are lost as decomposition progresses. These data are imperative to determine cause-of-death, which provides essential information about life history and natural and anthropogenic threats. The project would include three primary tasks:

1) Maintain the enhanced stranding network capacity for marine mammal conservation;
2) Maintain and increase the quantity and quality of data available for management; and
3) Assessment of health and mortality dynamics of marine mammals

1.2 Restoration Type Goals and Project Restoration Objectives

The overall goals for this Restoration Type relevant to this project, as identified in the PDARP/PEIS, are:

- Identify and implement actions that support ecological needs of the stocks; improve resilience to natural stressors; and address direct human-caused threats such as bycatch in commercial fisheries, vessel collisions, noise, industrial activities, illegal feeding and harassment, and hook-and-line fishery interactions.
- Identify and implement restoration activities that mitigate key stressors in order to support resilient populations. Collect and use monitoring information, such as population and health assessments and spatiotemporal distribution information.
- Implement an integrated portfolio of restoration approaches to restore injured bay, sound, and estuary, coastal, shelf, and oceanic marine mammals across the diverse habitats and geographic ranges they occupy.

The project restoration objectives are:

- Objective 1: Maintain enhanced staff capacity of the MS MMSN for marine mammal stranding response
- Objective 2: Maintain data collection, reporting, collaboration, and consistency across the MMSN
- Objective 3: Maintain enhanced capabilities to collect, store, and analyze samples from stranded marine mammals

Performance criteria would be used to determine restoration success or the need for corrective action in accordance with 15 C.F.R. 990.55(b)(1)(vii)). Specific, measurable performance criteria are defined, as applicable, for monitoring parameters associated with each of the restoration objectives in Section 3.0.

2.0 Adaptive Management

To increase the likelihood of achieving the project objective, MDEQ would conduct targeted monitoring and use the monitoring data to refine, as necessary, future management actions.

3.0 Project Monitoring, Performance Criteria, and Potential

The monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and potential corrective actions, if needed.

Information on each monitoring parameter is provided below and is organized by objective. The list of corrective actions provided below is not exhaustive; rather, it includes a list of potential actions to be considered if the project is not performing as expected once implemented. Other corrective actions may be identified post-implementation, as appropriate.

Table 1 - Monitoring Parameters for Objective 1

Objective 1: Maintain enhanced staff capacity of the MS MMSN for marine mammal stranding response. Performance Monitoring Parameter	**Purpose**	**Method**	**Timing, Frequency, Duration**	**Sample Size and Sites**	**Performance Criteria**	**Potential CorrectiveAction(s)**
Core Parameter: Stranding network personnel*	To document that the number of stranding response personnel is maintained	Document the number of trained personnel positions being maintained or added through this project	Throughout the life of the project; report annually	N/A	Maintain all positions that are filled by trained personnel	Hire trained personnel if need is not met
Core Parameter: Average response time*	To document if maintained staff enhances response times to strandings	Provide summary of response actions and average response times	Throughout the life of the project; report annually	All response actions in a year	Average response time is maintained or decreased	Modify response protocols to obtain desired response times
*The Implementing Trustee parameters are related to typical stranding response activities and do not include circumstances where an Unusual Mortality Event (UME) is declared. Parameter success would be measured for typical stranding response activities in typical years. Capacity requirements and response times for UME's, where strandings exceed average + 2 standard deviations from the 5 year norm could vary.						

Objective 2: Maintain data collection, reporting, collaboration, and consistency across the MMSN

Table 2 - Monitoring Parameters for Objective 2

Performance Monitoring Parameter	Purpose	Method	Timing, Frequency, Duration	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Core Parameter: Timeliness and efficiency of reporting	To continue to report and enter data into databases to provide more information to network partners	Data entry	Submit near real time reports according to standard MMSN protocols	All reports and response events in a given year	All records are entered free from errors within 30 days of response event to the appropriate database (i.e., Level A, GulfMAP, CETACEAN)	Update reporting protocols

Objective 3: Maintain enhanced capabilities to collect, store, and analyze samples from stranded marine mammals

Table 3 - Monitoring Parameters for Objective 3

Performance Monitoring Parameter	Purpose	Method	Timing, Frequency, Duration	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Core Parameter: Number of biological samples collected, and corresponding percentage that are analyzed (categorized by analysis type e.g. brucella, morbilli etc.)	Document that the project is maintaining analysis and increasing knowledge of marine mammals in Mississippi	Record number of biological samples collected, and the corresponding percentage that are analyzed (categorized by analysis type).	Samples would be collected during response events for the life of the project	All response events in a given year	Samples are collected, documented, and analyzed in accordance with standard MMSN protocols	N/A
Core Parameter: Percentage of stranded animals reported in Code 2 or 3* condition that are necropsied	Document that the project is maintaining necropsy evaluations and increasing knowledge of marine mammals in Mississippi	Record the percentage of reported Code 2 or 3 stranded animals that are necropsied	Annually compiled and reported during project implementation	All necropsies performed	100% of Code 2 and early Code 3 animals for which a necropsy is feasible	N/A

4.0 Monitoring Schedule

The schedule for project performance monitoring is shown in Table 4 by monitoring parameter.

Table 4 - Monitoring Schedule

Monitoring Parameters	Year 1	Year 2	Year 3
Stranding network personnel	x	x	x
Average response time	x	x	x
Timeliness and efficiency of reporting	x	x	x
Percent of biological samples collected that are analyzed	x	x	x
Percent of stranded animals reported that are necropsied	x	x	x

5.0 Evaluation

The MS TIG anticipates conducting an evaluation of the monitoring data collected (as described above) to help answer the following questions:

- Were the project restoration objectives achieved? If not, is there a reason why they were not met?
- Were there unanticipated events unrelated to the restoration project that potentially affectedthe monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?

6.0 Data Management

6.1 Data Description

Data from response events would be reported to the GulfMAP and CETACEAN databases within 30 days of the reported stranding. All data collected for the project would be summarized within 12 months after collection for annual reporting. To the extent practicable, data generated during monitoring activities would be documented using standardized field datasheets. If standardized datasheets are unavailable, then project-specific datasheets would be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets and notebooks and photographs would be retained by MDEQ.

Relevant project data that are handwritten on hardcopy datasheets or notebooks would be transcribed (entered) into standard digital format as appropriate per protocols developed by the Implementing Trustee. Electronic data files should be named with the date on which the file was created and should include a ReadMe file that describes when the file was created and by whom and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved.

All data would have properly documented Federal Geographic Data Committee/International Organization for Standardization (FGDC/ISO) metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, Quality Assurance/Quality Control (QA/QC) procedures, other information about data such as meaning, relationships to other data, origin, usage, and format).

6.2 Data Review and Clearance

After transcription of the data, the electronic data sheets would be verified against the original hardcopy datasheets and/or notebooks and would make any correctionsto transcription errors as appropriate before data are used for any analyses or distributed outside of the agency. Implementing Trustees would verify and validate MAM data and information and would ensure that all data are: i) entered or converted into agreed upon/commonly used digital format; ii) labeled with metadata following FGDC/ISO standards to the extent practicable and in accordance with Implementing Trustee agency requirements.

After all identified errors are addressed, data are QA/QC'ed. The Implementing Trustee would give the other MS TIG members time to review the data before making such information publicly available (as described below).

6.3 Data Storage and Accessibility

Once all data has been QA/QC'ed it would be reported to the GulfMAP and CETACEAN databases and stored on MDEQ servers. MDEQ would provide DWH NRDA MAM data and information to DIVER as soon as possible and no more than 1 year from when data are collected.

6.4 Data Sharing

Data would be made publicly available, in accordance with the Open, Public, Electronic and Necessary Government Data Act of 2019, through the DIVER Explorer Interface within 1 year of when the data collection occurred.

7.0 Reporting

All reporting would occur on an annual basis. This report would summarize the findings for the sampling period including all worksheets transferred into digital format and presented intabular and graphical formats. The data should be summarized in such a way that it is meaningful to the reader. Additionally, an annual report would be completed that includes:

- Summary data – synthesized data for all efforts during the year.
- Graphics, if applicable, and associated interpretations of the data.
- Comparisons of pre- and post-project conditions, as applicable.
- Any uncertainties with management actions.
- Potential data collection issues.
- Reporting on general MAM activities in the DIVER Restoration Portal on an annual basis.
- Developing a Final MAM Report before a project is closed out.

8.0 Roles and Responsibilities

The MS TIG is responsible for addressing MAM objectives that pertain to their restoration activities and for communicating information to the public through DIVER. The Implementing Trustee for the project would be MDEQ. The Institute of Marine Mammal Studies (IMMS) and Mississippi State University (MSU) would be project partners. MDEQ's roles include coordination with the project partners and the MS TIG to track project progress, program management and oversight, monitoring oversight, and partnering with IMMS and MSU for project operations.

MM3, Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements: Monitoring and Adaptive Management Plan

Table of Contents

1.0 Introduction

This project Monitoring and Adaptive Management (MAM) Plan identifies the monitoring and data collection needed 1) to evaluate progress toward meeting the project's restoration objectives, and 2) to support any necessary adaptive management. This plan was developed in accordance with the MAM Plan template provided in the MAM Manual Version 1.0 and was adapted to fit the needs of this project. This MAM Plan is a living document and may be updated as needed to reflect changing conditions and/or new information. Any future revisions to this document would be made publicly available through the DIVER Portal (https://www.diver.orr.noaa.gov/web/guest/home) and accessible through the Trustee Council's website (https://www.habitat.noaa.gov/storymap/dwh/).

1.1 Project Overview

This project is being implemented as restoration for the *Deepwater Horizon* (DWH) oil spill natural resource damage assessment (NRDA), consistent with the PDARP/PEIS.

- Programmatic goal: Replenish and protect living coastal and marine resources
- Restoration Type: Marine Mammals
- Restoration approach: Reduce commercial fishery bycatch through collaborative partnerships

- Restoration technique: Evaluate, develop, and implement conservation measures in the shrimp trawl fishery.
- TIG: Mississippi Trustee Implementation Group.
- Restoration plan: Mississippi Trustee Implementation Group Restoration Plan 3

This project aims to benefit Gulf of Mexico (GOM) bottlenose dolphins (*Tursiops truncatus*) by decreasing the number of entanglements and associated mortality of dolphins in commercial shrimp skimmer trawls operating in Mississippi state waters, while maintaining catch efficiency and fishing performance/usability. Dolphins interacting with shrimp trawls are occasionally captured or entangled, while depredating on fish gilled in trawl meshes. Commercial fishermen want to avoid interactions with dolphins and have been proactive in their attempts to modify gear to prevent interactions. These new materials have yet to be adopted on a large scale due to their increased cost (Hataway and Foster 2015).

The project will be conducted collaboratively with researchers and the fishing community cooperatively evaluating the performance and usability of both trawl covers and trawls constructed of alternative materials. Specific project objectives are divided into two phases and include:

Phase 1:

1) Conduct collaborative in-water testing with fishermen and researchers to determine the most effective trawl materials, trawl coverings, and/or fishing practices to be implemented in Phase 2 of the project to meet the project goal.

Phase 2:

1) Develop a plan for voluntary implementation of alternative trawl materials and/or configurations identified during Phase 1 of the project.
2) Implement the voluntary use of identified alternative materials and coverings for voluntary adoption by the Mississippi shrimp trawl fleet by partnering with stakeholders.

1.2 Restoration Type Goals and Project Restoration Objectives

This project primarily addresses the Marine Mammals Restoration Type, defined in the 2016 Deepwater Horizon Oil Spill Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement (PDARP/PEIS). (The PDARP/PEIS and the Record of Decision (ROD) are available at www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan/.) The overall goals for this Restoration Type relevant to this project, as identified in the Strategic Framework for Marine Mammal Restoration Activities (DWH NRDA Trustees 2017b) include:

- Implement an integrated portfolio of restoration approaches to restore injured BSE, coastal, shelf, and oceanic marine mammals across the diverse habitats and geographic ranges they occupy.
- Identify and implement restoration activities that mitigate key stressors in order to support resilient populations. Collect and use monitoring information, such as population and health assessments and spatiotemporal distribution information.
- Identify and implement actions that support ecological needs of the stocks; improve resilience to natural stressors; and address direct human-caused threats such as bycatch in commercial fisheries, vessel collisions, noise, industrial activities, illegal feeding and harassment, and hook-and-line fishery interactions.

This project aims to provide restoration benefits to bottlenose dolphins in the Gulf of Mexico by decreasing the number of entanglements and associated mortality of dolphins in commercial shrimp skimmer trawls operating in Mississippi state waters.

1.3 Conceptual Setting

The conceptual setting identifies factors and interactions, including uncertainties, that may influence the project outcomes. This may include factors affecting whether the project is implemented as planned, cofactors that may have a significant effect on variance in the data, and factors that may alter the expected outcome of the restoration effort. This project relies on future data collection to inform management decisions and stakeholder buy-in. Understanding the conceptual setting aids in adaptive management of the project by identifying factors that can be monitored to better understand project outcomes and providing the opportunity to anticipate their effects and plan for contingencies.

Data on bottlenose dolphin threats, injuries, and mortalities are collected and analyzed by NOAA and will be used to help establish baseline conditions for this project. A key factor that may affect project implementation and performance is the level of buy-in of commercial shrimpers, which may be influenced by logistical constraints, cost constraints, or perception. The approach taken by this project to in-water testing with the cooperation of the commercial shrimp industry in Mississippi and the reliance on voluntary implementation plans is intended to mitigate these factors. Changes within the fishery, whether due to economic, policy, or environmental considerations, would also likely affect project implementation and performance. There may be variance in how dolphins interact with shrimpers in different areas of Mississippi state waters, which has the potential to affect prototype design configuration and how the results are interpreted. Behavior variance however will not affect obtaining a substantial quantity of data to make appropriate gear configuration comparisons. The ability to detect dolphin interactions on the treatment and control nets to perform comparative analysis will be a factor that will affect project implementation. This will be adaptively managed as needed with potential corrective actions including altering the method of observation. Additional uncertainties, such as logistical constraints affecting suppliers of outreach materials, may be identified as the project is further developed, implemented, and monitored. If any drivers or stressors negatively affect the project, adaptive management may be necessary to ensure project objectives are being achieved. The adaptive management strategy for the project is outlined in Section 3.

2.0 Project Monitoring

Performance monitoring would be conducted to evaluate project success and identify the need for potential corrective actions or adaptive management. Below, a list of proposed monitoring parameters is provided, organized by each restoration objective. For each of the identified monitoring parameters, information is provided on the intended purpose, monitoring methods, timing and frequency, duration, sample size, and sites. The specific analyses for each parameter are described in Section 4.0 (Evaluation). Section 5.0 (Project-Level Decisions) discusses how these parameters may be tied to performance criteria and/or corrective actions where appropriate.

Objective #1. Conduct collaborative in-water testing with fishermen and researchers to determine the most effective trawl materials, trawl coverings, and/or fishing practices to be implemented in Phase 2 of the project to meet the project goal.

Parameter #1: Development of a comparative in-water testing plan.

a) Purpose: This parameter would be used to track project planning progress by identifying and prioritizing appropriate shrimp trawl alternative materials for comparative testing and developing the associated sampling plan.
b) Method: A team of technical experts, resource managers, industry stakeholders, and other regional stakeholders (as appropriate) would meet to discuss and prepare a list of prioritized materials/techniques for in-water testing; develop a study design for the in-water testing (by geographic area, if necessary), procedures for evaluating alternative shrimp trawl materials/techniques, and associated timelines; and identify and train key personnel.
c) Timing, Frequency, and Duration: Completed within one year of project initiation.
d) Sample size: N/A.
e) Sites: N/A.
f) Performance criteria: In-water sampling plan completed.

Parameter #2: Finalize gear prototype designs for in-water testing.

a) Purpose: This parameter would be used to track project planning progress by finalizing the alternative gear designs that would be used to conduct comparative in-water testing.
b) Method: Design and construct initial prototype designs; conduct in-water evaluations of designs; perform on-site modifications to optimize gear designs (as needed); conduct proof of concept testing aboard NOAA research vessel RV Caretta to evaluate the operational feasibility and shrimp catch rates.
c) Timing, Frequency, and Duration: Completed within first three years of project implementation. Year one through three- diver prototype evaluations conducted in Panama City, FL from R/V Caretta followed by comparative towing also conducted from R/V Caretta in Mississippi waters later that year. This proof of concept testing in MS will consider operational issues, test shrimp catch rates, and determine other modifications that may have potential to decrease marine mammal interactions for future prototypes.
d) Sample size: 1 research vessel for in water evaluations. For shrimp catch rate comparisons, a minimum of 30 tows will be conducted.
e) Sites: Construction of trawls/trawl covers in Pascagoula, MS. Prototype diver evaluations in Panama City, FL and comparative testing in MS state waters.
f) Performance criteria: Gear prototype design(s) finalized.

Parameter #3: Identification of effective gear configuration components (e.g., trawl covering design and/or stronger webbing materials) that show promise to reduce dolphin interactions compared to gear currently used in shrimp fishery.

a) Purpose: This parameter would be used to evaluate project performance and to track project planning progress.
b) Method: Conduct collaborative in-water testing with the fishing industry comparing control experimental net designs; comparisons would include shrimp catch rates and trawl damage from dolphin interactions (e.g., the number of holes in each net) and potentially assessment of dolphin behaviors around nets with drones/cameras.
c) Timing, Frequency, and Duration: Completed during project years 2-3. Two contracted commercial shrimp skimmer trawl vessels will conduct two, seven-day sampling trips each.
d) Sample Size: Two contracted commercial shrimp skimmer trawl vessels.
e) Sites: Mississippi state waters.
f) Performance criteria: At least 1 gear configuration component is identified.

Parameter #4: Reporting of key findings from in-water testing and potential future implementation actions

a) Purpose: This parameter would track the key findings from the study and discuss them in the context of future potential implementation actions in Phase II of the project.
b) Method: Report will be developed summarizing data collection methods, results, and conclusions from the testing phase. The report will also include recommended gear configurations/materials for potential future implementation actions in Phase II.
c) Timing, Frequency, and Duration: Initial report would be completed at the end of Phase 1, approximately year 3 of the project.
d) Sample Size: N/A.
e) Sites: N/A.
f) Performance criteria: 1 Report produced.

Objective #2: Developing a plan for voluntary implementation of alternative trawl materials, use of protective coverings, and/or new fishing practices in the shrimp trawl fleet

Parameter #5: Development of a specific voluntary implementation plan for reducing dolphin entanglements in shrimp skimmer trawls

a) Purpose: This parameter would track the project planning progress in identifying and developing potential mechanisms (e.g., incentives, outreach) for voluntary adoption of alternative gear measures and to inform adaptive management.
b) Method: A team of technical experts, resource managers, industry stakeholders, and other regional stakeholders (as applicable) would discuss potential mechanisms to encourage maximum voluntary adoption of the recommended skimmer shrimp trawl alternatives.
c) Timing, Frequency, and Duration: Completed within 4 years of project initiation.
d) Sample size: N/A.
e) Sites: N/A.
f) Performance metric: 1 voluntary implementation plan developed.

Objective #3: Implement the voluntary use of identified alternative materials and coverings for voluntary adoption by the Mississippi shrimp trawl fleet by partnering with stakeholders.

Parameter #6: Number of fishermen informed about voluntary adoption of trawl materials/configurations

a) Purpose: This parameter would be used to evaluate project performance and to inform adaptive management.
b) Method: The number of shrimpers informed about voluntarily adopting the alternative trawl materials/configurations and its importance would be counted and used to evaluate the effectiveness of potential outreach/incentive programs.
c) Timing, Frequency, and Duration: During project Years 4 and 5.
d) Sample size: Single count of fisherman informed.
e) Sites: Mississippi waters.
f) Performance criteria: Proportion of Mississippi shrimp fleet informed; 50% targeted.

Parameter #7: Number of fishermen voluntarily adopting gear modification designs

a) Purpose: This parameter would be used to determine success of project implementation.
b) Method: Record number of fishermen actively using gear modification designs.
c) Timing, Frequency, and Duration: As they are informed during project years 3-5.

d) Sample size: All participating vessels.
e) Sites: Mississippi waters.
f) Performance criteria: at least 35% of Mississippi shrimp fleet installs alternative materials/configurations.

Parameter #8: Partner with shrimpers to provide usability feedback on alternative trawl materials/configurations

a) Purpose: this parameter would likely be used to evaluate alternative material performance and usability and to inform adaptive management.
b) Method: The level of engagement via usability feedback from fishermen and potentially the number of fishermen voluntarily adopting trawl alternatives would be counted and used to evaluate the effectiveness of potential outreach/incentive programs and the effectiveness of performance and usability of alternative trawl materials.
c) Timing, Frequency, and Duration: Annually during project years 4-5.
d) Sample size: Approximately 70 vessels or 35% of the shrimp fleet.
e) Sites: Mississippi waters.
f) Performance criteria: Usability feedback from at least 50% of converted vessels.

3.0 Adaptive Management

As discussed in the PDARP/PEIS, adaptive management is a form of structured decision-making applied to the management of natural resources in the face of uncertainty (Pastorok et al. 1997; Williams 2011). It is an iterative process that integrates monitoring and evaluation of management actions with flexible decision-making, where adjustments are made to management approaches based on observed outcomes (NRC 2004). Within the context of ecological restoration, adaptive management addresses key uncertainties by linking science to restoration decision-making (Steyer and Llewellyn 2000; Thom et al. 2005). Performance may be evaluated in terms of implementation of the project plan, expected project outputs, or the ability of the project to achieve the desired restoration outcomes.

For this project, an adaptive management approach would be taken to ensure that high-priority restoration activities are identified and effectively and efficiently implemented to decrease the number of interactions and associated mortality of dolphins in commercial shrimp skimmer trawls in Mississippi state waters. The project team would use an iterative process to plan, evaluate, implement, and monitor activities so that the project can address the uncertainties inherent in ecological restoration of protected species.

The objectives are specifically designed to use the best available information to identify the most effective trawl modifications for implementation that meet project objectives. During in-water testing and plan development, adaptive management would focus on the sufficiency of the available data to identify the most effective and efficient materials/configurations for reducing entanglements without intolerable impact on fishing operations. During each phase, it would be important to ensure engagement and cooperation of the stakeholders in developing, testing, and implementing alternative options. Therefore, the level of stakeholder engagement would be monitored to determine whether additional outreach is needed. During plan development and outreach activities, the team would make initial plans for the best approaches for implementation of the identified alternative trawl materials/configurations (and appropriate monitoring parameters). As development of techniques and implementation progresses, the project team would continue to evaluate the implementation success and adjust the implementation approaches to make use of the best available information (e.g., from

earlier objectives from this project and other DWH Marine Mammals Restoration Type projects) and conditions in the field. Additionally, in the post-execution period, the team would continue to monitor dolphin interactions and mortality in the shrimp fishery as additional data (from this project or any other ecological activities in the Gulf of Mexico) become available.

4.0 Evaluation

Evaluation of monitoring data is needed to assess the performance of the project in meeting its restoration objectives, resolving uncertainties to increase understanding, and determine whether corrective actions are needed.

As part of the larger decision-making context beyond the project scale, the evaluation of monitoring data from the individual projects would be compiled and assessed at the Restoration Type and TIG level, and the results would be used to update the knowledge base to inform decisions such as future TIG project prioritization and selection, implementation techniques, and the identification of critical uncertainties. The results of the analysis would be used to answer the following questions:

- Were the project objectives achieved? If not, is there a reason why they were not met?
- Did the project produce unanticipated effects?
- Were there unanticipated events unrelated to the project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?
- Have data been summarized and characterized in a way that allows for a clear understanding of results?
- Have any trends or patterns been identified, and if so, how can they be characterized?
- What broader insights might be gained from implementation/monitoring of this project?

These questions will be answered and compiled in annual monitoring reports for the project and revisions to the MAM plan be made if needed.

5.0 Project-Level Decisions: Performance Criteria and Potential Corrective Actions

Performance criteria and potential corrective actions would be developed during project implementation planning and implementation, as indicated below. As the performance criteria and corrective actions are developed, this MAM plan would be updated to include them.

Table 5-1: Summary of monitoring parameters, performance criteria, and potential corrective actions, organized by restoration objective.

Monitoring Parameters	Performance Criteria	Potential Corrective Actions
1. Development of a comparative in-water testing plan.	1 In-water sampling plan completed	N/A
2. Finalize gear prototype designs for in-water testing.	Gear prototype design(s) finalized	N/A
3. Identification of effective gear configuration components (e.g., trawl covering design and/or stronger webbing materials) that show promise to reduce dolphin interactions compared to gear currently used in shrimp fishery.	At least 1 gear configuration component is identified	N/A
4. Reporting of key findings from in-water testing and potential future implementation actions.	1 Report produced	N/A
5. Development of a specific voluntary implementation plan for reducing dolphin entanglements in shrimp skimmer trawls.	1 voluntary implementation plan developed	N/A
6. Number of fishermen informed about voluntary adoption of trawl materials/configurations.	50% of Mississippi shrimp fleet.	Conduct additional outreach to fishermen.
7. Number of fishermen voluntarily adopting gear modification designs.	At least 35% of Mississippi shrimp fleet installs alternative materials/configurations.	Conduct additional outreach to fishermen.
8. Partner with shrimpers to provide usability feedback on alternative trawl materials/configurations.	Usability feedback from at least 50% of converted vessels.	Conduct additional outreach to fishermen.

6.0 Monitoring Schedule

The schedule for project monitoring is shown in Table 6-1, separated by activity. Performance monitoring activities would be conducted in Project Years 1-5.

Table 6-1: Monitoring schedule.

Monitoring Parameters	Year 1	Year 2	Year 3	Year 4	Year 5
1. Development of a comparative in-water testing plan.	x	n/a	n/a	n/a	n/a
2. Finalize gear prototype designs for in-water testing.	x	x	x	n/a	n/a
3. Identification of effective gear configuration components (e.g., trawl covering design and/or stronger webbing materials) that show promise to reduce dolphin interactions compared to gear currently used in shrimp fishery.	n/a	x	x	n/a	n/a
4. Reporting of key findings from in-water testing and potential future implementation actions.	n/a	n/a	x	n/a	n/a

Monitoring Parameters	Year 1	Year 2	Year 3	Year 4	Year 5
5. Development of a specific voluntary implementation plan for reducing dolphin entanglements in shrimp skimmer trawls.	n/a	n/a	n/a	x	n/a
6. Number of fishermen informed about voluntary adoption of trawl materials/configurations.	n/a	n/a	n/a	x	x
7. Number of fishermen voluntarily adopting gear modification designs.	n/a	n/a	x	x	x
8. Partner with shrimpers to provide usability feedback on alternative trawl materials/configurations.	n/a	n/a	n/a	X	x

7.0 Data Management

To the extent practicable, after consideration of ongoing federal and/or state-specific efforts (e.g., current protocols, existing databases), all environmental and biological data generated during monitoring activities will be documented using standardized field datasheets. If standardized datasheets are unavailable or not readily amendable to record project-specific data, project-specific datasheets will be drafted prior to conducting any project monitoring activities. Electronic data file names should include the date on which the file was created, a ReadMe file that describes when and by whom the file was created, and any explanatory notes about the file contents. If a data file is revised, a new copy will be made and the original preserved. The Implementing Trustees will verify and validate monitoring data and information and will ensure that all data are entered or converted into agreed upon/commonly used digital format labeled with metadata.

7.1 Data Description

During Objective 1, the project team would engage with technical experts, resource managers, and stakeholders to discuss and prepare a list of prioritized materials/techniques for in-water testing; develop a study design for the in-water testing (by geographic area, if necessary), procedures for evaluating alternative shrimp trawl materials/techniques, and associated timelines; and identify and train key personnel. Prototype designs to conduct comparative in-water testing would be finalized. As in-water testing proceeds, the team would collect, manage, and analyze data from control and experimental gear designs with comparisons conducted on shrimp catch rates and trawl damage from dolphin interactions (e.g., the number of holes in each net) and potentially assessment of dolphin behaviors around nets with drones/cameras. During Objective 2, the project team would continue to collect data from the Mississippi skimmer trawl fleet on the performance and usability of alternative trawl designs.

All data would have properly documented Federal Geographic Data Committee / International Organization for Standardization (FGDC/ISO) metadata, a data dictionary (defining codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., information about how data were collected, quality assurance [QA] and quality control [QC] procedures, other information about data such as meaning, relationships to other data, origin, usage, and format).

7.2 Data Review and Clearance

All collected data would undergo proper QA/QC protocols following the process outlined in Section 3 of the MAM Manual Version 2.0. In summary, the following steps would be taken. For data that have been transcribed, the electronic data sheets would be verified against the original hardcopy datasheets and/or notebooks. Any corrections to transcription errors would be made as appropriate before data are used for any analyses or distributed outside of the Implementing Trustee's agency. The Implementing Trustees would review MAM data and information and would ensure that all data is entered or converted into agreed upon/commonly used digital format and labeled with metadata following FGDC/ISO standards to the extent practicable and in accordance with Implementing Trustee agency requirements.

After identified errors have been addressed the Implementing Trustees would give the other TIG members time to review the data before making the data publicly available. Before submitting the monitoring data and information package, co-Implementing Trustees shall confirm with one another that the package is approved for submission (as applicable).

7.3 Data Storage and Accessibility

Once all data has been QA/QC checked it will be submitted to the DIVER Portal and, if applicable, in the CETACEAN. Implementing Trustees will provide DWH NRDA MAM data and information to these platforms as soon as possible and no more than one year from when data are collected.

7.4 Data Sharing

Data will be made publicly available, in accordance with the Federal Open Data Policy, through the DIVER Explorer Interface within one year of when the data collection occurred.

Some of the data collected may be protected from public disclosure under federal and state law (e.g., personally identifiable information under the Privacy Act or observer information collected under, Magnuson–Stevens Fishery Conservation and Management Act) and therefore would not be publicly distributed.

8.0 Reporting

Project monitoring reports will be prepared and uploaded to DIVER annually. In addition, consistent with Trustee Council Standard Operating Procedures and any future amendments, the Implementing Trustees will develop a final, high-level summary report prior to project close-out (Section 10.7.1 of SOPs; DWH NRDA Trustees 2016). This final report will provide a range of information about the project, including its activities, key achievements, and lessons learned.

9.0 Roles and Responsibilities

MDEQ and NOAA, as the Implementing Trustees, will be responsible for data collection, data analysis, QA/QC, reporting, and DIVER entries and will coordinate closely with MDEQ on these activities. NOAA

and MDEQ will jointly discuss and decide if/when any corrective actions or adaptive management measures would be recommended to the MS TIG.

10.0 References

DWH NRDA (Deepwater Horizon Natural Resource Damage Assessment) Trustees. 2016. "Trustee Council Standard Operating Procedures for Implementation of the Natural Resource Restoration for the *Deepwater Horizon* (DWH) Oil Spill." https://www.gulfspillrestoration.noaa.gov/sites/default/files/DWH%20TC%20SOP%202.0%20with%20appendices.pdf.

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B1, Bird Stewardship and Enhanced Monitoring in Mississippi: Monitoring and Adaptive Management Plan

Table of Contents

1.0 Introduction

This project monitoring and adaptive management (MAM) plan identifies the monitoring needed to evaluate progress toward meeting project objectives and to support adaptive management of the restoration project, as needed. Where applicable, it identifies key sources of uncertainty and incorporates monitoring data and decision points that address these uncertainties. As not all projects would have the same sources and degree of uncertainty, this project-specific MAM plan is scaled according to level of uncertainty, scope, scale, and Restoration Type associated with this project.

This MAM plan is a living document and may be updated as needed to reflect changing conditions and/or new information. Any future revisions to this document would be made publicly available through the DIVER Portal (https://www.diver.orr.noaa.gov/web/guest/home) and accessible through the Trustee Council's website (https://www.habitat.noaa.gov/storymap/dwh/).

1.1 Project Overview

This project is being implemented to restore for birds injured by the Deepwater Horizon (DWH) oil spill, consistent with the ProgrammaticDamage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS).

- Programmatic Goal: Replenish and Protect Living Coastal and Marine Resources
- Restoration Type: Birds

- Restoration Approach: Restore and Conserve Bird Nesting and Foraging Habitat
- Restoration Technique: Enhance habitat through vegetation management; Improve nesting and foraging area stewardship
- TIG: Mississippi Trustee Implementation Group (MS TIG)
- Restoration Plan: Mississippi Trustee Implementation Group Restoration Plan 3

This project would help restore coastal nesting shorebird species injured by the DWH oil spill by implementing stewardship activities that would reduce human disturbance of birds and predation of nests and chicks by wildlife (e.g., racoons, coyotes) and address critical information gaps for populations of colonial waterbirds breeding along the Mississippi coast to better inform restoration planning.

1.2 Restoration Type Goals and Project Restoration Objectives

The overall goal for this Restoration Type relevant to this project, as identified in the PDARP/PEIS, are:

- Restore lost birds by facilitating additional production and/or reduced mortality of injured bird species.
- Restore or protect habitats on which injured birds rely.

The project restoration objectives are:

- Protect and restore bird habitat and reduce key stressors that impact birds that use beaches for nesting, rearing, foraging, resting and refueling during migratory stopovers, and overwintering.
- Address information gaps for populations of breeding colonial waterbirds along the Mississippi coast and on the Mississippi, barrier islands to better inform restoration planning by tracking movements and colony behavior.
- Maintain or increase public awareness of bird conservation issues.

Performance criteria would be used to determine restoration success or the need for corrective action in accordance with 15 Code of Federal Records 990.55(b)(1)(vii)). Specific, measurable performance criteria will be defined, as applicable, for potential monitoring parameters associated with each of the restoration objectives in Section 3.0.

2.0 Adaptive Management

To increase the likelihood of achieving the project objective, the Implementing Trustees would conduct targeted monitoring and use the monitoring data to refine future management actions. The project would apply consistent restoration techniques previously applied in Mississippi to directly address habitat loss and degradation stressors that impact birds. Data collected on bird abundance and habitat occupancy would be fundamental monitoring parameters for the stewardship effort. These data would inform adaptive management needed during implementation and future restoration planning, such as adjusting the types and amount of effort invested in certain locations to improve habitat conservation and enhancement activities. Seabird tracking to monitor colony dynamics and habitat could inform the selection, design, and optimization of restoration projects in the future.

3.0 Project Monitoring, Performance Criteria, and Potential Corrective Actions

Prior to implementation for each project component, the Implementing Trustees would define specific monitoring parameters and metrics associated with the project objectives and relevant to the focal species to be monitored and their habitats. The geographic areas and specific components of the sampling design for each activity would also be defined. Thus, this section describes general monitoring objectives and potential parameters and metrics that are likely to be relevant to assess the components of this project. Table 1 provides draft project objectives and potential parameters that could be used in project monitoring; it is preliminary and is not exhaustive or prescriptive.

Table 1 - Draft Project objectives and potential parameters

Draft Project Objectives	Potential Parameters
Protect and restore bird habitat and reduce key stressors that impact birds that use beaches for nesting, rearing, foraging, resting and refueling during migratory stopovers, and overwintering	• Number of conservation measures implemented (e.g., fencing) • Acreage of protected habitat, by habitat type and focal species • Area monitored and other metrics of monitoring efforts (e.g., number of transects, number of sites, number of colonies) • Bird abundance, density, or occupancy (e.g., number of pairs, number of nests, number of colonies) • Bird nesting success, survival, and production • Number of predators managed
Address information gaps for populations of breeding colonial waterbirds along the Mississippi coast and on the Mississippi, barrier islands to better inform restoration planning by tracking movements and colony behavior	• Number of birds banded/fitted with loggers • Bird movements (e.g., mean trip duration, mean/max/min trip distance) • Habitat use (e.g., foraging area size) • Colony use (e.g., residence time)
Maintain or increase public awareness of bird conservation issues	• Number and type of educational opportunities (e.g., presentations to key stakeholders and user groups, law enforcement training sessions, and on-site visitor engagements) including number of individuals educated • Number and type of outreach materials distributed (e.g., mailers to beachfront residents, content through traditional media)

4.0 Monitoring Schedule

The schedule for project performance monitoring would be developed once monitoring parameters are finalized. The project would be implemented for 7 years.

5.0 Evaluation

The MS TIG anticipates conducting an evaluation of the monitoring data collected (as described above) to help answer the following questions:

- Were the project restoration objectives achieved? If not, is there a reason why they were not met?
- Were there unanticipated events unrelated to the restoration project that potentially affectedthe monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?

6.0 Data Management

6.1 Data Description

Data would be compiled within 12 months after collection. To the extent practicable, data generated during monitoring activities would be documented using standardized field datasheets. If standardized

datasheets are unavailable, then project-specific datasheets would be drafted prior to conducting any project monitoring activities. Original datasheets and notebooks and photographs would be retained by the implementing Trustees.

Relevant project data that are handwritten on hardcopy datasheets or notebooks would be transcribed (entered) into standard digital format as appropriate per protocols developed by the Implementing Trustee. Electronic data files should be named with the date on which the file was created and should include a ReadMe file that describes when the file was created and by whom and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved.

All data would have properly documented Federal Geographic Data Committee/International Organization for Standardization (FGDC/ISO) metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, Quality Assurance/Quality Control (QA/QC) procedures, other information about data such as meaning, relationships to other data, origin, usage, and format).

6.2 Data Review and Clearance

After transcription of the data, the electronic data sheets would be verified against the original hardcopy datasheets and/or notebooks and would make any correctionsto transcription errors as appropriate before data are used for any analyses or distributed outside of theagency. Implementing Trustees would verify and validate MAM data and information and would ensure that all data are: i) entered or converted into agreed upon/commonly used digital format; ii) labeled with metadata following FGDC/ISO standards to the extent practicable and in accordance with Implementing Trustee agency requirements.

After all identified errors are addressed, data are QA/QC'ed. The Implementing Trustees would give the other MS TIG members time to review the data before making such information publicly available (as described below).

6.3 Data Storage and Accessibility

Once all data has been QA/QC'ed it would be stored on MDEQ servers. Trustees would provide DWH NRDA MAM data and information to DIVER as soon as possible and no more than 1 year from when data are collected.

6.4 Data Sharing

Data would be made publicly available, in accordance with the Open, Public, Electronic and Necessary Government Data Act of 2019, through the DIVER Explorer Interface within 1 year of when the data collection occurred.

7.0 Reporting

All reporting would occur after field surveys are completed annually. This report would summarize the findings for the sampling period including all worksheets transferred into digital format and presented in tabular and graphical formats. The data should be summarized in such a way that it is meaningful to the reader. Additionally, an annual report would be completed that includes:

- Summary data –synthesized data for all efforts during the year.
- Graphics, if applicable, and associated interpretations of the data.
- Comparisons of pre- and post-project conditions, as applicable.
- Any uncertainties with management actions.
- Potential data collection issues.
- Reporting on general MAM activities in the DIVER Restoration Portal on an annual basis.
- Developing a Final MAM Report before a project is closed out.

8.0 Roles and Responsibilities

The MS TIG is responsible for addressing MAM objectives that pertain to their restoration activities and for communicating information to the public through DIVER. The Implementing Trustees for the project would be DOI and MDEQ. DOI and MDEQ roles include coordination with contractors and volunteers and the MS TIG to track project progress, program management and oversight, monitoring oversight.

REC1, Clower Thornton Nature Park Trail Improvement: Monitoring and Adaptive Management Plan

Table of Contents

1.0 Introduction

This project monitoring and adaptive management (MAM) plan identifies the monitoring needed to evaluate progress toward meeting project objectives and to support adaptive management of the restoration project, as needed. Where applicable, it identifies key sources of uncertainty and incorporates monitoring data and decision points that address these uncertainties. As not all projects would have the same sources and degree of uncertainty, this project-specific MAM plan is scaled according to level of uncertainty, scope, scale, and Restoration Type associated with this project.

This MAM plan is a living document and may be updated as needed to reflect changing conditions and/or new information. Any future revisions to this document would be made publicly available through the DIVER Portal (https://www.diver.orr.noaa.gov/web/guest/home) and accessible through the Trustee Council's website (https://www.habitat.noaa.gov/storymap/dwh/).

1.1 Project Overview

This project is being implemented to restore for recreational use losses resulting from the Deepwater Horizon (DWH) oil spill, consistent with the ProgrammaticDamage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS).

- Programmatic Goal: Provide and Enhance Recreational Opportunities
- Restoration Type: Provide and Enhance Recreational Opportunities
- Restoration Approach: Enhance Public Access to Natural Resources for Recreational Use
- Restoration Technique: Enhance public access to natural resources for recreational use
- TIG: Mississippi Trustee Implementation Group (MS TIG)
- Restoration Plan: Mississippi Trustee Implementation Group Restoration Plan 3

This restoration project would be implemented at The Clower Thornton Nature Area, a 17.5-acre remnant patch of coastal habitat within the urban setting located on East Railroad Street in Gulfport, Mississippi. The property is bounded to the west by a 1,598-foot segment of Coffee Creek, a tidally influenced coastal stream that flows south into the Mississippi Sound. This project includes restoration actions to install new trails and boardwalks, as well as other amenities such as educational kiosks and signage. The walking trails will intersect and traverse the interior of the park, connect visitors to the bottomland hardwoods along the banks of Coffee Creek and traverse maritime coastal forests. Pedestrians using the Clower Thornton Nature Park have access and connectivity to the Mississippi Sound via off-site trails and pedestrian routes.

1.2 Restoration Type Goals and Project Restoration Objectives

The overall goal for this Restoration Type relevant to this project, as identified in the PDARP/PEIS, is:

- Enhance public access to natural resources for recreational use

The project restoration objective is:

- Enhance public access to natural resources by constructing nature trails, boardwalks, educational kiosks and signage to complement existing park amenities to provide improved access to natural resources for recreational purposes.

Performance criteria would be used to determine restoration success or the need for corrective action in accordance with 15 Code of Federal Records 990.55(b)(1)(vii)). Specific, measurable performance criteria are defined, as applicable, for monitoring parameters associated with each of the restoration objectives in Section 3.0.

2.0 Adaptive Management

To increase the likelihood of achieving the project objective, MDEQ would conduct targeted monitoring and use the monitoring data to refine, as necessary, future management actions.

3.0 Project Monitoring, Performance Criteria, and Potential Corrective Actions

The monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and potential corrective actions, if needed.

Information on each monitoring parameter is provided below and is organized by objective. The list of corrective actions provided below is not exhaustive; rather, it includes a list of potential actions to be considered if the project is not performing as expected once implemented. Other corrective actions may

be identified post-implementation, as appropriate.

Objective 1: Enhance public access to natural resources by constructing nature trails, boardwalks, educational kiosks and signage to complement existing park amenities to provide improved access to natural resources for recreational purposes.

Table 1-3 Monitoring Parameters

Performance Monitoring Parameter	Purpose	Method	Timing, Frequency, Duration	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Objective Parameter: Construction of project features	To ensure project features are constructed to design specifications	Visual inspections and progress reports	Periodically during construction and upon completion of each feature.	N/A	Construction As-Builts	Resolution with contractor such that the terms of the contract are met
Core Parameter: Visitor use/access	To estimate the number of individuals using the park	Visual surveys (performed in-person or through automated counters)	Two times each year for five years after project features are constructed.	10 observation periods at project location	Public use of the park following completion of improvements	Outreach

4.0 Monitoring Schedule

The schedule for project performance monitoring is shown in Table 4-1 by monitoring parameter.

Table 1-4 Monitoring Schedule

Monitoring Parameters	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Construction of project features	x	n/a	n/a	n/a	n/a	n/a
Visitor use/access	n/a	x	x	x	x	x

5.0 Evaluation

The MS TIG anticipates conducting an evaluation of the monitoring data collected (as described above) to help answer the following questions:

- Were the project restoration objectives achieved? If not, is there a reason why they were not met?
- Were there unanticipated events unrelated to the restoration project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?

6.0 Data Management

6.1 Data Description

Data would be compiled within 12 months after collection. To the extent practicable, data generated during monitoring activities would be documented usingstandardized field datasheets. If standardized datasheets are unavailable, then project-specific datasheets would be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets and notebooks and photographs would be retained by MDEQ.

Relevant project data that are handwritten on hardcopy datasheets or notebooks would be transcribed (entered) into standard digital format as appropriate per protocols developed by the Implementing Trustee. Electronic data files should be named with the date on which thefile was created and should include a ReadMe file that describes when the file was created and by whom and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved.

All data would have properly documented Federal Geographic Data Committee/International Organization for Standardization (FGDC/ISO) metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, Quality Assurance/Quality Control (QA/QC) procedures, other information about data such as meaning, relationships to other data, origin, usage, and format).

6.2 Data Review and Clearance

After transcription of the data, the electronic data sheets would be verified against the original hardcopy datasheets and/or notebooks, and corrections would be made to transcription errors as appropriate before data are used for any analyses or distributed outside of theagency. Implementing Trustees would verify and validate MAM data and information and would ensure that all data are: i) entered or converted into agreed upon/commonly used digital format; ii) labeled with metadata following FGDC/ISO standards to the extent practicable and in accordance with Implementing Trustee agency requirements.

After all identified errors are addressed, data are considered to be QA/QC'ed. MDEQ would give the other MS TIG members time to review the data before making such information publicly available (as described below).

6.3 Data Storage and Accessibility

Once all data has been QA/QC'ed it would be stored on MDEQ servers. MDEQ would provide DWH NRDA MAM data and information to DIVER as soon as possible and no more than 1 year from when data are collected.

6.4 Data Sharing

Data would be made publicly available, in accordance with the Open, Public, Electronic and Necessary Government Data Act of 2019, through the DIVER Explorer Interface within 1 year of when the data collection occurred.

7.0 Reporting

All reporting would occur after field surveys are completed annually. This report would summarize the findings for the sampling period including all worksheets transferred into digital format and presented in tabular and graphical formats. The data should be summarized in such a way that it is meaningful to the reader. Additionally, an annual report would be completed that includes:

- Summary data –synthesized data for all efforts during the year.
- Graphics, if applicable, and associated interpretations of the data.
- Comparisons of pre- and post-project conditions, as applicable.
- Any uncertainties with management actions.
- Potential data collection issues.
- Reporting on general MAM activities in the DIVER Restoration Portal on an annual basis.
- Developing a Final MAM Report before a project is closed out.

8.0 Roles and Responsibilities

The MS TIG is responsible for addressing MAM objectives that pertain to its restoration activities and for communicating information to the public through DIVER. The Implementing Trustee for the project would be MDEQ. The City of Gulfport would be a project partner. MDEQ's roles include coordination with the MS TIG to track project progress, program management and oversight, monitoring oversight, and partnering with Gulfport for project oversight during construction.

REC2, Environmental Education and Stewardship at Walter Anderson Museum of Art: Monitoring and Adaptive Management Plan

Table of Contents

1.0 Introduction

This project monitoring and adaptive management (MAM) plan identifies the monitoring needed to evaluate progress toward meeting project objectives and to support adaptive management of the restoration project, as needed. Where applicable, it identifies key sources of uncertainty and incorporates monitoring data and decision points that address these uncertainties. As not all projects would have the same sources and degree of uncertainty, this project-specific MAM plan is scaled according to level of uncertainty, scope, scale, and Restoration Type associated with this project.

This MAM plan is a living document and may be updated as needed to reflect changing conditions and/or new information. Any future revisions to this document would be made publicly available through the DIVER Portal (https://www.diver.orr.noaa.gov/web/guest/home) and accessible through the Trustee Council's website (https://www.habitat.noaa.gov/storymap/dwh/).

1.1 Project Overview

This project is being implemented to restore for recreational use losses resulting from the Deepwater Horizon (DWH) oil spill, consistent with the ProgrammaticDamage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS).

- Programmatic Goal: Provide and Enhance Recreational Opportunities
- Restoration Type: Provide and Enhance Recreational Opportunities
- Restoration Approach: Enhance Public Access to Natural Resources for Recreational Use; Promote Environmental Stewardship, Education, and Outreach
- Restoration Technique: Enhance public access to natural resources for recreational use; Create or

enhance natural resource-related education facilities; Create or enhance natural resource related education programs
- TIG: Mississippi Trustee Implementation Group (MS TIG)
- Restoration Plan: Mississippi Trustee Implementation Group Restoration Plan 3

This restoration project would be implemented at the Walter Anderson Museum of Art in Ocean Springs, Mississippi. The project includes an expansion of the Museum's campus with outdoor spaces and gardens connecting to coastal landscapes and would include development of a hub for interdisciplinary discovery and STEM education informed by the life and art of pioneering artist Walter Inglis Anderson (1903-1965). Project elements would facilitate coastal education and recreation to promote access to and engagement in restoration and stewardship of natural resources.

1.2 Restoration Type Goals and Project Restoration Objectives

The overall goal for this Restoration Type relevant to this project, as identified in the PDARP/PEIS, are:

- Enhance public access to natural resources for recreational use
- Promote Environmental Stewardship, Education, and Outreach

The project restoration objective is:

- Enhance access and visitor use to natural resources for environmental education and outreach opportunities.

Performance criteria would be used to determine restoration success or the need for corrective action in accordance with 15 Code of Federal Records 990.55(b)(1)(vii)). Specific, measurable performance criteria are defined, as applicable, for monitoring parameters associated with each of the restoration objectives in Section 3.0.

2.0 Adaptive Management

To increase the likelihood of achieving the project objective, MDEQ would conduct targeted monitoring and use the monitoring data to refine, as necessary, future management actions.

3.0 Project Monitoring, Performance Criteria, and Potential Corrective Actions

The monitoring plan for this restoration project was developed to evaluate project performance, key uncertainties, and potential corrective actions, if needed.

Information on each monitoring parameter is provided below and is organized by objective. The list of corrective actions provided below is not exhaustive; rather, it includes a list of potential actions to be considered if the project is not performing as expected once implemented. Other corrective actions may be identified post-implementation, as appropriate.

Objective 1: Increase access and visitor use to natural resources through environmental education and outreach opportunities.

Table 1-3 Monitoring Parameters

Performance Monitoring Parameter	Purpose	Method	Timing, Frequency, Duration	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Objective Parameter: Construction of project features	To ensure project features are installed to design specifications	Visual inspections and progress reports	Periodically during construction and upon completion of each feature	N/A	Construction As-Builts	Resolution with contractor such that the terms of the contract are met
Core Parameter: Visitor use/access	To estimate the number of individuals using the project amenities	Visual surveys at facility entrance	TBD following completion of project features	TBD	Public use of the facilities and programs following completion of improvements	Increased Outreach

4.0 Monitoring Schedule

The schedule for project performance monitoring is shown in Table 4-1 by monitoring parameter.

Table 1-4 Monitoring Schedule

Monitoring Parameters	Year 0	Year 1	Year 2	Year 3	Year 4
Construction of project features	x	x	n/a	n/a	n/a
Visitor use/access	n/a	x	x	x	x

5.0 Evaluation

The MS TIG anticipates conducting an evaluation of the monitoring data collected (as described above) to help answer the following questions:

- Were the project restoration objectives achieved? If not, is there a reason why they were notmet?
- Were there unanticipated events unrelated to the restoration project that potentially affectedthe monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?

6.0 Data Management

6.1 Data Description

Data would be compiled within 12 months after collection. To the extent practicable, data generated during monitoring activities would be documented using standardized field datasheets. If standardized datasheets are unavailable, then project-specific datasheets would be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets and notebooks and photographs would be retained by MDEQ.

Relevant project data that are handwritten on hardcopy datasheets or notebooks would be transcribed (entered) into standard digital format as appropriate per protocols developed by the Implementing Trustee. Electronic data files should be named with the date on which the file was created and should

include a ReadMe file that describes when the file was created and by whom and any explanatory notes on the file contents. If a data file is revised, a new copy should be made and the original preserved.

All data would have properly documented Federal Geographic Data Committee/International Organization for Standardization (FGDC/ISO) metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, Quality Assurance/Quality Control (QA/QC) procedures, other information about data such as meaning, relationships to other data, origin, usage, and format).

6.2 Data Review and Clearance

After transcription of the data, the electronic data sheets would be verified against the original hardcopy datasheets and/or notebooks and would make any correctionsto transcription errors as appropriate before data are used for any analyses or distributed outside of theagency. Implementing Trustees would verify and validate MAM data and information and would ensure that all data are: i) entered or converted into agreed upon/commonly used digital format; ii) labeled with metadata following FGDC/ISO standards to the extent practicable and in accordance with Implementing Trustee agency requirements.

After all identified errors are addressed, data are QA/QC'ed. MDEQ would give the other MS TIG members time to review the data before making such information publicly available (as described below).

6.3 Data Storage and Accessibility

Once all data has been QA/QC'ed it would be stored on MDEQ servers. MDEQ would provide DWH NRDA MAM data and information to DIVER as soon as possible and no more than 1 year from when data are collected.

6.4 Data Sharing

Data would be made publicly available, in accordance with the Open, Public, Electronic and Necessary Government Data Act of 2019, through the DIVER Explorer Interface within 1 year of when the data collection occurred.

7.0 Reporting

All reporting would occur after field surveys are completed annually. This report would summarize the findings for the sampling period including all worksheets transferred into digital format and presented in tabular and graphical formats. The data should be summarized in such a way that it is meaningful to the reader. Additionally, an annual report would be completed that includes:

- Summary data –synthesized data for all efforts during the year.
- Graphics, if applicable, and associated interpretations of the data.
- Comparisons of pre- and post-project conditions, as applicable.
- Any uncertainties with management actions.
- Potential data collection issues.
- Reporting on general MAM activities in the DIVER Restoration Portal on an annual basis.
- Developing a Final MAM Report before a project is closed out.

8.0 Roles and Responsibilities

The MS TIG is responsible for addressing MAM objectives that pertain to their restoration activities and for communicating information to the public through DIVER. The Implementing Trustee for the project would be MDEQ. The Walter Anderson Museum of Art would be a project partner. MDEQ's roles include coordination with the MS TIG to track project progress, program management and oversight, monitoring oversight, and partnering with the museum during construction and monitoring.

APPENDIX B – PROTECTED SPECIES

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Table 1-1 Federally threatened, endangered, and proposed species for RP3/EA project areas.

Common Name	Scientific Name	Federal Status	Alternative	Habitat
Birds				
Piping Plover	*Charadrius melodus*	Threatened	FM1, B1, B2	Beaches and mudflats in southeastern coastal areas. Critical Habitat exists on the mainland beaches, coastal, and barrier islands.
Piping Plover Critical Habitat	*Charadrius melodus*	Threatened	FM1	Piping Plover Critical Habitat includes units MS-1 through MS-13
Red Knot	*Calidris canutus rufa*	Threatened	FM1	Marine intertidal habitats including inlets, estuaries, and bays feeding in mud and sand flats on beaches and barrier islands
Fishes				
Gulf Sturgeon and Critical Habitat	*Acipenser oxyrinchus desotoi*	Threatened	FM1, MM1, REC3	Migrates from large freshwater coastal rivers to brackish and marine coastal bays and estuaries. Gulf Sturgeon Critical Habitat Units in Mississippi include Units 2 and 8.
Mammals				
West Indian Manatee	*Trichechus manatus*	Endangered	FM1, ST1, ST2, MM2, MM3, REC3	Fresh and salt water in large coastal rivers, bays, bayous and estuaries
Reptiles				
Hawksbill Sea Turtle	*Eretmochelys imbricata*	Endangered	FM1, ST1, ST2, MM1, MM2, MM3, REC3	Coral reefs, open ocean, bays, estuaries
Leatherback Sea Turtle	*Dermochelys coriacea*	Endangered	FM1, ST1, ST2, MM1, MM3, REC3	Open ocean, coastal waters
Kemp's ridley Sea Turtle	*Lepidochelys kempii*	Endangered	FM1, ST1, ST2, MM1, MM2, MM3, REC3	Nearshore and inshore coastal waters, often in salt marshes; neritic zones with muddy or sandy substrate (NOAA Fisheries 2014b)
Green Sea Turtle	*Chelonia mydas*	Threatened	FM1, ST1, ST2, MM1, MM2, MM3, REC3	Shallow coastal waters with SAVs and algae, nests on open beaches
Loggerhead Sea Turtle and Critical Habitat	*Caretta caretta*	Threatened	FM1, ST1, ST2, MM1, MM2, MM3, REC3	Open ocean; also inshore areas, bays, salt marshes, ship channels and mouths of large rivers

APPENDIX C – FINDING OF NO SIGNIFICANT IMPACT

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FINDING OF NO SIGNIFICANT IMPACT (FONSI) OF THE MISSISSIPPI TRUSTEE IMPLEMENTATION GROUP FINAL RESTORATION PLAN 3 AND ENVIRONMENTAL ASSESSMENT: HABITAT PROJECTS ON FEDERALLY MANAGED LANDS, SEA TURTLES, MARINE MAMMALS, BIRDS, AND PROVIDE AND ENHANCE RECREATIONAL OPPORTUNITIES

G.1 Introduction

The Mississippi Trustee Implementation Group Final Restoration Plan 3 and Environmental Assessment: Habitat Projects on Federally Managed Lands, Sea Turtles; Marine Mammals, Birds, and Provide and Enhance Recreational Opportunities (RP3/EA) is an integrated restoration plan and environmental assessment prepared under the natural resource damage assessment (NRDA) regulations of the Oil Pollution Act (OPA) and the implementing regulations of the National Environmental Policy Act (NEPA). The RP3/EA was prepared by the Mississippi Trustee Implementation Group (MS TIG) to partially address injuries caused by the *Deepwater Horizon* (DWH) oil spill to natural resources and services in the Mississippi Restoration Area using NRDA funds as set forth in the DWH post-settlement Consent Decree.

The MS TIG is comprised of one (1) state Trustee agency and four (4) federal Trustee agencies: the Mississippi Department of Environmental Quality (MDEQ), U.S. Department of the Interior (DOI), National Oceanic and Atmospheric Administration (NOAA), U.S. Environmental Protection Agency (EPA), and U.S. Department of Agriculture (USDA).[1]

The DWH Trustees' 2016 *Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement* (PDARP/PEIS) is a programmatic document developed by the DWH Trustees to guide and direct the DWH oil spill restoration effort. The PDARP/PEIS was prepared in accordance with OPA, NEPA, Council on Environmental Quality (CEQ) NEPA regulations, and the NEPA regulations, procedures and guidance applicable to the DWH federal Trustees. Where appropriate, the RP3/EA tiers from the PDARP/PEIS.

G.2 Lead and Cooperating Agencies, Adoption of NEPA Analysis by Cooperating Agencies

The MS TIG designated DOI as the lead federal agency responsible for NEPA analysis for the RP3/EA. Each of the other federal co-Trustees is participating as a cooperating agency pursuant to NEPA (40 CFR 1508.5) and the Trustee Council Standard Operating Procedures for Implementation of the Natural Resource Restoration for the Deepwater Horizon (DWH) Oil Spill (SOP) (DWH Trustees 2021: Appendix F:3–4). As federal agencies, each Trustee on the MS TIG must make its own independent evaluation of the NEPA analysis in support of its decision-making responsibilities. In accordance with 40 CFR 1506.3(a) and the SOP (DWH Trustees 2021: Section 9.4 and Appendix G), each of the federal agencies

[1] Chapter 7 of the PDARP/PEIS describes a distributed governance structure that assigns a TIG for each of the eight Restoration Areas (restoration in each of the five Gulf States, Open Ocean, Regionwide, and Unknown Conditions and Adaptive Management). The Trustees believe that restoration can be carried out most efficiently by directly vesting restoration decision-making to those Trustees who have the strongest collective trust interests in natural resources and their services within each Restoration Area.

participating in the MS TIG has reviewed the RP3/EA, found that it meets the standards set forth in its own NEPA implementing procedures, and accordingly adopts the RP3/EA NEPA analysis.

G.3 Public Participation

On October 30, 2020, the MS TIG requested that the public submit project ideas on their website (www.gulfspillrestoration.noaa.gov). The MS TIG screened projects submitted through November 30, 2020. On June 11, 2021, the MS TIG issued a Notice of Intent on the Trustees' website informing the public that it was initiating the drafting of a restoration plan to address the following Restoration Types: Habitat Projects on Federally Managed Lands; Birds; Marine Mammals; Sea Turtles; and Provide and Enhance Recreational Opportunities. After reviewing and considering more than 1,290 project proposals, the MS TIG developed the Draft RP3/EA.

The Draft RP3/EA was available for public review and comment on the MS TIG's website beginning on December 7, 2021. A notice of availability was published in the Federal Register and on the Trustees' website on December 7, 2021, and the MS TIG accepted comments through January 26, 2022. During the public comment period, the MS TIG hosted a webinar to facilitate the public review and comment process. The MS TIG accepted public comments during the public webinar, through a web-based comment submission site (https://www.gulfspillrestoration.noaa.gov/restoration-areas/mississippi) and through U.S. mail.

During the public comment period, the MS TIG received submissions from private citizens, a federal entity, and non-governmental organizations. All comments were reviewed and considered prior to finalizing the RP3/EA. Chapter 6 of the Final RP3/EA provides further detail, including a summary of all public comments received on the Draft RP3/EA, and the MS TIG's responses.

G.4 Purpose and Need, Proposed Action and Alternatives

The MS TIG has undertaken its restoration planning effort to meet the purpose of contributing to the restoration of those natural resources and services injured in the Mississippi Restoration Area as a result of the DWH oil spill. The RP3/EA is consistent with the Final PDARP/PEIS and its purpose and need fall within the scope of the purpose and need identified in the Final PDARP/PEIS.

The RP3/EA evaluates a reasonable range of alternatives, consisting of twelve projects, including seven identified as preferred by the MS TIG for implementation (Table 1), and a no action alternative for each restoration type. The MS TIG proposes to use approximately $19,000,000 of the settlement funds allocated to the MS TIG for the Mississippi Restoration Area to implement the preferred restoration alternatives in the RP3/EA. Through OPA and NEPA evaluations (RP3/EA Chapters 3 and 4), the MS TIG has determined that implementation of the seven (7) preferred alternatives best meets the purpose and need for partial restoration over the non-preferred and no action alternatives. Accordingly, the MS TIG selects the preferred alternatives identified in Table 1 for funding and implementation at this time. Pursuant to the Consent Decree, the alternatives selected for implementation will be funded from the five restoration type allocations: Habitat Projects on Federally Managed Lands, Sea Turtles, Marine Mammals, Birds, and Provide and Enhance Recreational Opportunities.

Table 1: Preferred Restoration Alternatives in the MS TIG's RP3/EA

Preferred Restoration Alternatives	Estimated Project Costs
Restoration Type: Habitat Projects on Federally Managed Lands (FM)	
FM-1 Improve Native Habitat by Removing Marine Debris from Mississippi Barrier Islands This project would remove marine debris on Mississippi barrier islands managed by the National Park Service's Gulf Islands National Seashore (including all of Petit Bois, Horn, and Ship islands and a portion of Cat Island). Debris would be surveyed and a scope of work to remove large debris prepared. Methods to remove debris would be varied and could include activities such as contract marine salvage crews removing large debris which may need to be dismantled in place and/or NPS staff and potentially volunteers on foot collecting and aggregating small- and medium-size debris for transport and disposal.	$3,000,000
Restoration Type: Sea Turtles (ST)	
ST-1 Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities (3 Years) This project would maintain the enhanced capacity of the Mississippi stranding network by in order to provide an enhanced ability to respond to stranded, sick, injured, or dead sea turtles as well as perform sea turtle rehabilitation activities and assess health and causes of mortality. This project builds on the sea turtle portion of the National Fish and Wildlife Foundation-Gulf Environmental Benefit Fund (NFWF-GEBF) Mississippi Marine Mammal and Sea Turtle Conservation, Recovery, and Monitoring Program currently slated for funding through 2022. The project includes personnel, equipment, and supplies needed for continued response and data collection efforts.	$2,500,000
Restoration Type: Marine Mammals (MM)	
MM-1 Maintaining Enhanced Marine Mammal Stranding Network Capacity and Diagnostic Capabilities (MDEQ) This project would maintain the increased capacity of the Mississippi Marine Mammal Stranding Network (MMSN) in order to provide an enhanced ability to respond to stranded, sick, injured, or dead marine mammals as well as assessing health and causes of mortality. This project builds on the marine mammal portion of the National Fish and Wildlife Foundation-Gulf Environmental Benefit Fund (NFWF-GEBF) Mississippi Marine Mammal and Sea Turtle Conservation, Recovery, and Monitoring Program - Phase I that is anticipated to be completed in 2022. The project includes personnel, equipment, and supplies needed	$2,350,000

Preferred Restoration Alternatives	Estimated Project Costs
for continued response and data collection efforts.	
MM-3 Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Improvements (MDEQ and NOAA) The overall goal of this project is to provide restoration benefits to Gulf of Mexico common bottlenose dolphins by decreasing the number of interactions and associated mortality of dolphins in commercial shrimp skimmer trawls in Mississippi state waters while maintaining catch efficiency and fishing performance/usability. Phase 1 would consist of collaborative testing with fishermen and researchers to determine the most effective trawl materials, trawl coverings, and fishing practices to meet the project goal. Phase 2 would include developing a plan for voluntary implementation of alternative trawl materials, use of protective coverings, and new fishing practices in the shrimp trawl fleet, and partnering with stakeholders to implement the voluntary use of these alternative materials and coverings.	$3,090,000
Restoration Type: Birds (B)	
B-1 Bird Stewardship and Enhanced Monitoring in Mississippi This project would help restore coastal nesting shorebird species by implementing stewardship activities that would reduce human disturbance of birds and predation of nests and chicks by wildlife (e.g., racoons, coyotes). Stewardship activities could include nuisance animal control, vegetation management, monitoring of nesting sites, patrols by wildlife stewards and/or law enforcement, and targeted community engagement, outreach, and education. The project would also address critical information gaps for populations of colonial waterbirds breeding along the Mississippi coast through monitoring activities such as bird banding, tracking, and nest and site monitoring.	$6,105,500
Restoration Type: Provide and Enhance Recreational Opportunities (REC)	
Rec-1 Clower Thornton Nature Park Trail Improvement (MDEQ) This project would improve recreational access through installation of a new trail/boardwalk and other amenities (e.g., educational kiosks, signage). The trail would intersect and traverse the interior of the park, connecting visitors to the bottomland hardwoods along the banks of Coffee Creek and traversing maritime coastal forests (Magnolia/Live Oak and Pine forests). Pedestrians using the Clower Thornton Nature Park have access and connectivity to the Mississippi Sound via off-site trails and pedestrian routes.	$630,000

Preferred Restoration Alternatives	Estimated Project Costs
Rec-2 Environmental Education and Stewardship at Walter Anderson Museum of Art (MDEQ) This project would help design and construct an expansion of the Walter Anderson Museum of Art's Creative Complex into a total of 15,000 square feet of indoor and outdoor spaces and gardens, provide partial funding for program development, contract educators, supplies, and landscape construction (Shoreline Garden). The project would foster public access, coastal discovery and innovation, improving the connection between communities and natural resources, and would ultimately strengthen environmental stewardship of resources in the Gulf of Mexico and help compensate for lost recreational use resulting from the Deepwater Horizon oil spill.	$1,356,000

Non-Preferred alternatives evaluated in the RP3/EA include:

- FM-2 Habitat Management on the Mississippi Barrier Islands
- ST-2Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities-5 Years
- MM-2 Marine Mammal Health Assessments to Monitoring Restoration Effectiveness
- B-2 Bird Stewardship on the Mississippi Barrier Islands
- Rec-3 Mississippi Gulf Coast Pier Improvements

G.5 NEPA Analysis Summary

Action Alternatives

The reasonable range of alternatives was analyzed under NEPA to determine environmental impacts that could result from implementation of the alternatives (RP3/EA Chapter 4), helping inform the MS TIG during its decision-making process. The NEPA analysis concluded that projects are anticipated to result in both beneficial and adverse effects. Potential adverse impacts to resources fall within a short-term minor and moderate to long-term minor impact range, with most moderate adverse impacts across all restoration types occurring only during construction activities, and the rest occurring in conjunction with long-term benefits. Effects within this range are determined not significant considering the context and intensity of the projects' scopes and effects on the resources. Table 4-13 of the RP3/EA provides a concise overview of impacts. To avoid redundancy, only environmental effects of non-preferred alternatives that differ notably from the preferred alternatives (Proposed Action) are described in more detail below. None of the projects analyzed in the RP3/EA would result in any long-term adverse effects that rise above a minor level.

A summary of anticipated effects of the reasonable range of alternatives is presented in table 4-13 of the RP3/EA, and also in Table 1 below. The NEPA analysis supports the following conclusions regarding the degree of potential effects the proposed action would have on the affected environment:

- The Proposed Action will have no significant adverse impacts to unique characteristics of the geographic areas. The Proposed Action is not expected to have any significant adverse effects on wetlands, floodplains, municipal water sources, ecologically critical areas, wild and scenic river corridors, park lands, wilderness, wilderness research areas, research natural areas, inventoried roadless areas, national recreation areas, or prime farmlands, particularly on a regional basis. The purpose of the Proposed Action is to improve the condition of natural resources damaged by the DWH oil spill.
- The effects of the Proposed Action on the quality of the human environment are not highly controversial. The MS TIG accepted public comments on the Draft RP3/EA from December 7, 2021, through January 26, 2022. All of the comments received during the comment period indicated support for the preferred projects in the plan. None of the alternatives evaluated in the RP3/EA would have more than minor to moderate adverse effects on the resources considered. Additionally, none create a disproportionately high and adverse effect on minority or low-income populations.
- The Proposed Action neither establishes a precedent for future MS TIG actions with significant effects nor represents a decision in principle about a future consideration. Future MS TIG actions will be determined through separate, independent planning processes.
- The Proposed Action will have no significant adverse cumulative impacts. The MS TIG concluded that although some of the projects may have an incremental contribution to adverse cumulative impacts, the contribution would not be significant.
- The Proposed Action will have no significant adverse impacts on districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or cause the loss or destruction of significant scientific, cultural, or historical resources. The Proposed Action will be implemented in accordance with all applicable laws and regulations concerning the protection of cultural and historic resources. National Historic Preservation Act Section 106 review is ongoing and necessary consultations will be completed prior to implementation of any alternative. See Table 2: Agency Coordination and Consultation below. If any cultural resources are found during implementation, work would cease, the proper agencies would be notified, and additional review under Section 106 would be conducted if necessary.
- The Proposed Action is not likely to result in significant adverse effects to Endangered Species Act (ESA)-listed species or their critical habitats. Implementing Trustees are required to implement all alternative-specific mitigation measures, including BMPs, that are identified in RP3/EA and conditions identified in the completed consultations/permits and biological evaluation forms. Implementing Trustees will provide oversight to ensure no unanticipated effects to listed species and habitats occur, including ensuring that BMPs are implemented and continue to function as intended. For the status of each alternative's ESA consultations, see Table 2: Agency Coordination and Consultation, below.
- The Proposed Action will not violate federal, state, or local laws, or requirements imposed for environmental protection. Projects will be monitored appropriately, and approaches and designs may be applied, adopted, or modified from other similar projects as deemed necessary. The Proposed Action will be implemented in compliance with all environmental protection laws and requirements. See Table 3: Agency Coordination and Consultation, below.

- The Proposed Action will not adversely affect stocks of marine mammals as defined in the Marine Mammal Protection Act (MMPA). Most projects will have no impacts to marine mammals; however, several projects will include the potential for increased boat operations and Project MM1 may result in increased stress to marine mammals from response operations; however, appropriate measures and best practices have been incorporated to minimize impacts to marine mammals and all existing authorizations and permits under MMPA will be adhered to. Also see Table 3 Agency Coordination and Consultation below.
- NMFS reviewed the preferred alternatives for compliance with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) and determined that appropriate measures and best management practices have been incorporated to minimize effects to essential fish habitat and therefore, consultations and permits are not required. The Proposed Action would not have significant adverse impacts to essential fish habitat. The alternatives analyzed were determined to have the potential for minor short term adverse effects on EFH from increased disturbance from boats, debris removal, and response activities.
- The Proposed Action will not have significant adverse impacts on federally managed fish species. Short-term minor adverse impacts to federally managed fish species are anticipated as a result of marine debris removal, increased boat use, and response activities. Specific conservation measures and best practices would be followed during implementation to avoid and minimize disruption and overall adverse effects to protected species.
- The Proposed Action may have a short- to long-term minor adverse effect on vulnerable marine or coastal ecosystems from barge operations, boat operations, removal of in-water debris at or near shorelines, response activities and the construction of recreational facilities (e.g., trails, pavilions). Adherence to permit and consultation conditions and use of best management practices avoids or minimizes impacts to these ecosystems.
- The Proposed Action is not expected to result in the introduction or spread of a nonindigenous species. Provisions for invasive species management and best practices minimize the risk of the introduction or spread of nonindigenous species.
- The Proposed Action will have no significant adverse impacts on public health and safety. Threats to public health and safety from construction activities would be mitigated through construction BMPs. Best practices will be implemented on a site-specific basis to mitigate the potential for adverse effects to occur to public health and safety during implementation.
- The Proposed Action has no highly uncertain, unique, or unknown risks. Restoration practices for living coastal and marine resources including sea turtles, marine mammals and birds, the proposed activities for habitat restoration, and construction of public amenities are successful, well-established, and commonly used practices to meet the goals of restoration for lost recreational use and injured natural resources.

Natural Recovery/No Action Alternative

Pursuant to OPA NRDA regulations and NEPA, the Natural Recovery/No Action alternative was analyzed programmatically in the PDARP/PEIS, Section 5.3.2, and was found to not meet the purpose and need for implementing alternatives that address lost natural resources and their services. Therefore, Natural Recovery/No Action was discarded from further consideration in subsequent tiered RP/EAs. Pursuant to NEPA, the No Action Alternative was analyzed in the RP3/EA by each restoration type as a ". . .

benchmark, enabling decisionmakers to compare the magnitude of environmental effects of the action alternatives."[2]

The No Action alternative would have no beneficial impacts to and no direct adverse effects on physical, biological, or socioeconomic resources. However, taking no action would indirectly allow some ongoing adverse effects on resources to continue, including the following:

Physical Resources

- Long-term minor adverse effects to geology and substrates from continued accumulation of marine debris.

Biological Resources

- Long-term minor adverse effects on habitat, wildlife species, marine and estuarine fauna and protected species from impacts such as beach and dune habitat trampling, entrapment and entanglement from trash, and predation by nuisance species.

[2] CEQ. 03/23/81. Council on Environmental Quality – Forty Most Asked Questions Concerning CEQ's NEPA Regulations.

Table 2: Summary of Effects for Reasonable Range of Alternatives.

Restoration Alternative	Geology and Substrates	Hydrology and Water Quality	Air Quality and GHG Emissions	Noise	Habitats	Wildlife Species	Marine and Estuarine Fauna	Protected Species	Socioeconomics Environmental Justice	Cultural Resources	Infrastructure	Land and Marine Management	Tourism and Recreational Use	Fisheries and Aquaculture	Marine Transportation	Aesthetics and Visual Resources	Public Health and Safety
FM1	s, +	s, +	s	s	s, +	s, +	s, +	s, +	s, +	NE	NE	s	s, +	NE	s, +	s, +	+
FM2	s, +	s, +	s	s	s, +	s, +	NE	s, +	NE	NE	NE	s	s, +	NE	NE	l, +	NE
ST1	s	s	s	s	s	s	s, +	s, +	NE	NE	NE	NE	s	NE	NE	NE	NE
ST2	s	s	s	s	s	s	s, +	s, +	NE	NE	NE	NE	s	NE	NE	NE	NE
MM1	s	s	s	s	s	s	s	s, +	NE	NE	NE	NE	s	NE	NE	s, +	NE
MM2	s	s	s	s	s	s	s	s, +	NE	NE	NE	NE	NE	NE	NE	NE	NE
MM3	NE	s	s	s	s	NE	s	s, +	NE	NE	NE	NE	s	NE	NE	NE	NE
B1	s, +	s	s	s	s, +	s, +	NE	s, +	NE	NE	NE	s	s, +	NE	NE	s, +	NE
B2	s, +	s	s	s	s, +	s, +	NE	s, +	NE	NE	NE	s	s, +	NE	NE	s, +	NE
REC1	s, l	s	s, l	s, l	l	l	NE	NE	s, +	NE	s, +	NE	s, +	NE	NE	s, +	s
REC2	l	s	s, l	s, l	s, +	NE	NE	NE	s, +	NE	s, +	NE	s, +	NE	NE	s, +	s
REC3	l	s	s, l	S, l	s	s	s	s	s, +	NE	s, +	NE	s, +	NE	NE	s, +	s, +

Key:
+ Beneficial effect; NE No effect
s Short-term minor adverse effect; S Short-term moderate adverse effect S Short-term major adverse effect;
l Long-term minor adverse effect, L Long-term moderate adverse effect; L Long-term major adverse effect

G.6 Agency Coordination and Consultation Summary

The MS TIG has engaged in environmental compliance and/or technical assistance and reviews with the applicable state and federal agencies. The status of those consultations is summarized below in Table 3.

Table 3: Agency Coordination and Consultation

Preferred alternatives	Coastal Zone Management Act (CZMA)	Endangered Species Act - Section 7 (NMFS)	Endangered Species Act - Section 7 (USFWS)	Magnuson Stevens Act (EFH) (NMFS)	Marine Mammal Protection Act (MMPA) (NMFS)	Marine Mammal Protection Act (MMPA) (USFWS)	National Historic Preservation Act (NHPA)	Rivers and Harbors Act/Clean Water Act (USACE permit)	Bald and Golden Eagle Protection Act (BGEPA)	Migratory Bird Treaty Act (MBTA)	Coastal Barrier Resources Act (CBRA)
Restoration Type: Habitat Projects on Federally Managed Lands											
FM1, Improve Native Habitat by Removing Marine Debris from Mississippi Barrier Islands	C	C-NLAA	C-NLAA	C	C	C-NE	IP	N/A	C-NE	C-NE	C
Restoration Type: Sea Turtles											
ST1, Maintaining Enhanced Sea Turtle Stranding Network Capacity and Diagnostic Capabilities	C	C-EC	C-NLAA	C	C	C-EC	IP	N/A	C-NE	C-NE	C
Restoration Type: Marine Mammals											
MM1, Enhancing Marine Mammal Stranding Network Capacity and Diagnostic Capabilities	C	C-EC	C-NLAA	C	C	C-EC	IP	N/A	C-NE	C-NE	C
MM2, Reduction of Marine Mammal Fishery Interactions through Trawl Technique and Component Material Improvements	C	C- NE	C-NE	C	C	C-NE	IP	N/A	C-NE	C-NE	C
Restoration Type: Birds											
B1. Bird Stewardship and Enhanced Monitoring in Mississippi	C	C-NE	C-NLAA	C	C	C-NE	IP	N/A	C-NE	C-NE	C
Restoration Type: Provide and Enhance Recreational Opportunities											
REC1, Clower Thornton Nature Park Trail Improvement	C	N/A	C-NE	N/A	N/A	N/A	IP	IP	C-NE	C-NE	N/A
REC2. Environmental Education and Stewardship at Walter Anderson Museum	C	N/A	C-NE	N/A	N/A	N/A	IP	N/A	C-NE	C-NE	N/A
C: Complete C-EC: Complete, covered by existing compliance C-NE: Complete, no effect C-NLAA: Complete, not likely to adversely affect	IP: In progress IP-NLAA: In progress, not likely to adversely affect IP-LAA: In progress, likely to adversely affect N/A: Not applicable										

If any further need arises to coordinate and consult with other regulatory authorities, the additional coordination or consultation requirements will be addressed prior to project implementation. The status of federal regulatory permits/approvals will be maintained online (http://www.gulfspillrestoration.noaa.gov/environmental-compliance/) and updated as regulatory compliance information changes. The MS TIG federal trustees' Finding of No Significant Impact for this RP3/EA is issued subject to the completion of all outstanding compliance reviews under applicable federal laws. If the Proposed Action changes or information is brought to light as a result of completing such reviews that is potentially relevant to the environmental assessment supporting this Finding of No Significant Impact, that assessment will be updated or supplemented as required by NEPA and a new determination made by the MS TIG federal trustees as to whether the Proposed Action is likely to significantly affect the quality of the human environment.

G.7 Determination

In view of the information presented in this document and the analysis contained in the supporting RP3/EA for implementation of the preferred alternatives benefitting the Mississippi Restoration Area, the MS TIG federal trustees have determined that the proposed action will not significantly impact the quality of the human environment. Accordingly, preparation of an environmental impact statement for this action is not necessary.

FOR THE U.S. DEPARTMENT OF THE INTERIOR

MARY JOSIE BLANCHARD

Department of the Interior Natural Resources Trustee Official for the Mississippi Trustee Implementation Group

Date: June 1, 2022

FOR THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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CHRISTOPHER D. DOLEY

Principal Representative, National Oceanic and Atmospheric Administration

Date: _____

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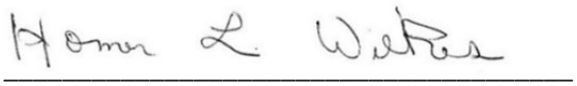
TONY PENN

Chief, Assessment and Restoration Division
National Ocean Service

Date: _____

FOR THE U.S. DEPARTMENT OF AGRICULTURE

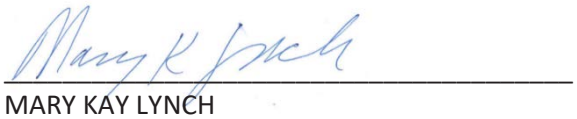


HOMER L. WILKES

Principal Representative, U.S. Department of Agriculture

Date: June 1, 2022

FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY



MARY KAY LYNCH

Alternate to Principal Representative, U.S. Environmental Protection Agency

Date: May 31, 2022