

Chapter 4: Introduction to Phase IV Early Restoration Projects

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4.1 Overview of Phase IV Early Restoration Projects

This chapter provides introductory, overview information about the Phase IV Early Restoration projects that have been selected for implementation by the Trustees. Any additional Early Restoration projects will be proposed and selected in subsequent plans to be released at a future date. As noted throughout this document, Early Restoration actions are not intended to provide the full extent of restoration needed to make the environment and the public whole for the injuries to natural resources caused by the Spill. There will be additional opportunities for consideration of restoration projects in developing future restoration plan(s) as part of the comprehensive NRDA process. Throughout the restoration process, public input and comment will be considered.

The remainder of this chapter provides:

- A summary of Phase IV projects;
- A general description of the methodologies used to estimate Offsets for the projects;
- A general description of the monitoring planned for the projects;
- A general description of the Trustees' approach to environmental compliance; and
- A brief overview of each project.

Detailed information about each project, as well as project-specific information on affected environments and analyses of environmental consequences, is provided in the project-specific Chapters 5-14.

Table 4-1 lists the ten Phase IV projects, identifies the state(s) in which each is located or proximate, identifies the implementing Trustee(s), lists the project cost, and relates each project back to the programmatic Early Restoration project type(s) listed in Chapter 1 and described in the Final Phase III ERP/PEIS.

The Trustees have selected ten Phase IV Early Restoration projects totaling \$134 million in estimated project costs. Ecological projects comprise \$126.2 million (94%) of this total, and recreational projects comprise the remaining \$7.5 million (6%). Overview information concerning all of the projects is presented below.

Table 4-1. Phase IV Early Restoration Projects

PROJECT TITLE	LOCATION	IMPLEMENTING TRUSTEE(S)	COST	PROJECT TYPE ¹
Texas Rookery Islands	TX	TX Trustees, DOI	\$20,603,770	Restore and Protect Birds
Restore Living Shorelines and Reefs in Mississippi Estuaries	MS	MS	\$30,000,000	Restore Oysters; Protect Shorelines and Reduce Erosion
Bike and Pedestrian Use Enhancements at Davis Bayou, Mississippi District, Gulf Islands National Seashore	MS ²	DOI	\$6,996,751	Enhance Public Access to Natural Resources for Recreational Use; Enhance Recreational Experiences
Bon Secour National Wildlife Refuge Trail Enhancement Project , Alabama	AL ²	DOI	\$545,110	Enhance Public Access to Natural Resources for Recreational Use; Enhance Recreational Experiences; Promote Environmental and Cultural Stewardship, Education and Outreach
Osprey Restoration In Coastal Alabama	AL	AL	\$45,000	Restore and Protect Birds
Point aux Pins Living Shoreline	AL	AL	\$2,300,000	Protect Shorelines and Reduce Erosion
Shell Belt and Coden Belt Roads Living Shoreline	AL	AL	\$8,050,000	Protect Shorelines and Reduce Erosion
Seagrass Recovery Project at Gulf Islands National Seashore, Florida District	FL ²	DOI	\$136,700	Restore and Protect Submerged Aquatic Vegetation
Sea Turtle Early Restoration	Gulf-wide	NOAA, TX Trustees, DOI	\$45,000,000	Restore and Protect Sea Turtles
Pelagic Longline Bycatch Reduction Project	Gulf-wide	NOAA	\$20,000,000	Restore and Protect Finfish and Shellfish
Total			\$133,677,331	
¹ Relevant project type from the Trustees' preferred programmatic alternative (see Chapter 5 of the Final Phase III ERP/PEIS).				
² These projects will be implemented on federally managed lands and managed by DOI.				

4.2 Organization and Content of Phase IV Project Chapters

Chapters 5-14 provide information and analysis related to the Phase IV projects. Each project-specific chapter begins with a general description of the project and relevant background information, followed by: 1) a discussion of the project's consistency with project evaluation criteria; 2) a description of planned performance criteria, monitoring and maintenance; 3) a description of the type and quantity of Offsets BP will receive if the project is selected for implementation; and 4) information about estimated project costs.

Following this project information is a project-specific environmental assessment, which provides information specific to each project's affected environment and analysis of anticipated environmental consequences for the individual projects. The Trustees chose to analyze each project separately under

NEPA because each project has independent utility from other Phase IV projects and are not connected actions.¹ Each of the projects is consistent with project types identified and evaluated in the Trustees' programmatic alternatives (see Final Phase III ERP/EIS). Chapters 5 through 14 describe the environmental consequences, or effects, of implementing Phase IV projects on the physical, biological, and human environment described in Chapter 2 of the Final Phase III ERP/PEIS. To identify those resources that could be significantly impacted by the proposed alternatives and actions, appropriate definitions of *impacts* must first be identified. Appendix D provides guidelines for resource-specific definitions for determining effects of individual planned actions. These definitions were also included and described in the Final Phase III ERP/PEIS. As part of this effort, these chapters evaluate cumulative impacts of these projects. Sections 4.10 and 4.11 provide detail pertaining to the general approach to identifying cumulative impacts.

4.3 Offsets Estimation Methodologies

The Trustees used three primary methods to estimate Offsets for Early Restoration projects: Habitat Equivalency Analysis ("HEA"), Resource Equivalency Analysis ("REA"), and monetized estimates of project benefits. A general overview of each of these methods is provided below. Table 4-2 provides information about the type(s) of Offsets negotiated with BP for each project. More detailed information about estimated Offsets for each project can be found in Chapters 5-14 and Appendix C of this document.

The methods used to estimate Offsets for Early Restoration projects were implemented pursuant to the Framework Agreement and are based on the expected benefits for each project. In the context of Early Restoration under the Framework Agreement, the Trustees used the best information and methodologies available to judge the adequacy of proposed Early Restoration actions relative to OPA regulatory evaluation standards (see 15 C.F.R. § 990.54(a)), while determining that the agreements reached with BP under the Framework Agreement were also fair, reasonable, and in the public interest. It is important to note that, under the Framework Agreement, neither the amount of the Offsets nor the methods of estimation used in analyzing any project are a precedent for assessing the gains provided by any other projects either during the Early Restoration process, in the assessment of total injury, or in the comprehensive restoration planning process for the Spill.

The Trustees will apply these Early Restoration Offsets against the Trustees' total assessment of BP's NRD liability, consistent with final project stipulations and the Framework Agreement.

¹ NEPA provides that actions that are connected or dependent on other actions must be analyzed together in one NEPA analysis. Actions are considered connected if: (1) they automatically trigger other actions which may require an EIS(s), (2) they cannot or will not proceed unless other actions are taken previously or simultaneously, or (3) they are interdependent parts of a larger action and depend on the larger action for their justification. The Phase IV projects do not fit the description of connected actions in 40 C.F.R. § 1508.25. First, to the best of the Trustees' knowledge, none of the projects would automatically trigger other actions which may require an EIS(s). Second, each of the project's performance does not depend on the previous or simultaneous performance of any other Phase IV action. Third, the projects are not an interdependent part of a larger Phase IV action.

Table 4-2. Phase IV Early Restoration Projects: Offset Types

PROJECT	LOCATION	OFFSET ¹
Texas Rookery Islands	TX	Pelican, gull, sandwich and royal terns and wading bird years
Restoring Living Shorelines and Reefs in Mississippi Estuaries	MS	Salt Marsh Habitat; benthic Secondary Productivity
Bike and Pedestrian Use Enhancements at Davis Bayou, Mississippi District, Gulf Islands National Seashore	MS ²	Recreational use
Bon Secour National Wildlife Refuge Trail Enhancement Project, Alabama	AL ²	Recreational use
Osprey Restoration In Coastal Alabama	AL	Piscivorous raptor bird years
Point aux Pins Living Shoreline	AL	Salt Marsh Habitat; Benthic Secondary Productivity
Shell Belt and Coden Belt Roads Living Shoreline	AL	Salt Marsh Habitat; Benthic Secondary Productivity
Seagrass Recovery Project at Gulf Islands National Seashore, Florida District	FL ²	Submerged aquatic vegetation habitat
Sea Turtle Early Restoration	Gulf-wide	Adult reproductive equivalents for Kemp’s ridley sea turtles, green sea turtles and loggerhead sea turtles
Pelagic Longline Bycatch Reduction Project	Gulf-wide	Kilograms of fish biomass; adult dolphin mortalities avoided; leatherback sea turtle adult mortalities avoided
¹ Offset Types indicated in this table provide general information about Offsets, for overview purposes only. Important, detailed information about Offsets is provided in project-specific write-ups included in Chapters 5-14. ² These projects will be implemented on federally managed lands and managed by DOI.		

4.4 Habitat Equivalency Analysis (HEA) and Resource Equivalency Analysis (REA)

HEA and REA are methods commonly used in natural resource damage assessments. HEA is used to quantify changes in ecological services on a habitat basis (e.g., acres of marsh habitat) whereas REA is used to quantify changes in ecological services² in resource specific units (e.g., birds, oysters, etc.). When HEA or REA is used to estimate restoration credits, anticipated ecological benefits resulting from the proposed activity often are expressed in units that reflect the present (current) value over a project’s lifespan. For purposes of the Early Restoration projects included in this document, the Trustees expressed HEA-estimated Offsets as “discounted service acre years” (“DSAYs”)³ of the specific habitat types to be restored.

REA-estimated benefits are expressed in resource-specific units, rather than on a habitat basis. For example, the Trustees estimated the present value of Offsets associated with Early Restoration projects focused on construction of living shorelines in terms of discounted kilogram years (DKg-Y) of benthic

² Examples of ecological services include biological diversity, nutrient cycling, food production for other species, habitat provision, and other services that natural resources provide for each other.

³ 1 “DSAY” = the discounted (to a specified base year) services provided by one acre of habitat for one year.

secondary productivity (in addition to a habitat credit for living shorelines projects, estimated as DSAYs of salt marsh habitat).⁴

The Trustees considered a variety of project-specific factors when applying HEA and REA methods to estimate the ecological benefits of restoration projects, including, but not limited to:

- The date at which ecological services from a restoration project are expected to begin to accrue;
- The rate of ecological service accrual over time;
- The time period over which ecological services will be provided;
- The quantity and quality of ecological services provided by the restored habitat or resource relative to those not affected by the Spill; and
- The size of the restoration action.

HEA- and REA-based Offsets negotiated by the Trustees and BP use 2010 (the year of the Spill) as the base year and a 3.0 percent annual discount rate for calculation of present values.⁵ For each of the Phase IV ecological Early Restoration projects, the Trustees and BP either agreed to:

- A primary Offset;
- A primary Offset, plus specified agreements on methods for converting Offset units, if needed, to better match units ultimately used in the Trustees' final assessment of injury;
- A primary Offset to be applied against a specified injury, and a secondary Offset to be applied only if the primary Offsets are in excess of the injury ultimately determined and quantified in the Trustees' final assessment of injury; or
- More than one Offset, reflecting project-specific evaluation of the types of benefits expected to be generated by a particular project.

Detailed information about Offsets negotiated for each Phase IV Early Restoration project is provided in subsequent chapters and Appendix C of this document.

4.5 Monetized Offsets

The expected benefits of some restoration projects can be monetized, or expressed in terms of the dollar value of expected benefits to the public, rather than in terms of ecological gains. As with HEA and REA, monetization approaches are used to estimate Offsets over a restoration project's expected lifespan. For this Final Phase IV ERP/EA, the Trustees used a monetizing approach to estimate Offsets for recreational use projects designed to achieve a range of goals, including:

- Enhancing public access to natural resources for recreational use;
- Enhancing recreational experiences; and/or
- Promoting environmental and cultural stewardship, education and outreach.

⁴ 1 "DKG-Y" = the discounted (to a specified base year) kilograms of biomass generated by the project in one year, reflecting the expected survival and growth of that biomass during that year.

⁵ It is standard practice to use a 3.0 percent annual discount rate for this type of analysis; please see (NOAA 1999) for a detailed discussion of the basis for its use.

More specifically, the Trustees relied on a benefit-to-cost ratio (“BCR”) approach to estimate Offsets for the Phase IV Early Restoration recreational use projects. This approach uses existing economic literature and preliminary estimates of project inputs (see below for additional detail) to develop BCRs representing average benefit-to-cost ratios. For example, a project with an estimated cost of \$10 and a BCR of 2.0 would be assigned a monetized Offset of \$20. This monetized Offset would later be applied to monetized estimates of recreational use losses attributable to the Spill.

Estimated project inputs considered by Trustees as part of the process for developing BCRs for recreational use losses include, but are not limited to:

- The number of participants expected to benefit from each project;
- The benefit these individuals are expected to derive from a new experience or enhanced experience;
- The time frame over which the benefits would be provided, in terms of both start date as well as expected duration of benefits; and
- The discount rate used to calculate the present value of future benefits (3.0 percent, expressed in 2010 dollars).

The BCR is applied to the amount of Early Restoration funds that are provided by BP for a project, but not to funds provided from other sources.

The Trustees and BP agreed to apply a BCR 2.0 to the Phase IV recreational use projects. Thus, projects will provide BP with a monetized Offset equal to 2.0 times the project funding provided by BP, to be applied against monetized injuries to recreational use arising from the Spill.

4.6 Monitoring

NRDA regulations call on Trustees, when developing a restoration plan under OPA, to establish restoration objectives that are specific to the injuries (15 C.F.R. § 990.55(b)(2)). These objectives should clearly specify the desired project outcome, and the performance criteria by which successful restoration under OPA will be determined (15 C.F.R. § 990.55(b)(2)). The monitoring component of a restoration plan is further described in 15 C.F.R. § 990.55(b)(3).

A brief overview of the monitoring for the Phase IV projects is also provided in the “Performance Criteria Monitoring and Maintenance” sections of project-specific Chapters 5-14. The monitoring plans for each of the projects are provided in Appendix B of this document. These plans were designed to evaluate the effectiveness of each of the proposed restoration actions in meeting the restoration objectives and to assist in determining the need for corrective actions, if applicable. These plans contain information on restoration objectives, performance criteria, specific monitoring actions to be taken or data to be collected, and expected monitoring timelines. While the Trustees generally strive for consistency in performance monitoring parameters, frequency, and duration for similar project types, flexibility in monitoring design is necessary to account for inherent differences between restoration projects. The

monitoring plans for most projects⁶ will be refined as project siting and/or designs are finalized. In addition, for those projects that will include biological and structural sampling in the natural environment, the specifics regarding sampling techniques, timing, frequency, and locations could be modified in order to evaluate the established performance criteria.

4.7 Consistency with Project Evaluation Criteria

Chapters 5-14 of this document provide project-specific information addressing each project's consistency with project evaluation criteria. These criteria are summarized below for reference.

The following evaluation criteria are from the OPA regulations (15 C.F.R. § 990.54):

- The cost to carry out the alternative;
- The extent to which each alternative is expected to meet the Trustees' goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses (the ability of the restoration project to provide comparable resources and services; that is, the nexus between the project and the injury is an important consideration in the project selection process);
- The likelihood of success of each alternative;
- The extent to which each alternative will prevent future injury as a result of the incident, and avoid collateral injury as a result of implementing the alternative;
- The extent to which each alternative benefits more than one natural resource and/or service; and
- The effect of each alternative on public health and safety.

If the Trustees conclude that two or more alternatives are equally preferable, the most cost-effective alternative must be chosen (15 C.F.R. § 990.54(b)).

The Framework Agreement states Early Restoration projects are to meet all of the following criteria:

- Contribute to making the environment and the public whole by restoring, rehabilitating, replacing, or acquiring the equivalent of natural resources or services injured as a result of the Spill, or compensating for interim losses resulting from the incident;
- Address one or more specific injuries to natural resources or services associated with the incident;
- Seek to restore natural resources, habitats, or natural resource services of the same type, quality, and of comparable ecological and/or recreational use value to compensate for identified resource and service losses resulting from the incident;
- Are not inconsistent with the anticipated long-term restoration needs and anticipated final restoration plan; and

⁶ BP and the Trustees agreed to work together to develop the monitoring plans for the Texas Rookery Islands and Sea Turtle Early Restoration projects. The monitoring plans included in Appendix B for these projects are the final plans developed with BP.

- Are feasible and cost-effective.

In addition, the introductions to Chapters 5-14 include additional, Trustee-specific information about their Early Restoration project screening process, beyond the general project screening information provided in Chapter 1, as applicable. Finally, to limit repetition in the discussion of OPA regulation's evaluation standards in the project information portions of Chapters 5-14, the Trustees note that:

- The potential of each project to cause collateral injury (15 C.F.R. § 990.54(a)(4)) is evaluated and that analysis is informed by each project's environmental consequence analysis; and
- The potential impact of each project on public health and safety (15 C.F.R. § 990.54(a)(6)), is addressed by each project's environmental consequence analysis where applicable for individual projects.

4.8 Environmental Compliance

Chapters 5-14 of this document provide detailed information and OPA and NEPA analyses for each Phase IV Early Restoration project, its expected environmental consequences and its consistency with the Final Phase III ERP/PEIS. In addition, coordination and reviews to ensure compliance with a variety of other legal authorities potentially applicable to the Phase IV Early Restoration projects have been initiated. While some of these reviews may not be finalized before selection decisions on the projects included in this Final Phase IV ERP/EA are made, the information available at release of this document indicates that all the projects would be able to meet permitting and other environmental compliance requirements prior to implementation, and that all projects would be implemented in accordance with all applicable laws and regulations. Further, no on-the-ground work will commence for a Phase IV project until all permitting and environmental compliance requirements are met. Project-specific information and analyses regarding the environmental compliance status of Phase IV Early Restoration projects are provided below and in Chapters 5-14 of this document. After release of this Final Phase IV ERP/EA, the environmental compliance status for selected projects will continue to be updated and will be made available on the Gulf Spill Restoration website (<http://www.gulfspillrestoration.noaa.gov/restoration/early-restoration/>).

Examples of applicable laws or Executive Orders (EO) include, but are not necessarily limited to, those listed below. Additional detail on each of these laws or Executive Orders EOs can be found in Chapter 7 of the Final Phase III ERP/PEIS. Project-specific Chapters 5-14 in this document contain additional information on the outcomes of these consultations, conferences and reviews, where they are complete, including required conservation measures and/or BMPs, where applicable. Wherever pre-existing consultations or permits are present, they were reviewed to determine if the consultations/permits were still valid or if a re-initiation of the consultations was necessary.

Potentially applicable laws and Executive Orders:

- Endangered Species Act (16 U.S.C. §§ 1531 *et seq.*)
- Migratory Bird Treaty Act (16 U.S.C. §§ 703 *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.*)

- Atlantic Tunas Convention Act (16 U.S.C. §§ 971 *et seq.*)⁷
- Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668 *et seq.*)
- Coastal Zone Management Act (16 U.S.C. §§ 1451 *et seq.*)
- Coastal Barrier Resources Act (16 U.S.C. §§ 3501 *et seq.*)
- Clean Air Act (42 U.S.C. §§ 7401 *et seq.*)
- Federal Water Pollution Control Act (Clean Water Act, 33 U.S.C. §§ 1251 *et seq.*) and/or Rivers and Harbors Act (33 U.S.C. §§ 401 *et seq.*)
- National Historic Preservation Act (16 U.S.C. §§ 470 *et seq.*)
- EO 13112: Invasive Species
- EO 11988: Floodplain Management (now as augmented by EO 13690, January 30, 2015)⁸
- EO 11990: Protection of Wetlands
- EO 12114⁹: Environmental Effects Abroad of Major Federal Actions
- EO 12898: Environmental Justice
- EO 12962: Recreational Fisheries
- EO 13112: Invasive Species
- EO 13175: Consultation and Coordination with Indian Tribal Governments
- EO 13186: Responsibilities of Federal Agencies to Protect Migratory Birds
- EO 13653: Preparing the United States for the Impacts of Climate Change, November 1, 2013¹⁰

4.9 Overview Summary of Phase IV Early Restoration Projects

Figure 4-1 below identifies the location(s) for each Phase IV project. The following subsections list and briefly describe each of the ten projects.

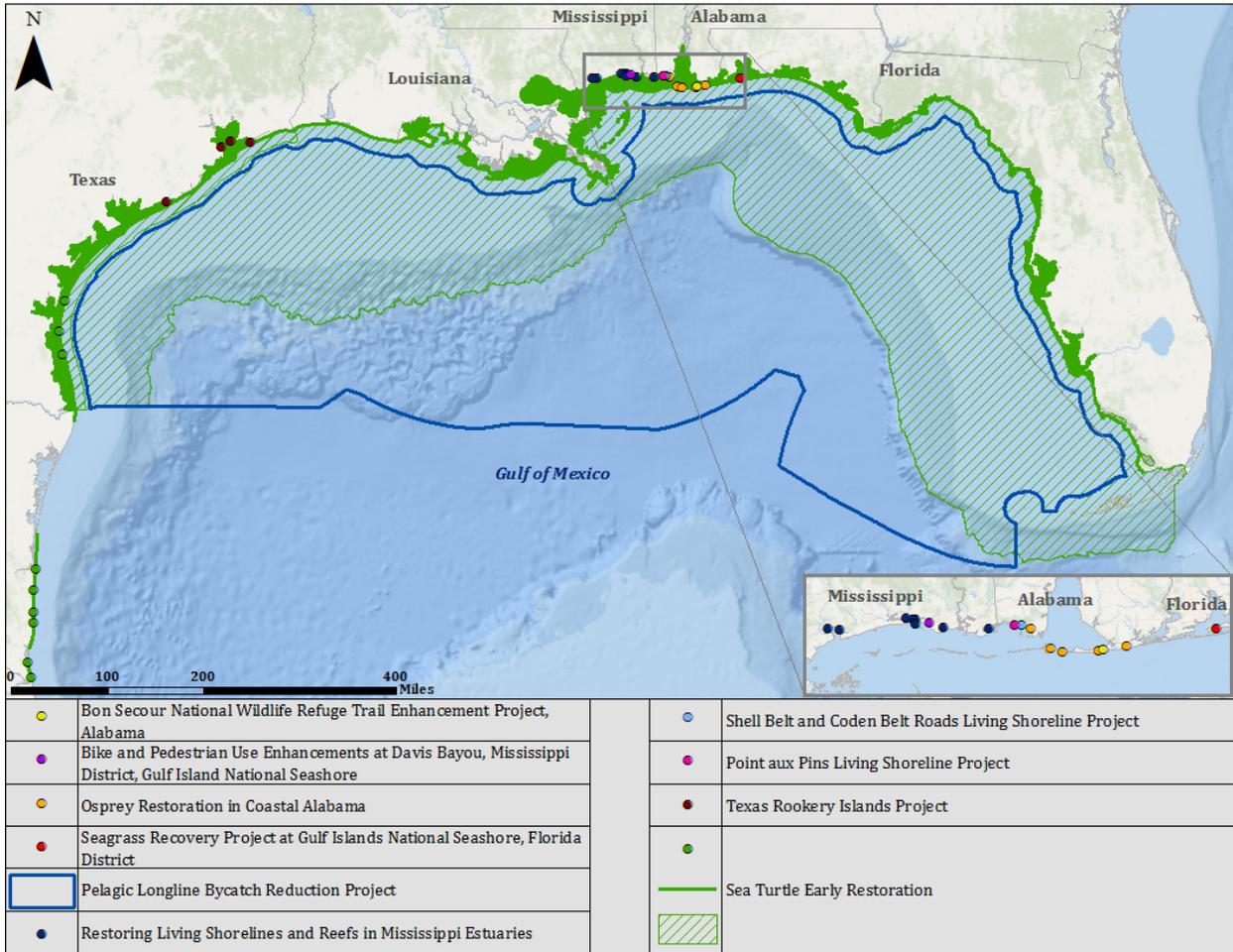
⁷ Not described in the Final Phase III ERP/PEIS, the ATCA was enacted in 1975 to ratify the United States' participation in the International Convention for the Conservation of Atlantic Tunas (ICCAT). The goal of ICCAT is to conserve and protect highly migratory tunas and tuna-like species in the Atlantic Ocean and adjacent seas.

⁸ Executive Order 11988, requires agencies to avoid, to the extent possible, adverse impacts associated with the occupancy and modification of floodplains and to avoid floodplain development wherever there is a practicable alternative. The January 2015 E.O. amends E.O. 11988, and, among other items, directs agencies to use natural systems, ecosystem processes, and nature-based approaches when developing alternatives for consideration where possible. It also provides three approaches that federal agencies can use to establish the flood elevation and hazard area for consideration in their decisionmaking.

⁹ Compliance with EO 12114 is being addressed through this NEPA environmental analysis

¹⁰ Not described in the Final Phase III ERP/PEIS, EO 13653 was issued in order to prepare the Nation for the impacts of climate change by undertaking actions to enhance climate preparedness and resilience.

Figure 4-1. Phase IV Early Restoration Project Locations



4.9.1 Texas Rookery Islands

The Texas Rookery Islands project will restore and protect three rookery islands in Galveston Bay and one rookery island in East Matagorda Bay using coastal engineering techniques. The primary goal of the project is to increase nesting of colonial waterbirds, including brown pelicans, gulls, terns (royal and sandwich terns), and wading birds (great blue herons, roseate spoonbills, reddish egrets, great egrets, snowy egrets, tricolored herons, and black-crowned night herons). Restoration actions at each rookery island will increase the amount of available nesting habitat by expanding the size of the island and enhancing the quality of habitat for nesting birds. Habitat longevity will be increased by raising the island elevation and constructing protective features, such as breakwaters or armoring levees. These restoration actions will result in an increase in the numbers of nesting colonial waterbirds. Rookery islands in Galveston Bay include Dickinson Bay Island II, located within Dickinson Bay; Rollover Bay Island, located in East (Galveston) Bay; and Smith Point Island, located west of the Smith Point Peninsula. Dressing Point Island lies in East Matagorda Bay, and is part of the Big Boggy National Wildlife Refuge.

4.9.2 Restoring Living Shorelines and Reefs in Mississippi Estuaries

The Restoring Living Shorelines and Reefs in Mississippi Estuaries project will restore intertidal and subtidal reefs and use living shoreline techniques in four bays. Project actions will take place in Grand Bay, Graveline Bay, Back Bay of Biloxi and vicinity, and St. Louis Bay, all located in Jackson, Harrison, and Hancock counties. The project will provide for the construction of more than four miles of breakwaters, five acres of intertidal reef habitat and 267 acres of subtidal reef habitat across the Mississippi Gulf Coast.

4.9.3 Bike and Pedestrian Use Enhancements at Davis Bayou, Mississippi District, Gulf Islands National Seashore

This project will involve implementing roadway improvements for pedestrians and bicyclists in the Davis Bayou Area of Gulf Islands National Seashore. In response to prior public scoping meetings conducted outside of the Early Restoration process, NPS developed two action alternatives for this project. The NPS Preferred Alternative will widen the existing road surface on Park Road and Robert McGhee Road to accommodate multiple-use bicycle-pedestrian lanes. The other alternative would reduce the amount of automobile traffic in the park by limiting access to VFW Road during certain times of the day. Both alternatives would include two traffic-calming medians on Park Road.

4.9.4 Bon Secour National Wildlife Refuge Trail Enhancement Project, Alabama

This project will involve repairing and improving, to an American with Disabilities Act (ADA) standard, an existing trail (Jeff Friend Trail) on Bon Secour National Wildlife Refuge (BSNWR). The BSNWR is located on the Gulf Coast, 8 miles west of the city of Gulf Shores, Alabama, in Baldwin and Mobile counties. This aged boardwalk and gravel trail will be repaired and improved to ensure safe public access and to enhance the quality of visitor experience. An observation platform will also be constructed along the trail, and two handicapped parking spaces will be widened to better accommodate visitors. The project

is not expected to significantly increase visitation, but rather to provide a safe and enhanced experience for visitors to the Refuge.

4.9.5 Osprey Restoration in Coastal Alabama

The restoration project will install five osprey nesting platforms along the coast in Mobile and Baldwin Counties, Alabama in order to provide enhanced nesting opportunities for piscivorous (fish-eating) raptors.

4.9.6 Point aux Pins Living Shoreline

The Point aux Pins Living Shoreline project will employ living shoreline techniques that utilize natural and/or artificial breakwater materials to stabilize shorelines along an area in Portersville Bay in the Mississippi Sound near Point aux Pins in Mobile County, Alabama. The project will be located adjacent to an existing living shoreline project previously constructed by the ADCNR utilizing other funding sources.

Construction activities will include placement of breakwater materials along the shoreline to dampen wave energy and reduce shoreline erosion while also providing habitat and increasing benthic secondary productivity. The specific breakwater elevations, construction techniques and design will be developed to maximize project success and meet regulatory requirements. Over time, the breakwaters are expected to provide habitat that supports benthic secondary productivity, including, but not limited to, bivalve mollusks, annelid worms, shrimp, crabs, and small forage fishes.

4.9.7 Shell Belt and Coden Belt Roads Living Shoreline

The Shell Belt and Coden Belt Roads Living Shoreline project will employ shoreline restoration techniques to increase benthic productivity and enhance the growth of planted native marsh vegetation. The project will be located in the Portersville Bay portion of Mississippi Sound, seaward of the southernmost portions of Shell Belt and Coden Belt Roads in Coden, Alabama. This project will be constructed to dampen wave energy and protect newly planted emergent vegetation while also providing habitat and increasing benthic secondary productivity. The specific breakwater elevations, construction techniques and design will be developed to maximize project success and meet regulatory requirements. Over time, the breakwaters are expected to develop into reefs that support benthic secondary productivity, including, but not limited to, bivalve mollusks, annelid worms, shrimp, and crabs. Marsh vegetation is expected to become established further enhancing both primary and secondary productivity adjacent to the breakwaters.

4.9.8 Seagrass Recovery Project at Gulf Islands National Seashore, Florida District

The Seagrass Recovery project at Gulf Islands National Seashore's Florida District will restore shallow seagrass beds in the Florida panhandle. It will restore 0.02 acres of seagrass injured by propeller scars, blow holes and human foot traffic, primarily in turtle grass (*Thalassia testudinum*) on DOI-managed lands located along the south side of the Naval Live Oaks Preserve in Santa Rosa Sound, in Santa Rosa

County, Florida. Project activities will include harvesting and transplanting seagrass, installing bird stakes to condition sediments to promote seagrass survival, and installing signage to educate visitors about the restoration project and the ecological importance of seagrass.

4.9.9 Sea Turtle Early Restoration

The Sea Turtle Early Restoration project is a multi-faceted approach to restoration that collectively addresses identified needs for a variety of species and life stages of sea turtles, consistent with long-term recovery plans and plan objectives for sea turtles in the Gulf of Mexico. The Sea Turtle Early Restoration project consists of four complementary project components:

- The Kemp’s Ridley Sea Turtle Nest Detection and Enhancement project component will provide needed additional staff, infrastructure, training, education activities, equipment, supplies, and vehicles over a 10-year period in both Texas and Mexico for Kemp’s ridley sea turtle nest detection and protection.
- The Enhancement of the Sea Turtle Stranding and Salvage Network (STSSN) and Development of an Emergency Response Program project component will enhance the existing STSSN beyond current capacities for 10 years in Texas and across the Gulf, as well as develop a formal Emergency Response Program within the Gulf of Mexico.
- The Gulf of Mexico Shrimp Trawl Bycatch Reduction component will enhance two existing NOAA programs which will work to reduce the bycatch of sea turtles in shrimp trawls in the Gulf of Mexico. The two programs are the Gear Monitoring Team (GMT) and the Southeast Shrimp Trawl Fisheries Observer Program (Observer Program).
- The Texas Enhanced Fisheries Bycatch Enforcement component will enhance TPWD enforcement activities for fisheries that incidentally catch sea turtles while they operate primarily in Texas State waters within the Gulf of Mexico, for a 10-year period.

4.9.10 Pelagic Longline Bycatch Reduction Project

The Pelagic Longline Bycatch Reduction Project will restore open-ocean (pelagic) fish that were affected by the Spill. The Gulf pelagic longline (PLL) fishery primarily targets yellowfin tuna and swordfish, but incidentally catches and discards other fish, including marlin, sharks, bluefin tuna, and smaller individuals of the target species. The project aims to reduce the number of fish accidentally caught and killed in fishing gear by compensating PLL fishermen who agree to voluntarily refrain from PLL fishing in the Gulf during an annual six-month repose period that coincides with the bluefin tuna spawning season. The project will also provide participating fishermen with two alternative gear types to allow for the continued harvest of yellowfin tuna and swordfish during the repose period when PLL gear is not used.

4.10 Potential Cumulative Impacts

The CEQ regulations to implement NEPA require the assessment of cumulative impacts in the decision-making process for federal projects, plans, and programs. Cumulative impacts are defined as “the impact

on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 C.F.R. § 1508.7). As stated in the CEQ handbook, “Considering Cumulative Effects” (CEQ 1997), cumulative impacts need to be analyzed in terms of the specific resource, ecosystem, and human community being affected and should focus on effects on “important issues of national, regional, or local significance.” Following the CEQ guidance, the goal is not to capture every theoretically possible impact, but instead “to count what counts.”

In accordance with CEQ guidance, “An analysis of the cumulative impacts for each resource [should] be provided in each level of review, either by relying upon the analysis in the programmatic NEPA review or adding to that analysis in the tiered NEPA review, either approach facilitated by incorporating by reference the cumulative impact analysis provided in the programmatic NEPA review” (CEQ 2014).

4.11 Phase IV Projects Cumulative Impacts Methodology

In the context of the Phase IV Early Restoration Plan, cumulative impacts assessments undertake four primary steps:

(1) **Define appropriate spatial and temporal boundaries for the analysis.** The spatial boundary is the area where past, present, and reasonably foreseeable future actions have, are, or could take place and result in cumulative impacts to the affected resource when combined with the impacts of the alternatives being considered. The action area for the analysis is defined for each project.

(2) **Describe baseline environmental and/or socioeconomic conditions for affected resources within the spatial and temporal boundaries.** Existing environmental and socioeconomic conditions in and around the proposed project locations are represented by the current state of the affected environment, as described in Chapter 2 and Chapters 5-14 of this Final Phase IV ERP/EA.

(3) **Identify past, present and reasonably foreseeable future government and private actions that could have or contribute to potentially significant impacts on the affected resources.** The categories of potentially relevant past, present, and reasonably foreseeable future actions discussed in the Final Phase III ERP/PEIS included:

- Restoration related to the *Deepwater Horizon* spill;
- Other relevant environmental stewardship and restoration activities;
- Military operations;
- Marine transportation;
- Energy activities;
- Marine mineral mining, including sand and gravel mining;
- Coastal development and land use;
- Fisheries and aquaculture; and
- Tourism and recreation.

Actions that would be relevant to the Phase IV projects' cumulative impacts analysis are defined as those with similar scope, timing, impacts or location.

(4) Characterize the cumulative impacts of the project assuming implementation of the other present and reasonably foreseeable future actions. Chapters 5-14 describe the cumulative impacts of the Phase IV projects when combined with other past, present, and reasonably foreseeable future actions.

Rather than repeat the presentation of the cumulative impacts analysis presented in the Phase III ERP/PEIS, the Trustees reviewed the list of current and planned projects identified in Chapter 6 of that document. Relevant local and site-specific past, present and reasonably foreseeable future actions not analyzed in the Phase III ERP/PEIS were identified through communications with agencies and organizations and review of publicly available databases of planned projects relevant to the proposed Phase IV projects. The Trustees then determined whether the proposed Phase IV projects would contribute substantially to adverse cumulative impacts when added to past, present or reasonably foreseeable future actions.

4.12 Other NEPA Considerations

4.12.1 Unavoidable Adverse Impacts

Section 102(2)(C)(ii) of NEPA, 42 U.S.C. § 4332(2)(C)(ii), requires that an EIS include information on any adverse environmental effects that cannot be avoided, should the proposed action be implemented. Unavoidable adverse impacts are the effects on the human environment that would remain after mitigation measures have been applied. Unavoidable adverse impacts do not include temporary or permanent impacts that would be mitigated. While these impacts do not have to be avoided by the planning agency, they must be disclosed, considered and mitigated where possible (40 C.F.R. § 1500.2(e)). For some projects, mitigation measures are identified as options that can be used to avoid, reduce, minimize or mitigate these impacts. Unavoidable adverse impacts associated with conversion of habitat and built infrastructure are disclosed for relevant Phase IV projects where they are reasonably foreseeable. Chapters 5-14 consider the extent to which adverse impacts can be avoided, including consideration of appropriate mitigation, and describe where appropriate, adverse impacts that are unavoidable.

4.12.2 Relationship Between Short-Term Uses of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity

Federal Agencies must discuss “the relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 C.F.R. § 1502.16). The Final Phase III ERP/PEIS found that for a number of project types, such as creating and improving wetlands, protecting shorelines and reducing erosion, and restoring barrier islands and beaches, short-term adverse impacts generally include those associated with construction or implementation of restoration activities. Many of these impacts would be temporary and were not expected to reduce long-term productivity. However, these project types were intended to enhance long-term productivity.

The Final Phase III ERP/PEIS found that a number of project types were intended to provide and enhance recreational opportunities that would increase access to, and the recreational use of, resources. Dependent on how those uses are managed, these project types could result in both short-term and long-term impacts to habitats and resources. However, those impacts were not expected to degrade long-term productivity. Overall, the alternatives considered were expected to enhance long-term productivity.

The purpose of the Phase IV projects is to accelerate meaningful restoration of injured natural resources and their services resulting from the Spill. This Final Phase IV ERP/EA will complement previous investments in Early Restoration in accordance with OPA and funding made available under the Framework Agreement. In order to meet this purpose, the Trustees are selecting projects that are intended to improve certain aspects of the human environment which will result in the maintenance and enhancement of the long-term productivity of a number of natural resources. Chapters 5-14 describe in detail the types of short- and long-term adverse impacts and/or benefits that would be expected for the different resource categories from each project.

4.12.3 Irreversible and Irretrievable Commitment of Resources

Federal Agencies must discuss “any irreversible and irretrievable commitment of resources which would be involved in the proposed action should it be implemented” (40 C.F.R. § 1502.16). For purposes of this analysis, a commitment of a resource includes such things as agency funding or staff necessary to undertake a project.

Implementation of any of the Phase IV projects will require an irreversible and irretrievable commitment of resources including staff time for project planning and development and the associated funding necessary to go through the consultation, coordination and decision-making processes. Other resource use that would be irreversible and irretrievable would be the use of energy through the combustion of fossil fuels and material resources for construction. However, the level of commitment is likely to vary based on the project. Chapters 5-14 describe in detail, where appropriate, the types of resource commitments expected for the different resource categories from each project.

4.12.4 Climate Change and NEPA

In 2014, the CEQ issued revised draft guidance on considering the effects of climate change and greenhouse gas emissions in the analysis of proposed action under NEPA (CEQ 2014). The draft climate change guidance also suggests ways that federal agencies should consider effects of climate change in developing projects that are resilient in nature and able to adapt to changes in the existing environmental conditions over time.

Consideration of coastal vulnerability from climate change factors is important in planning. The Intergovernmental Panel on Climate Change (IPCC) defines vulnerability as “the propensity or predisposition to be adversely affected...encompass[ing] a variety of concepts including sensitivity to harm and lack of capacity to cope and adapt” (IPCC 2014). Factors affecting coastal vulnerability include the physical characteristics of a particular setting and climate and non-climate drivers (Burkett and

Davidson 2012). Climate drivers include sea level change, waves and currents, winds, storminess, atmospheric carbon dioxide, atmospheric temperature, water properties, sediment supply, and groundwater availability (Burkett and Davidson 2012). Consideration of factors such as sea level rise, changes to shorelines and altered hydrology at the project design stage has allowed, and will allow, for the anticipation of a range of environmental changes and the development of Early Restoration projects that would be more resilient over time.

Executive Order 13653 (“Preparing the United States for the Impacts of Climate Change”, November 1, 2013) reinforces the direction to undergo planning efforts to develop projects that are more resilient to changes in the environment over time as a result of climate change effects. It states that the Federal Government must build on recent progress and pursue new strategies to improve the Nation's preparedness and resilience. In doing so, Federal agencies should promote: (1) engaged and strong partnerships and information sharing at all levels of government; (2) risk-informed decision-making and the tools to facilitate it; (3) adaptive learning, in which experiences serve as opportunities to inform and adjust future actions; and (4) preparedness planning. This Executive Order and guidance was considered during the planning for the Phase IV projects.

4.13 Adoption of Existing NEPA Analyses

Federal agencies are encouraged to coordinate and take appropriate advantage of existing NEPA documents and studies, including adoption and incorporation by reference. Under CEQ NEPA Regulations (40 C.F.R. § 1506.3), DOI NEPA Regulations (43 C.F.R. § 46.120), and individual DOI bureau NEPA procedures, DOI may adopt another federal agency's NEPA analysis to streamline the NEPA compliance process.

DOI may adopt another federal agency's NEPA analysis or portion thereof if it meets the standards for an adequate analysis under the CEQ NEPA regulations, and if it adequately assesses the environmental effects of the proposed action and reasonable alternatives (40 C.F.R. § 1506.3(a); 43 C.F.R. § 46.120(c)). If DOI adopts another agency's NEPA analysis, the supporting record must include an evaluation of whether new circumstances, new information or changes in the action or its impacts not previously analyzed may result in significantly different environmental effects (43 C.F.R. § 46.120(c)).

One of the components of the Sea Turtle Early Restoration project has an existing NEPA analysis, originally prepared by NPS (“Expansion of Facilities Supporting Sea Turtle Science and Recovery, Construction of Patrol Cabins and Expansion of Incubation Laboratory, 2011”). The EA contains a relevant analysis for a portion (infrastructure) of the Kemp's Ridley Nest Detection and Enhancement component of the Sea Turtle Early Restoration project which was analyzed in an existing EA completed by the NPS. In this case, a DOI Bureau (USFWS) is adopting another Bureau's (NPS) EA. As the lead agency for preparation of this Final Phase IV ERP/EA, DOI through its Authorized Official is responsible for determining the adequacy of any NEPA analysis that DOI intends to adopt.

DOI has independently evaluated the existing NEPA analysis pertinent to the Phase IV Sea Turtle Early Restoration project. DOI has determined that the existing NEPA analysis meets the standards for

adequate NEPA analysis under the CEQ NEPA regulations, and that it adequately assesses the environmental effects of a portion of the project. All applicable environmental commitments previously made in the adopted NEPA document are incorporated by reference into the Phase IV Sea Turtle Early Restoration project analysis. Accordingly, DOI adopts the NEPA analysis and incorporates it into this document. This NEPA analysis can be found in Appendix F.

4.14 References

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