Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement

Abstract: In accordance with the Oil Pollution Act of 1990 (OPA) and the National Environmental Policy Act (NEPA), the federal and state natural resource trustee agencies (Trustees) have prepared a Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement (Final PDARP/PEIS). The Final PDARP/PEIS considers programmatic alternatives, composed of Restoration Types, to restore natural resources, ecological services, and recreational use services injured or lost as a result of the *Deepwater Horizon* oil spill incident. The OPA natural resource damage assessment regulations guided the Trustees' development and evaluation of programmatic restoration alternatives. The Final PDARP/PEIS also evaluates the environmental consequences of the restoration alternatives under NEPA. This document shows that the injuries caused by the *Deepwater Horizon* oil spill incident affected such a wide array of linked resources over such an enormous area that the effects must be described as constituting an ecosystem-level injury. Consequently, the Trustees' preferred alternative for a restoration plan employs a comprehensive, integrated ecosystem approach to best address these ecosystem-level injuries. Specific restoration projects, to be selected in subsequent planning phases and evaluated under OPA and NEPA, will take place primarily in the northern Gulf of Mexico, Texas, Louisiana, Mississippi, Alabama, and Florida.

Lead Agency: National Oceanic and Atmospheric Administration

Cooperating Agencies:
Texas Parks and Wildlife Department
Texas General Land Office
Texas Commission on Environmental Quality
Louisiana Coastal Protection and Restoration Authority
Louisiana Oil Spill Coordinator's Office
Louisiana Department of Environmental Quality
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources
Mississippi Department of Environmental Quality
Alabama Department of Conservation and Natural Resources
Natural Resources Geological Survey of Alabama
Florida Department of Environmental Protection
Florida Fish and Wildlife Conservation Commission
U.S. Environmental Protection Agency
U.S. Department of Agriculture
U.S. Department of the Interior

For Further Information Contact: Courtney Groeneveld, email: *gulfspill.restoration@noaa.gov*

Suggested Citation: Deepwater Horizon Natural Resource Damage Assessment Trustees. (2016). *Deepwater Horizon oil spill: Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement.* Retrieved from *http://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan*

Deepwater Horizon Oil Spill Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement

FEBRUARY 2016

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

FEB 1 1 2016

Dear Reviewer:

In 2010, the natural resources of the northern Gulf of Mexico were seriously impacted by the *Deepwater Horizon* oil spill. Since that time, the *Deepwater Horizon* natural resource Trustees have worked together to assess the injuries to natural resources in the northern Gulf of Mexico and to the services those resources provide, and to determine the restoration needed to compensate the public for these impacts. Many habitats, plants, and animals in the northern Gulf of Mexico were injured; indeed, the Trustees believe that the northern Gulf of Mexico ecosystem itself was injured.

The Trustees prepared this *Deepwater Horizon Oil Spill Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement* (Final PDARP/PEIS) in accordance with the Oil Pollution Act (OPA) and the National Environmental Policy Act of 1969 (NEPA). The Trustees solicited public comment on the Draft PDARP/PEIS and have considered the extensive public comments received in preparing this Final PDARP/PEIS. The document presents the Trustees' injury assessment and proposed restoration plan and considers the environmental impacts of the proposed restoration and alternatives to that restoration. The Trustees propose to select a comprehensive, integrated ecosystem restoration plan for implementation. The Final PDARP/PEIS is programmatic; it describes the framework by which subsequent project-specific restoration plans will be identified and developed during the coming decades.

We are the NOAA responsible officials for the Final PDARP/PEIS:

David G. Westerholm
Director, Office of Response and Restoration
National Ocean Service
National Oceanic and Atmospheric Administration
1305 East-West Highway
Silver Spring, MD 20910

Samuel D. Rauch III
Deputy Assistant Administrator for Regulatory Programs
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
1315 East-West Highway
Silver Spring, MD 20910

The full text of the Final PDARP/PEIS is available at www.gulfspillrestoration.noaa.gov. For questions regarding obtaining these documents you may contact Courtney Groeneveld, National Marine Fisheries Service, Office of Habitat Conservation by email at gulfspill.restoration@noaa.gov.

On behalf of the Trustees and as approved by the Trustees in the attached resolution, we are pleased to submit this document for filing with the EPA and for noticing of availability to the public. As provided for in NEPA and OPA implementing regulations, the Trustees will not make a final decision to adopt a programmatic restoration alternative until 30 days or more after EPA publishes the Notice of Filing and NOAA publishes the Notice of Availability in the Federal Register.

Sincerely,

Samuel D. Rauch, III
Designated NOAA NEPA Coordinator
Deputy Assistant Administrator for
Regulatory Programs
National Marine Fisheries Service

David G. Westerholm
Director, Office of Response and Restoration
National Ocean Service

Enclosure

DWH Natural Resource Trustees Resolution 16-2
ADOPTED February 9, 2016

A RESOLUTION OF THE DEEPWATER HORIZON OIL SPILL NATURAL RESOURCE TRUSTEES TO APPROVE FOR FILING WITH THE EPA AND FOR NOAA'S NOTICING OF AVAILABILITY THE "FINAL PROGRAMMATIC DAMAGE ASSESSMENT AND RESTORATION PLAN AND FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT"

The undersigned representatives of the *Deepwater Horizon* Oil Spill Natural Resource Trustees (Trustees) hereby approve for filing with the U.S. Environmental Protection Agency (EPA) the "Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement" ("Final PDARP/PEIS") pursuant to 40 C.F.R. §1506.9. The PDARP/PEIS was prepared in accordance with the Oil Pollution Act of 1990 (OPA) and the National Environmental Policy Act (NEPA). The Final PDARP/PEIS that is the subject of this resolution was provided to the Trustees through an e-mail dated February 5, 2016, and titled "Final PDARP/PEIS for TC Review." The "Final PDARP/PEIS" includes summaries of public comments and responses to public comments as required by the Council on Environmental Quality's (CEQ) NEPA regulations and the OPA regulations. Under the requirements of CEQ regulations at 40 C.F.R. §1506.10 (a), the EPA will provide notice of making the Final PDARP/PEIS available to the public. Under the requirements of the OPA regulations at 15 C.F.R. §990.23(c)(2)(ii)(E), the National Oceanic and Atmospheric Administration (NOAA), on behalf of the Trustees, will also file a Notice of Availability of the Final PDARP/PEIS with the Federal Register. As provided by 40 C.F.R. §1506.10(b)(2) and the OPA regulations, the Trustees will not make a final decision to adopt a programmatic restoration alternative (the proposed action) set forth in the Final PDARP/PEIS until 30 days or more after the EPA publishes the Notice of Filing and NOAA publishes the Notice of Availability in the Federal Register.

SIGNATURES ON FOLLOWING PAGES:

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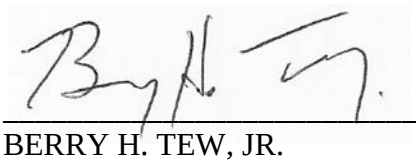
Alabama Department of Conservation and Natural Resources
Commissioner



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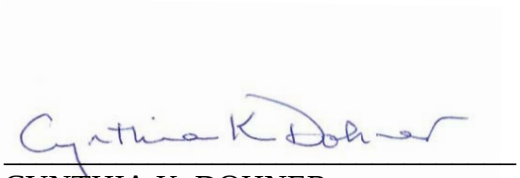
FOR THE UNITED STATES:



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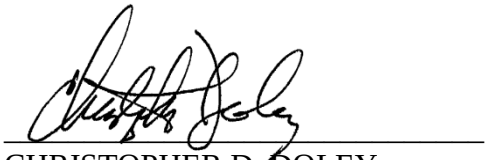
Alternate to Principal Representative



CHRISTOPHER D. DOLEY
National Oceanic and Atmospheric Administration
Principal Representative

ANN C. MILLS
U.S. Department of Agriculture
Deputy Under Secretary for Natural Resources and Environment

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1. Introduction and Executive Summary

What Is in This Chapter?

- ***Deepwater Horizon* Incident (Section 1.1):** What is the *Deepwater Horizon* incident, and under what authority was this document prepared in response to that incident?
- ***Deepwater Horizon* Trustees (Section 1.2):** Who are the *Deepwater Horizon* Trustees?
- **Authorities and Requirements (Section 1.3):** What authorities and requirements govern preparation of this document, and why did the Trustees decide to take a programmatic, rather than project-specific, approach?
- **The Natural Resource Damage Assessment Process (Section 1.4):** What is the natural resource damage assessment process the Trustees have followed, and what Emergency and Early Restoration has already been implemented?
- **Summary of This Final PDARP/PEIS) (Section 1.5):** In brief: How did the Trustees conduct the injury assessment and what were the key findings? How did the Trustees develop the restoration plan, what are the proposed alternatives and their environmental impacts, and which alternative do the Trustees prefer? How will restoration be governed, and how will the Trustees coordinate with other restoration efforts?
- **Proposed Settlement and PDARP Decision (Section 1.6):** What is the proposed settlement with BP, what is the related decision in this Final PDARP, and why do the Trustees believe these are appropriate?
- **Public Involvement in Restoration Planning (Section 1.7):** How has the public been involved in restoration planning and what happens next?
- **Overview of Public Comments on the Draft PDARP/PEIS and Key Changes in the Final PDARP/PEIS (Section 1.8):** What comments did the public provide on the draft document, and how did the Trustees consider those comments in this final document? What other types of changes have the Trustees made to this document since the draft was released in October 2015?
- **References (Section 1.9)**

1.1 *Deepwater Horizon* Incident

On April 20, 2010, the *Deepwater Horizon* (DWH) mobile drilling unit exploded, caught fire, and eventually sank in the Gulf of Mexico (Figure 1.1-1), resulting in a massive release of oil and other substances from BP's Macondo well. Tragically, 11 workers were killed and 17 injured by the explosion and fire. Initial efforts to cap the well following the explosion were unsuccessful, and for 87 days after the explosion, the well continuously and uncontrollably discharged oil and natural gas into the northern Gulf of Mexico. Approximately 3.19 million barrels (134 million gallons) of oil were

Source: *U.S. Coast Guard (USCG 2011).*

Figure 1.1-1. *Deepwater Horizon* offshore drilling unit on fire.

released into the ocean (U.S. v. BP et al. 2015), by far the largest offshore oil spill in the history of the United States. The volume of oil discharged during the *Deepwater Horizon* spill was equivalent to the *Exxon Valdez* oil spill re-occurring in the same location every week for 12 weeks.

Oil spread from the deep ocean to the surface and nearshore environment, from Texas to Florida. The oil came into contact with and injured natural resources as diverse as deep-sea coral, fish and shellfish, productive wetland habitats, sandy beaches, birds, endangered sea turtles, and protected marine life (Figure 1.1-1). The oil spill prevented people from fishing, going to the beach, and enjoying their typical recreational activities along the Gulf of Mexico.[1] Extensive response actions, including cleanup activities and actions to try to prevent the oil from reaching sensitive resources, were undertaken to try to reduce harm to people and the environment. However, many of these response actions had collateral impacts on the environment. The oil and other substances released from the well in combination with the extensive response actions together make up the *Deepwater Horizon* oil spill incident.

Unprecedented in both scope and nature, the *Deepwater Horizon* oil spill was the largest offshore oil spill in U.S. history. The spill dealt a heavy blow to the Gulf Coast region natural resources and its natural resource-dependent economy.

As an oil pollution incident, the *Deepwater Horizon* spill was subject to the provisions of the Oil Pollution Act (OPA) of 1990[2], which addresses preventing, responding to, and paying for oil pollution incidents in navigable waters, adjoining shorelines, and the exclusive economic zone of the United States. Under the authority of OPA, a council of federal and state "Trustees" was established (see Section 1.2), 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. As required under OPA, the Trustees have conducted a natural resource damage assessment (NRDA) and prepared this document, which describes the Trustees' injury assessment and proposed restoration plan. A draft of this document was made available for public review and comment, and the Trustees considered public comments when preparing this Final PDARP/PEIS. See the text box at the end of this chapter for details about how this document is organized.

[1] This document is concerned with impacts to the public's natural resources and the services provided by those resources, such as recreation. It does not discuss economic harm to private parties and governments caused by the *Deepwater Horizon* spill.
[2] Oil Pollution Act (OPA) of 1990 (33 USC §§ 2701 *et seq*.)

Sources *(clockwise from top left): Hsing et al. (2013); International Bird Rescue Center; NOAA; Tomo Hirama; NOAA; Louisiana Department of Wildlife and Fisheries/Mandy Tumlin; NOAA.*

Figure 1.1-1. Examples of resources affected by the *Deepwater Horizon* incident (clockwise from top left): injured coral, oiled brown pelicans, dolphins swimming through oil, oiled Kemp's ridley turtle, oiled coastal wetlands, dolphin in oil, and oil on a beach.

1.2 *Deepwater Horizon* Trustees

Under OPA, designated Trustees may seek compensation for lost or injured natural resources through restoration.

The *Deepwater Horizon* Trustees are the government entities authorized under OPA to act as trustees on behalf of the public to 1) assess the natural resource injuries resulting from the *Deepwater Horizon* oil pollution incident, and then 2) develop and implement a restoration plan to compensate for those injuries. To work collaboratively on the NRDA, the *Deepwater Horizon* Trustees organized a Trustee Council (the Council) comprising representatives of the U.S. Department of Commerce; the U.S. Department of the Interior (DOI); the U.S. Environmental Protection Agency (EPA); the U.S. Department of Agriculture (USDA);[3] and designated agencies representing each of the five Gulf states: Florida, Alabama, Mississippi, Louisiana, and Texas (Figure 1.2-1).

Federal Trustee Agencies	State Trustee Agencies
Department of the Interior • U.S. Fish and Wildlife Service • Bureau of Land Management • National Park Service	**Florida** • Department of Environmental Protection • Fish and Wildlife Conservation Commission
Department of Commerce • National Oceanic and Atmospheric Administration	**Alabama** • Department of Conservation and Natural Resources • Geological Survey of Alabama
Environmental Protection Agency	**Mississippi** • Department of Environmental Quality
Department of Agriculture	**Louisiana** • Coastal Protection and Restoration Authority • Oil Spill Coordinator's Office • Department of Environmental Quality • Department of Wildlife and Fisheries • Department of Natural Resources
	Texas • Commission on Environmental Quality • General Land Office • Parks and Wildlife Department

Figure 1.2-1. *Deepwater Horizon* NRDA Trustee Council and representing agencies.

[3] The federal Trustees are designated pursuant to section 2706(b)(2) of OPA (33 U.S.C. 2706(b)(2)) and by Executive Order 12777 (1991); Executive Order 13158 (2000); and Executive Order 13626 (2012). Although a Trustee under OPA by virtue of the proximity of its facilities to the *Deepwater Horizon* oil spill, the U.S. Department of Defense (DOD) is not a member of the Trustee Council and did not participate in development of this PDARP/PEIS.

1.3 Authorities and Requirements

As described below, this document simultaneously fulfills requirements under two pertinent regulatory authorities: the Oil Pollution Act of 1990 (OPA) and the National Environmental Policy Act (NEPA).

1.3.1 Oil Pollution Act

The 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). OPA makes each party responsible for a vessel or facility from which oil is discharged, or which poses the substantial threat of a discharge, liable (among other things) for removal costs and for damages for injury to, destruction of, loss, or loss of use of, natural resources, including the reasonable cost of assessing the damage. Under OPA regulations,[4] the natural resource injuries for which responsible parties are liable include injuries resulting from the oil discharge and those resulting from response actions or substantial threat of a discharge. OPA specifies that trustees responsible for representing the public's interest (in this case, state and federal agencies) must be designated to act on behalf of the public to assess the injuries and to address those injuries. The *Deepwater Horizon* Trustees ("the Trustees") for the affected natural resources conducted a natural resource damage assessment to:

- Assess the impacts of the *Deepwater Horizon* oil spill on natural resources in the Gulf of Mexico and the services those resources provide.
- Determine the type and amount of restoration needed to compensate the public for these impacts.

In this document (*Deepwater Horizon* Oil Spill Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement [Final PDARP/PEIS]), which serves as the Damage Assessment and Restoration Plan (DARP) under OPA, the Trustees present to the public their findings on the extensive injuries (Chapter 4) to multiple habitats, biological species, ecological functions, and geographic regions across the northern Gulf of Mexico that occurred as a result of the *Deepwater Horizon* oil spill, as well as their programmatic plan for restoring those resources (Chapter 5).

The injuries from the *Deepwater Horizon* incident affected such a wide array of linked resources over such an enormous area that the effects of the spill must be described as constituting an ecosystem-level injury.

As this document shows, the injuries caused by the *Deepwater Horizon* spill cannot be fully described at the level of a single species, a single habitat type, or a single region. Rather, the injuries affected such a wide array of linked resources over such an enormous area that the effects of the *Deepwater Horizon* spill must be described as constituting an ecosystem-level injury. Consequently, the Trustees' preferred alternative for a restoration plan employs a comprehensive, integrated ecosystem approach to best address these ecosystem-level injuries. The Trustees' full injury assessment and

[4] The OPA regulations can be found at 15 CFR Part 990.

resulting restoration plan were informed by reasonable scientific inferences about the extent of injury and about the resource benefits that can be derived from broad-scale ecosystem restoration.

Given the ecosystem-level nature of the injuries, the Trustees decided to prepare a *programmatic* DARP—in other words, a DARP that provides long-term direction for restoring the full suite of injured natural resources and services. Instead of identifying specific restoration projects, the PDARP provides direction and guidance for identifying, evaluating, and selecting future restoration projects to be carried out by Trustee implementation groups (Section 5.10.4 and Chapter 7).

This Final Programmatic Damage Assessment and Restoration Plan (PDARP) provides long-term direction and guidance for restoring injured natural resources and services caused by the *Deepwater Horizon* oil spill.

1.3.2 National Environmental Policy Act Requirements

OPA regulations require federal trustees to comply with National Environmental Policy Act[5] regulations when planning restoration. NEPA requires federal agencies to consider the potential environmental impacts of planned actions. NEPA provides a mandate and framework for federal agencies to determine if their proposed actions have significant environmental effects and related social and economic effects, consider these effects when choosing between alternative approaches, and inform and involve the public in their environmental analysis and decision-making process.

NEPA requires federal agencies to develop an environmental impact statement (EIS) for any "major federal action significantly affecting the quality of the human environment." The EIS typically has several parts:

- A statement of the purpose and need for the proposed action.
- A description of the environment that could be affected (for example: What habitats and species are present? Are any threatened or endangered?).
- A description of the proposed action and a set of alternatives.
- An analysis of the direct, indirect, and cumulative environmental impacts of each alternative.

In this document, the Trustees address these requirements by providing a *programmatic* EIS (PEIS) that evaluates broad (as opposed to project-specific) restoration alternatives. Consequently, while serving as a PDARP under OPA, this document also serves as a PEIS under NEPA. In Section 5.5, the Trustees propose a preferred restoration alternative for comprehensive integrated ecosystem restoration that they judge as best, among several other alternatives (Section 5.9), at compensating the public for the losses to natural resources and services caused by the *Deepwater Horizon* spill. The identification of a preferred alternative is informed by consideration and comparison of the environmental consequences of the alternatives under NEPA in Section 6.5.

[5] See 42 USC § 4321 *et seq.*, and the regulations guiding NEPA implementation at 40 CFR § 1500 *et seq.*

This programmatic document describes the process for subsequent restoration planning to select specific projects for implementation. The subsequent restoration plans will be consistent with this PDARP and integrated with a NEPA analysis tiered from this PEIS. A tiered environmental analysis is a project-specific analysis that focuses on project-specific issues, and summarizes or references (rather than repeats) the broader issues discussed in the PEIS. This process may include formal public scoping (i.e., if a tiered EIS is required) to fulfill federal agencies' NEPA responsibilities.

1.4 The Natural Resource Damage Assessment Process

Under OPA (15 CFR § 990.10), trustees with jurisdiction over resources threatened or affected by an oil release may conduct a NRDA to determine whether natural resources have been injured and then plan restoration to address those injuries. The OPA regulations lay out a process for conducting an NRDA that includes three main phases (Figure 1.4-1). The *Deepwater Horizon* Trustees have been proceeding with this NRDA process but have also included additional steps, such as Early Restoration. In addition, this Final PDARP/PEIS has been prepared as a programmatic document as part of the restoration planning phase. Subsequent project-specific restoration planning will occur prior to restoration implementation. The three main phases of the NRDA are described briefly below.

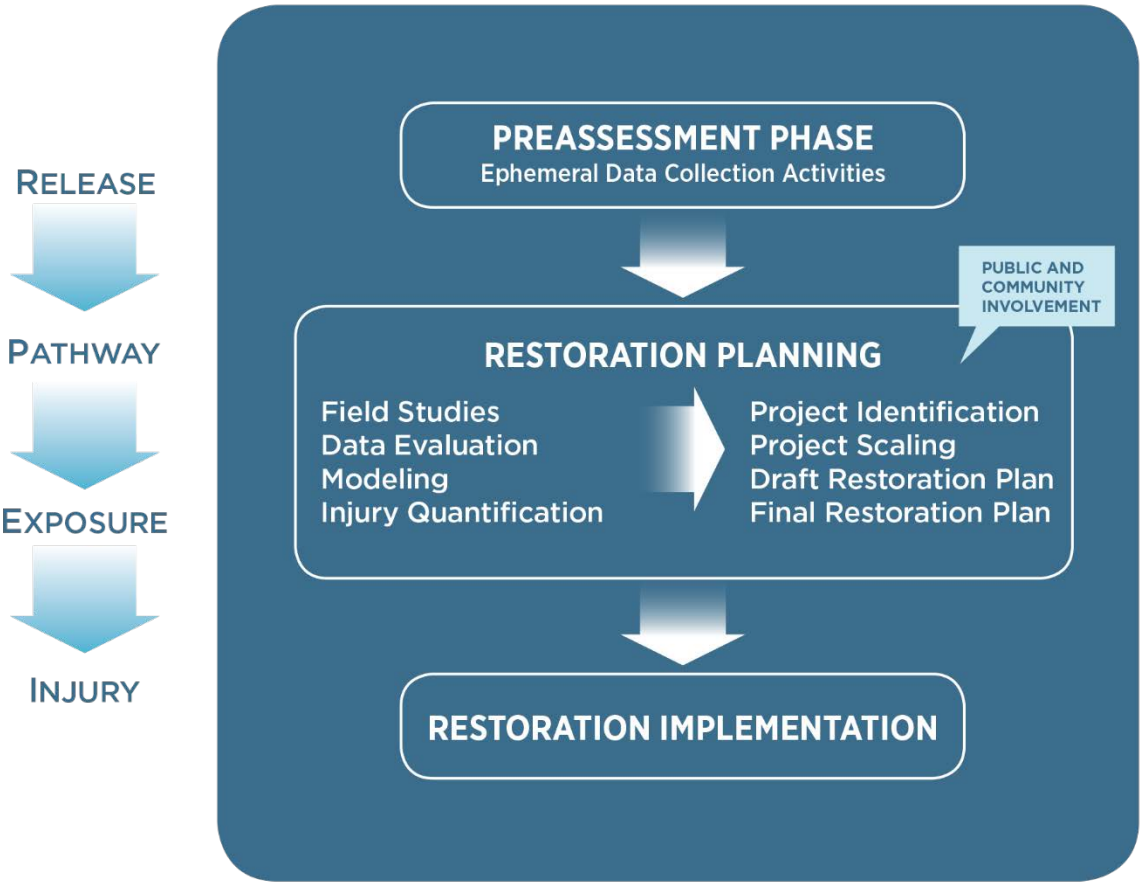


Figure 1.4-1. Simplified overview of NRDA process according to OPA regulations.

1.4.1 Preassessment Phase

During this phase, trustees determine whether an oil spill incident is likely to have injured natural resources or their services, and whether it is appropriate to undertake restoration. If so, the trustees invite the potentially responsible parties to participate in the NRDA and restoration planning.

Shortly after the *Deepwater Horizon* oil spill, the Trustees initiated the preassessment phase (pursuant to 15 CFR §§ 990.40–990.45). By August 19, 2010, Trustee scientists had already observed impacts from the spill, including, but not limited to, oil impacts across over 1,300 miles (2,100 kilometers) of shoreline habitat; visibly oiled and dead birds, sea turtles, and marine mammals; lost recreational opportunities; and impacts to water column resources. These initial data showed that the spill's geographic scale was unprecedented and the scope of likely injuries to natural resources was vast.

Joint Studies with BP

The Trustees invited all responsible parties to participate in the NRDA process; only BP chose to do so. Under a cooperative agreement with BP for the NRDA process, the Trustees conducted many joint studies with BP.

Based on these data and the spill's long duration, the Trustees determined that they had the authority to pursue restoration under OPA. They developed and published a Notice of Intent to Conduct Restoration Planning (DWH Trustees 2010),[6] which notified the public of this decision. Pursuant to OPA regulations (15 CFR § 990.14), the Trustees also sent this Notice of Intent to the potentially responsible parties[7] and invited the parties to participate in the NRDA as part of a cooperative process. Of the responsible parties, only BP chose to participate in the NRDA and enter into a cooperative assessment process with the Trustees. Under this arrangement, BP and the Trustees conducted joint studies to collect data.

Even under a cooperative NRDA process, the authority and responsibility to assess natural resource injuries and losses and define appropriate restoration plans rest solely with the trustees. Thus, the Trustees are the sole author of this Final PDARP/PEIS.

1.4.2 Restoration Planning

During the restoration planning phase, trustees assess and quantify potential injuries and lost services and use that information to determine the need for restoration actions. For the *Deepwater Horizon* NRDA, the Trustees conducted two coordinated processes during this phase: injury assessment and restoration planning.

- **Injury assessment.** The purpose of injury assessment is to determine the nature and extent of injuries to natural resources and services from an oil spill. Under the *Deepwater Horizon* injury assessment process, conducted from 2010 through 2015 (and including the work conducted as part of the preassessment process), the Trustees developed and implemented hundreds of

[6] Notice of Intent, 75 FR 60800, Discharge of Oil From *Deepwater Horizon*/Macondo Well, Gulf of Mexico; Intent to Conduct Restoration Planning (*https://federalregister.gov/a/2010-24706);* Notice of Intent, 36 La. Reg. 2441-43 (October 20, 2010), Restoration Planning—Discharge of Oil From the *Deepwater Horizon* Mobile Offshore Drilling Unit and the Subsea Macondo Well into the Gulf of Mexico, April 20, 2010 (*http://www.doa.louisiana.gov/osr/reg/1010/1010.pdf*).

[7] Potentially responsible parties identified in the Notice of Intent to Conduct Restoration Planning were BP Exploration and Production, Inc.; Transocean Holdings, Inc.; Triton Asset Leasing, GmbH; Transocean Offshore Deepwater Drilling, Inc.; Transocean Deepwater, Inc.; Anadarko Petroleum; Anadarko E&P Company, LP; and MOEX Offshore 2007, LLC (DWH Trustees 2010).

scientific studies[8] to assess the impacts of the *Deepwater Horizon* oil spill on natural resources and habitats, as well as lost human recreational uses of these resources and habitats. BP and the Trustees cooperatively developed sampling protocols for certain studies. When they did not reach agreement on sampling protocols, both BP and the Trustees conducted independent (i.e., non-cooperative) studies.

- **Restoration planning.** Informed by the injury assessment, the Trustees have developed programmatic restoration alternatives (described in Chapter 5). The Trustees' comprehensive restoration planning work to date has included public scoping to identify appropriate types of restoration; identification and evaluation of alternatives to offset injuries to diverse resources and habitats; evaluation of alternatives under NEPA and OPA; and development of monitoring approaches to better understand the benefits (both qualitative and quantitative) of restoration actions. Chapter 5 of this Final PDARP/PEIS presents the programmatic restoration plan developed by the Trustees and evaluates alternatives in accordance with OPA. Chapter 6 evaluates the alternatives in accordance with NEPA.

Phased Restoration

Emergency/early. Due to the magnitude of the spill, the Trustees began implementing Emergency and Early Restoration work before the injury assessment was complete.

Long-term. As a programmatic document, this Final PDARP/PEIS provides long-term direction and guidance that will be used to propose specific future actions for restoring injured natural resources and services.

1.4.3 Restoration Implementation

Due to the magnitude of the spill, the Trustees began planning for and implementing Emergency and Early Restoration projects (described below) with funding from BP before the injury assessment was complete. These actions are a subset of the extensive, continuing effort needed to address complete restoration of injured resources.

Once this programmatic restoration planning is complete, the Trustees will, per OPA requirements, develop and solicit public comment on subsequent project-specific restoration plans (integrated with an analysis under NEPA), which will include associated monitoring and performance criteria. Subsequent plans and projects will be consistent with this Final PDARP/PEIS. Once these plans are final, the Trustees will implement the projects in compliance with environmental laws.

1.4.3.1 Emergency Restoration

Under OPA, Trustees may take emergency primary restoration actions before completing the NRDA process to minimize continuing injury, or prevent additional injury, as long as the actions are feasible and the costs not unreasonable. Guided by preliminary data about resource impacts from the

[8] These studies have been subject to formal and informal peer review, both within Trustee agencies, by BP scientists (for cooperative studies), and by independent scientists.

Deepwater Horizon spill, the Trustees collectively selected and implemented three types of Emergency Restoration in response to the spill (NOAA 2013):

- **Submerged aquatic vegetation (SAV).** The Trustees implemented Emergency Restoration to prevent additional injury to and restore SAV beds damaged by propeller scarring and other response vessel impacts. The Trustees assessed SAV damage in multiple locations across the Gulf of Mexico and ultimately selected sites in Florida that best met the Emergency Restoration criteria.
- **Waterfowl and shorebirds.** The Trustees provided alternative wetland habitat in Mississippi for waterfowl and shorebirds that might otherwise winter in oil-affected habitats.
- **Sea turtles.** The Trustees conducted a project to improve the nesting and hatching success of endangered sea turtles on the Texas coast, including Padre Island National Seashore.

Some Trustees also independently implemented additional Emergency Restoration actions.

1.4.3.2 Early Restoration

For the *Deepwater Horizon* spill, Early Restoration was intended to accelerate restoration of injured natural resources and their services, but not to fully compensate the public for all resulting injuries and losses. On the first anniversary of the spill (April 20, 2011), the Trustees and BP agreed that BP would provide up to $1 billion toward Early Restoration projects, under the terms of a Framework Agreement for Early Restoration ("the Framework Agreement"),[9] as a preliminary step toward restoring injured natural resources and services caused by the spill. Early Restoration proceeded in phases, with each phase adding additional projects to partially address injuries to nearshore resources, birds, fish, sea turtles, federally managed lands, and recreational uses. Injuries were partially addressed through coastal habitat restoration, resource-specific restoration, and education and recreational infrastructure projects.

Early Restoration projects are aimed at accelerating meaningful restoration while also contributing to knowledge required for long-term restoration planning.

Sixty-five projects with a total cost of approximately $877 million have been selected through the five phases of Early Restoration planning (DWH Trustees 2012a, 2012b, 2014, 2015). Chapter 5 provides further details on Early Restoration. The balance of funding originally pledged for Early Restoration has been incorporated into the proposed settlement described in Section 1.6.

[9] The Framework Agreement can be found at *http://www.gulfspillrestoration.noaa.gov/wp-content/uploads/2011/05/framework-for-early-restoration-04212011.pdf*. Accessed July 7, 2015.

1.5 Summary of This Final PDARP/PEIS

This section provides a brief summary of the injury assessment and restoration planning sections of this Final PDARP/PEIS, including an overview of the approach the Trustees took to the assessment, key findings of the injury assessment, a summary of the programmatic restoration plan, a summary of the NEPA evaluation of restoration, an overview of Trustee governance of restoration implementation, and a discussion of coordination with other *Deepwater Horizon* restoration planning efforts.

1.5.1 Approach to the Injury Assessment

The scale of the *Deepwater Horizon* spill was unprecedented, both in terms of the area affected and the duration of the spill. Due to the enormous scope of this incident, evaluation of all potentially injured natural resources in all potentially oiled locations at all times remains cost-prohibitive and scientifically impractical. The Trustees therefore undertook an ecosystem approach to injury assessment that included the evaluation of representative habitats, ecosystem processes and linkages, ecological communities, specific natural resources, and human services.

The Trustees conducted a detailed assessment to determine the nature, degree, geographic extent, and duration of injuries from the *Deepwater Horizon* incident. This information was then used in the restoration planning process to inform the type and amount of restoration appropriate to address these injuries.

The Trustees began to assess injuries as soon as news of the spill was received, and they continued with a multi-phased iterative approach, in which planning and design decisions were informed by the data that had already been collected and evaluated. The Trustees used a variety of methods, including field and laboratory studies and models. They used scientific inference to make informed conclusions about injuries that they were not able to study directly.

The injury assessment involved two main steps: **injury determination** and **injury quantification**.

1.5.1.1 Step 1: Injury Determination

In this step, the Trustees evaluated whether the *Deepwater Horizon* incident injured natural resources or impaired their ability to provide services. This part of the assessment basically involves answering the following questions:

1. Can a **pathway** be established from the discharge to the exposed resource? This step involved confirming the sequence of events that resulted in oil being transported from BP's Macondo well to the locations where injuries occurred.

2. Did **exposure** take place? This step involved confirming that the injured resources were indeed exposed to *Deepwater Horizon* oil.

3. What **injuries** (i.e., adverse effects) occurred as a result of the exposure and/or response activities?

1.5.1.2 Step 2: Injury Quantification

In this step, the Trustees determined the degree (severity), geographic extent, and temporal extent (amount of time) of the injuries and service losses that occurred. To do this, the Trustees compared the injured resources and services with baseline conditions—that is, the condition that would have existed if the *Deepwater Horizon* incident had not occurred. The Trustees could not quantify *every* injury that occurred. Instead, they focused on where injury quantification could be most helpful for restoration planning.

Because of the vast scale of the incident and potentially affected resources, the Trustees evaluated injuries to a set of representative habitats, communities, species, and ecological processes. Studies were conducted at many scales, including the cellular, individual, species, community, and habitat levels. The Trustees generally did not quantify changes in the population size or status of plants and animals, because natural variability from year to year can make it difficult to detect oil spill impacts at the population level. They also did not limit their quantification to counts of animals killed by the spill, because so many of the animals killed were not observed.

1.5.2 Key Findings of the Injury Assessment

Key findings of the injury assessment are listed below. Figure 1.5-1 depicts the major categories of injury from the *Deepwater Horizon* incident, along with the corresponding sections of this Final PDARP/PEIS where findings are presented in detail. A detailed summary of findings is also presented in Section 4.11.

- The Trustees documented that oil flowed within deep ocean water currents hundreds of miles away from the blown-out well; and that it moved upwards and across a very large area of the ocean surface. This movement resulted in observable slicks that extended over 43,300 square miles (an area about the size of the State of Virginia), affecting water quality and exposing aquatic biota. Oil was deposited onto at least 400 square miles of the sea floor and washed up onto more than 1,300 miles of shoreline from Texas to Florida.

- The oil came into contact with and injured natural resources as diverse as deep-sea corals, fish and shellfish, productive wetland habitats, sandy beaches, birds, endangered sea turtles, and protected marine life. The oil spill prevented people from fishing, going to the beach, and enjoying their typical recreational activities along the Gulf of Mexico. Extensive response actions, including cleanup activities and actions to try to prevent the oil from reaching sensitive resources, were undertaken to try to reduce harm to people and the environment. However, many of these response actions had collateral impacts on the environment.

- The oil released into the environment by the *Deepwater Horizon* incident was toxic to a wide range of organisms, including fish, invertebrates, plankton, birds, turtles, and mammals. It caused a wide array of toxic effects, including death, disease, reduced growth, impaired reproduction, and physiological impairments that made it more difficult for organisms to survive and reproduce.

- The waters, sediments, and marsh habitats in many locations in the northern Gulf of Mexico had concentrations of oil that were high enough to cause toxic effects. The degree and extent of

these toxic concentrations varied by location and time. The extent and degree of toxic levels of oil has declined substantially from 2010 to the present.

- Exposure to oil and response activities resulted in extensive injuries to multiple habitats, species, and ecological functions, across broad geographic regions.
- The *Deepwater Horizon* incident resulted in injuries to intertidal marsh habitats, including marsh plants and associated organisms; shoreline beaches and sediments, and organisms that live on and in the sand and sediment; fish and shellfish and other invertebrates that live in the water; a wide range of bird species; floating *Sargassum* habitats offshore and submerged aquatic vegetation; deep-sea and nearshore ocean-bottom habitats, including rare, deep water corals; endangered and threatened sea turtles; and several species of dolphins and whales.
- The spill directly reduced the use of popular recreational activities including boating, fishing, and going to the beach between May 2010 and November 2011.
- Overall, the ecological scope of impacts from the *Deepwater Horizon* incident was unprecedented, with injuries affecting a wide array of linked resources across the northern Gulf ecosystem.

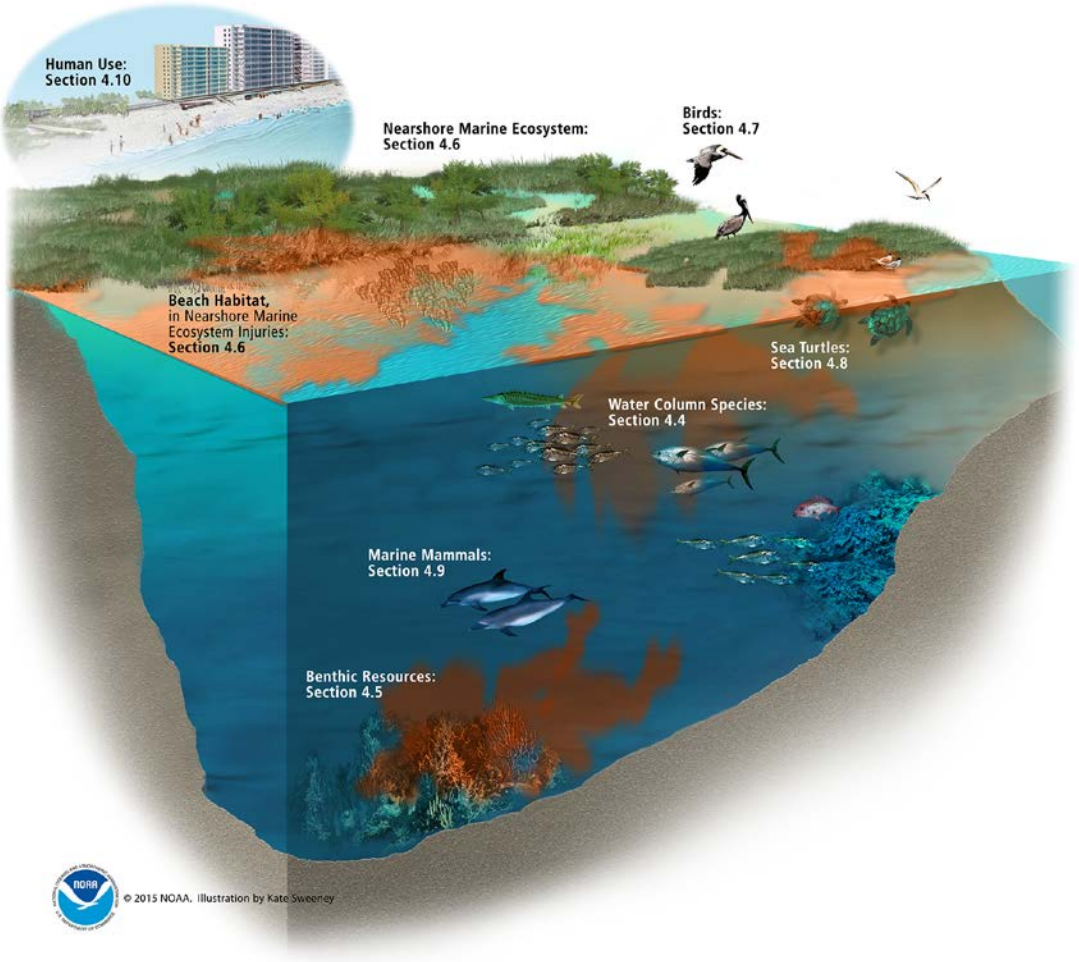
1.5.3 Restoring Natural Resources

Given the broad ecological scope of the injuries, restoration planning similarly requires a broad ecosystem perspective to restore the vast array of resources and services injured by the *Deepwater Horizon* incident. Thus, the Trustees are proposing a comprehensive, integrated ecosystem restoration plan with a portfolio of Restoration Types that address the diverse suite of injuries that occurred at both regional and local scales. The Trustees developed this plan after carefully reviewing the available scientific data, making reasonable scientific inferences, and considering ecological linkages (interactions between habitats and species), resiliency, and sustainability.

The Trustees identified the need for a comprehensive restoration plan at a programmatic level to guide and direct the massive restoration effort, based on the following five overarching goals:

- Restore and conserve habitat.
- Restore water quality.
- Replenish and protect living coastal and marine resources.
- Provide and enhance recreational opportunities.
- Provide for monitoring, adaptive management, and administrative oversight to support restoration implementation.

These five goals work both independently and together to restore injured resources and services.



Source: *Kate Sweeney for NOAA.*

Figure 1.5-1. Major categories of *Deepwater Horizon* oil spill injuries and the corresponding injury assessment sections in Chapter 4 of this document.

Through their restoration planning efforts, the Trustees identified 13 distinct Restoration Types that pertain to these goals (Figure 1.5-2). The Trustees also identified restoration planning approaches that can help meet the more specific goals developed for each Restoration Type. This Final PDARP/PEIS focuses on presenting these Restoration Types and approaches at a programmatic level. The Trustees will subsequently identify, plan, evaluate, carry out, and monitor specific restoration activities in accordance with the goals, Restoration Types, and restoration approaches of this programmatic plan.

As required by OPA and NEPA, the Trustees developed and evaluated alternatives for comprehensive restoration planning:

- Alternative A establishes a comprehensive, integrated ecosystem restoration plan (referred to as the integrated restoration portfolio) based on the programmatic Trustee goals.
- Alternative B establishes a resource-specific restoration plan based on the programmatic Trustee goals.
- Alternative C defers development of a comprehensive restoration plan until greater scientific understanding of the injury determination is achieved.

In addition, as required by OPA and NEPA, the Trustees considered a natural recovery/no action alternative, under which the Trustees would not prepare a restoration plan or implement future restoration projects under NRDA, other than those already approved through the Early Restoration process.

Alternatives A, B, and C represent different restoration philosophies. Alternatives A and B would result in two different investment strategies for the available settlement funds (see Section 1.6), making use of the same Restoration Types presented in Figure 1.5-3. Alternative C defers restoration and could include the same Restoration Types as Alternatives A and B, but also could include refinements to those Restoration Types or a change in focus across the Restoration Types following further study.

The Trustees identified Alternative A (comprehensive, integrated ecosystem restoration) as preferred, because it best restores the range of habitats, resources, and services injured by the spill. By investing in a wide range of resources and habitats throughout the region, the Trustees' integrated portfolio under Alternative A will provide benefits to a large variety of species and ecological services. It will also maximize the likelihood of appropriately compensating the public for all the resources, services, and ecological linkages injured by the spill. Under this preferred alternative, the Trustees allocate funds based on their understanding and evaluation of exposure and injury to natural resources and services, as well as their analysis of where restoration spending for the various Restoration Types would be most appropriate (see Section 5.10 for details). Allocations are to:

- **Restoration Types.** The proposed plan allocates specific amounts of money to the 13 Restoration Types shown in Figure 1.5-2. The portfolio includes restoration focused on specific resource types, such as marine mammals and migratory birds, as well as restoration of supporting habitats such as coastal wetlands.

- **Restoration Areas.** The proposed plan allocates specific amounts of money to seven geographic areas: each of the five Gulf states, Regionwide, and the Open Ocean. The allocation includes funds for administrative oversight and monitoring and adaptive management. Some additional funds will be reserved for currently unknown conditions and adaptive management.

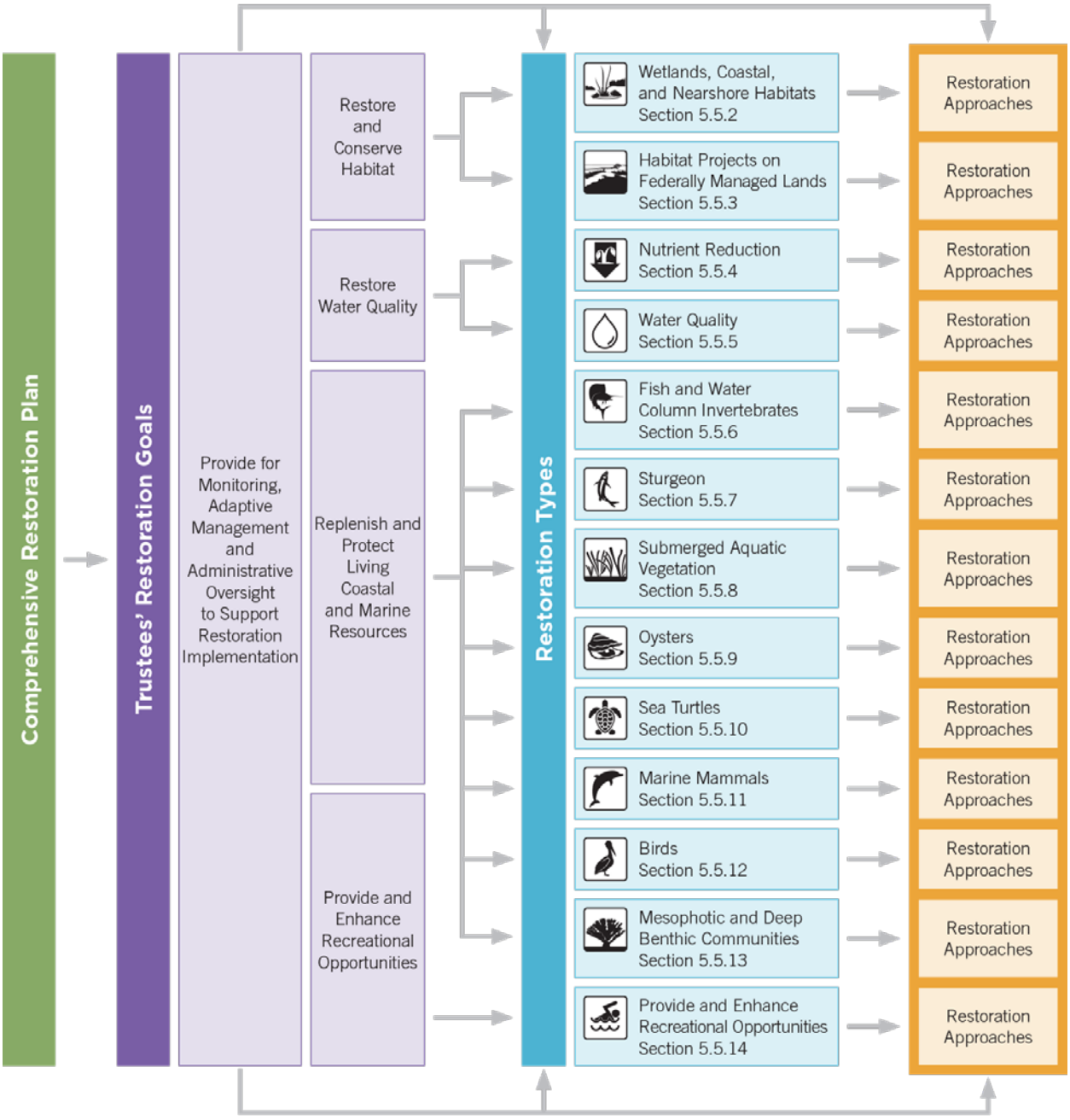


Figure 1.5-2. The Trustees' approach to developing this restoration plan, showing the goals and their related Restoration Type(s) connecting to restoration approaches, with monitoring, adaptive management, and administrative oversight planned throughout all approaches.

Sources: *Top: Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) Task Force. Middle left: Florida Department of Environmental Protection. Middle right: Jud Kenworthy. Bottom left: CWPPRA Task Force. Bottom right: CWPPRA Task Force.*

Figure 1.5-3. A wide variety of coastal habitat restoration projects have been successfully implemented in the northern Gulf of Mexico.

Top: CWPPRA Barataria Barrier Island Complex project (BA-38), Plaquemines Parish, Louisiana.
Middle left: Pensacola Bay oyster reef restoration, Santa Rosa County, Florida, NOAA Restoration Center, Community-based Restoration Program.
Middle right: Scientist monitoring a seagrass restoration site.
Bottom left: CWPPRA Whiskey Island back-barrier marsh creation (TE-50), Terrebonne Parish, Louisiana.
Bottom right: CWPPRA Bayou Dupont sediment delivery system project, Jefferson and Plaquemines Parishes, Louisiana (BA-39).

The investment of funds proposed under Alternative A particularly focuses on restoring Louisiana coastal marshes, which is an essential element of the proposed plan. Given both the extensive impacts to Louisiana marsh habitats and species from the *Deepwater Horizon* incident and the critical role that these habitats play for many injured resources and for the overall productivity of the northern Gulf region, coastal and nearshore habitat restoration (see examples in Figure 1.5-3) is the most appropriate and practical mechanism for restoring the ecosystem-level linkages disrupted by the *Deepwater Horizon* incident. Aspects of this vast and diverse injury, however, will require additional restoration, especially to resources that spend some or all of their lives in the open waters of the Gulf of Mexico. Therefore, this plan also calls for restoration focused on specific resources. To ensure that recreational use injuries are fully compensated, additional investments will be made to enhance human interaction with the environment by increasing recreational opportunities, improving water quality and habitats, and using education and outreach to engage people in restoration and stewardship of natural resources.

1.5.4 NEPA Evaluation of Restoration

In addition to presenting the findings of a natural resource damage assessment and providing a proposed restoration plan under the Oil Pollution Act, this Final PDARP/PEIS includes an examination of the environmental impacts of the preferred alternative and additional restoration alternatives, as required by NEPA.

The proposed restoration is broad and unprecedented in scope, and may be taking place in an environmentally sensitive area. For example, there are areas designated as critical habitat for a number of Endangered Species Act-listed species in the northern Gulf of Mexico, including loggerhead sea turtles, smalltooth sawfish, Gulf sturgeon, beach mice, and piping plover. Thus, it was important for the Trustees[10] to develop a programmatic EIS to correspond with the proposed restoration plan. More specific environmental analyses will be developed for specific restoration activities in the future.

Restoration can potentially affect natural, social, cultural, and economic resources in many ways. Impacts could include direct effects, indirect effects, and cumulative effects—that is, the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions. While restoration projects are intended to have positive effects on the environment overall, it is possible that some projects could also have unintended negative consequences. For example, a construction project might disturb plant and animal habitats, and it might produce air pollution and noise while construction is taking place. A project designed to improve habitat for certain plant or animal species might inadvertently diminish habitat for other species. The types of impacts considered in the PEIS are:

- Impacts to physical resources.
    - Geology (soil, erosion).

[10] The *Deepwater Horizon* Trustee Council agencies are serving as cooperating agencies under NEPA. While the Army Corps of Engineers has not participated as a cooperating agency on the PDARP/PEIS, the Corps has special expertise and experience with some of the projects likely to be proposed in the course of implementing the PDARP/PEIS, and will be invited to participate as a cooperating agency on such projects.

  - Hydrology (surface water and ground water flows) and water quality.
  - Air quality.
  - Noise.

- Impacts to biological resources.

  - Habitats.
  - Living coastal and marine resources (wildlife, marine and estuarine fauna and flora, protected species).

- Impacts to socioeconomics and environmental justice (disproportionate effects on minority and low-income populations).

  - Cultural resources.
  - Infrastructure.
  - Land and marine management.
  - Tourism and recreational use.
  - Fisheries and aquaculture.
  - Marine transportation.
  - Aesthetics and visual resources.
  - Public health and safety, including flood and shoreline protection.

By using a PEIS process to carefully review the potential impacts of the proposed integrated restoration plan as well as the potential impacts of restoration alternatives, the Trustees determined that the proposed integrated restoration plan will have both beneficial and adverse impacts. The beneficial impacts of restoration, however, would substantially outweigh potential adverse impacts, especially in the long term, and especially if best practices are used to minimize adverse impacts. For example, benefits to physical and biological resources are typically long term and focus on recovery of habitat and/or species populations. Adverse impacts can be related to construction impacts such as short-term disturbance. Adverse impacts can also result from intentional long-term changes that are made to geology, vegetation, and substrates when an existing habitat is converted to a restored habitat, such as shallow open-water being converted to marsh. In Appendix 6.A, Best Practices, the Trustees recommend best practices to guide future restoration activities.

In addition to evaluating the potential impacts of the preferred alternative (integrated restoration portfolio), the Trustees examined the potential environmental impacts of alternatives, as follows:

- **Alternative B—Resource-specific restoration.** This alternative would rely on the same Restoration Types as the preferred alternative, but with a different emphasis across Restoration Types (i.e., a focus on replenishing and protecting specific marine resources with correspondingly less emphasis on coastal habitat restoration). At a programmatic level, the potential adverse environmental consequences could largely be the same as with the preferred alternative, since the same Restoration Types are proposed. However, environmental impacts may differ as the project approaches emphasized in subsequent restoration plans may differ. Given the reduced emphasis on restoration of Gulf coastal habitats, there is less certainty about

the benefits that Alternative B would provide for the reasonably inferred but unquantified injuries described in Chapter 4.

- **Alternative C—Continue injury assessment and defer restoration planning.** This alternative increases the potential for targeting restoration projects to identified injuries; however, it would delay restoration action and would result in less restoration funding, as funds would be needed for the continued injury assessment. Continued assessment would cause substantial delays in comprehensive restoration action beyond Early Restoration, which would lead to further losses in natural resources and their services, along with corresponding socioeconomic impacts. Additionally, the reduction in funds available for restoration (due to expenditure on continued assessment) would result in Alternative C not providing as much benefit to injured resources as Alternatives A or B.

- **Alternative D—Natural recovery/no action.** The Trustees are required under NEPA to evaluate a No Action alternative. Under this alternative, Early Restoration would be the only restoration implemented; no additional restoration under NRDA would be done by Trustees. This alternative would not accomplish beneficial impacts to injured resources via additional active NRDA restoration. Natural resources would recover more slowly, and some might not recover, without restoration, and the public would not be compensated for losses to natural resources and their services during this recovery time period ("interim" losses).

1.5.5 Governance

In keeping with the Trustees' responsibilities under OPA, and in the context of the comprehensive, integrated ecosystem restoration plan identified as the preferred alternative, the Trustees' governance structure guides the continuing restoration process and establishes transparency and public accountability of the Trustees' actions. The Trustees assure restoration is achieved with financial accountability and that obligations set forth in the Oil Pollution Act, the future Consent Decree, the Final PDARP/PEIS, and future restoration plans are met. The duties of the Trustees include restoration planning, restoration implementation, monitoring and adaptive management, financial management, public engagement, and restoration tracking.

The Trustees propose a distributed governance structure that assigns a Trustee Implementation Group (TIG) for each of seven Restoration Areas (restoration in each of the five Gulf states, Open Ocean, and Regionwide), and additionally establishes a TIG for "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. Because these are shared public trust resources, with overlap in federal and state jurisdiction, both state and federal Trustees serve on the Trustee Council and within respective TIGs. The general division of responsibilities between the TIGs and the Trustee Council is as follows:

- *The TIGs' function* will primarily be planning, deciding on, and implementing restoration, including monitoring and adaptive management. Each TIG will make all restoration decisions for the funding allocated to its Restoration Area.

- *The Trustee Council's function* will primarily be ensuring coordination and efficiency across the TIGs by establishing procedures and practices needed to standardize or provide consistency for some TIG activities.

1.5.6 Coordination with Other *Deepwater Horizon* Restoration Planning Efforts

Coordination between the NRDA restoration and other *Deepwater Horizon* restoration programs will promote successful implementation of this Final PDARP and optimize ecosystem recovery within the Gulf of Mexico. The Trustee Council may consider the restoration actions of these other programs to identify synergies and reduce potential redundancies when selecting projects under this PDARP. These programs will produce significant monitoring data to inform restoration decisions and improve adaptive management. Data sharing between programs is encouraged, and the Trustee Council will make information for projects selected under this PDARP available to the public, as well as to the scientific community and other restoration programs.

Other *Deepwater Horizon* restoration planning efforts are planned or underway as a result of:

- **Clean Water Act penalties (RESTORE Act).** The Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States (RESTORE) Act of 2012 dedicates 80 percent of any civil and administrative penalties paid under the Clean Water Act to the Gulf Coast Restoration Trust Fund for ecosystem restoration, economic recovery, and tourism promotion in the Gulf Coast region.
- **Criminal plea agreement payments.** In 2012 to 2013, BP and Transocean each entered into criminal plea agreements with the United States Justice Department. Substantial funding under those plea agreements is being directed to:
    - The **Gulf Environmental Benefit Fund**, administered by the National Fish and Wildlife Foundation, to restore and protect Gulf Coast natural resources.
    - The **North American Wetlands Conservation Fund,** administered by the U.S. Fish and Wildlife Service, for "wetlands restoration and conservation projects" located in the Gulf or projects that would "benefit migratory bird species and other wildlife and habitat" affected by the oil spill.
    - The **National Academy of Sciences**, to enhance the safety of offshore drilling to protect human health and the environment.

1.6 Proposed Settlement and PDARP Decision

Under OPA, there are several different possible scenarios for the Trustees to receive the funding needed to implement restoration. In one scenario, the Trustees prepare a draft and final PDARP and present a written demand to the responsible parties to either implement the restoration or provide the funding necessary for restoration implementation (15 CFR § 990.62). If the responsible parties reject the demand, the Trustees can then file a judicial claim (i.e., a lawsuit) in an attempt to win a judgment for the cost of restoration, or the Trustees can seek funding for restoration from the federal government's Oil Spill Liability Trust Fund (15 CFR § 990.64). This litigation scenario typically results in long delays and has an uncertain outcome with respect to the amount of funding that may be gained for restoration.

A second scenario under OPA is a settlement scenario. The OPA regulations note that "Trustees may settle claims for natural resource damages . . . at any time, provided that the settlement is adequate in the judgement of the trustees to satisfy the goal of OPA and is fair, reasonable, and in the public interest" (15 CFR § 990.25). A settlement avoids the risks and delays of litigation and provides the Trustees with certainty about the amount of funding available for restoration.

On July 2, 2015, BP, the major party responsible for the *Deepwater Horizon* spill, announced that the Trustees and BP had reached an agreement in principle to settle natural resource damages for the spill (DOJ 2015a, 2015b). The Trustees have proposed to accept the settlement with BP to resolve BP's liability for natural resource damages associated with the *Deepwater Horizon* oil spill. Under this settlement, BP would pay a total of $8.1 billion for restoration to address natural resource injuries (this includes $1 billion already committed for Early Restoration), plus up to an additional $700 million (some of which is in the form of accrued interest) to respond to natural resource damages unknown at the time of the agreement and/or to provide for adaptive management. Finally, the settlement also includes a proposed allocation of the settlement proceeds to various Restoration Types and Restoration Areas. This proposed settlement is described in a proposed Consent Decree that was recently lodged in a federal case arising from matters related to the *Deepwater Horizon* oil spill: *United States v. BPXP et al., Civ. No. 10-4536, centralized in MDL 2179, In re: Oil Spill by the Oil Rig "Deepwater Horizon" in the Gulf of Mexico, on April 20, 2010 (E.D. La.).* The proposed Consent Decree was subject to its own public comment process regarding the sufficiency of the settlement or other terms.[11] Upon conclusion of the public comment process, if both the plaintiffs and then the Court find the decree to be adequate, fair, reasonable, and in the public interest, the Court will officially enter the final Consent Decree between defendant BP and plaintiffs United States and the Gulf States.

In this Final PDARP/PEIS, the Trustees outline the injury assessment (Chapter 4) and proposed restoration plan (Chapters 5, 6, and 7). The Trustees propose to make a programmatic decision regarding how this funding would be used for restoration to offset the natural resource injuries described in this document. This programmatic decision includes the preferred restoration alternative described in Chapter 5, as well as the associated provisions for governance of restoration spending

[11] The Consent Decree also relates to other types of legal claims (such as civil penalties) that are not part of the NRDA process and are not discussed here. A link for the proposed Consent Decree is available at *www.gulfspillrestoration.noaa.gov*.

described in Chapter 7. As explained in summary above and in detail in Section 5.5, the preferred restoration alternative provides for a comprehensive, integrated ecosystem restoration plan with a portfolio of Restoration Types that address the diverse suite of injuries that occurred at both regional and local scales. This proposal focuses on allocating funds to meet five goals and 13 restoration activities designed to meet these goals. This decision for restoration planning was submitted for public review and comment, as was the integrated PEIS.[12]

The Trustees believe that both the settlement and the programmatic plan are appropriate for the following reasons. The Trustees have jointly examined and assessed the extent of injury and the proposed restoration alternatives with particular consideration of approaches to restoring, replacing, rehabilitating, or acquiring the equivalent of the injured natural resources and services. If the proposed decree becomes final, and if the funding available for restoration is expended in conformance with the programmatic plan proposed in this Final PDARP/PEIS, the Trustees are satisfied that the resulting efforts (together with the work flowing from the Framework Agreement) will make the public whole for the loss in natural resources and services suffered. In reaching this conclusion, the Trustees have considered, among other things:

- The nature and extent of the specific injuries that have been identified and studied and the uncertainties attached to those injuries.
- Uncertainties as to other injuries not fully studied.
- The potential benefits (and detriments) of ecosystem-level habitat restoration, and the uncertainties attached to those restoration options.
- Potential benefits (and detriments) from other approaches to restoration, such as shifting the focus of restoration away from ecosystem restoration to restoration of specific, well-studied resources, and the uncertainties attached to those restoration options.
- The further degradation to the environment that would occur as restoration is delayed while further study is undertaken to narrow uncertainties.
- The further degradation to the environment that would occur as restoration is delayed during the litigation process.
- The benefits of starting restoration sooner rather than litigating.

The Trustees conclude that the settlement provides a reasonable approach to achieving the goals of OPA to make the public and the environment whole, is a fair and reasonable result, and advances the public interest.

[12] The Trustees held a series of public meetings to facilitate public review and comment on the proposed restoration plan.

1.7 Public Involvement in Restoration Planning

OPA and NEPA require the Trustees to consider public comments on the *Deepwater Horizon* restoration planning process. Public outreach and involvement have been an integral part of Trustee restoration planning since 2010.

The Trustees first provided public notice on the need for restoration planning for the *Deepwater Horizon* oil spill in October 2010.[13] Since then, the Trustees have engaged the public in several different ways, including obtaining input during a formal restoration scoping process in 2011.[14] Each state and federal Trustee established a website to provide the public with information about injury and restoration processes.[15] The Trustees also developed a website[16] where the public can submit restoration project ideas on an ongoing basis. The Trustees have reviewed and considered these project ideas as part of restoration planning and during development of this document.

Public Engagement During the NRDA Process

Trustees have engaged with the public throughout the NRDA process. Key outreach methods have included:

- Announcements in the *Federal Register*
- Public meetings
- Websites

Trustees welcome all public comments and consider recommended restoration ideas to help identify what types of restoration should be implemented and potential impacts.

In addition, during each of the five completed phases of Early Restoration planning, the Trustees published a draft restoration plan, held public meetings, solicited public comments, and responded to comments in a final

[13] Notice of Intent, 75 FR 60800, Discharge of Oil From *Deepwater Horizon*/Macondo Well, Gulf of Mexico; Intent to Conduct Restoration Planning (*https://federalregister.gov/a/2010-24706);* Notice of Intent, 36 La. Reg. 2441-43 (Oct. 20, 2010), Restoration Planning – Discharge of Oil From the *Deepwater Horizon* Mobile Offshore Drilling Unit and the Subsea Macondo Well into the Gulf of Mexico, April 20, 2010 (*http://www.doa.louisiana.gov/osr/reg/1010/1010.pdf*).

[14] Public Scoping for Preparation of a Programmatic Environmental Impact Statement for the *Deepwater Horizon* BP Oil Spill, April 2011; *http://www.gulfspillrestoration.noaa.gov/wp-content/uploads/2011/04/Public-DWH-PEIS-Scoping-Review-Document.pdf*. The April 2011 scoping document provided the public with background on scoping, the NRDA process, the relationship of the NRDA and NEPA processes, alternatives development, types of restoration, and environmental consequences.

[15] The Trustees established the following websites:

- NOAA, Gulf Spill Restoration, available at *http://www.gulfspillrestoration.noaa.gov/*
- NOAA, DIVER, available at *https://dwhdiver.orr.noaa.gov/*
- DOI, *Deepwater Horizon* Oil Spill Response, available at *http://www.fws.gov/home/dhoilspill/*
- Texas Parks and Wildlife Department, *Deepwater Horizon* Oil Spill, available at *http://www.tpwd.state.tx.us/landwater/water/environconcerns/damage_assessment/deep_water_horizon.phtml/*
- Louisiana, *Deepwater Horizon* Oil Spill Natural Resource Damage Assessment, available at *http://la-dwh.com/*
- Mississippi Department of Environmental Quality, Natural Resource Damage Assessment, available at *http://www.restore.ms/*
- Alabama Department of Conservation and Natural Resources, NRDA Projects, available at *http://www.alabamacoastalrestoration.org*
- Florida Department of Environmental Protection, *Deepwater Horizon* Oil Spill Response and Restoration, available at *www.deepwaterhorizonflorida.com*.

[16] See *http://www.gulfspillrestoration.noaa.gov/restoration/give-us-your-ideas/*.

restoration plan. Although these comments were targeted at Early Restoration, much of the input is relevant to the programmatic restoration planning process. Future phases of restoration planning and implementation for specific projects will provide the public with additional opportunities for review and comment.

1.7.1 Public Review Process for This PDARP/PEIS

The Trustees encouraged the public to review and comment on the Draft PDARP/PEIS during a 60-day review period. The Trustees held a series of public meetings to facilitate the public review and comment process. At the close of the public comment period, the Trustees considered all relevant comments received during the public comment period and have revised the PDARP/PEIS as appropriate. A summary of comments received and the Trustees' responses are included in Chapter 8 of this final document.

Separately, the United States Department of Justice, Environment and Natural Resources Division, took public comment for 60 days on the proposed Consent Decree that is lodged with the court in *Deepwater Horizon* oil spill: *United States v. BPXP et al., Civ. No. 10-4536, centralized in MDL 2179, In re: Oil Spill by the Oil Rig "Deepwater Horizon" in the Gulf of Mexico, on April 20, 2010 (E.D. La.).* The Consent Decree also relates to other types of legal claims (such as civil penalties) that are not part of the NRDA process and are not discussed here. To access the proposed Consent Decree visit *http://www.justice.gov/enrd/deepwater-horizon*.

1.7.2 Next Steps

Following appropriate OPA and NEPA regulatory procedures and timing, after public release of this Final PDARP/PEIS, the Trustees intend to prepare a Record of Decision (ROD) that formally selects a programmatic alternative for implementation. The preferred programmatic alternative in this Final PDARP/PEIS remains Alternative A, consistent with the Draft PDARP/PEIS.

1.7.3 Administrative Record

The Trustees opened a publicly available Administrative Record for the NRDA for the *Deepwater Horizon* oil spill, including restoration planning activities, concurrently with publication of the 2010 Notice of Intent (pursuant to 15 CFR § 990.45). DOI is the lead federal Trustee for maintaining the Administrative Record, which can be found at *http://www.doi.gov/deepwaterhorizon/adminrecord*. Information on restoration implementation for Emergency and Early Restoration efforts is being provided to the public through the Administrative Record and other outreach efforts, including *http://www.gulfspillrestoration.noaa.gov*.

1.8 Overview of Public Comments on the Draft PDARP/PEIS and Key Changes in the Final PDARP/PEIS

The Trustees provided multiple opportunities for public comment as described in Section 1.7.1 and Chapter 8. During the comment period, the Trustees received a total of 6,370 individual submissions from private citizens; businesses; federal, state, and local agencies; nongovernmental organizations; and others. The Trustees received comments via public meetings, Web-based submissions, e-mail, and mailed-in submissions.

1.8.1 Overview of Public Comments on the Draft PDARP/PEIS

The Trustees received general comments on the Draft PDARP/PEIS and also received comments on specific chapters and sections. With respect to the NEPA analysis, no issues of environmental controversy were identified in the public comments. Comments received generally fell into categories that followed the chapters.

Chapters 1 through 3 (Introduction and Executive Summary, Incident Overview, Ecosystem Setting):

- General support for (and some opposition to) the Trustees producing the PDARP/PEIS.
- General support for restoration of Gulf of Mexico resources.
- Critiques of the public involvement and engagement process.
- Requests for technical corrections and clarifications.

Chapter 4 (Injury to Natural Resources):

- General support for the thoroughness of the assessment and the clarity of the presentation of this complex information.
- Requests for technical corrections and clarifications.
- Expressions of concern that the NRDA valuation of damages was incomplete, was too low, and did not incorporate the full range of ecosystem services.
- Requests for more information about the Trustees' assessment methods and findings and critiques of the adequacy of those methods and findings.

Chapter 5 (Restoring Natural Resources):

- Expressions of support for the preferred alternative "Comprehensive, Integrated Ecosystem Restoration" and an ecosystem approach to restoration in general.
- Expressions of support for specific Restoration Types or requests for clarification.

- Expressions of concern over the adequacy of the funding allocations for certain Restoration Types or Restoration Areas.
- Suggestions for additional restoration approaches.
- Requests for restoration coordination with other entities.

Chapter 6 (Environmental Consequences and Compliance with Other Laws):

- Expressions of concern that some restoration approaches have the potential for unintended adverse impacts to natural and cultural resources.
- Proposed additional information to include in the analysis of cumulative impacts and requests for clarification regarding relationships between the PDARP/PEIS and other Gulf restoration programs.
- Expressions of concern over the level of climate change adaptation included in the PDARP/PEIS.
- Expressions of concern about references to spatial planning and the inclusion of the National Ocean Policy Executive Order.

Chapter 7 (Governance):

- A large number of comments, including lengthy comment letters with detailed recommendations, on the Trustees' governance structure. The majority of these comments expressed concern over the structure, or where supportive of the structure caveated that support with a series of recommendations and requested clarifications.
    - Expressions of concern about the proposed governance structure included the ability of the Trustees to achieve the proposed comprehensive, integrated ecosystem restoration approach with a decentralized organizational structure by Trustee Implementation Groups (TIGs) and with no mention of Trustee Council dedicated staff.
- Expressions of concern and confusion over administrative costs, the potential inefficiency of the TIG structure, and the extent to which administrative support will come from the Open Ocean TIG administrative funds.
- Expressions of concern over the funding allocated to certain Restoration Areas and Restoration Types, including concern that funding be used for projects that restore injured resources.
- Some expressions of support for the governance structure, caveated to request clarifications or provide specific recommendations.
- Requests for a Regional Citizen Advisory Council and a Science Advisory Group to ensure that the ecosystem approach is achieved, and to provide greater collaboration and coordination with the broader science community.

- Expressions of need for open and transparent processing of Trustee work, including open meetings, public review of standard operating procedures (SOP), and public availability of data and reports.
- Expressions of support for monitoring, scientific support, and the monitoring and adaptive management framework as described in the PDARP/PEIS, as well as expressions of concern about the need for consistency in monitoring.
- Expressions of concern about how decisions will be made regarding expenditure of "Unknown Conditions and Adaptive Management" funds.

1.8.2 Key Changes in the Final PDARP/PEIS

The Trustees revised the Draft PDARP/PEIS after considering the public comments received. The Trustees also made minor editorial and technical revisions to the document to address issues found through internal review of the Draft PDARP/PEIS. None of these revisions affected the Trustees' conclusions about the ecosystem-level injury in the northern Gulf of Mexico and the restoration needed to address this injury. An overview of the Trustees' changes is included below. The Trustees have added Chapter 8 to the Final PDARP/PEIS, which includes statements of concern summarizing the comments received and the Trustees' response to those comments.

Overview of Revisions to Chapter 1:

- The majority of the changes to this chapter were editorial text changes to improve clarity and flow.
- The Trustees made minor revisions reflecting that this document is now a final document (instead of a draft) and the public comment process has been completed.
- The Trustees updated the status of Phase V Early Restoration.
- In Chapter 1, Section 1.8 was added to provide an overview of the comments received on the Draft PDARP/PEIS and to summarize the revisions made between the Draft PDARP/PEIS and Final PDARP/PEIS.
- The Trustees conclude that no issues of controversy related to environmental consequences were raised.

Overview of Revisions to Chapter 2:

- The only changes to this chapter were editorial text changes to improve clarity and flow.

Overview of Revisions to Chapter 3:

- The majority of the changes to this chapter were editorial text changes to improve clarity and flow.

- The Trustees made minor revisions to the chapter to address technical concerns raised by commenters:
    - The Trustees clarified that industrial activities, including oil and gas extraction, contribute to land loss and subsidence.
    - The Trustees clarified that marine organisms and their reproductive elements are also part of transport pathways.

Overview of Revisions to Chapter 4:

- The majority of the changes to this chapter were editorial text changes to improve clarity and flow. An overview of minor technical revisions made to the chapter is found below. None of these revisions affected the Trustees' conclusions about the ecosystem-level injury in the northern Gulf of Mexico and the restoration needed to address this injury.
- The Trustees made minor revisions to the chapter to address technical concerns raised by commenters:
    - The Trustees clarified their descriptions of dispersant, the source of dispersant application (subsea or surface), surface-dispersed oil, the toxicity tests conducted with dispersant, and the impacts of dispersant on the Gulf ecosystem.
    - The Trustees clarified descriptions of their toxicity tests.
    - The Trustees clarified that the marine mammal and sea turtle assessments relied on similar information.
    - The Trustees clarified their discussion of effects to offshore populations of marine mammals versus bay, sound, and estuary populations of marine mammals.
- The Trustees made minor technical corrections to the chapter to address issues found through internal review of the document; a more detailed list of these changes has been incorporated into the Administrative Record.
    - The Trustees corrected figure scales and captions where necessary and adjusted text where the text did not correctly reflect a table or figure.
    - The Trustees added LC20 and LC50 values to the text where appropriate.
    - The Trustees added checkmarks to a table to capture all appropriate categories of benthic injury.
    - The Trustees clarified their use of the terms "bacteria," "protozoa," "phytoplankton," and "zooplankton."
    - The Trustees revised their discussion of synthetic-based drilling mud.

- The Trustees provided a more precise description of a mesophotic reef sampling location.
- The Trustees included updated references.
- The Trustees found a small error in their calculations of sea turtle exposure and injury and revised the estimates of quantified injury and exposure by 5 percent or less.
- The Trustees revised their estimates of amphipod and red drum injury quantification in the nearshore environment by 11 percent or less, based on a new calculation of a dose-response curve.
- After additional QC steps, the Trustees made minor adjustments to a few toxicity test results, including revising some LC20 and LC50 calculations, a confidence interval, and some mortality estimates.

Overview of Revisions to Chapter 5:

- The majority of the changes to this chapter were editorial text changes to improve clarity and flow.
- Early Restoration Phase V was finalized; therefore, the Trustees revised Section 5.4.3, Early Restoration; Section 5.5.14, Provide and Enhance Recreational Opportunities; and Appendix 5.B, Early Restoration, to reflect the Early Restoration Phase V projects that were selected.
- In response to public comment, the Trustees revised the restoration approach "Enhance development of bycatch reducing technologies" to be more inclusive of other fishery-related restoration opportunities, including mechanisms for reducing illegal, unreported, and unregulated fishing in the Gulf of Mexico, in Section 5.5.6. The restoration approach is now called "Voluntary fisheries-related actions to increase fish biomass." The description in Appendix 5.D, Section D.3.5, was also revised.
- In response to public comment, the Trustees revised the descriptions in Appendix 5.D for restoration approaches "Reduce mortality among Highly Migratory Species and other oceanic fishes" (Section D.3.2) and "Voluntary fisheries-related actions to increase fish biomass" (Section D.3.5) to include the potential for vessel purchase as part of the incentive structure for voluntary participation.
- The Trustees deleted reference to the restoration approach "Reduce mortality among Highly Migratory Species and other oceanic fishes" under the Sea Turtle Restoration Type in Section 5.5.10 because it was similar to the restoration approach "Reduce sea turtle bycatch in commercial fisheries through identification and implementation of conservation measures."
- In response to public comment, the Trustees revised the description in Appendix 5.D for the restoration approach "Protect and conserve marine, coastal, estuarine, and riparian habitats" (Section D.1.7) to include additional potential benefits of land acquisition projects.

- The Trustees revised the implementation considerations for the restoration approaches "Place hard ground substrate and transplant coral" (Section D.7.1) and "Enhance recreational experiences" (Section D.8.2) to clarify the intent to avoid impacts to listed coral species during substrate placement and coral fragmentation.

Overview of Revisions to Chapter 6:

- The majority of the changes to this chapter were editorial text changes to improve clarity and flow and to reflect the changes made to Chapter 5 and Appendix 5.D in the evaluation of environmental consequences.

- The Trustees updated the descriptions of several restoration approaches and associated text to correspond to changes made in Chapter 5 and Appendix 5D; the revisions did not result in substantive changes to the direct, indirect, or cumulative effects analyses for these restoration approaches

- In response to public comment, the Trustees incorporated additional clarification into the text regarding the programmatic approach to cumulative impacts analysis in the PDARP/PEIS and their intent to build upon this analysis through tiering at the time of subsequent restoration plans. The chapter text was clarified by stating that tiered analysis will take into consideration other funded restoration projects (i.e., Resources and Ecosystems Sustainability, Tourist Opportunities and Revived Economies of the Gulf Coast States [RESTORE] and Gulf Environmental Benefit Fund [GEBF] projects) and evaluate them with consideration of the appropriate geographic and resource focus (see Section 6.6.4.1).

- In response to public comment and based on updated public information, for purposes of cumulative effects analyses, the Trustees updated language describing restoration funding under the RESTORE Act to clarify the full amount available, and clarified that because the balance of the funds is subject to appeal, it is not yet certain whether that amount will be paid (Section 6.6.4.1.1). Information was similarly updated with respect to GEBF funding (Section 6.6.4.1.2).

- The Trustees updated language under Endangered Species Act (ESA) compliance to describe the current status of ESA Section 7 programmatic consultations with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS), including notice that both NMFS and USFWS have initiated consultation under ESA (Section 6.6.9.1).

- Based on public comments received and addressed in Chapter 7, the Trustees clarified text in "NEPA Considerations and Tiering Future Restoration Planning" (Section 6.17.2), noting that the consideration of cumulative impacts of proposed projects through tiering from this PDARP/PEIS is consistent with the Council on Environmental Quality's 2014 guidance on effective programmatic NEPA analysis.

- In response to public comment, the Trustees clarified that analysis of the cumulative impacts on resources would be provided at each level of review, either by relying upon the analysis in the

programmatic EIS or adding to that analysis in the tiered NEPA review. In both cases, the programmatic cumulative impacts analysis would be incorporated by reference.

- Two additional best practices were included in Appendix 6.A based on internal agency review.
- Appendix 6.C (Trustees' Correspondence) was expanded to include correspondence regarding cooperating agency status, correspondence regarding EPA's environmental rating of the Draft PDARP/PEIS under Section 309 of the Clean Air Act, correspondence to NMFS and to USFWS requesting programmatic consultation under Section 7 of ESA, correspondence to state coastal zone management programs (CZMPs) seeking concurrence on the proposed Coastal Zone Management Act (CZMA) federal consistency determination, and State CZMP responses to that federal consistency determination.

Overview of Revisions to Chapter 7:

- The Trustees made revisions to the chapter to address technical concerns raised by reviewers:
  - In Section 7.2 clarifications were made to define which Administrative Oversight and Comprehensive Planning allocations will fund state and federal individual Trustees' non-project-specific participation on TIGs and which allocation would fund work conducted on behalf of the Trustee Council.
  - Section 7.3 was modified to include commitments to transparency during the restoration planning process.
  - In Section 7.5, clarification on the use of Unknown Conditions and Adaptive Management funds was added, including the development of specific procedures to guide decisions on the use of this allocation, and their inclusion in SOPs.
  - Section 7.6 was modified to include a commitment to a Cross-TIG monitoring and adaptive management working group.
  - Section 7.7 was modified to include commitments to public engagement through annual Trustee Council and TIG meetings that are publicly noticed.
  - Section 7.7 was modified to clarify text about the DIVER Restoration Management Portal.
- The Trustees made minor technical corrections to the chapter to address issues found through internal review of the document.
  - Modified Section 7.3 by changing "strategic plans" to "strategic frameworks" to clarify the actual intent that these frameworks would help guide restoration planning in the TIGs and to differentiate the frameworks from project-specific restoration plans.
  - Revised Section 7.7 to include additional functions that the Trustees intend to support with the DIVER Restoration Management Portal.

What Is in This Final *Deepwater Horizon* Programmatic Damage Assessment and Restoration Plan/Final Programmatic Environmental Impact Statement (Final PDARP/PEIS)?

Chapter 1 (Introduction and Executive Summary) describes why this Final PDARP/PEIS was written and under what authority. It also presents the *Deepwater Horizon* Trustees and NRDA process, the injury assessment process and key findings, the restoration planning approach and alternatives, the settlement proposed by BP and the Trustees' response, public involvement in restoration planning, and opportunities for public comment.

Chapter 2 (Incident Overview) provides an overview of the *Deepwater Horizon* oil spill incident. It describes what happened in the aftermath of the *Deepwater Horizon* explosion, the amount of oil and other spill materials released into the Gulf of Mexico, and the response actions taken to try to reduce harm to people and the environment.

Chapter 3 (Ecosystem Setting) describes the Gulf of Mexico regional ecosystem and its diverse natural resources and associated services to provide context for the injury assessment and restoration alternatives, including understanding the affected environment (as defined by NEPA) for the programmatic restoration plan and EIS.

Chapter 4 (Injury to Natural Resources) summarizes the Trustees' approach to and findings resulting from the injury assessment. Each section in Chapter 4 covers a key part of the injury assessment:

- Section 4.1 (Approach to the Injury Assessment) describes the process by which the Trustees considered how to study the effects from the spill.
- Section 4.2 (Natural Resource Exposure) explains how oil moved through the environment after the spill and the nature and extent of exposure to that oil experienced by biota and habitats.
- Section 4.3 (Toxicity) describes the toxicity of *Deepwater Horizon* oil to natural resources and summarizes the results of the Trustees' comprehensive toxicity testing program.
- Sections 4.4 through 4.10 describe the injury assessment for specific resources, habitats, and services, as follows: water column resources (Section 4.4); benthic (i.e., bottom-dwelling) resources and habitats (Section 4.5); nearshore marine ecosystem (Section 4.6); birds (Section 4.7); sea turtles (Section 4.8); marine mammals (Section 4.9); and lost recreational use (Section 4.10).
- Section 4.11 (Injury Assessment: Summary and Synthesis of Findings) summarizes the Trustees' injury assessment findings and synthesizes those conclusions in an ecosystem context.

Chapter 5 (Restoring Natural Resources) provides the Trustees' approach to restoration planning and evaluates the restoration alternatives, including the preferred alternative of comprehensive, integrated ecosystem restoration.

- Section 5.1 (Bridging Injury to Restoration) presents the wide-ranging injuries identified in

Chapter 4 as an ecosystem-level injury and ties this injury to the Trustees' preferred alternative for restoration, which is an ecosystem-level approach.

- Section 5.2 (Overarching Trustee Restoration Planning Approach, OPA Requirements) describes the Trustees' overall approach to restoration planning.
- Section 5.3 (Trustee Programmatic Goals, Purpose, and Need) describes the Trustees' overarching goals, purpose, and need for restoration.
- Section 5.4 (Approach to Developing and Evaluating Alternatives) describes the Trustees' process for developing restoration alternatives, which is a required step under the OPA and NEPA statutes that guide Trustee action.
- Section 5.5 (Alternative A: Comprehensive, Integrated Ecosystem Restoration [Preferred Alternative]) describes the Trustees' preferred alternative of comprehensive, integrated ecosystem restoration. It introduces each of the Restoration Types that together form a comprehensive, integrated approach to restoration.
- Sections 5.6, 5.7, and 5.8 describe the three other restoration planning alternatives considered by the Trustees.
- Section 5.9 (Comparative OPA Evaluation of Action Alternatives) compares the two action alternatives and explains why the Trustees selected comprehensive, integrated restoration as their preferred alternative.
- Section 5.10 (Summary of the Preferred Alternative and Funding Allocations) summarizes the preferred alternative, presents the funding allocation to each Restoration Type in defined Restoration Areas, provides a sense of the restoration potential associated with that funding, and describes the process for subsequent restoration planning.

Chapter 6 (Environmental Consequences and Compliance with Other Laws) describes the predicted consequences, or effects, of implementing PDARP/PEIS restoration alternatives proposed in Chapter 5, Restoring Natural Resources, on the physical, biological, and socioeconomic environment as required by NEPA.

Chapter 7 (Governance) presents the Trustees' governance approach for implementing the preferred alternative.

Chapter 8 (Public Comment on the Draft PDARP/PEIS and Responses) provides the public comments received on the Draft PDARP/PEIS and the Trustees' responses to those comments.

OPA and NEPA Requirements: The Basics

What Is the Oil Pollution Act of 1990 (OPA)?

The Oil Pollution Act of 1990 (OPA) (33 U.S.C. 2701 *et seq.*) is a law enacted by Congress in 1990, partly in response to the *Exxon Valdez* oil spill in 1989. OPA amends the Clean Water Act and addresses problems associated with preventing, responding to, and paying for oil pollution incidents in navigable waters, adjoining shorelines, and the exclusive economic zone of the United States. It created a comprehensive prevention, response, liability, and compensation regime to deal with vessel- and facility-caused oil pollution to U.S. navigable waters. The goal of OPA is to make the environment and public whole for injuries to natural resources and services resulting from an incident involving a discharge of oil or a substantial threat of a discharge of oil.

Under OPA, Who Acts for the Public and Why?

OPA provides for federal and state agencies (and federally recognized Indian Tribes) to act as **trustees** for natural resources on behalf of the public. Under OPA, the designated trustees develop and implement a plan for the restoration, rehabilitation, replacement, or acquisition of the equivalent of the injured natural resources under their trusteeship (collectively referred to as "restoration").

Under OPA, Who Is Liable and What Are "Damages"?

Under OPA, liabilities to be borne by the responsible parties include "damages for injury to, destruction of, loss of, or loss of use of, natural resources [land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources], including the reasonable costs of assessing the damage." This means that the responsible parties must pay the costs of identifying the injuries and restoring natural resources injured by the spill, including compensating for any loss in value of natural resources from the time of injury until the resources are restored. Responsible parties are also liable for the costs of cleaning up spilled oil (or other contaminants).

What Is a Natural Resource Damage Assessment?

Under OPA, an NRDA is conducted to determine the type and amount of restoration needed to compensate the public for harm to natural resources as a result of an oil spill.

OPA regulations define a process for injury assessment and restoration planning consisting of three phases: preassessment, injury assessment/restoration planning, and restoration implementation (15 CFR§ 990). The trustees also develop a **restoration plan** that outlines alternative approaches to make the public whole for the injuries to natural resources and the loss of services. The final step of an NRDA is to implement restoration and monitor its effectiveness. Trustees solicit public comment on proposed restoration plans and then select and implement restoration projects.

What Is the National Environmental Policy Act (NEPA)?

The National Environmental Policy Act (NEPA), enacted in 1969, establishes procedural

requirements for federal agencies and ensures fully informed and well-considered decisions by requiring federal agencies to consider the environmental impacts of their major proposed actions and reasonable alternatives to those actions.

What Is an Environmental Impact Statement (EIS)?

NEPA's implementing regulations (40 CFR §§ 1500 *et seq.*) specify that federal agencies must prepare an Environmental Impact Statement for certain proposed actions "significantly affecting the quality of the human environment." For an NRDA restoration plan, the purpose of the EIS is to involve the public and facilitate the decision-making process in the federal trustees' analysis of alternative approaches to restoring injured natural resources and services.

How Are NEPA and OPA Related?

OPA regulations require that restoration planning actions undertaken by federal trustees comply with NEPA and its implementing regulations. The OPA regulations specify that a Draft Restoration Plan/EIS should be prepared when the restoration is anticipated to have a significant impact on the quality of the human environment.

What Is a "Programmatic" EIS?

A federal agency may prepare a programmatic EIS (PEIS) to evaluate broad actions (rather than site- or project-specific actions). When a federal agency prepares a PEIS, the agency may "tier" subsequent narrower environmental analyses on site-specific plans or projects from the PEIS to eliminate repetitive discussions and to focus on project-specific issues for each level of environmental review.

Where Can I Find the Text of OPA, NEPA, and the NRDA and NEPA Regulations?

- OPA can be accessed at *http://www.epw.senate.gov/opa90.pdf*.
- The NRDA regulation can be accessed at *http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title15/15cfr990_main_02.tpl*.
- NEPA can be accessed at *https://ceq.doe.gov/laws_and_executive_orders/the_nepa_statute.html*.
- The NEPA regulations can be accessed at *https://ceq.doe.gov/ceq_regulations/regulations.html*.

1.9 References

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