



Monitoring and Adaptive Management Manual to
Support Integrated Ecosystem Restoration for
the *Deepwater Horizon* oil spill

Ann C. Hijuelos
Department of Interior

August 29, 2018

Contributors

Cross-TIG MAM Work Group

TX	Richard Seiler	FL	Beth Alvi
TX	Angela Schrift	FL	Gareth Leonard
TX	Allison Fischer	DOI	Michelle Meyers
LA	Rick Raynie	DOI	Greg Steyer
LA	Todd Folse	DOI	Pete Tuttle
MS	Robbie Kroger	NOAA	Melissa Carle
MS	Steve Parker	NOAA	Eric Weissberger
MS	Valerie Alley	NOAA	Tom Dolan (ERT)
AL	Amy Hunter	USDA	Mark Defley
AL	Carl Ferraro	USDA	Benjamin Battle
AL	Bethany Kraft	EPA	Treda Grayson
FL	Nadia Martin (IEc)	EPA	Danny Wiegand

Deepwater Horizon Settlement Allocation

\$20.8 B

up to \$8.8B
for Natural
Resource Damages

- Includes \$1B for Early Restoration (partially paid)
- Includes up to \$700M to address future unknown conditions

\$5.5B
for Clean Water Act
civil penalties

- \$4.4B (80%) will flow through the RESTORE Act
- \$1.1B (20%) will go to the Oil Spill Liability Trust Fund

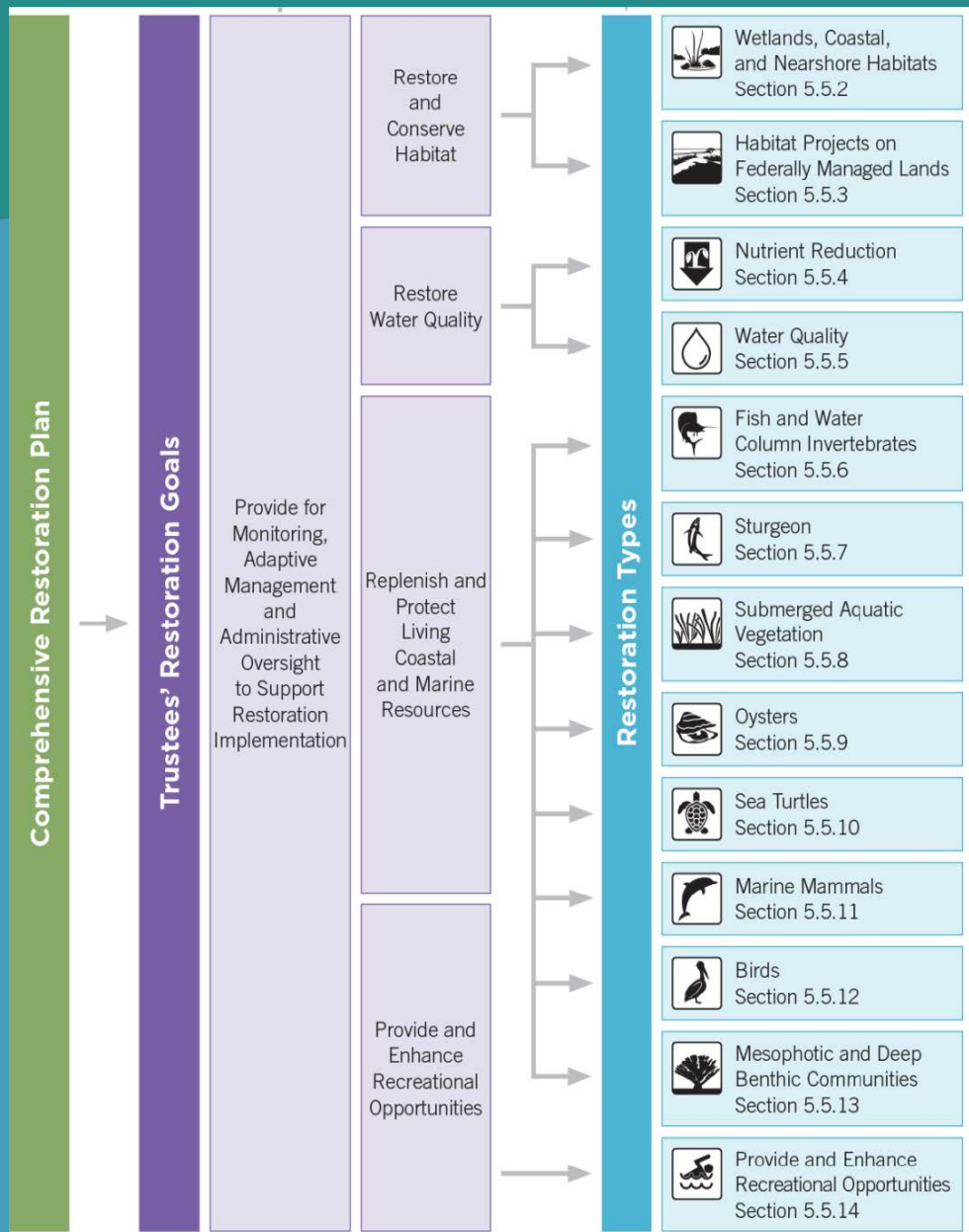
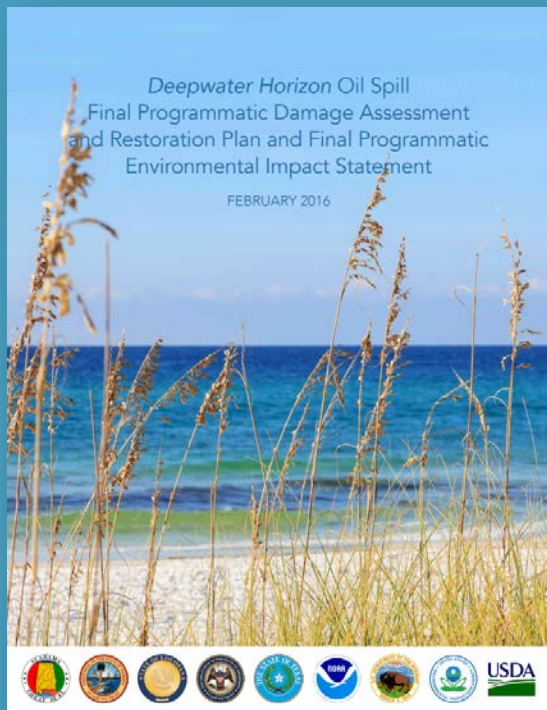
\$5.9B
for economic
claims

- \$4.9B to the 5 Gulf states
- Up to \$1B to local governments in the 5 Gulf states

\$0.6B
for additional
payments

- \$0.35B NRD assessment costs
- \$0.25B False claims act royalties on oil; response & other costs

Restoration of Injured Resources



Structure

Trustee Implementation Groups (TIGs)

Texas

*Trustees for Texas
Federal Trustees*

Louisiana

*Trustees for Louisiana
Federal Trustees*

Mississippi

*Trustees for Mississippi
Federal Trustees*

Alabama

*Trustees for Alabama
Federal Trustees*

Florida

*Trustees for Florida
Federal Trustees*

Regionwide

All Trustees

Open Ocean

Federal Trustees

Unknown Conditions and Adaptive Management

All Trustees

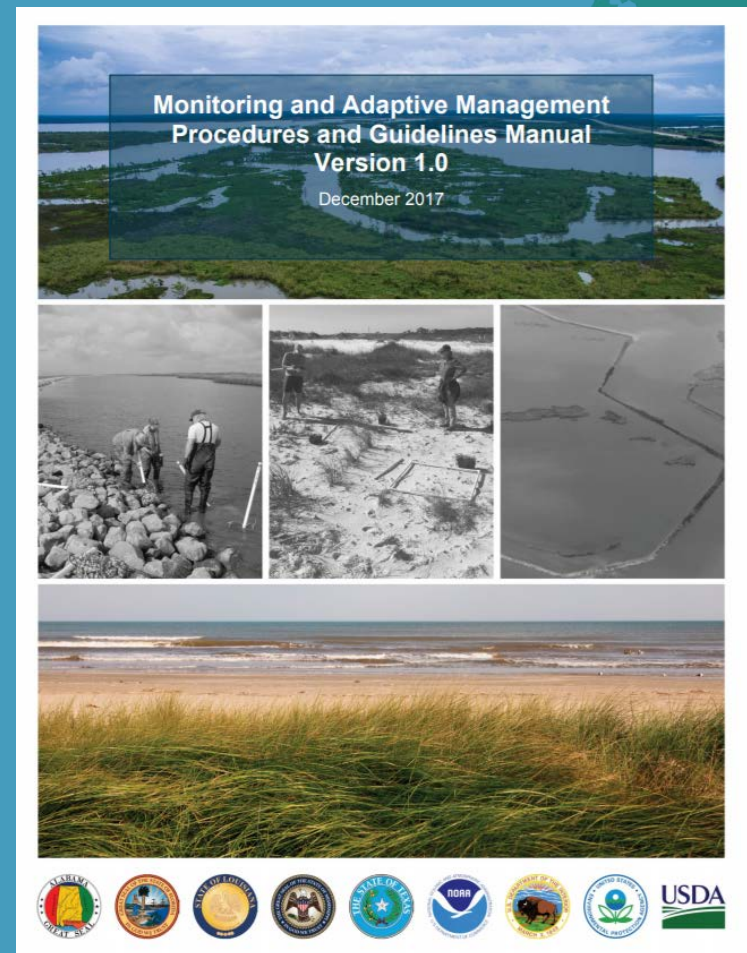


Cross-TIG Monitoring and Adaptive Management Work Group
(All Trustees)

MAM Manual Version 1.0

Released in January 2018
Version 1.0:

- Template and guidance for developing project MAM plans
- Monitoring guidance for *beaches, dunes, barrier islands, wetlands, water quality, and recreational use* restoration projects
- Data management



Purpose

- Provide the TIGs with detailed information on:
 - Recommended MAM procedures and guidelines;
 - Guidance for the development of MAM Plans;
 - Guidance on the implementation of MAM at the project, Restoration Type, and programmatic levels;
- To provide transparency to the public, the scientific community, and other stakeholders related to the DWH NRDA restoration planning effort.



C. MAM Plan Template

The Cross-TIG MAM work group has established a template and set of guidelines for the development of project-level MAM Plans (Section 10.6.3 of SOP; DWH NRDA Trustees, 2016). This template, in conjunction with the guidance in Section 2.4 and subsections within, is intended to serve as a resource for the TIGs in the development of their project-specific MAM Plans. Collectively, the components of the MAM Plan document the level of MAM needed at the project scale.

C.1 Introduction

C.1.1 Project Overview

C.1.2 Restoration Type Goals and Project Restoration Objectives (Section 2.4.1)

C.1.3 Conceptual Setting (Section 2.4.2)

C.1.3.1 Potential Sources of Uncertainty (Section 2.4.3)

C.2 Project Monitoring (Section 2.4.4)

C.3 Adaptive Management (Section 2.4.5)

C.4 Evaluation (Section 2.4.6)

C.5 Project-Level Decisions: Performance Criteria and Potential Correction Actions (Section 2.4.7)

C.6 Monitoring Schedule (Section 2.4.4.3)

C.7 Data Management (Section 2.4.8)

C.8 Reporting (Section 2.4.9 and Attachment D)

C.9 Roles and Responsibilities

C.10 References

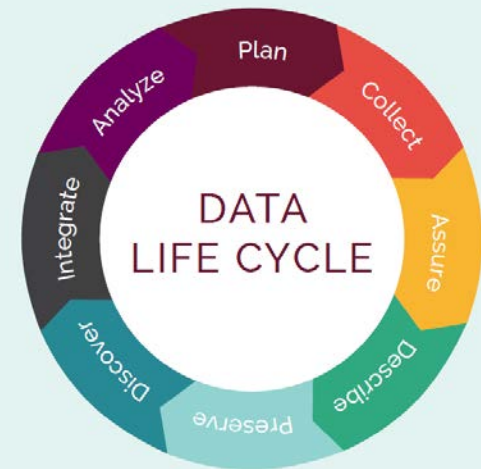
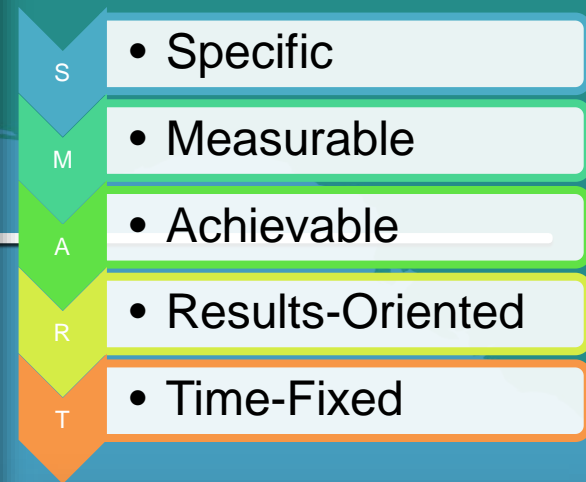
C.11 MAM Plan Revision History

Reference

DWH NRDA Trustees. 2016. Trustee Council Standard Operating Procedures for Implementation of the Natural Resource Restoration for the Deepwater Horizon (DWH) Oil Spill. Originally approved May 4, 2016; revised November 15, 2016.

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- B. MAM Manual Glossary of Terms
- C. MAM Plan Template.....
- D. MAM Report Template.....
- E. Monitoring Guidance.....

Guidance for MAM Plan Development (Section 2.4)

- Will be developed for all projects other than those selected only for engineering and design (Section 10.3.3 of SOP; DWH NRDA Trustees, 2016b).
- Document the level of MAM at the project scale, which depends on the degree of uncertainty.

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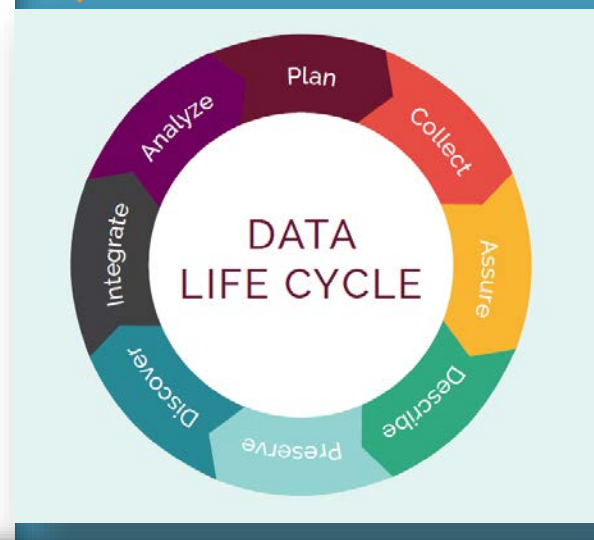
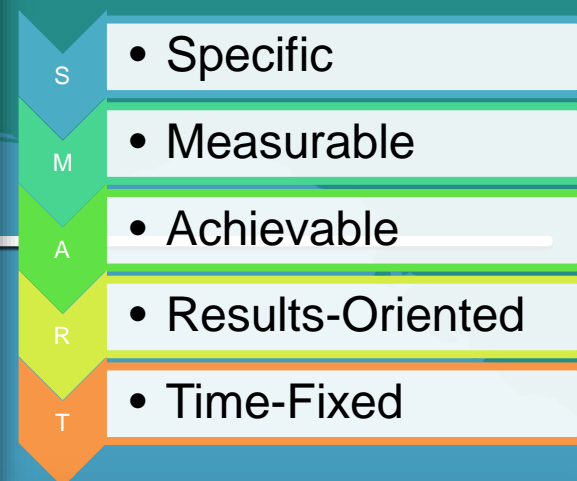
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D.	MAM Report Template.....
E.	Monitoring Guidance.....

Monitoring Guidance

Recommendations are provided to:

- Promote consistency in data collection across similar projects.
- Facilitate future analysis across TIGs and/or Restoration Types.
- Assist TIGs with recommended methodologies or protocols to save time and resources.

TIG project teams are responsible for planning restoration and monitoring efforts.

- TIGs will identify restoration projects and objectives.
- TIGs will identify monitoring parameters applicable to the objectives.
- TIGs may use alternate parameters, as applicable.

Monitoring Guidance

December 2017

E.2 Create, Restore, and Enhance Coastal Wetlands: Monitoring Guidance

This section is intended to provide guidance to the TIGs as they develop MAM Plans for restoration projects, as appropriate. Specifically, it provides:

- Examples of Restoration Techniques
- Guidance on example restoration objectives, example drivers, and example uncertainties
- Guidance on core performance monitoring parameters for projects within the Restoration Approach
- Guidance on supplemental performance monitoring parameters for specific restoration objectives.

The monitoring parameters identified within a project MAM Plan should be consistent with the recommended monitoring defined within this guidance document, wherever appropriate. Depending on the nature of the restoration project, TIGs may also choose not to include some of the elements described in this guidance document (e.g., drivers, uncertainties). If adjustments from the monitoring guidance are needed, these adjustments should be described in the project-specific MAM Plan and agreed to by the TIG (Section 10.6.3 of SOP; DWH NRDA Trustees, 2016b). The guidance provided in this section should not be considered an exhaustive list. Therefore, TIGs may develop project-level objectives, drivers, uncertainties, and monitoring parameters that have not been previously identified. The TIGs will develop MAM objectives and monitoring parameters that pertain to their restoration activities, and will determine the frequency and duration of monitoring, and the associated budget they deem appropriate. Finally, this section is subject to change as new monitoring parameters, methods, and technologies are identified and/or developed.

E.2.1 Restoration Techniques

Restoration Techniques are specific restoration actions the Trustees identified for each of the Restoration Approaches. Restoration Techniques may be used individually or in combination. See Appendix 5.D of the PDARP/PEIS (DWH NRDA Trustees, 2016a). The following are example Restoration Techniques included in the PDARP/PEIS for this Restoration Approach. This list should not be considered exhaustive; additional Restoration Techniques may be developed and/or identified.

1. Create or enhance coastal wetlands through placement of dredged material
2. Backfill canals
3. Restore hydrologic connections to enhance coastal habitats
4. Construct breakwaters.

E.2.2 Example Project-Level Restoration Objectives

Project-level restoration objectives should be specific to the resource injuries and clearly specify the desired outcome(s) of the restoration project (15 CFR § 990.55(b)(2)). See Section 2.4.1 for guidance on establishing restoration objectives. The following are example project-level restoration objectives that may apply to one or more of the above-mentioned Restoration Techniques. This list should not be considered exhaustive; additional objectives may be developed and/or identified.

- Create or restore intertidal wetland elevations
- Restore targeted coastal wetland hydrology
- Increase or maintain native coastal wetland vegetation
- Restore targeted salinity regime

Guidance for each Restoration Approach includes:

- Restoration Techniques.
- Project-level restoration objectives.
- Drivers.
- Uncertainties.
- Recommendations on parameters including:
 - Standardized definitions
 - Measurement units
 - Data collection methods
 - Monitoring locations, frequencies, and durations
 - Potential analyses

Guidance is **not** exhaustive.

Example: Restore and Enhance Dunes and Beaches

Table E.4.1. Core performance monitoring parameters and additional parameters for consideration under the Restore and Enhance Dunes and Beaches Restoration Approach

Core performance monitoring parameters	Parameters for consideration (as appropriate)
<ul style="list-style-type: none">• Area• Shoreline position• Elevation	<ul style="list-style-type: none">• Width (beach, dune, island)• Classification of hardbottom and submerged habitat types• Position of hardbottom and submerged habitats• Substratum type• Relief• Distribution of sediment within hardbottom habitats• Hardbottom persistence or exposure• Habitat connectivity• Wave height/energy/attenuation• Flow magnitude and patterns• Sediment budget and transport patterns• Frequency and extent of overtopping and overwash



Example: Restore and Enhance Dunes and Beaches

Table E.4.2. Performance monitoring parameters and additional parameters for consideration for projects with specific restoration objectives. These would be collected in addition to the parameters listed in Table E.4.1.

Project-specific objective	Objective-specific performance monitoring parameters	Parameters for consideration (as appropriate)
Promote establishment of beach dune and back-barrier marsh vegetation	<ul style="list-style-type: none"> • Vegetation density • Vegetation percent cover • Vegetation species composition 	<ul style="list-style-type: none"> • Survival/mortality • Height
Reduce sediment loss and erosion and/or reduce	<ul style="list-style-type: none"> • Structural integrity and function of constructed features (beach and dune structures, including groins, and fencing and/or 	<ul style="list-style-type: none"> • Extent of shoreline armoring • Sediment depth data, texture, type, consolidation rate • Number of protected habitat sites • Visitor use and access • Vegetation density • Vegetation percent cover • Vegetation species composition • Species density/abundance • Species utilization



Example: Restore and Enhance Dunes and Beaches

E.9.1 Area (measured or modeled, units = m² or km²)

E.9.1.1 Definition

The area influenced by project implementation.

E.9.1.2 Restoration Approaches

- Create, Restore, and Enhance Coastal Wetlands
- Create, Restore, and Enhance Barrier and Coastal Islands and Headlands
- Restore and Enhance Dunes and Beaches
- Reduce Nutrient Loads to Coastal Watersheds
- Reduce Pollution and Hydrologic Degradation to Coastal Watersheds
- Enhance Public Access to Natural Resources for Recreational Use

E.9.1.3 Potential Methodologies

Field-Based or Remote Sensing Methodologies

Method 1: Project and habitat boundaries can be mapped based on a airplane, helicopter, unmanned aerial systems (UAS); high-resolution appropriate remote sensing platforms. Imagery used to map wetland true color and infrared bands, and have a spatial resolution of 1 meter comparison of different remote sensing platforms commonly used for Klemas (2011) and Klemas (2013). For additional information on the mapping, see Klemas (2015), Madden et al. (2015), Zweig et al. (2017) (2017). Source imagery should be orthorectified [i.e., free from distortions, optics, sensor tilt, and differences in elevation; see Rufe (2014)]. Colle



Example: Create, Restore, and Enhance Coastal Wetlands

Core parameters:

- Area.
- Elevation.
- Vegetation survival.
- Vegetation % cover and composition.

Objective-specific:

- Restore hydrologic connectivity.

Table E.2.2. Performance monitoring parameters and additional parameters for consideration for projects with specific restoration objectives. These would be collected in addition to the parameters listed in Table E.2.1.

Project-specific objective	Objective-specific performance monitoring parameters	Parameters for consideration (as appropriate)
Restore targeted salinity regime	<ul style="list-style-type: none"> • Salinity (surface water) 	<ul style="list-style-type: none"> • Salinity (porewater)
Reduce shoreline erosion rate	<ul style="list-style-type: none"> • Shoreline position • Structural integrity and function of constructed features 	<ul style="list-style-type: none"> • Sediment consolidation • Elevation • Wave height • Wave energy • Wave attenuation • Fetch • Longshore drift and currents
Restore hydrologic connectivity	<ul style="list-style-type: none"> • Channel dimensions^{a, b} • Structural integrity and function of constructed features 	<ul style="list-style-type: none"> • Sediment deposition • Salinity (surface water) • Surface water nutrients • Dissolved oxygen • Soil nutrients • Soil moisture • Velocity (water) in channels, culverts^{a, b} • Discharge^{a, b}
Provide habitat for fish and invertebrate species	<ul style="list-style-type: none"> • Channel dimensions^a • Wetland edge • Nekton/epibenthos abundance, density, and composition • Nekton diversity 	<ul style="list-style-type: none"> • Nekton length/width • Nekton biomass • Infauna/epifauna composition • Infauna/epifauna density • Infauna/epifauna biomass • Abundance/density of predators for targeted species • Salinity (surface water) • Temperature • Dissolved oxygen • Velocity (in channels, culverts)^{a, b} • Abundance of preferred food/prey species for targeted species
Provide habitat for birds	<ul style="list-style-type: none"> • Area (by targeted habitat types) • Bird abundance/density and species composition 	<ul style="list-style-type: none"> • Bird habitat utilization (staging, loafing, feeding, etc.) • Bird nest density • Nest success • Nest predation rate • Abundance/density of predators for targeted species • Abundance/density of preferred food/prey species for targeted species

Data Management

- DIVER Deepwater Horizon NRDA Restoration Management Portal:
 - Project Tracking Database

Gulf Spill Restoration Projects

Restoration projects in the Gulf States approved by the Deepwater Horizon NRDA Trustees

Deepwater Horizon Trustee Council: DOI EPA NOAA USDA AL FL LA MS TX

All Projects FL AL MS LA TX Regionwide Open Ocean

download data (48KB csv)

1 Dune Restoration - Alabama
2a Galveston Landing Boat Ramp
2b Navy Point Boat Ramp
2c Mahogany Mill Boat Ramp
2d Pensola Boat Ramp
3 Dune Restoration - Florida
4 Lake Hermitage Marsh Creation
5a Oyster Culture Placement - Louisiana
5b Oyster Hatchery - Louisiana
6 Marsh Island Restoration
7 Artificial Reef Habitat Restoration - Mississippi
8 Oyster Culture - Mississippi
9a Bird Breeding Habitat - Florida
9b Bird Breeding Habitat - Mississippi, Alabama, and Florida
100 Sea Turtle Nesting Florida state and local (birds)

Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS

<https://www.habitat.noaa.gov/storymap/dwh/index.html>

Louisiana Outer Coast Restoration

Project ID: 35 | Project Status: In Progress



Description:

The Louisiana Outer Coast Restoration project involves the restoration of beach, dune, and back-barrier marsh habitats, as well as brown pelicans, terns, skimmers, and gulls at four barrier island locations in Louisiana: Chenier Ronquille, Shell Island, North Breton Island, and Caillou Lake Headlands (also known as Whiskey Island on Ilse Dernieres State Refuge). The State of Louisiana, NOAA, and DOI are working cooperatively on this project. Construction is complete on Chenier Ronquille and Shell Island. Construction is ongoing on Caillou Lake Headlands and Breton Island is currently in the design phase.

Component(s):

- [North Breton Island Restoration](#)
- [Caillou Lake Headlands Barrier Island Restoration](#)
- [Chenier Ronquille Barrier Island Restoration](#)
- [Shell Island \(East and West Lobes\) Barrier Island Restoration](#)

Trustee Implementation Group(s):

- Louisiana

Implementing Trustee(s):

- Department of the Interior (DOI)
- Louisiana Coastal Protection and Restoration Authority (CPRA)
- Louisiana Department of Environmental Quality (LDEQ)
- Louisiana Department of Natural Resources (LDNR)
- Louisiana Department of Wildlife & Fisheries (LDWF)
- Louisiana Oil Spill Coordinator's Office (LOSCO)
- National Oceanic and Atmospheric Administration (NOAA)

Restoration Type(s):

- Wetlands, Coastal and Nearshore Habitats
- Birds

Restoration Phase:

Early Restoration Phase 3

Site Location(s):



Monitoring

[Expand All](#) | [Collapse All](#)
[Documents Available](#)

☰ North Breton Island Restoration

Monitoring Framework: Barrier Island Restoration, Dune Restoration

Restoration Objectives:

Provide nesting habitat which facilitates additional production of brown pelicans, terns, skimmers and gulls (helping to restore injuries to these species).

Comments:

Louisiana, NOAA and DOI collaborated to develop a project monitoring plan to help inform project success. The plan (titled Deepwater Horizon Natural Resource Damage Assessment (NRDA) Monitoring Plan, Phase III Early Restoration, Louisiana Outer Coast Restoration Project) outlines a proposed strategy to collect data which will help inform the success of the constructed design within the context of the analyzed dynamics of the Breton Island system. This plan will be implemented at Breton following construction of the selected restoration design.

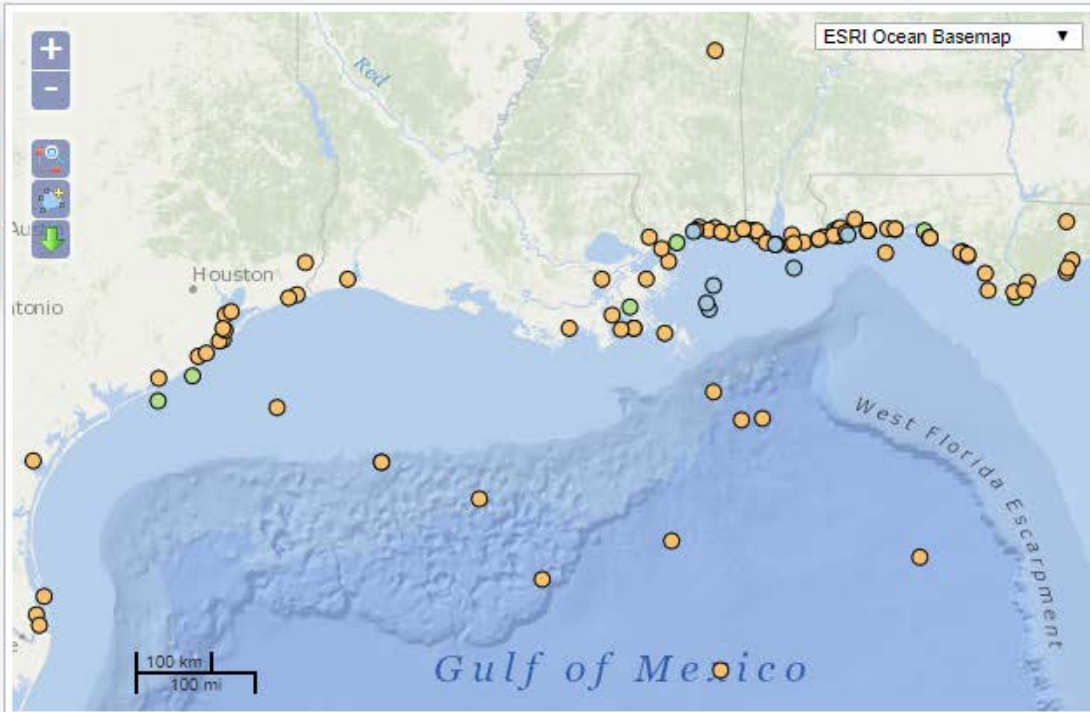
Activity	Monitoring Category	Parameter	Info	Frequency	Performance Target	Target Date	Approx. Start	Approx. End	Target Achieved	Comments
Vegetation survey	Performance Monitoring	Percent cover		Spring/Summer of 2022, 2025, 2029, and 2033			04/22/2022	07/15/2028		
Aerial photography or satellite imagery	Performance Monitoring	Area	Acres of Habitat	Shortly after completion, and at least 2 additional events (2024 and 2028).			03/22/2021	03/18/2028		
Aerial photography or satellite imagery	Performance Monitoring	Shoreline position		3 times post-construction			03/22/2022	03/18/2028		
Avian survey	Performance Monitoring	Presence or absence	Map colony boundaries	annual surveys conducted for 10 years post-construction			06/22/2021	06/19/2028		
Avian survey	Performance Monitoring	Reproductive output		annual surveys conducted for 10 years post-construction			07/22/2021	07/18/2028		

post

Data Management

- DIVER Deepwater Horizon NRDA Restoration Management Portal:
 - Project Tracking Database
 - Restoration Monitoring Database

The screenshot displays the DIVER Explorer web application interface. At the top, the NOAA logo is on the left, followed by the text "NATURAL RESOURCE DAMAGE ASSESSMENT & RESTORATION DATA & VISUALIZATION". To the right of this header is a navigation bar with five icons: a home icon labeled "HOME", an information icon labeled "ABOUT", a stack of papers icon labeled "DATA OVERVIEW", an open book icon labeled "HELP", and a lightbulb icon labeled "WHAT'S NEW". Below the navigation bar, there is a "Change Region: Select a region..." dropdown menu. The main content area features a sidebar on the left with two sections: "GUIDED QUERY" and "KEYWORD SEARCH". The "GUIDED QUERY" section includes "Projects & Planning Details" (with sub-items "Project Information" and "Build A New Projects & Planning Details Query"), "Environmental Data" (with sub-items "Field Collected Data Records", "Lab Results and Field Observations", "Chemistry and Bioassay Results", and "Build A New Environmental Data Query"), and "My Queries" (with sub-item "Export Query"). The "KEYWORD SEARCH" section is currently empty. The main content area displays the "DIVER Explorer" logo and the tagline "Data Integration Visualization Exploration and Reporting". A "LOAD" button is visible in the bottom right corner of the main content area.



Legend

Change Legend:

Project Status

- Complete
- In Progress
- Monitoring/O&M
- Terminated

Summary | **Data and Export** | Charts | Metadata

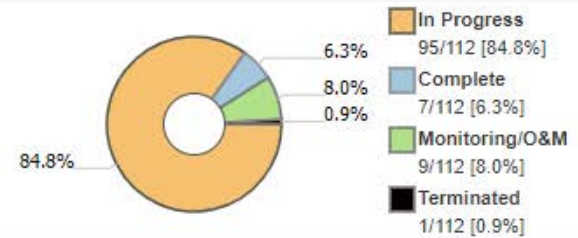


Options

Restoration Summary

Number of Restoration Project Records: 89
 Number of Restoration Planning & Admin Records: 23

Summary Options:



ID	Name	Record Type	Project Status
1	Alabama Dune Restoration Cooperative Project	Project	In Progress
2	Florida Boat Ramp Enhancement and Construction Project	Project	Monitoring/O&M
3	Florida (Pensacola Beach) Dune Restoration Project	Project	Complete

Reporting

- Reporting on status of MAM Activities
 - DIVER Restoration Portal

Overview
Components
Activities
As-Built
Monitoring
Env Compliance
Budget
Contacts
Documents

Monitoring [Expand All](#) | [Collapse All](#)
[Documents Available](#)

North Breton Island Restoration

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Aerial photography or satellite imagery	Performance Monitoring	Shoreline position		3 times post-construction			03/22/2022	03/18/2028		
Avian survey	Performance Monitoring	Presence or absence	Map colony boundaries	annual surveys conducted for 10 years post-construction			06/22/2021	06/19/2028		
Avian survey	Performance Monitoring	Reproductive output		annual surveys conducted for 10 years post-construction			07/22/2021	07/18/2028		

Deepwater Horizon Restoration Project Report



Alabama Oyster Culch Restoration
2017 Annual Report

Portal ID: 11
This report represents the status of the project as of Dec 31st, 2017

PROJECT SUMMARY

This project will enhance and improve the oyster populations in the estuarine waters of Alabama. The project will place approximately 30,000 to 40,000 cubic yards of suitable oyster shell culch over approximately 319 acres of subtidal habitat in Mobile County, Alabama, in proximity to other oyster reefs currently managed by the Alabama Department of Conservation and Natural Resources (ADCNR) and within the historic footprint of oyster reefs in the area.

Trustee Implementation Group(s)	Alabama
Implementing Trustee(s)	Alabama Department of Conservation & Natural Resources (ADCNR)
Restoration Type(s)	Oysters
Project Status	Monitoring/O&M
Restoration Phase	Early Restoration Phase 3
Multiple Component Project?	No
General Location(s)	Alabama

KEY PHOTO



Reporting

- Reporting on status of MAM Activities
 - DIVER Restoration Portal
- Reporting on Restoration Projects
 - Final MAM Report developed once a project is complete includes:
 - Evaluation of project monitoring data;
 - Project outcomes, including lessons learned or uncertainties addressed;
 - Considerations for planning and implementing future projects;
 - Any additional information deemed relevant by the Implementing Trustee(s) or TIG.

**Monitoring Final Report Year 1-3 (2014-2016)
MISSISSIPPI ARTIFICIAL REEF HABITAT
EARLY RESTORATION PROJECT**

Submitted by
**The University of Southern Mississippi
Gulf Coast Research Laboratory**



to
Mississippi Department of Environmental Quality

Page 1 of 20

Deepwater Horizon
NRDA Early Restoration Project Comprehensive Final Monitoring
Report:

Louisiana Oyster Cultch Project

Prepared by: Louisiana Natural Resource Trustees

May 2016

Introduction

The Louisiana Natural Resource Trustees (Trustees) selected the Louisiana Oyster Cultch Project (project) as a Phase I *Deepwater Horizon* (DWH) early restoration project to compensate the public for injury to oysters (*Deepwater Horizon* Oil Spill Natural Resource Trustees, 2012). The project involves (1) placing oyster cultch onto public oyster areas at six locations in coastal Louisiana, (2) monitoring oyster recruitment and production in restored areas to assess performance against specific criteria, and (3) constructing an oyster hatchery facility to improve existing oyster hatchery operations and produce supplemental larvae and seed to help facilitate success of the cultch plantings, if necessary. This document provides the status and performance of this project based on project-specific monitoring activities conducted through May 2015.

This document describes cultch placement activities in detail. This includes a summary of the Louisiana Department of Wildlife and Fisheries (LDWF)-led project-specific sampling methods to monitor the cultch plant sites, followed by project-specific monitoring data results of oyster recruitment and production at project cultch sites. A description of the oyster hatchery facility is also included.

Reporting

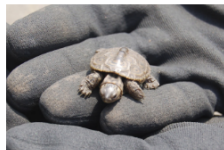
- TIGs will aggregate monitoring data annually and provide updates as part of the Annual Trustee Council meeting
- Programmatic reviews approximately every 5 years

Gulf Spill Restoration: Two Years After Settlement

Posted on April 20, 2018 | Trustee Council

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It's been two years since we settled with BP and began implementing our **programmatic plan** to restore the Gulf. Since then, we've been busy planning, implementing restoration, and hearing from you about what restoration should look like. **2017 shaped up to be a success** and we look forward to continued progress this year as well.



A young diamondback terrapin before being released on Chenier Ronquille Barrier Island, LA.

2017 Outreach and Planning

The Trustee Council held its second **annual public meeting** in November 2017. We gave an update on our work since the settlement and described restoration planning activities and opportunities for public engagement. This is one of many public meetings held to hear from you on your Gulf restoration priorities.

There were one or more meetings for each of the several restoration plans completed by Trustee Implementation Groups in 2017.

- **Louisiana's plan** focuses on wetlands, coastal and nearshore habitats, habitat projects on federally managed lands, and birds.
- **Mississippi's plan** focuses on wetlands, coastal and nearshore habitat, birds, and nutrient reduction.
- **Alabama's plan** focuses on recreational use.
- **Texas's plan** focuses on wetlands, coastal and nearshore habitats, and oysters.

2017 Projects and Trustee Council Initiatives

We also completed a number of early restoration projects that were approved prior to the 2016 settlement.

- **Restored Chenier Ronquille Barrier Island** in Louisiana and **released diamondback terrapins** there to help support the species' recovery.
- **Placed 62,000 cubic yards of oyster cultch** over approximately 300 acres in three Florida panhandle bays.
- Developed three new artificial reef sites in Texas, including **sinking the cargo vessel Kraken** as part of the state's Ship-to-reef program.
- Re-opened **Jeff Friend Trail at Bon Secour National Wildlife Refuge**, which was restored to address recreational opportunities lost as a result of the oil spill.

To assist with restoration planning, the Trustees for the Region-wide TIG **developed and released four strategic frameworks** – one each for marine mammals, sea turtles, oysters, and birds.

Additionally, we developed and released the **Monitoring and Adaptive Management Manual**, which recommends procedures and guidelines for monitoring needed to evaluate restoration outcomes and benefits to injured resources.

Meanwhile, work continued on a number of restoration projects in 2017.

- Building three more barrier islands in Louisiana.



Deepwater Horizon Trustee Council Annual Financial Summary Report (Cumulative through December 31, 2017)

Report Overview:

The Deepwater Horizon natural resource damage assessment settlement mandates annual payments over a 15-year period. The payments total \$8.8 billion, for use by the state and federal trustees for restoration planning and implementation. This annual report details the status of the receipt, allocation, and expenditure of funds through December 31, 2017. The terms used in this report are defined as follows:

- Funds Received** - Funds received from BP and any interest earned on those funds.
- Allocated** - Funds that have been transferred to an implementing trustee for the purposes of restoration activities.
- Unallocated** - Funds that have not yet been allocated to a specific restoration activity.
- Expended** - Allocated funds that have been paid out by the implementing trustees for restoration activities.
- Unexpended** - Allocated funds that have not yet been paid out.

Summary of Funds Received and Allocated:

The following table breaks down the receipt and allocation of funds by Trustee Implementation Group (TIG).

	Alabama TIG	Florida TIG	Louisiana TIG	Mississippi TIG	Texas TIG	Open Ocean TIG	Regionwide TIG	Total
Funds Received	\$ 146,746,006.96	\$ 191,737,812.19	\$ 698,146,270.05	\$ 144,911,630.05	\$ 117,882,884.02	\$ 157,954,168.52	\$ 56,601,115.83	\$ 1,513,979,887.62

Additional Content for Future Versions

- Monitoring guidance for additional Restoration Approaches
 - Land Conservation, SAV, Oysters, Birds, Marine Mammals, Sea Turtles, Fish, Deep Benthic/Mesophotic Resources
- Procedures for evaluation of progress towards restoration goals
- Procedures for reviewing existing information to identify emerging “unknown conditions”



Next Steps: Programmatic Evaluation

- Develop mechanisms for evaluating collective progress towards meeting Restoration Type goals
- Assess relative success of Restoration Approaches
- Evaluate collective progress toward the preferred alternative – an “integrated, ecosystem approach to restoration”
- Contribute to Programmatic Reports

Pilot study to focus on the *Wetlands, Coastal, and Nearshore Habitats* Restoration Type

<http://www.gulfspillrestoration.noaa.gov/>

<http://www.gulfspillrestoration.noaa.gov/monitoring-and-adaptive-management>

