RESTORATION IN MISSISSIPPI TRUSTEE IMPLEMENTATION GROUP
of the
DEEPWATER HORIZON TRUSTEE COUNCIL

In re: Oil Spill by the Oil Rig "Deepwater Horizon" in the Gulf of Mexico on April 20, 2010,
Civil Action Nos. 10-4536; 10-04182; 10-03059; 13-4677; 13-158; 13-00123 (ED. La.)
MDL No. 2179

Resolution # MS-2024-013

Resolution of the Mississippi Trustee Implementation Group to Approve the Restoration Planning Activity: Development of a Diatom and Bacteria Community Assessment Tool for Coastal Mississippi

1. In accordance with the Oil Pollution Act of 1990 (OPA), the National Environmental Policy Act of 1969 (NEPA), the *Deepwater Horizon* Oil Spill: Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement (PDARP/PEIS), the Trustee Council Standard Operating Procedures for Implementation of the Natural Resource Restoration for the *Deepwater Horizon* Oil Spill, revised August 2, 2021 (TC SOPs), and the Consent Decree entered in United States v. BPXP et al., Civ. No. 10-4536, centralized in MDL 2179, In re: Oil Spill by the Oi Rig "Deepwater Horizon" in the Gulf of Mexico, on April 20, 2010 (E.D. La.) (Consent Decree), the undersigned representatives of the Mississippi Trustee Implementation Group (MS TIG) hereby approve the actions set forth below to support the restoration of natural resources and services injured or lost as a result of the DWH oil spill, which occurred on or about April 20, 2010, in the Gulf of Mexico.

2. The undersigned Authorized Officials of the MS TIG hereby approve (a) the attached MS TIG Restoration Planning Activity Implementation Plan: Development of a Diatom and Bacteria Community Assessment Tool for Coastal Mississippi (Implementation Plan) (Portal ID 381) and (b) the commitment and disbursement of funds to the Implementing Trustees for implementation.

3. The Activity to be funded through this resolution supports restoration planning to carry out the restoration goals identified in the Final PDARP/PEIS and Record of Decision that provides and explains the Trustees' selection of the Preferred Alternative (Alternative A) for the Final PDARP/PEIS. This Activity is also consistent with the Consent Decree resolving the civil actions referenced above, and with the TC SOPs.

4. Funds transferred from the DOI Restoration Fund to the Implementing Trustees, as authorized by this Resolution, may be used only for the restoration planning activities authorized by this Resolution and described in the attached Implementation Plan. Any other use of funds disbursed pursuant to this Resolution is prohibited. Any non-authorized use of disbursed funds must be reported to the full TIG immediately upon discovery.

5. Through this Resolution and associated *Deepwater Horizon* Trustee Withdrawal Forms, the MS TIG authorizes the commitment and disbursement of up to $695,000 in Nutrient Reduction (Nonpoint Source) Restoration Type funding from the DOI Restoration Fund to DOI, EPA, USDA, and MDEQ, as indicated in the table below, for the restoration planning activities described in the attached Implementation Plan.

Restoration Planning Activity: Development of a Diatom and Bacteria Community Assessment Tool for Coastal Mississippi

Restoration Type	Implementing Trustee	DIVER Portal ID #	Authorized Project Budget
Nutrient Reduction (Nonpoint Source)	DOI	381	$500,000
Nutrient Reduction (Nonpoint Source)	EPA	381	$10,000
Nutrient Reduction (Nonpoint Source)	USDA	381	$10,000
Nutrient Reduction (Nonpoint Source)	MDEQ	381	$175,000
Total			$695,000

6. It is resolved that after a thorough review of the proposed Restoration Planning Activity Implementation Plan: Development of a Diatom and Bacteria Community Assessment Tool for Coastal Mississippi, the duly authorized officials for the MS TIG approve the Implementation Plan and authorize commitment and release of funds. This resolution may be executed in counterparts.

RESTORATION IN MISSISSIPPI TRUSTEE IMPLEMENTATION GROUP

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Effective Date: December 9, 2024

Mississippi Trustee Implementation Group Restoration Planning Activity Implementation Plan: Development of a Diatom and Bacteria Community Assessment Tool for Coastal Mississippi

Document Purpose

This Mississippi Trustee Implementation Group Restoration Planning Activity Implementation Plan: Development of a Diatom and Bacteria Community Assessment Tool for Coastal Mississippi (Implementation Plan) is intended to assist in restoration activities, data gaps and providing potential metrics to monitor performance of nutrient reduction projects of the MS TIG by addressing information related to diatom and bacteria assessment for streams and rivers in the Pascagoula, Lower Pearl, and Coastal Basins in the Mississippi Restoration Area.

Introduction

The Deepwater Horizon oil spill settlement (2016) provides Natural Resource Damage Assessment (NRDA) Trustees (Trustees) up to $8.8 billion, distributed over 15 years, to restore natural resources and services injured by the Spill. As described in the Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement (PDARP/PEIS), the Trustees identified a comprehensive, integrated ecosystem restoration approach as the most effective and representative means to address the broad and geographically expansive resource injuries associated with the Spill. For the programmatic goal of Restore Water Quality, the Trustees describe potential restoration approaches and techniques, identify potential individual / synergistic restoration benefits, and highlight the importance of monitoring and adaptive management considerations.

The Mississippi Restoration Area Trustee Implementation Group (MS TIG) has approved two traditional agricultural related nutrient reduction projects. USDA, EPA, and MDEQ are working as Implementing Trustees of the MS TIG with project partner NRCS to implement and measure management efforts to reduce nutrient loading in river systems. Excess nutrients can be exported from these systems and can lead to hypoxia, harmful algal blooms, habitat loss, and fish kills in Gulf Coast estuaries. The Trustees have identified a need to attempt to quantify the effectiveness of reducing nutrient loading as a result of these projects in the coastal systems.

Linkages between water quality improvements and ecosystem benefits are conceptually understood and have resulted in measurable ecosystem benefits in certain watersheds (Greening & Janicki, 2006; Russell & Greening, 2013). Quantifying those linkages is challenging given the various nutrient inputs in a watershed (Keeler et al., 2012), though monitoring and adaptive management can be used to address these challenges. A critical component to successful nutrient mitigation strategies is effective monitoring and assessment tools that can track changes in nutrient status and help assess the efficacy of management efforts, ultimately informing and improving nutrient reduction strategies. Given the dynamic nature of rivers, detecting improvements in nutrient conditions through routine water quality sampling often requires long-term, high frequency sampling that is labor intensive and expensive. Ecosystem responses to management efforts can take years to detect through water quality sampling due to the legacy nature of nutrients, making it difficult to assess the effectiveness of different strategies at relevant timescales. To increase the likelihood of detecting ecological improvements from nutrient mitigation strategies, biological monitoring is often used in tandem with water quality sampling as a more integrated, additional weight of evidence.

Mississippi Department of Environmental Quality (MDEQ) currently uses an indicator of stream health throughout the state called the Mississippi Benthic Index of Stream Quality (M-BISQ), which involves collection and assessment of benthic macroinvertebrate communities and taxa. This tool allows users to document and rank streams along a relative disturbance gradient and in relation to bioregional degradation thresholds, providing a straightforward approach for using biological data to assess the general health of streams.

However, other organisms that live in stream environments, such as algae and bacteria, can also be used to provide additional and potentially source-specific information about environmental factors that may be causing degradation. Nutrients have a more direct effect on algae compared to benthic macroinvertebrates by influencing rates of primary production, dictating species of plants and algae that can become established, which overall influences assemblage structure. Bacteria contain specialized protein complexes that drive global nutrient cycles. Therefore, bacteria can also be more responsive to changes in nutrient concentrations making them a highly sensitive indicator of nutrient conditions in streams.

Studies have established the utility of algae or diatom-based community traits and species composition as sensitive response measures to nutrient pollution in streams. Diatoms are single-celled algae found in almost all aquatic habitats. Recently, a collaborative study between MDEQ, U.S. Geological Survey Lower Mississippi-Gulf Water Science Center, (USGS-LMG-WSC) and the U.S. Department of Agriculture Agricultural Research Service Sedimentation Lab (USDA-ARS-Sed Lab) (Hicks and Taylor, 2019), demonstrated the utility of diatom-based metrics in more habitat-limited, low-gradient streams draining large-river alluvial plains. Recent research has also demonstrated the potential of bacterial assemblages as an additional, highly sensitive weight of evidence for using biological data to track changes in nutrient concentrations in agricultural streams (DeVilbiss et al., 2023).

Currently, the state is limited to assessing status and trends of nutrient conditions using chemistry data from water samples, where collection and processing of water samples can be time consuming, expensive and require months before obtaining results. Although recent studies by Hicks and Taylor (2019) and DeVilbiss et al. (2023) demonstrated the utility of diatom- and bacterial-based metrics, these studies were only for the Mississippi Alluvial Plain (MAP), also known locally as the Delta, the lower portion of the Yazoo River Basin in Mississippi. The studies concluded that more samples were needed to increase the precision and utility.

Due to the more direct relationship between nutrients and algae/bacterial responses in aquatic environments, use of diatom/algal and bacterial community data may provide sensitive and relatively inexpensive indicators for determining changes in nutrient conditions and biological responses to nutrient reduction strategies implemented in watersheds. Currently, limited data exist for algal/ diatom and bacterial community assessments in streams and rivers in Mississippi, and more diatom and bacterial community data are needed in Mississippi streams. As such, the MS TIG proposes the development of a diatom/bacteriological indicator of stream health to further its restoration planning efforts.

Objective

The objective of this project will be to collect water-quality, habitat, and diatom and bacteria assemblage data to:

1) Provide a proof of concept of the utility of using algae and bacterial community data to quantify response along nutrient gradients that will set the foundation for development of a statewide biotic index of nutrient conditions using periphyton and bacterial community data,
2) Explore and compare various field sampling, laboratory processing, and data analysis procedures,
3) Develop and calibrate candidate indicator(s) for use as monitoring and assessment tools, and
4) Provide additional information for the MS TIG to use in future restoration planning efforts.

Scope

The scope of this project will involve data collection from 1st through 4th order streams in three primary river basins in Mississippi, the Pascagoula, Lower Pearl, and Coastal Streams Basins, to inform and optimize efficiency of a broader state-wide sampling and design. Data will be collected from approximately 150 upstream and freshwater, wadable stream reaches. A map of the proposed data collection sites in Mississippi is shown in Figure 1.

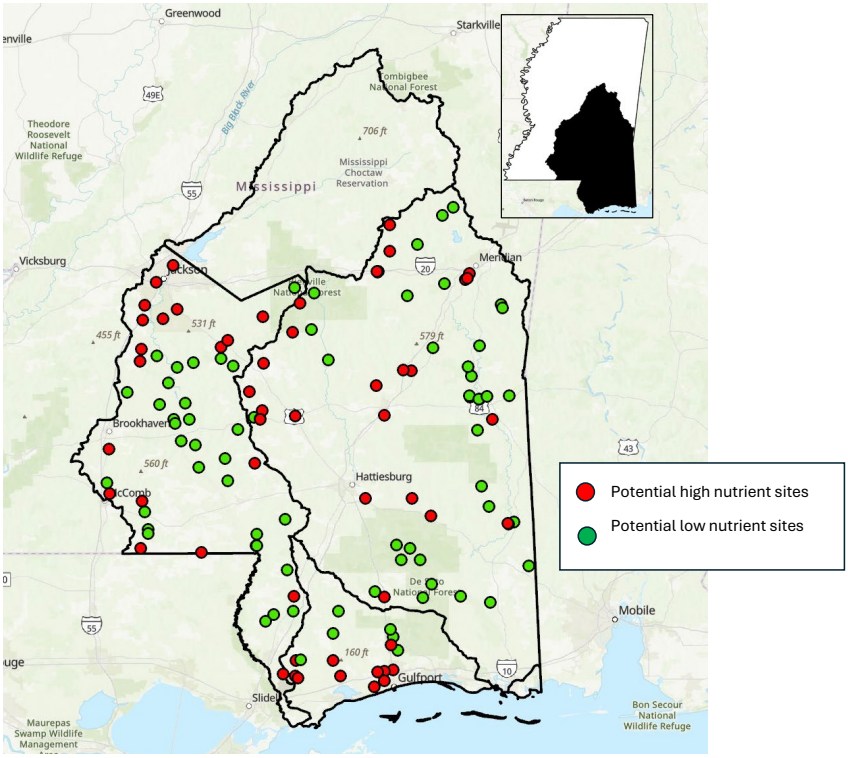

Figure 1. Map of the proposed data collection sites in Mississippi.

Relevance and Benefits

This project will benefit the MS TIG by assisting in the development of tools for sampling and analysis of nutrients, periphyton, bacteria community, and other environmental data for detection, documentation, and temporal tracking of stressor-response and nutrient status relationships in streams and rivers in the

Mississippi Restoration Area. These tools may be used to determine if nutrient reduction projects are improving instream water quality which could lead to water quality improvement in the area affected by the DWH Oil Spill. This tool may also help identify areas for the MS TIG where investing Nutrient Reduction Restoration Type funds could ultimately improve water quality of the affected area.

Approach

Site Selection

Data will be collected during two 8-week Index Periods, August-September in 2025 and 2026, from approximately 75 sites per year for a total of 150 sites. Sites will be distributed across the Pascagoula River, Lower Pearl and Coastal Streams Basins.

Sites will be selected from previously sampled locations using M-BISQ wadable streams methods.

Historic data, basin characteristics, and SPARROW model catchment-level outputs will be used to target sample sites representing a range of concentrations for nitrogen (N) and phosphorus (P) typically observed across Mississippi streams.

Field Data Collection

Field teams – 2 teams, 2 people each team.

Each site will be visited once during each period to collect a variety of environmental data. Samples and measurements will be taken for periphyton communities, bacterial communities, physical habitat, substrate particle size distribution, and field and lab water chemistry. During the site visit, a 100-m assessment reach will be identified. Ten equidistant transects will be marked along the length of the assessment reach. Details of data to be collected are given below:

Water Chemistry Data Collection

Instantaneous water quality measurements will be made for temperature, dissolved oxygen, pH, specific conductance, turbidity and surface water grab samples will also be collected. Water quality samples and field water quality properties will be collected according to MDEQ surface water-quality monitoring standard operating procedures (MDEQ, 2013). Instantaneous water-quality measurements will be made using a YSI 6920 V2-1 multiparameter water quality sonde (Yellow Springs Instruments). Surface water sampling consists of a vertical instantaneous grab sample collected from the channel thalweg. Surface water grab samples for nutrient analysis will be acidified in the field with sulfuric acid ($H_2SO_{4)}$, and all water samples will be stored on ice and shipped to the laboratory within 24 hours.

Periphyton Community Data Collection

Periphyton are defined as a community of organisms growing on submerged surfaces in freshwater and will be the medium by which we obtain samples to identify existing algae and diatoms. Methods to be used in the collection of periphyton samples will follow USGS National Water Quality Assessment (NAWQA) methods (Moulton and others, 2002). Periphyton will be sampled once during the same week when habitat and water quality data are collected. Two targeted habitats will be sampled: epidendric habitat (e.g., woody snags) and epipelic, benthic habitat consisting of silt-sized (< 0.064 mm) streambed sediments on which organisms are loosely associated. Reach-scale composite samples of epidendric and

epipelic periphyton for analysis of assemblage structure will be collected by removing material from the surface of woody snags and soft silt collected from five locations distributed throughout the assessment reach. Woody snags will be sampled by scrubbing biological material off surfaces with a stiff brush and subsequent rinsing of the wood and brush into a plastic dishpan. Sediments are sampled by inverting a sterile, 50-mL Falcon Tube into the top 5 cm of soft sediments at 5 locations throughout the stream reach that represent the relative distribution of sediment sizes (e.g., sands, silts, clays). Each of the 5 subsamples is combined into a sterile Whirl-Pak and frozen on-site in dry ice until transferred to a -80 °C freezer at the laboratory. Sediment samples are stored at -80 °C until shipped overnight on dry ice to the EPA ORD laboratory in Ohio. Sample water from the diatom rinse is poured into a 500-mL sampling bottle, and the volume is recorded. Length and diameter of each woody snag is measured, and the total sampling area calculated. A 100 mL subsample is aliquoted into a sterile conical vile and placed on ice until returned to the lab where it is stored in the freezer at -20 °C until shipped to the EPA ORD laboratory in Ohio.

Physical Habitat and Substrate Particle Size Data Collection

Physical habitat data will involve measurement and recording of various physical characteristics similar to NAWQA methods and a qualitative habitat assessment, according to MDEQ's standard operating procedures (MDEQ, 2013). Physical measurements of width, depth, habitat types, canopy cover, and percent macrophyte cover will be collected along 10 equally spaced transects throughout the reach. Visual-based habitat assessment provides qualitative ratings for each of 10 parameters describing instream habitat, bank, and riparian features along a continuum of conditions. The rating system used by field crew observers scores each parameter as optimal (20-16), suboptimal (15-11), marginal (10-6), or poor (5-0). Scores from individual parameters are then summed for each assessment reach with total habitat scores ranging from 200-0. Substrate particle size distribution is quantified using a modified Wolman 100 particle pebble count according to MDEQ standard operating procedures (MDEQ 2013).

Laboratory Analysis

Periphyton Sample Analysis

Identification of periphyton and bacteria taxa from each sample will be evaluated using DNA metabarcoding. DNA metabarcoding for diatoms will be done by sequencing a portion of the rbcL gene of the chloroplast according to methods described in Vasselon et al. (2017) and Smucker et al. (2020). Briefly, the rbcL gene in extracted diatom DNA from each sample will be amplified with polymerase chain reaction (PCR) and tagged with a unique molecular barcode for sample identification. Amplified rbcL genes will then be sequenced using the Illumina Miseq platform. Sequencing data will be processed, filtered, and taxonomically assigned using the DADA2 diatoms pipeline (Keck et al., 2019) and the Diat.barcode diatom barcode library (Rimet et al., 2018). Bacterial samples will be sequenced by targeting the V4 region of the 16S rRNA gene using the 515f and 806rb primers in accordance with the Earth Microbiome Project protocol. Bacterial sequences will also be quality filtered using the DADA2 pipeline.

Water Chemistry Lab Analysis

Surface water grab samples will be analyzed for ammonia (NH_3–N), nitrite–nitrate (NO_x–N), total nitrogen, total Kjeldahl nitrogen, total phosphorus, alkalinity, total suspended solids, chemical oxygen

demand, total organic carbon, and chloride concentrations. All laboratory chemical analyses of water samples will be performed by the MDEQ laboratory in Pearl, MS, and will be done in accordance with USEPA *Methods for Chemical Analysis of Water and Wastes* (USEPA 1983)*, Test Methods for Evaluating Solid Waste SW*-846 (USEPA, 1986), and the *Standard Methods for Examination of Water and Wastewater* (APHA, 2005).

Data Analyses

Data analyses will be performed to address the following:

1) Natural site classification (stream size, geographic location, etc.)
2) Stressor – response performance of DNA data
3) Develop a tool for assessing status and trends of nutrients.

We will investigate taxon-specific and assemblage-level responses and potential thresholds and change-points that may indicate increasing nutrient concentrations to identify the magnitude, direction and uncertainty of individual sequences and whole assemblage threshold responses to TN and TP gradients. We will use a series of tests and applications, including:

- Generalized additive modelling (GAM)
- Permutational analysis of variance (PERMANOVA) (Anderson 2001, Oksanen et al. 2020)
- Permutation test of multivariate dispersion (PERMDISP) (Anderson 2006, Oksanen et al. 2020)
- Threshold indicator analysis (TITAN2) (Baker and King 2010, Taylor et al. 2023)

Smucker et al. (2020) demonstrated using TITAN to assign specific DNA sequences to tolerant or intolerant categories, a technique we will employ in our study. In addition to using *BioMonTools* for calculating and scoring algal metrics, R packages will form the foundation for testing differences and dispersions among stream classes and nutrients concentrations, specifically using the “adonis” and “permutest.betadisper” functions in the vegan package (v. 2.5-7) (Oksanen et al. 2020). Additional statistical approaches will be explored, specifically related to exploring interactions between nutrients and other environmental factors, as the nature of the dataset and needs becomes more apparent.

Quality Assurance/Quality Control

Field meters will be calibrated daily prior to each use. For water quality sampling, field blanks will be analyzed and replicate samples will be taken at 10 percent of sampling events. For biological and habitat sampling, duplicate samples will be collected in an adjacent 100m reach at three sites, usually above the sample reach, not to exceed 20 meters in between. The MDEQ laboratory participates in the USGS Branch of Quality Systems Standard Reference Sample project biannually to test laboratory performance as outlined in the MDEQ 2019 Quality Management Plan QMP-004-R2. In addition, blank samples (typically inorganic free assured water) are collected and analyzed to assess associated bias, and split replicates are collected and sent to the USGS National Water Quality Laboratory in Denver, CO, to assess variability in the dataset. Based on assessment of these QC data, data quality objectives for this project can be achieved using analyses provided by the MDEQ laboratory.

For the DNA sample analysis, quality assurance/quality control procedures for the will be in accordance with the USEPA (2024) Office of Research and Development – Quality Assurance Project Plan DNA Metabarcoding of Periphyton Assemblages to Monitor Environmental Condition. For each PCR reaction,

non-template controls (reaction wells with PCR reagents but no DNA) will be included to assure no contamination occurred throughout the pipeline. Following PCR, gel electrophoresis will be used to confirm the correct gene segment was amplified. Amplified DNA concentrations will be measured using a Qubit fluorometer to assure each sample was effectively amplified and enough DNA is present to be sequenced. Illumina sequencing provides quality scores for each individual base that was sequenced that indicate the probability that the wrong base was called. These quality scores will be used to remove any sequences or regions of sequences with unacceptably high error rates. The DADA2 pipeline for processing rbcL sequences also has an error-correction step that efficiently identifies and corrects errors that occurred both during PCR and during sequencing.

Timeline

Data collection will be performed during the summers of 2025 and 2026. DNA analysis of samples will be done in the Fall of 2025 and 2026. Data analysis will begin as water quality data and periphyton community data become available.

Funding

All funding is presented as gross amount. Funding will be to purchase, install, operate, and maintain data collection according to the objective. Funding includes management/oversight, cooperator relations and briefings, data analysis and report writing.

Trustee	Restoration Type	Budget
DOI	Nutrient Reduction (Nonpoint Source)	$500,000
EPA	Nutrient Reduction (Nonpoint Source)	$10,000
USDA	Nutrient Reduction (Nonpoint Source)	$10,000
MDEQ	Nutrient Reduction (Nonpoint Source)	$175,000
Total	Nutrient Reduction (Nonpoint Source)	$695,000

Data Management

EPA ORD will be the proprietors of the diatom and bacterial DNA sequences and will upload all data to the NCBI SRA. USGS will be the proprietors of the water quality and habitat data which will be made publicly available on Science Base as a data release. Water Quality data will also be stored in NWIS. The data management plan will be consistent with guidance provided in the Monitoring and Adaptive Management Procedures and Guidelines Manual (DWH NRDA Trustees 2017b) and the Trustee Standard Operating Procedures (DWH NRDA Trustees 2016b). The Trustees will submit annual reports publicly available to the DWH DIVER Portal. The MS TIG will provide a final report of the activity including any references and may include recommendations regarding nutrient reduction restoration planning.

Roles of the Implementation Team

Activities by Major Element	MDEQ	DOI	USDA	EPA
Management, Administration and Oversite				
Facilitate Trustee Planning, Coordination and Technical Review	x	x	x	x
Manage Data and DIVER reporting	x	x		
Provide Review of Technical Documents	x	x	x	x

Implementation				
Field Collections		x		
WQ Lab sample analysis	x			
Bacteriological/Diatom Sample analysis				x
Data Analysis				
Trustee Data Review and Development of Methodology	x	x	x	x
Draft and Final data summary and reporting		x		
Review and Approval of Report	x	x	x	x

National Environmental Policy Act Review

Introduction

Section 6.4.14 of the PDARP/PEIS considers the environmental consequences associated with activities including, but not limited to planning, feasibility studies, design, engineering, and permitting of conceptual projects. These activities can include a mixture of data collection into historical conditions, modeling of ecological response to the project, conducting surveys, and creating maps and scale drawings of potential project sites. These activities may also include minimally intrusive field activities. The restoration planning activities described in this Implementation Plan fall within the scope described in the PDARP/PEIS. Upon review, the federal trustees of the MS TIG find the environmental conditions and NEPA analysis in the PDARP/PEIS and the underlying assumptions therein in the context of the restoration planning activities remain valid and that it continues to be applicable as a programmatic evaluation for DWH restoration planning. Therefore, this review relies on the analysis in Section 6.4.14 of the PDARP/PEIS, which is incorporated herein by reference and summarized below.

Summary NEPA Review

For purposes of this NEPA review, activities to be performed are categorized as “office work”, “lab work” and “field work”. In this review, analysis of samples, software, compiling data, and similar activities are considered office work and make up the preponderance of the work. These activities would not cause adverse impacts to any resource area and require no additional review.

For field work, the PDARP/PEIS states that temporary impacts on the biological and physical environment could include minor short-term, temporary disturbance of habitats and species, minor emissions from equipment and vehicles, and minor disturbance to freshwater environments. Field work for this Planning Activity consists entirely of *biological community sample collection and habitat visual surveys utilizing methodologies and instrumentation, as described above, all of which will cause not more than minimal disturbances to sediment, water column and woody debris.*

Conclusion

No long-term adverse impacts would occur as a result of performing these restoration planning activities. No impacts would result from office-based activities. Short-term, negligible to minor adverse impacts could occur to freshwater substrate habitat from disturbance due to field work including sample collection of habitats for diatom and bacteria assemblages. Beneficial impacts would result from increased understanding about the relationship between nutrients and other abiotic factors and

community/species make-up of diatom and bacteria communities, to help detect benefits of nutrient reduction efforts to the aquatic health of freshwater ecosystems. The impacts fall within the analysis provided in Section 6.4.14 of the Final PDARP/PEIS which states that some planning activities would cause minor, direct, short-term impacts through associated fieldwork. Therefore, no further NEPA analysis for these restoration planning activities is required.

Compliance with Other Environmental Laws and Regulations

The Mississippi TIG will ensure compliance with all applicable state and local laws and other applicable federal laws and regulations relevant to this restoration planning activity. Consultation with DOI is in progress for federal statutes under their purview (Endangered Species Act, Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act, Coastal Barrier Resources Act, and Section 106 of the National Historic Preservation Act). NOAA has determined that no federal statutes under its purview (i.e. ESA, Essential Fish Habitat, and the Marine Mammal Protection Act), are applicable since all the activities associated with this restoration planning activity are being conducted in freshwater, upstream wadable streams (non-tidal/non-estuarine).

The MS TIG has determined that the proposed activities are covered by the Coastal Zone Management Act (CZMA) consistency determination for the Final PDARP/PEIS. As described in Section 6.9.4 of the Final PDARP/PEIS, the Federal Trustees recognized that there are reasonably foreseeable effects on coastal uses resources that would flow from the adoption of the Final PDARP/PEIS, which included preliminary phases of restoration planning. Accordingly, the federal Trustees evaluated those reasonably foreseeable effects of the PDARP/PEIS for state review. The MS TIG has reviewed the Trustees' consistency determination and concurred with that determination (DWH NRDA 2016).

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

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

http://www.gulfspillrestoration.noaa.gov/environmental-compliance/.

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USEPA (2024) Office of Research and Development – Quality Assurance Project Plan DNA Metabarcoding of Periphyton Assemblages to Monitor Environmental Condition insert *link to AR*

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