

RESTORE Council Proposal Document

General Information

Proposal Sponsor: U.S. Department of the Interior (DOI)

Title:
State and Offshore Sediment Resources Inventory

Project Abstract:

The U.S. Department of the Interior, through the Bureau of Ocean Energy Management (BOEM), is requesting \$15M in Council-Selected Restoration Component funding, for the proposed State and Offshore Sediment Resources Inventory program. This would include implementation funds as FPL Category 1. The program will support the primary RESTORE Comprehensive Plan goal to restore and conserve habitat by providing a regional, ecosystem-based mapping tool to manage offshore State and Federal sediment essential for restoration of coastal shorelines across the Gulf. Surveys will be conducted to identify potential sediment resources, and information on sediment sources, characteristics, and volumes will be assembled and available in a comprehensive database for use by Gulf resource managers.

The Gulf's beach and barrier island restoration efforts have historically been implemented on a project-by-project basis, without comprehensive consideration of scope, type and quantity of this finite resource. Yet obtaining the right type of sediment with appropriate characteristics for a specific project is critical to a project's success and could provide positive environmental impact and could save States time and matching monies in future U.S. Army Corps projects. Program duration is 3 years.

FPL Category: Cat1: Implementation Only

Activity Type: Program

Program: State and Offshore Sediment Resources Inventory (DOI/BOEM)

Co-sponsoring Agency(ies):
COE

Is this a construction project?:
No

RESTORE Act Priority Criteria:

(I) Projects that are projected to make the greatest contribution to restoring and protecting the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region, without regard to geographic location within the Gulf Coast region.

Priority Criteria Justification:

The sediment resources inventory would:

1. Determine the availability and location of sediment, including sand and gravel, for the management of barrier islands, beaches, and other coastal habitats necessary for State and Federal projects;
2. Significantly reduce restoration uncertainty, timing, and cost associated with determining strategic features of sediment necessary for projects, significantly reducing cost of restoration projects;
3. Support engineering and design for a variety of projects that will:
 - restore, protect, and enhance long-term resiliency to barrier island, interior wetland, and estuarine

ecosystems and habitats while serving as the first line of defense of the mainland during storms and;
- restore beaches that protect the shoreline and/or support coastal tourism economy.

4. Identify sensitive bottom habitats that should be protected from dredging and other bottom disturbing activities.

Project Duration (in years): 3

Goals

Primary Comprehensive Plan Goal:
Restore and Conserve Habitat

Primary Comprehensive Plan Objective:
Improve Science-Based Decision Making Process

Secondary Comprehensive Plan Objectives:
Restore and Enhance Natural Processes and Shorelines

Secondary Comprehensive Plan Goals:
Enhance Community Resilience

PF Restoration Technique(s):
Improve science-based decision-making processes: Develop tools for planning and evaluation

Location

Location:

Gulf-wide in State and Federal Waters (Figure 1).

HUC8 Watershed(s):

Please see the RESTORE Council Gulfwide location information available at:

https://restorethegulf.gov/sites/default/files/Gulfwide%20Watersheds_Counties_CongessionalDistricts.pdf

State(s):

Texas

Alabama

Mississippi

Louisiana

Florida

County/Parish(es):

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Congressional District(s):

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Narratives

Introduction and Overview:

The objective of this program is to provide a regional, ecosystem-based mapping tool to manage offshore State and Federal sediment critical to the success of a multitude of coastal restoration projects anticipated along the Gulf of Mexico shoreline. This tool would collect, analyze and map data on the type and availability of State & Federal offshore sediment resources. BOEM would place collected data in the Marine Minerals Information System (MMIS) and link to the state-housed databases [e.g., LASARD, OASIS (Alabama), TXSED, and ROSSI]. This data can be used by project managers to inform choices for sediment. By collecting and analyzing these geological and geophysical data in advance of specific projects, BOEM, in cooperation with the Gulf of Mexico States and other Federal agencies, can develop a more comprehensive understanding of available sediment resources. This knowledge will help States better manage sediment resources within their jurisdictional boundaries, and proactively identify sediment resources for project planning purposes.

The program would also identify and delineate areas to be protected for the long term as significant State and Outer Continental Shelf (OCS) sediment resources. To date, the States of Florida, Mississippi, and Louisiana have used offshore sediment resources to construct barrier islands and renourish beaches off their coasts. With the increased need for sediment resources, it is critical to understand the scope, type, and quantity of the finite resource so that it is managed sustainably (Cousins 2019). This program will directly contribute to those future projects identified by the Gulf Regional Sediment Management Master Plan by providing regional information on coastal sediment along northern Gulf of Mexico shorelines (Khalil et al. 2012). Also, because sediment resources would be mapped across the region, the database produced would identify alternative sediment sources. It would allow for increased options when environmental considerations, such as biological or archaeological sensitive areas could inhibit the use of some potential sediment resources. Following additional environmental review, those sediment resources could be made available to local, State, and Federal agencies to recover from storm damage caused by severe storms, to enhance and preserve coastal habitat, and to stem chronic erosion such as the Mississippi Coastal Improvement Program. At the conclusion of this sediment inventory program, BOEM will have collected and analyzed sediment data and placed this information into an interactive database that can be accessed by state and federal resource managers to research and identify potential sediment resources for their projects.

Proposed Methods:

The proposed program is a set of comprehensive sediment survey activities using state-of-the-art technology and methods to identify, delineate, monitor, and research State and Outer Continental Shelf (OCS) sediment resources. Sand survey equipment types and techniques used to support these activities were presented in previous BOEM documents (BOEM 2014a, BOEM 2014b, BOEM 2017). The proposed program would include three components: (1) reconnaissance-scale surveys to identify and delineate State and OCS sediment resources; (2) site-specific, high resolution geophysical surveys to further delineate borrow areas and investigate the presence of objects of archaeological significance, munitions of explosive concern (MEC), and hard bottom or other sensitive benthic habitat in the vicinity of potential borrow areas; and (3) research and/or monitoring surveys to detect geologic and morphological changes in sediment resource areas. In some States, reconnaissance studies are still needed as a first step to identify potential sediment resources. Reconnaissance studies use wider spaced survey lines over comparatively large areas (i.e., regional in scope) to identify sand bodies and characterize the shallow geological framework and surficial geology of potential sediment resources. These surveys will help to ascertain if sediment resources are of a certain quality (sediment type) and quantity to warrant further exploration. Site-specific studies use tighter line spacing over a smaller area to delineate the lateral and vertical extent of borrow areas and to determine the resource use limitations (e.g., cultural resources, sensitive habitat, etc.). Additionally, surveys may occur before and after a dredge event to monitor any changes to a sediment resource and/or conduct specific research to understand the complexities of the environment (e.g., physical, biological, geological, etc.) and potential implications, in accordance with BOEM's stewardship responsibilities. Surveying would not be continuous; rather, most surveys would be small in spatial scale and short in duration. It is anticipated that approximately 70–85 percent of the

survey work conducted under this proposal would be reconnaissance in nature and that 15–30 percent would be site-specific, high-resolution surveys based on the State’s priority areas and needs. Sediment survey activities, whether reconnaissance or site-specific, could be conducted simultaneously or in sequence, depending upon the information needs, field conditions, and efficiency factors. Two general survey types would be employed: geophysical surveys for mapping the geologic framework and seafloor condition and geological surveys to collect sediment samples and shallow sediment cores (20 ft [6.1 m] maximum length) (BOEM 2019). The geophysical surveys obtain information about sedimentary architecture, shallow hazards (e.g., MEC or buried cables), archaeological resources, and sensitive benthic habitats, and they do not impact the seafloor. Geological surveys collect information on sediment composition and textural properties and do impact the seafloor (BOEM 2019). The end result would be the development of a tool that BOEM would continually update with new information as sediment resources are used or as new ones are identified. This tool would be employed by State and Federal agency project managers early in the design phase to identify and secure suitable sediment resources (e.g., sediment color and grain size for each restoration project).

On average, up to about 70 line-miles (113 line-km) of geophysical data could be collected per day, assuming that site-specific survey data is not collected simultaneously with reconnaissance-level data. It is anticipated that up to 4,000-8,000 line-miles of geophysical surveys could be collected for the entire Study Area in one year. Actual surveys would be discontinuous in time and geography, where the typical individual survey is smaller in terms of contiguous survey area (< 100-1000 km²). For sediment samples, which are primarily used to ground-truth the geophysical data, approximately 15 vibracores (method of sampling sediment) and up to 50 benthic grabs per day could be collected, although it is anticipated that most would be vibracores, with a small portion being grab samples. Up to 1,000-1,500 geological samples could be collected in one year. All estimates are based on one vessel completing the surveys; however, more than one vessel could be used. For a given survey, a vessel and crew would mobilize, though frequency would depend on the location and scope of activities.

BOEM can work with States and USACE to help to restore:

- 160,000 acres of ecosystem restoration (beaches, dunes, and wetlands) in Texas;
- 1,250 linemiles of geophysical data to cover the Panhandle (state and federal waters) in Florida;
- the entire coastlines of Mississippi and Alabama, and
- designated areas in Louisiana.

Environmental Benefits:

The program would carefully manage the use of sediment while supporting coastal resiliency initiatives to nourish eroded beaches, conserve sensitive wildlife areas, and restore barrier islands and wetlands that provide natural protection from storms. By proactively developing an inventory of OCS and State sediment resources, BOEM will help manage use conflicts and foster ecosystem health while supporting the following national interests:

- provide resources to Federal and state agencies and localities to reduce damages to coastal infrastructure;
- respond to emergency requests for use of OCS sediment resources following storm events; and
- restore parkland, wildlife refuges and habitat, and other areas, which can promote the long-term sustainability of communities and ecosystems.

The sediment resources are generally based on sediment grain size, shape, sorting, color, mineralogy, sediment deposit volume and geometry, and proximity to project sites. To determine which State or OCS areas contain compatible sediment resources and facilitate stewardship responsibilities, BOEM is proposing to conduct, fund, or authorize sediment survey activities to identify, delineate, monitor, and research potential sediment resources for future restoration projects.

Metrics:

Metric Title: PRM012 : Tool development for decision-making - # tools developed

Target: 1

Narrative: One tool will be developed as a strategic framework for Gulf sediment resource management that identifies sources, volumes and characteristic of sediment to aid decisionmakers in their project planning. BOEM is anticipating in executing five cooperative agreements over the life of the program to conduct the reconnaissance scale surveys and to conduct the study on geologic and morphological changes in sediment resource areas. The source data will be collected via a cooperative agreement with the States. Once the source data is submitted to BOEM, BOEM will QA/QC the data and data will be incorporated in MMIS for the resource managers use. MMIS database is geospatial viewer that helps manage multiple uses on the OCS such as sand resource assessment, environment assessments, sand leasing, and project placement. As the shoreline, marshes, or barrier islands are restored, we will be able to know how many miles of shoreline have been restored, and the amount of on-land infrastructure (military installations, homes, beaches) that has been protected.

Metric Title: PRM009 : Research - # studies reported to mgmt.

Target: 7

Narrative: These studies would include one reconnaissance scale survey for each of the Gulf states and OCS + one high resolution benthic assessment of potential sites + one study on geologic and morphological changes in sediment resource areas. The Study Area lies within the GOM state and federal waters out to 50 meters (m) (164 feet [ft]) deep. Sediment survey activities would not occur simultaneously across the entire Study Area, but the survey activities would be of limited spatial extent at any one time. The Study Area includes adjacent transit corridors used for vessel mobilization, demobilization, and access to support bases.

Risk and Uncertainties:

Surveys would aim to decrease the overall number of vessel mobilizations and reduce redundant data collection. The survey design and selection of technologies, deployment modes, and timing would balance data quality needs, while avoiding and minimizing potential environmental impacts.

The threat of storms and high demand of survey companies may delay some of the surveys. This risk would be mitigated by working with survey companies to help establish a schedule to leverage ship time with other local, state, and federal agencies for projects. This collaborative effort has worked in the past and those efforts can be utilized in the future.

Monitoring and Adaptive Management:

The data collection and data analysis will stand in perpetuity, with an evaluation of accuracy of the data collected and analyzed and with routine updates to the Marine Minerals Information System (MMIS), and state-funded sediment databases.

Data Management:

BOEM has managed and archived large volumes of geoscientific data through MMIS. To manage these large volumes of diverse data, BOEM has developed standard operating procedures so that coastal and offshore geoscientific, environmental, and associated data are presented uniformly, thus, making it easier for future datasets to be loaded into state-funded databases and MMIS and reviewed by State and Federal users. The end result would be the development of a tool that is continually updated with new information as sand resources are used or as new ones are identified. This tool would be employed by State and Federal agency project managers early in the design phase to identify and secure suitable sand resources for each restoration project.

Collaboration:

This program requires a high degree of collaboration and planning with Federal and State agencies, municipalities, and local communities. The U.S. Army Corps of Engineers is a partner because the

development of the sediment inventory enables coastal projects to achieve a post-disaster readiness. They can execute access to appropriate sediment that are proximate to coastal communities and have critical infrastructure at exposure. The sediment inventory also supports an increased need for material in USACE authorized project recovery activities associated with: the Texas Coastal Storm Risk Management (CSRSM) and ecosystem restoration (ER); South Atlantic Coastal Study (SACS) which includes Florida, Alabama, and Mississippi; and projects sponsored entirely by local and state governments (e.g., Texas Coastal Master Plan CSRSM/ER, Collier County, Florida). This tool potentially provides a tremendous cost and time saving for the states when dealing with future USACE projects. With accessibility to the sediment information, state resource managers will save at least six months of planning time and would save the GOM States' at least \$200,000 in matching monies per USACE project. The tool would also help restoration projects across various funding sources in the Gulf such as Natural Resource Damage Assessment and Gulf Environmental Benefit Fund.

Public Engagement, Outreach, and Education:

As the States decide on which areas will be restored or renourished, BOEM will work closely with the States for any outreach or public engagement for those restoration projects.

Leveraging:

Funds: \$700,000.00

Type: Bldg on Others

Status: Received

Source Type: Other Federal

Description: Depending on the State-defined needs and appropriations, BOEM may have limited funds to participate in, fund, or authorize sediment survey activities in a cooperative agreement. The purpose of these nationwide funds is to characterize and map these resources, so that they may be effectively managed into the future. Acquiring the nationwide funds can be challenging and is a highly competitive process. For the limited funds, there are other BOEM regions and programs competing for the same funds. As a result, less than 5% of the OCS in water depths of <100 ft, where dredging typically occurs with today's technology, has been surveyed due to the amount of limited funding.

Environmental Compliance:

The Department of the Interior (DOI) believes that the Gulf-wide Sediment Inventory activities would be fully covered by BOEM's National Environmental Policy Act (NEPA) Sand Survey Activities Environmental Assessment (EA). The EA will fully cover the Federal Environmental Consultations for these activities, which have also been addressed in the EA.

Bibliography:

BOEM. 2014a. Atlantic OCS proposed geological and geophysical activities: Mid-Atlantic and South Atlantic Planning Areas; final programmatic environmental impact statement. 3 vols. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS EIS/EA BOEM 2014-001.

BOEM. 2014b. Proposed geophysical and geological activities in the Atlantic OCS to identify sand resources and borrow areas: North Atlantic, Mid-Atlantic, and South Atlantic-Straits of Florida Planning Areas; final environmental assessment. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, Herndon, VA. OCS EIS/EA BOEM 2013-219.

BOEM. 2017. Gulf of Mexico OCS proposed geological and geophysical activities: Western, Central, and Eastern Planning Areas; final programmatic environmental impact statement. 4 vols. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS EIS/EA BOEM 2017-051.

Cousins, S. 2019. Shifting sand: Why we're running out of aggregate, *Construction Research and Innovation*, 10:3, 69-71, DOI: 10.1080/20450249.2019.1656448.

Khalil, S.M., Parson, L.E., and Waters, J.P. (eds.). 2012. Technical Framework for the Gulf Regional Sediment Management Master Plan (GRSMMP), *Journal of Coastal Research*, Special Issue No. 60, 72–124.

U.S. Dept. of the Interior. Bureau of Ocean Energy Management. 2019. Finding of no significant impact: Proposed sand survey activities for BOEM's Marine Minerals Program; Atlantic and Gulf of Mexico—final environmental assessment. EA published in April 2019; FONSI signed on May 1, 2019. OCS EIS/EA BOEM 2019-022. Internet website: <https://www.boem.gov/MMP-Sand-EA-FONSI/>. Accessed on April 1, 2020.

Budget

Project Budget Narrative:

BOEM is seeking a request of \$15,000,000. Development of the Gulfwide Sediment Inventory includes: (1) geophysical and geological data acquisition; and (2) data evaluation and interpretation. For this effort, BOEM would leverage work through state cooperative agreements and interagency agreements as well as academia and private contractor opportunities. BOEM will maximize partnering opportunities to acquire data. Even though the various States have different coastline miles, the survey, collection needs, and collection methods are same. The variation in shoreline special extent is based upon balancing individual state priorities with a budget that is divided evenly across states.

Based on the priorities determined by the States, data acquisition would include up to 2,500 km of new geophysical surveys (e.g., bathymetry, sub-bottom, and side-scan sonar) and/or up to 550 geological samples (e.g., vibracores), most likely a combination of the two in each of the Gulf States.

Total FPL 3 Project/Program Budget Request:

\$ 15,000,000.00

Estimated Percent Monitoring and Adaptive Management: N/A

Estimated Percent Planning: 5 %

Estimated Percent Implementation: 70 %

Estimated Percent Project Management: 5 %

Estimated Percent Data Management: 20 %

Estimated Percent Contingency: 0 %

Is the Project Scalable?:

Yes

If yes, provide a short description regarding scalability.:

This Gulf-wide program, which would provide \$3M to each interested State for data collection can be scaled, if needed. The amount of money for the program will depend on the number of States interested in having the data collected in their State. If only one State is interested in the program, then only \$3M will be expended for the program.

Sites can be prioritized based on data gaps and data analysis in State and Federal waters that need to be filled.

Environmental Compliance¹

Environmental Requirement	Has the Requirement Been Addressed?	Compliance Notes (e.g.,title and date of document, permit number, weblink etc.)
National Environmental Policy Act	Yes	BOEM’s National Environmental Policy Act (NEPA) Sand Survey Activities Environmental Assessment will fully cover the Federal Environmental Consultations for all of the activities identified as yes below. The EA and FONSI can be found at https://www.boem.gov/sites/default/files/non-energy-minerals/MMP-Sand-EA-FONSI.pdf ; The description of equipment; EFH assessment; finding of no historic properties effects; and consultation coordination can be found in the uploaded PDF.
Endangered Species Act	Yes	See documents upload under NEPA
National Historic Preservation Act	Yes	See documents upload under NEPA
Magnuson-Stevens Act	Yes	See documents upload under NEPA
Fish and Wildlife Conservation Act	Yes	See documents upload under NEPA
Coastal Zone Management Act	Yes	See documents upload under NEPA
Coastal Barrier Resources Act	Yes	See documents upload under NEPA
Farmland Protection Policy Act	N/A	Note not provided.
Clean Water Act (Section 404)	Yes	See documents upload under NEPA
River and Harbors Act (Section 10)	Yes	See documents upload under NEPA
Marine Protection, Research and Sanctuaries Act	Yes	See documents upload under NEPA
Marine Mammal Protection Act	Yes	See documents upload under NEPA
National Marine Sanctuaries Act	Yes	See documents upload under NEPA
Migratory Bird Treaty Act	Yes	See documents upload under NEPA
Bald and Golden Eagle Protection Act	N/A	Note not provided.
Clean Air Act	Yes	See documents upload under NEPA
Other Applicable Environmental Compliance Laws or Regulations	N/A	Note not provided.

¹ Environmental Compliance documents available by request (restorecouncil@restorethegulf.gov).

Maps, Charts, Figures



Figure 1: State and offshore sediment resources program location

RESTORE Council FPL 3 Proposal Document

General Information

Proposal Sponsor:

U.S. Department of the Interior – Bureau of Ocean Energy Management

Title:

State and Offshore Sediment Resources Inventory

Project Abstract:

The Gulf's beach & barrier island restoration efforts have historically been implemented on a project-by-project basis, without comprehensive consideration of scope, type and quantity of this finite resource. Yet obtaining the right type of sediment with appropriate characteristics for a specific project is critical to a project's success and could provide positive environmental impact. The historical approach considers the Gulf as separate individual systems, rather than a regional ecosystem. BOEM proposes a program that will use a database tool to develop a strategic framework for Gulf sediment resource management that identifies sources of sediment, volume and characteristics of sediment. The total cost of the program which includes planning and implementation is \$15 million dollars.

FPL Category: Cat1: Implementation Only

Activity Type: Program

Program: State and Offshore Sediment Resources Inventory (DOI/BOEM)

Co-sponsoring Agency(ies):

U.S. Army Corps of Engineers

Is this a construction project?

No

RESTORE Act Priority Criteria:

(I) Projects that are projected to make the greatest contribution to restoring and protecting the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region, without regard to geographic location within the Gulf Coast region.

Priority Criteria Justification:

The sediment resources inventory would:

1. Determine the availability and location of sediment, including sand and gravel, for the management of barrier islands, beaches, and other coastal habitats necessary for State and Federal projects;
2. Significantly reduce restoration uncertainty, timing, and cost associated with determining strategic features of sediment necessary for projects, significantly reducing cost of restoration projects;
3. Support engineering and design for a variety of projects that will:
 - restore, protect, and enhance long-term resiliency to barrier island, interior wetland, and estuarine ecosystems and habitats while serving as the first line of defense of the mainland during storms and;
 - restore beaches that protect the shoreline and/or support coastal tourism economy.

4. Identify sensitive bottom habitats that should be protected from dredging and other bottom disturbing activities.

Project Duration (in years): 3

Goals

Primary Comprehensive Plan Goal:
Restore and Conserve Habitat

Primary Comprehensive Plan Objective:
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PF Restoration Technique(s):
Improve science-based decision-making processes: Develop tools for planning and evaluation

Location

Location:
Gulf-wide in State and Federal Waters (Figure 1).

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Narratives

Introduction and Overview:

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extent of borrow areas and to determine the resource use limitations (e.g., cultural resources, sensitive habitat, etc.). Additionally, surveys may occur before and after a dredge event to monitor any changes to a sediment resource and/or conduct specific research to understand the complexities of the environment (e.g., physical, biological, geological, etc.) and potential implications, in accordance with BOEM's stewardship responsibilities. Surveying would not be continuous; rather, most surveys would be small in spatial scale and short in duration. It is anticipated that approximately 70–85 percent of the survey work conducted under this proposal would be reconnaissance in nature and that 15–30 percent would be site-specific, high-resolution surveys. Sediment survey activities, whether reconnaissance or site-specific, could be conducted simultaneously or in sequence, depending upon the information needs, field conditions, and efficiency factors. Two general survey types would be employed: geophysical surveys for mapping the geologic framework and seafloor condition and geological surveys to collect sediment samples and shallow sediment cores (20 ft [6.1 m] maximum length) (BOEM 2019). The geophysical surveys obtain information about sedimentary architecture, shallow hazards (e.g., MEC or buried cables), archaeological resources, and sensitive benthic habitats, and they do not impact the seafloor. Geological surveys collect information on sediment composition and textural properties and do impact the seafloor (BOEM 2019). The end result would be the development of a tool that BOEM would continually update with new information as sediment resources are used or as new ones are identified. This tool would be employed by State and Federal agency project managers early in the design phase to identify and secure suitable sediment resources (e.g., sediment color and grain size for each restoration project).

On average, up to about 70 line-miles (113 line-km) of geophysical data could be collected per day, assuming that site-specific survey data is not collected simultaneously with reconnaissance-level data. It is anticipated that up to 4,000-8,000 line-miles of geophysical surveys could be collected for the entire Study Area in one year. Actual surveys would be discontinuous in time and geography, where the typical individual survey is smaller in terms of contiguous survey area (< 100-1000 km²). For sediment samples, which are primarily used to ground-truth the geophysical data, approximately 15 vibracores (method of sampling sediment) and up to 50 benthic grabs per day could be collected, although it is anticipated that most would be vibracores, with a small portion being grab samples. Up to 1,000-1,500 geological samples could be collected in one year. All estimates are based on one vessel completing the surveys; however, more than one vessel could be used. For a given survey, a vessel and crew would mobilize, though frequency would depend on the location and scope of activities.

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- designated areas in Louisiana.

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The sediment resources generally based on sediment grain size, shape, sorting, color, mineralogy, sediment deposit volume and geometry, and proximity to project sites. To determine which State or OCS areas contain compatible sediment resources and facilitate stewardship responsibilities, BOEM is proposing to conduct, fund, or authorize sediment survey activities to identify, delineate, monitor, and research potential sediment resources for future restoration projects.

Metrics:

Metric Title: PRM012 : Tool development for decision-making - # tools developed: Planning, Research, Monitoring

Target: 1

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Metric Title: PRM009 : Research - # studies reported to mgmt.: Planning, Research, Monitoring

Target: 7

Narrative: These studies would include one reconnaissance scale survey for each of the Gulf states and OCS + one high resolution benthic assessment of potential sites + one study on geologic and morphological changes in sediment resource areas. The Study Area lies within the GOM state and federal waters out to 50 meters (m) (164 feet [ft]) deep. Sediment survey activities would not occur simultaneously across the entire Study Area, but the survey activities would be of limited spatial extent at any one time. The Study Area includes adjacent transit corridors used for vessel mobilization, demobilization, and access to support bases.

Risk and Uncertainties:

Surveys would aim to decrease the overall number of vessel mobilizations and reduce redundant data collection. The survey design and selection of technologies, deployment modes, and timing would balance data quality needs, while avoiding and minimizing potential environmental impacts.

Monitoring and Adaptive Management:

The data collection and data analysis will stand in perpetuity, with an evaluation of accuracy of the data collected and analyzed and with routine updates to the Marine Minerals Information System (MMIS), and state-funded sediment databases.

Data Management:

BOEM has managed and archived large volumes of geoscientific data through MMIS. To manage these large volumes of diverse data, BOEM has developed standard operating procedures so that coastal and offshore geoscientific, environmental, and associated data are presented uniformly, thus, making it easier for future datasets to be loaded into state-funded databases and MMIS and reviewed by State and Federal users.

Collaboration:

This program requires a high degree of collaboration and planning with Federal and State agencies, municipalities, and local communities. The U.S. Army Corps of Engineers is a partner because the development of the sediment inventory enables coastal projects to achieve a post-disaster readiness. They can execute access to appropriate sediment that are proximate to coastal communities and have critical infrastructure at exposure. The sediment inventory also supports an increased need for material in USACE authorized project recovery activities associated with: the Texas Coastal Storm Risk Management (CSR) and ecosystem restoration (ER); South Atlantic Coastal Study (SACS) which includes Florida, Alabama, and Mississippi; and projects sponsored entirely by local governments (e.g., Texas Coastal Master Plan CSR/ER). This tool would also help restoration projects across various funding sources in the Gulf such as Natural Resource Damage Assessment and Gulf Environmental Benefit Fund.

Public Engagement, Outreach, and Education:

As the States decide on which areas will be restored or re-nourished, BOEM will work closely with the States for any outreach or public engagement for those restoration projects.

Leveraging:

Funds: \$700,000.00

Type: Bldg on Others

Status: Received

Source Type: Other Federal

Description: Depending on the State-defined needs and appropriations, BOEM may have limited funds to participate in, fund, or authorize sediment survey activities in a cooperative agreement. The purpose of these nationwide funds is to characterize and map these resources, so that they may be effectively managed into the future. Acquiring the nationwide funds can be challenging and is a highly competitive process. For the limited funds, there are other BOEM regions and programs competing for the same funds. As a result, less than 5% of the OCS in water depths of <100 ft, where dredging typically occurs with today's technology, has been surveyed due to the amount of limited funding.

Environmental Compliance:

The Department of the Interior (DOI) believes that the Gulf-wide Sediment Inventory activities would be fully covered by BOEM's National Environmental Policy Act (NEPA) Sand Survey Activities Environmental Assessment (EA). The EA will fully cover the Federal Environmental Consultations for these activities, which have also been addressed in the EA.

Bibliography:

BOEM. 2014a. Atlantic OCS proposed geological and geophysical activities: Mid-Atlantic and South Atlantic Planning Areas; final programmatic environmental impact statement. 3 vols. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS EIS/EA BOEM 2014-001.

BOEM. 2014b. Proposed geophysical and geological activities in the Atlantic OCS to identify sand resources and borrow areas: North Atlantic, Mid-Atlantic, and South Atlantic-Straits of Florida Planning Areas; final environmental assessment. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, Herndon, VA. OCS EIS/EA BOEM 2013-219.

BOEM. 2017. Gulf of Mexico OCS proposed geological and geophysical activities: Western, Central, and Eastern Planning Areas; final programmatic environmental impact statement. 4 vols. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS EIS/EA BOEM 2017-051.

Cousins, S. 2019. Shifting sand: Why we're running out of aggregate, *Construction Research and Innovation*, 10:3, 69-71, DOI: 10.1080/20450249.2019.1656448.

Khalil, S.M., Parson, L.E., and Waters, J.P. (eds.). 2012. Technical Framework for the Gulf Regional Sediment Management Master Plan (GRSMMP), *Journal of Coastal Research*, Special Issue No. 60, 72–124.

U.S. Dept. of the Interior. Bureau of Ocean Energy Management. 2019. Finding of no significant impact: Proposed sand survey activities for BOEM's Marine Minerals Program; Atlantic and Gulf of Mexico—final environmental assessment. EA published in April 2019; FONSI signed on May 1, 2019. OCS EIS/EA BOEM 2019-022. Internet website: <https://www.boem.gov/MMP-Sand-EA-FONSI/>. Accessed on April 1, 2020.

Budget

Project Budget Narrative:

BOEM is seeking a request of \$15,000,000. Development of the Gulfwide Sediment Inventory includes: (1) geophysical and geological data acquisition; and (2) data evaluation and interpretation. For this effort, BOEM would leverage work through state cooperative agreements and interagency agreements as well as academia and private contractor opportunities. BOEM will maximize partnering opportunities to acquire data. Based on the priorities determined by the States, data acquisition would include up to 2,500 km of new geophysical surveys (e.g., bathymetry, sub-bottom, and side-scan sonar) and/or up to 550 geological samples (e.g., vibracores), most likely a combination of the two in each of the Gulf States.

Total FPL 3 Project/Program Budget Request:

\$ 15,000,000.00

Estimated Percent Monitoring and Adaptive Management: N/A

Estimated Percent Planning: 5 %

Estimated Percent Implementation: 70 %

Estimated Percent Project Management: 5 %

Estimated Percent Data Management: 20 %

Estimated Percent Contingency: 0 %

Is the Project Scalable?

Yes

If yes, provide a short description regarding scalability.:

This Gulf-wide program, which would provide \$3M to each State for data collection can be scaled, if needed.

Sites can be prioritized based on data gaps and data analysis in State and Federal waters that need to be filled.

Environmental Compliance¹

Environmental Requirement	Has the Requirement Been Addressed?	Compliance Notes (e.g.,title and date of document, permit number, weblink etc.)
National Environmental Policy Act	Yes	BOEM's National Environmental Policy Act (NEPA) Sand Survey Activities Environmental Assessment will fully cover the Federal Environmental Consultations for all of the activities identified as yes below. The EA and FONSI can be found at https://www.boem.gov/sites/default/files/n-on-energy-minerals/MMP-Sand-EA-FONSI.pdf ; The description of equipment; EFH assessment; finding of no historic properties effects; and consultation coordination can be at found in the uploaded PDF.
Endangered Species Act	Yes	See documents upload under NEPA
National Historic Preservation Act	Yes	See documents upload under NEPA
Magnuson-Stevens Act	Yes	See documents upload under NEPA
Fish and Wildlife Conservation Act	Yes	See documents upload under NEPA
Coastal Zone Management Act	Yes	See documents upload under NEPA
Coastal Barrier Resources Act	Yes	See documents upload under NEPA
Farmland Protection Policy Act	N/A	Note not provided.
Clean Water Act (Section 404)	Yes	See documents upload under NEPA
River and Harbors Act (Section 10)	Yes	See documents upload under NEPA
Marine Protection, Research and Sanctuaries Act	Yes	See documents upload under NEPA
Marine Mammal Protection Act	Yes	See documents upload under NEPA
National Marine Sanctuaries Act	Yes	See documents upload under NEPA
Migratory Bird Treaty Act	Yes	See documents upload under NEPA
Bald and Golden Eagle Protection Act	N/A	Note not provided.
Clean Air Act	Yes	See documents upload under NEPA
Other Applicable Environmental Compliance Laws or Regulations	N/A	Note not provided.

¹ Environmental Compliance document uploads available by request (restorecouncil@restorethegulf.gov).

Maps, Charts, Figures



Figure 1. State and offshore sediment resources program location

FPL 3b Internal Staff Review of Proposal Submitted 4/24/2020

Project/Program	State and Offshore Sediment Resources Inventory (DOI/BOEM)		
Primary Reviewer	Jean Cowan	Sponsor	DOI
EC Reviewer	John Ettinger	Co-Sponsor	
1. Is/Are the selected Priority Criteria supported by information in the proposal?			Yes
Notes			
2. Does the proposal meet the RESTORE Act geographic eligibility requirement?			Yes
Notes			
3. Are the Comprehensive Plan primary goal and primary objective supported by information in the proposal?			Yes
Notes			
4. Planning Framework: If the proposal is designed to align with the Planning Framework, does the proposal support the selected priority approaches, priority techniques, and/or geographic area?			Yes
Notes			
5. Does the proposal align with the applicable RESTORE Council definition of project or program?			Yes
Notes			
6. Does the budget narrative adequately describe the costs associated with the proposed activity?			More information needed
Notes	Recognizing the variation in the length of coastline between the states (as illustrated in Figure 1), please consider providing additional information regarding the rationale to provide \$3 million to each State for data collection. Are the survey and data collection needs in each state the same despite the differences in coastline length?		
7. Are there any recommended revisions to the selected leveraged funding categories?			No

Notes	
8. Have three external BAS reviews been completed?	
	More information needed
Notes	Please see the external BAS review comments, and external reviews summary attached with these review comments.
9. Have appropriate metrics been proposed to support all primary and secondary goals?	
	Yes
Notes	
10. Environmental compliance: If FPL Category 1 has been selected for the implementation component of the project or program, does the proposal include environmental compliance documentation that fully supports the selection of Category 1?	
	Yes
Notes	
11. Geospatial Compliance: Have the appropriate geospatial files and associated metadata been submitted along with a map of the proposed project/program area?	
	Yes
Notes	

FPL 3b BAS Review Summary
State and Offshore Sediment Resources Inventory (DOI/BOEM)
May 2020

Overall the external Best Available Science reviews for *State and Offshore Sediment Resources Inventory (DOI/BOEM)* are positive. All reviewers agree that reasonable justification that the proposal is based on science that uses peer-reviewed data has been provided. Reviewers also feel that the scientific basis of this project is justified using science that maximizes the quality, objectivity, and integrity of information. Most reviewers (1 and 2) agree that the project has clearly defined goals, though they believe that the objectives could be better documented (e.g., by fleshing out information that can be discerned from the proposed metrics), as well as the methods to achieve objectives (Reviewers 2 and 3). While measures of success aligning with the primary project goals are identified, some reviewers feel that measures can be divided into smaller specific tasks (Reviewer 2) or that additional measures are needed to capture project success (Reviewer 3). The reviewers found the methods for the proposed project to be clearly defined with appropriate justification, and Reviewer 3 points out that the existing Minerals Management GIS survey will give the proposed project a jump start on achieving its goals.

All reviewers agree that the proposal objectives and methods are justified using peer-reviewed literature and publicly available information pertaining to the Gulf Coast region, though Reviewer 3 points out that the sponsors often rely on their own planning documents as sources. Reviewer 3 raises a number of questions regarding the timeline, budget, potential partnerships, and other methodological details, though it should be noted that such detailed information is not required at the proposal stage. In addition, Reviewer 1 requests information on how effort will be divided between states given the variation in shoreline spatial extent. Reviewers generally agree the proposal identifies a monitoring strategy that will support the measurement of project success. Although Reviewer 2 indicates interest in information on monitoring quality assurance and control, it should be noted that this information is not required at the proposal stage.

Reviewers agree that all literature sources used to support the proposal are accurately and completely cited, and represented in a fair and unbiased manner, though Reviewer 3 again notes that references do not provide a survey of relevant scientific literature. Reviewers do not raise concerns as to whether the information discussed and used for project justification is recent and relevant to the proposed activity.

Reviewer 1 believes the proposal evaluates uncertainties and risks in achieving its objectives over time, and that such risks are low, while Reviewer 2 requests additional information on how uncertainties pertaining to surveys conducted through six cooperative agreements are handled. Reviewer 3 feels that an evaluation of uncertainties and risks is not applicable for the straightforward project plans and objectives presented, seeing the tool being developed as a living product that can be updated by the sponsors as needed over time. Reviewer 3 also believes that the question of vulnerability to long-term environmental risks is not pertinent to the proposed project, while the other reviewers believe that such risks are adequately addressed by the environmental compliance information in the proposal.

Reviewers 1 and 2 point out the proposed project can significantly reduce restoration uncertainty, timing, and cost, though Reviewer 2 notes that it would be useful to include documentation on how the sediment delineation is derived and how the uncertainty associated with the sediment type identification and delineation is made available to the decision-makers. All reviewers believe the environmental benefits of the proposed activity are well-described within the project proposal. While the proposal does not evaluate the successes and failures of similar restoration efforts, Reviewer 2 believes that this is not applicable to tool development and the collection of additional field data, and Reviewer 3 feels that the previous experience of the sponsor has been addressed and may be sufficient information. All reviewers agree that the project sponsor has demonstrated experience conducting projects similar to the one proposed, though it may not be explicitly described in the proposal.

While Reviewer 3 questions whether there may be some redundancy in the activities proposed with the current U.S. Army Corps of Engineers SAND study, they also provide the following comment: "Project objectives are, in collaboration with the Gulf states, to a) gather existing science, and b) to collect new data for interpretation, all dealing with regional sediment resources. This is very straightforward, and the need for this work is well laid out in the BOEM planning documents."

FPL 3b BAS Review Summary

State and Offshore Sediment Resources Inventory (DOI/BOEM)

Response to comments

Overall the external Best Available Science reviews for *State and Offshore Sediment Resources Inventory (DOI/BOEM)* are positive. All reviewers agree that reasonable justification that the proposal is based on science that uses peer-reviewed data has been provided.

-BOEM appreciates the comment and no changes were made to the proposal based on this comment.

Reviewers also feel that the scientific basis of this project is justified using science that maximizes the quality, objectivity, and integrity of information. Most reviewers (1 and 2) agree that the project has clearly defined goals, though they believe that the objectives could be better documented (e.g., by fleshing out information that can be discerned from the proposed metrics), as well as the methods to achieve objectives (Reviewers 2 and 3).

-The methods of the program were defined in the proposed methods section of the proposal on page 3.

The proposed program would include three components: (1) reconnaissance-scale surveys to identify and delineate State and OCS sediment resources; (2) site-specific, high resolution geophysical surveys to further delineate borrow areas and investigate the presence of objects of archaeological significance, munitions of explosive concern (MEC), and hard bottom or other sensitive benthic habitat in the vicinity of potential borrow areas; and (3) research and/or monitoring surveys to detect geologic and morphological changes in sediment resource areas

BOEM provided additional information under the Metrics section of the proposal.

While measures of success aligning with the primary project goals are identified, some reviewers feel that measures can be divided into smaller specific tasks (Reviewer 2) or that additional measures are needed to capture project success (Reviewer 3).

-The task for the program in the individual State will be based on the State's priority area. The revised text on page 4 reads. "Surveying would not be continuous; rather, most surveys would be small in spatial scale and short in duration. It is anticipated that approximately 70–85 percent of the survey work conducted under this proposal would be reconnaissance in nature and that 15–30 percent would be site-specific, high-resolution surveys based on the State's priority areas and needs."

The reviewers found the methods for the proposed project to be clearly defined with appropriate justification, and Reviewer 3 points out that the existing Minerals Management GIS survey will give the proposed project a jump start on achieving its goals.

-BOEM is continually adding legacy data as we receive it from various stakeholders throughout the Gulf. This legacy data will help the program, and the States determine baselines and determine data gaps. The Marine Minerals Information System (MMIS) will give the proposed State's project a jump on achieving the goals of the program. BOEM appreciates the comment.

All reviewers agree that the proposal objectives and methods are justified using peer-reviewed literature and publicly available information pertaining to the Gulf Coast region, though Reviewer 3 points out that the sponsors often rely on their own planning documents as sources.

-BOEM is the only Federal agency authorized to issue sand leases on the OCS. As a result, BOEM must rely on environmental documents created by BOEM, in part, because they are the most specific studies to the program. However, in those documents, BOEM relies upon cited literature from sources throughout the document.

Reviewer 3 raises a number of questions regarding the timeline, budget, potential partnerships, and other methodological details, though it should be noted that such detailed information is not required at the proposal stage.

-The comment is noted and will be addressed at the next stage or at an appropriate point in the process.

In addition, Reviewer 1 requests information on how the effort will be divided between states given the variation in shoreline spatial extent.

-In the proposed methods on page 4, BOEM discusses how the work will be divided. BOEM intends to work with States and USACE to help to restore:

-160,000 acres of ecosystem restoration (beaches, dunes, and wetlands) in Texas;

-1,250 line miles of geophysical data to cover the Panhandle (state and federal waters) in Florida;

-the entire coastlines of Mississippi and Alabama, and

-designated areas in Louisiana.

BOEM added language to the data management section of the proposal as well to clarify that the variation in shoreline special extent is based upon balancing individual state priorities with a budget that is divided evenly across states."

Due to the amount of funding, the information collected will be based on the State identified priorities.

Reviewers generally agree the proposal identifies a monitoring strategy that will support the measurement of project success. Although Reviewer 2 indicates interest in information on monitoring

quality assurance and control, it should be noted that this information is not required at the proposal stage.

-BOEM will work with the States and USACE to set appropriate monitoring parameters and quality assurance.

Reviewers agree that all literature sources used to support the proposal are accurately and completely cited, and represented in a fair and unbiased manner, though Reviewer 3 again notes that references do not provide a survey of relevant scientific literature. Reviewers do not raise concerns as to whether the information discussed and used for project justification is recent and relevant to the proposed activity.

-The recent 2019 BOEM Environmental Assessment on Sand Surveys has relevant scientific literature in the document.

Reviewer 1 believes the proposal evaluates uncertainties and risks in achieving its objectives over time, and that such risks are low, while Reviewer 2 requests additional information on how uncertainties pertaining to surveys conducted through six cooperative agreements are handled.

-Additional information was added to the uncertainties and risk section of the proposal on page 6 of the proposal.

Reviewer 3 feels that an evaluation of uncertainties and risks is not applicable for the straightforward project plans and objectives presented, seeing the tool being developed as a living product that can be updated by the sponsors as needed over time.

-BOEM appreciates the comment and the comment is noted. The proposal was not changed based on this comment.

Reviewer 3 also believes that the question of vulnerability to long-term environmental risks is not pertinent to the proposed project, while the other reviewers believe that such risks are adequately addressed by the environmental compliance information in the proposal.

-BOEM appreciates the comment and the comment is noted from Reviewer 3 and the other reviewers. The proposal was not changed based on this comment.

Reviewers 1 and 2 point out the proposed project can significantly reduce restoration uncertainty, timing, and cost, though Reviewer 2 notes that it would be useful to include documentation on how the sediment delineation is derived and how the uncertainty associated with the sediment type identification and delineation is made available to the decision-makers. All reviewers believe the environmental benefits of the proposed activity are well-described within the project proposal. While the proposal does not evaluate the successes and failures of similar restoration efforts, Reviewer 2 believes that this is not applicable to tool development and the collection of additional field data, and Reviewer 3 feels that the previous experience of the sponsor has been addressed and may be

sufficient information. All reviewers agree that the project sponsor has demonstrated experience conducting projects similar to the one proposed, though it may not be explicitly described in the proposal.

-The sediment delineation methods were described in the environmental benefits section on page 5. In the Marine Minerals Information System (MMIS), the resource manager will be able to know the sediment grain size, shape, sorting, color, mineralogy, sediment deposit volume and geometry, and proximity to project sites by selecting those data layers in the database.

While Reviewer 3 questions whether there may be some redundancy in the activities proposed with the current U.S. Army Corps of Engineers SAND study, they also provide the following comment: “Project objectives are, in collaboration with the Gulf states, to a) gather existing science, and b) to collect new data for interpretation, all dealing with regional sediment resources. This is very straightforward, and the need for this work is well laid out in the BOEM planning documents.”

-BOEM and the USACE are working together on the SAND study. BOEM has provided legacy data for the USACE database. The programs are similar but cover different geographical areas such State versus Federal waters. However, this proposal will help fill in the data gaps for OCS and State waters. There are still a lot of unknown areas in the Gulf especially off the coast of Texas which the SAND study does not address.

Gulf Coast Ecosystem Restoration Council

FPL 3b Internal Best Available Science Review Panel Summary

July 2020

Introduction

On Tuesday, June 30, and Wednesday July 1, 2020 the RESTORE Council convened the Funded Priorities List (FPL) 3b Internal Best Available Science (BAS) Review Panel. The purpose of this internal panel was to use Council member-agency expertise to address external BAS review comments provided for FPL 3b submitted project/program proposals, and potentially identify project/program synergies not identified prior to proposal submission. The ultimate goal of the panel was to provide Council members with substantive best available science content to inform their decision-making.

The internal panel was convened via webinar with representatives from each of the Council's eleven member agencies present. Each BAS Panel member was provided the following:

- 1) Full FPL 3b proposals
- 2) 3 external BAS reviews for each proposal
- 3) Summary of external BAS reviews for each proposal
- 4) Proposal Sponsor's response to the BAS reviews summary
- 5) Any proposed revisions to the proposal

Proposal sponsors provided a brief synopsis of their proposal to the panel, a summary of comments made in external reviews, and discussed their proposed response to the external reviews. Council staff then solicited feedback from the panel on the proposal sponsor's presentation of comments and responses to those comments, and any additional BAS concerns. Council staff also solicited feedback on any existing or future synergies with other Gulf restoration activities. The proceedings of the meeting for this proposal are summarized below.

Department of the Interior

State and Offshore Sediment Resources Inventory (DOI/BOEM)

Feedback from the panel on the proposal sponsor's presentation of comments and responses to those comments, and any additional BAS concerns:

Allocation of funding/spatial extent: Requests information on how the effort will be divided between states given the variation in shoreline spatial extent.

- The BAS panel agrees that DOI has appropriately addressed this comment.

Monitoring QA/QC: Interest in information on monitoring quality assurance and control (though it should be noted that this information is not required at the proposal stage).

- The BAS panel agrees that DOI has appropriately addressed this comment.

Survey uncertainties: Additional information on how uncertainties pertaining to surveys conducted through six cooperative agreements are handled.

- The BAS panel agrees that DOI has appropriately addressed this comment.

Sediment delineation: It would be useful to include documentation on how the sediment delineation is derived and how the uncertainty associated with the sediment type identification and delineation is made available to decision-makers.

- The BAS panel agrees that DOI has appropriately addressed this comment.

Lessons learned: The proposal does not evaluate the successes and failures of similar restoration efforts (though this may not be applicable to tool development and data collection, and past experience of the sponsor is demonstrated).

- The BAS panel agrees that DOI has appropriately addressed this comment.

Other: A panelist asks who will conduct the reconnaissance surveys.

- BOEM response: BOEM would leave it up to the states for state waters, allowing states to contract with survey companies unless they prefer BOEM to contract with survey companies directly.

Other: Will legacy data be made available with newly collected data?

- BOEM response: Yes, legacy data is being gathered now in preparation for potential funding of the proposal, and will be used to identify data gaps which the proposed surveys will be able to fill.

Other: Will cores be taken, or will data collection involve only surveys?

- BOEM response: Sediment cores will be taken.

Panel comments on existing or future synergies with proposed activity:

Coordination between the proposed work and a currently-funded RESTORE project, the Alabama State Expenditure Plan funded Characterization and Delineation of Significant Sand Resource Areas Essential for Beach Restoration activity, would afford potential efficiencies, such as leveraging ship time between projects.



SCIENCE EVALUATION

Bucket 2: Comprehensive Plan Component

Proposal Title: State and Offshore Sediment Resources Inventory
Location (If Applicable): Gulf-wide
Council Member Bureau or Agency: U.S. Department of the Interior, Bureau of Ocean Energy Management
Type of Funding Requested: Implementation

Reviewed by: Reviewer 1
Date of Review: 05/10/2020

Best Available Science:

These 4 factors/elements help frame the reviewer's answers to A, B and C found in next section:

Question 1.	
Have the proposal objectives, including proposed methods, been justified using peer reviewed and/or publicly available information?	Yes
Comments:	
The proposal objectives are justified and supported by a series of peer-reviewed papers published in a Special Issue of the Journal of Coastal Research. The methods are justified and described in several BOEM reports.	

Question 2.	
If information supporting the proposal does not directly pertain to the Gulf Coast region, are the proposal's methods reasonably supported and adaptable to that geographic area?	Yes
Comments:	
The information supporting the proposal directly pertains to the Gulf Coast region.	

Question 3.	
Are the literature sources used to support the proposal accurately and completely cited? Are the literature sources represented in a fair and unbiased manner?	Yes
Comments:	
The papers published in the Journal of Coastal Research Special Issue provide a solid and comprehensive support of the proposed research. The literature sources are represented in a fair and unbiased manner. There is a minor mistake in the "Bibliography". The citation of "Khalil et al., 2012" should pertain to the entire Special Issue. The page number, 72-124, refers to a paper within the SI by "Byrnes and Berlinghoff".	

Question 4.	
Does the proposal evaluate uncertainties and risks in achieving its objectives over time? (e.g., is there an uncertainty or risk in the near- and/or long-term that the project/program will be obsolete or not function as planned?)	Yes
Comments:	
The proposed research identified the needs to decrease the number of vessel mobilization and reduce redundant data collection. It is not likely that the proposed program will be obsolete in both near- and long-term.	

Based on the answers to the previous 4 questions, and *giving deference to the sponsor to provide within reason the use of best available science*, the following three questions can be answered:

Question A	
Has the applicant provided reasonable justification that the proposal is based on science that uses peer- reviewed and publicly available data?	Yes
Comments:	
The science is well justified in the Journal of Coastal Research Special Issue.	

Question B	
Has the applicant provided reasonable justification that the proposal is based on science that maximizes the quality, objectivity, and integrity of information (including, as applicable, statistical information)?	Yes
Comments:	
The needs for this project are well justified based on science and practices.	

Question C	
Has the applicant provided reasonable justification that the proposal is based on science that clearly documents and communicates risks and uncertainties in the scientific basis for such projects/programs?	Yes
Comments:	
The Gulf-wide database and tool established by this project can significantly reduce restoration uncertainty, timing and cost.	

Science Context Evaluation:

Question A	
Has the project/program sponsor or project partners demonstrated experience in implementing a project/program similar to the one being proposed?	Yes
Comments:	
BOEM is the proper agency to implement the proposed project.	

Question B	
Does the project/program have clearly defined goals objectives?	Yes
Comments:	
The goals are clearly defined.	

Question C	
Has the proposal provided a clear description of the methods proposed, and appropriate justification for why the method is being selected (e.g., scientifically sound; cost-effectiveness)?	Yes
Comments:	
The methods were briefly described in the proposal but well documented in the series of reports in the Bibliography.	

Question D	
Does the project/program identify the likely environmental benefits of the proposed activity? Where applicable, does the application discuss those benefits in reference to one or more underlying environmental stressors identified by best available science and/or regional plans?	Yes
Comments:	
As stated in the proposal: "BOEM, in cooperation with the GOM State and other Federal agencies, can develop a more comprehensive understanding of sediment resources." The application discussed the potential environmental benefits in reference to several stressors.	

Question E	
Does the project/program have measures of success (i.e., metrics) that align with the primary Comprehensive Plan goal(s)/objectives? (Captures the statistical information requirement as defined by RESTORE Act)	Yes
Comments:	
The proposed study will develop one tool as a strategic framework for Gulf sediment resources management, in addition to some field data collection.	

Question F	
Does the proposal discuss the project/program's vulnerability to potential long-term environmental risks (i.e., climate, pollution, changing land use)? (Captures risk measures as defined under best available science by the RESTORE Act)	Yes
Comments:	
This is discussed in the environmental compliance table.	

Question G	
Does the project/program consider other applicable short-term implementation risks and scientific uncertainties? Such risks may include the potential for unanticipated adverse environmental and/or socio-economic impacts from project implementation. Is there a mitigation plan in place to address these risks? Any relevant scientific uncertainties and/or data gaps should also be discussed. (Captures risk measures as defined under best available science by the RESTORE Act)	Yes
Comments:	
The proposed study aims at developing a tool and collecting additional field data. The above questions are not directly applicable. The “yes” answer is chosen here because there is no “N/A” option.	

Question H	
Does the project/program consider recent and/or relevant information in discussing the elements above?	Yes
Comments:	
The above questions are not directly applicable. The “yes” answer is chosen here because there is no “N/A” option.	

Question I	
Has the project/program evaluated past successes and failures of similar efforts? (Captures the communication of risks and uncertainties in the scientific basis for such projects as defined by the RESTORE Act)	Yes
Comments:	
The proposed study aims at developing a tool and collecting additional field data. The above questions are not directly applicable. The “yes” answer is chosen here because there is no “N/A” option.	

Question J	
Has the project/program identified a monitoring and data management strategy that will support project measures of success (i.e., metrics). If so, is appropriate best available science justification provided? If applicable, how is adaptive management informed by the performance criteria? (Captures statistical information requirement a defined by the RESTORE Act)	Yes
Comments:	
A data management strategy was developed. BOEM had significant experience and success in developing and maintaining such large database.	



Please summarize any additional information needed below:
The proposed study is well worthwhile. I do have one comment/question concerning the budget. The proposal stated that the program would provide \$3M to each of the five Gulf State. However, TX, LA, and FL have much longer shoreline and coastal zone. Why would the budget be divided evenly for each State?



SCIENCE EVALUATION

Bucket 2: Comprehensive Plan Component

Proposal Title: State and Offshore Sediment Resources Inventory
Location (If Applicable): Gulf-wide
Council Member Bureau or Agency: U.S. Department of the Interior, Bureau of Ocean Energy Management
Type of Funding Requested: Implementation

Reviewed by: Reviewer 2
Date of Review: 05/11/2020

Best Available Science:

These 4 factors/elements help frame the reviewer's answers to A, B and C found in next section:

Question 1.	
Have the proposal objectives, including proposed methods, been justified using peer reviewed and/or publicly available information?	Yes
Comments:	
<p>Two articles have been referred to support the objective of this proposal. The first article by Cousins talks about the scarcity of sand for construction activities. The article is published in the Journal of Construction Research and Innovation. Only the abstract of the article is publicly available.</p> <p>The second article by Khalil et al. 2012, is the most crucial article supporting the objective of this proposal. The article is a brief introduction to the Gulf regional Sediment management master Plan (GRSMMP). The detailed document about the GRSMMP is available publicly and written by citing numerous scientific publications.</p>	

Methods:

The proposal refers to three previously published BOEM documents for proposed methods. These documents are BOEM published proposed Geological and geophysical activities in the Gulf of Mexico and Atlantic regions. These documents are publically available and based on peer-reviewed journal articles.

The three program components described in the methodology are as specified in the referenced articles. The geophysical and geological surveys are capable of achieving proposed information about the seafloor sediments.

Question 2.

If information supporting the proposal does not directly pertain to the Gulf Coast region, are the proposal's methods reasonably supported and adaptable to that geographic area?

Yes

Comments:

There is no need to adopt the survey methods as the proposal refers to the BOEM published proposed geological and geophysical activities in the Gulf of Mexico. The Gulf of Mexico is the geographical area of the proposed surveys.

Question 3.

Are the literature sources used to support the proposal accurately and completely cited? Are the literature sources represented in a fair and unbiased manner?

Yes

Comments:

The supporting literature cited in this proposal is accurate. The literature sources presented are large technical documents prepared by BOEM and GOM Alliance. These reports are based on many unbiased technical peers reviewed journal articles. So it is fair to say that the literature sources are unbiased.

Question 4.

Does the proposal evaluate uncertainties and risks in achieving its objectives over time? (e.g., is there an uncertainty or risk in the near- and/or long-term that the project/program will be obsolete or not function as planned?)	Need more information
Comments:	
The proposal has a short paragraph about risks and uncertainties. It is useful to know how the uncertainties of conducting surveys through six cooperative agreements are handled.	
The developed tool be current as long as there is a continuous inflow of new data and updates from all the users of offshore resources. The BOEM being an authority to approve such projects, it should have most of the inhouse information available to update ongoing activity and survey results.	

Based on the answers to the previous 4 questions, and *giving deference to the sponsor to provide within reason the use of best available science*, the following three questions can be answered:

Question A	
Has the applicant provided reasonable justification that the proposal is based on science that uses peer- reviewed and publicly available data?	Yes
Comments:	
Yes, the identification of sediment type and their properties are proposed using well established and previously proven survey methods. The methods are well documented in referenced technical reports which are publically available.	

Question B	
Has the applicant provided reasonable justification that the proposal is based on science that maximizes the quality, objectivity, and integrity of information (including, as applicable, statistical information)?	Yes
Comments:	

The collection of survey data that looks at 1) surficial sediment properties (using Side scan sonars and backscatter data from multibeam sonars) 2) sub-surface sediment properties from sub-bottom profilers, and, 3) ground-truthing of remotely acquired data from 1 and 2, maximizes the quality and integrity of information.

Question C	
Has the applicant provided reasonable justification that the proposal is based on science that clearly documents and communicates risks and uncertainties in the scientific basis for such projects/programs?	Need more information
Comments:	
The collection of survey data, as described in comments for Question B, increases the confidence in the sediment data presented to decision-makers minimizing the uncertainty. It would be useful to include the documentation on how the sediment delineation is derived and how the uncertainty associated with the sediment type identification and delineation is made available to the decision-makers.	

Science Context Evaluation:

Question A	
Has the project/program sponsor or project partners demonstrated experience in implementing a project/program similar to the one being proposed?	Need more information
Comments:	
There are no specific paragraphs that give previous examples of similar scale projects being conducted by the sponsors. BOEM’s experience with the data management portion of the project is mentioned in the proposal. However, it is known to me that BOEM and USACE have conducted such large scale projects.	

Question B	
Does the project/program have clearly defined goals objectives?	Need more information
Comments:	
The proposal has clearly defined goals. The objectives or more specific actions to achieve goals can be better documented. Some critical objectives are described at different sections of the proposal; for example, in the Metric title: PRM012, it is mentioned that the BOEM plans on executing six cooperative agreements for conducting the surveys. From matrix Title PRM009: it is mentioned that the study areas are out to 50m of waters. Are all surveys under this project conducted to 50m depth contour?	

Question C	
Has the proposal provided a clear description of the methods proposed, and appropriate justification for why the method is being selected (e.g., scientifically sound; cost-effectiveness)?	Yes
Comments:	
The methods of geophysical and geological surveys are well defined in the referenced documents.	

Question D	
Does the project/program identify the likely environmental benefits of the proposed activity? Where applicable, does the application discuss those benefits in reference to one or more underlying environmental stressors identified by best available science and/or regional plans?	Yes
Comments:	
It is clear that this project provides environmental benefits, as described in the proposal.	

Question E	
Does the project/program have measures of success (i.e., metrics) that align with the primary Comprehensive Plan goal(s)/objectives? (Captures the statistical information requirement as defined by RESTORE Act)	Need more information
Comments:	
There are two metrics mentioned in the proposal. The first metrics talk about the development of the tool, survey operations, and restoration activity reporting. These measures of success can be divided into smaller specific tasks for the proposed large project.	

Question F	
Does the proposal discuss the project/program's vulnerability to potential long-term environmental risks (i.e., climate, pollution, changing land use)? (Captures risk measures as defined under best available science by the RESTORE Act)	Yes
Comments:	
The proposal provided a list of Environment compliance requirements and a note about whether the applicable act's requirements are addressed or not.	

Question G	
Does the project/program consider other applicable short-term implementation risks and scientific uncertainties? Such risks may include the potential for unanticipated adverse environmental and/or socio-economic impacts from project implementation. Is there a mitigation plan in place to address these risks? Any relevant scientific uncertainties and/or data gaps should also be discussed. (Captures risk measures as defined under best available science by the RESTORE Act)	Yes
Comments:	
The proposal discusses the action plan if the survey areas found to be biological or archaeological sensitive.	

Question H	
Does the project/program consider recent and/or relevant information in discussing the elements above?	Yes
Comments:	
The survey techniques and methods proposed in this proposal are taken from recently prepared technical documents (2019/2017)	

Question I	
Has the project/program evaluated past successes and failures of similar efforts? (Captures the communication of risks and uncertainties in the scientific basis for such projects as defined by the RESTORE Act)	Need more information
Comments:	
The past evaluations are not clearly mentioned in the proposal. However, a successful data management experience with MMIS is mentioned. It may be beneficial to study any other programs that are similar to the proposed program.	

Question J	
Has the project/program identified a monitoring and data management strategy that will support project measures of success (i.e., metrics). If so, is appropriate best available science justification provided? If applicable, how is adaptive management informed by the performance criteria? (Captures statistical information requirement a defined by the RESTORE Act)	Need more information
Comments:	
The proposal mentions monitoring and adaptive management. I am curious to know how the data collection and processing activity be monitored and what are the criteria for the accuracy evaluations.	



Please summarize any additional information needed below:
<p>1) How much area is expected to be surveyed under this grant in 3 years? Can it be How far offshore? What is a cost-efficient distance from shore for a beach nourishment project?</p> <p>2) How much of the previously collected data is available through the state and federal agencies? What are the databases that are utilized to avoid duplicating data collection?</p> <p>3) What specific types of equipment expected to be used for reconnaissance and site-specific surveys? Will these be specified during the cooperative agreements? For example, using a multibeam Vs single beam during the geophysical surveys can profoundly impact the amount of area where bathymetric data is collected. Are there any minimum and preferred list of equipment expected from the cooperative partners?</p> <p>4) How the tool will be developed once the collected survey data are processed. Is this a GIS-based tool? Will it be associated with MMIS?</p> <p>5) what exact sections from the referenced material (BOEM2017, BOEM 2014a, BOEM 2014B) when describing proposed methods of sand survey equipment types and techniques used?</p> <p>6) This massive survey effort may certainly be useful for bathymetric data collection for navigation purposes (NOAA responsibilities). Are there any plans to coordinate with the NOAA Office of Coast survey?</p> <p>7) The proposed project can contribute the survey data towards the SEABED 2030 project and potentially have some additional funding available. Are there any federal fundings available to support SEABED 2030 mission?</p> <p>8) Lately, the backscatter data from multi-frequency multibeam systems has been proven to gather additional information about the sediment types that are not available through the use of a single beam or multibeam mono frequency sonars. Are there any plans to encourage the use of backscatter data from multi-frequency multibeam sonars during the cooperative agreement for geophysical surveys?</p> <p>9) The use of multibeam sub-bottom profilers can collect swaths of sub-bottom profile data compared to a single beam sub-bottom profiler. Are there any plans to encourage the use of multibeam sub-bottom profilers for the geophysical data collection?</p>

10) Can the development of the tool for decision making be started using the limited available dataset?



SCIENCE EVALUATION

Bucket 2: Comprehensive Plan Component

Proposal Title: State and Offshore Sediment Resources Inventory
Location (If Applicable): Gulf-wide
Council Member Bureau or Agency: U.S. Department of the Interior, Bureau of Ocean Energy Management
Type of Funding Requested: Implementation

Reviewed by: Reviewer 3
Date of Review: 05-11-2020

Best Available Science:

These 4 factors/elements help frame the reviewer's answers to A, B and C found in next section:

Question 1.	
Have the proposal objectives, including proposed methods, been justified using peer reviewed and/or publicly available information?	Yes
Comments:	
Proposal objectives are not strongly supported by peer reviewed literature. In fact, the only literature they cite, other than their own planning documents, is a USGS RSM planning document reformatted and published in the the Journal of Coastal Research. There is no survey of the relevant scientific literature. The BOEM planning documents do completely lay out the techniques and methods to be used in great detail.	

Question 2.	
If information supporting the proposal does not directly pertain to the Gulf Coast region, are the proposal's methods reasonably supported and adaptable to that geographic area?	Yes
Comments:	
Information is transferable and pertinent to the GOM.	

Question 3.	
Are the literature sources used to support the proposal accurately and completely cited? Are the literature sources represented in a fair and unbiased manner?	Yes
Comments:	
See comment in question 1.	

Question 4.	
Does the proposal evaluate uncertainties and risks in achieving its objectives over time? (e.g., is there an uncertainty or risk in the near- and/or long-term that the project/program will be obsolete or not function as planned?)	No
Comments:	
Project plans and objectives are straightforward, and project outcomes are envisioned as a living product that will be updated as new information becomes available.	

Based on the answers to the previous 4 questions, and *giving deference to the sponsor to provide within reason the use of best available science*, the following three questions can be answered:

Question A	
Has the applicant provided reasonable justification that the proposal is based on science that uses peer- reviewed and publicly available data?	Yes
Comments:	
Project objectives are, in collaboration with the Gulf states, to a) gather existing science, and b) to collect new data for interpretation, all dealing with regional sediment resources. This is very straightforward, and the need for this work is well laid out in the BOEM planning documents.	

Question B	
Has the applicant provided reasonable justification that the proposal is based on science that maximizes the quality, objectivity, and integrity of information (including, as applicable, statistical information)?	Yes
Comments:	
Again, the BOEM planning documents are comprehensive.	

Question C	
Has the applicant provided reasonable justification that the proposal is based on science that clearly documents and communicates risks and uncertainties in the scientific basis for such projects/programs?	No
Comments:	
This information may be contained within the BOEM planning documents, but it is not clear from the proposal that this is the case. Risks and uncertainties are not specifically addressed for the proposed work.	

Science Context Evaluation:

Question A	
Has the project/program sponsor or project partners demonstrated experience in implementing a project/program similar to the one being proposed?	Yes
Comments:	
The proposed project is simply a follow-up project that builds on that done along the US East coast with funds provided by Congress after Hurricane Sandy devastated the region. BOEM shows that they have learned much from that previous experience and has made some changes to their general approach that respect lessons learned in that study, which ran from 2014-2019.	

Question B	
Does the project/program have clearly defined goals objectives?	Yes
Comments:	
The goals are well-defined, but only generally stated. Yes, they will work with the Gulf states to collect and integrate existing and new data, but the working relationships to do so are not spelled out at the state, regional, municipal or individual level. I assume they exist. There is a long way from "we'll collect everything into a GIS" and doing it, when data are in many different formats and archives.	

Question C	
Has the proposal provided a clear description of the methods proposed, and appropriate justification for why the method is being selected (e.g., scientifically sound; cost-effectiveness)?	Yes
Comments:	
All the details of the specific methods have been tested in the East coast surveys. The Minerals Management GIS is already existing, so that hurdle does not need to be cleared again. That MMGIS product will give this new project a jump start on the process of achieving its goals.	

Question D	
Does the project/program identify the likely environmental benefits of the proposed activity? Where applicable, does the application discuss those benefits in reference to one or more underlying environmental stressors identified by best available science and/or regional plans?	Yes
Comments:	
Environmental benefits are great, from restoring beaches, to storm protection, to habitat restoration, as well as critical habitat avoidance where improtnat bottom types exist. I wish this last item had been on their radar when they did the East coast studies!	

Question E	
Does the project/program have measures of success (i.e., metrics) that align with the primary Comprehensive Plan goal(s)/objectives? (Captures the statistical information requirement as defined by RESTORE Act)	Need more information
Comments:	
There are two metrics proposed. Neither rare based on anything that I can determine as statistically relevant – they are only a number of reports to pbe provided (7 – one for each state, assumably), and the number of tools developed (1). I would not consider these metrics for success of the project, as they do not include any assessment of real achievement. There does not appear to be any statistical aspect to the proposed activities.	

Question F	
Does the proposal discuss the project/program's vulnerability to potential long-term environmental risks (i.e., climate, pollution, changing land use)? (Captures risk measures as defined under best available science by the RESTORE Act)	Yes
Comments:	
This item is not pertinent to the proposed project. As far as changes in shelf sediments caused by climate or land use change, these vulnerabilities will be repfected in the new data as it comes in.	

Question G	
Does the project/program consider other applicable short-term implementation risks and scientific uncertainties? Such risks may include the potential for unanticipated adverse environmental and/or socio-economic impacts from project implementation. Is there a mitigation plan in place to address these risks? Any relevant scientific uncertainties and/or data gaps should also be discussed. (Captures risk measures as defined under best available science by the RESTORE Act)	No
Comments:	
This is not discussed in the proposal.	

Question H	
Does the project/program consider recent and/or relevant information in discussing the elements above?	No
Comments:	
See response above.	

Question I	
Has the project/program evaluated past successes and failures of similar efforts? (Captures the communication of risks and uncertainties in the scientific basis for such projects as defined by the RESTORE Act)	Yes
Comments:	
This has been addressed as far as the proposers' previous efforts, which show that they have developed a refined plan based on previous experience. They do not discuss previous efforts by others, which have been many over the past 40 years. Such a discussion, as background, may be contained within their comprehensive planning documents.	

Question J	
Has the project/program identified a monitoring and data management strategy that will support project measures of success (i.e., metrics). If so, is appropriate best available science justification provided? If applicable, how is adaptive management informed by the performance criteria? (Captures statistical information requirement a defined by the RESTORE Act)	Yes
Comments:	
At a very high level, proposers do have a monitoring and management strategy that will support the two metrics of success, although you have to work to make them line up. They will use the existing MMGIS platform to gather, archive, and make accessible existing information, and to serve as a basis for a planning tool (yet to be developed) for coastal managers. This portal will be updated as new information is delivered by PIs in each state, funded through state cooperatives. The state reports will form the basis of the data to report.	



Please summarize any additional information needed below:
I believe that some of the activities proposed are redundant with other current efforts. The goal of making a tool to use for managers, where they can go to see what sand resources are available and track their usage, is the specific goal of the SAND study, currently ongoing with the USACE, funded through a \$16M pot of federal funds supporting the South Atlantic Coastal Study (which includes FL, MS and AL). The budget for the proposed study might be double-dipping a bit.