

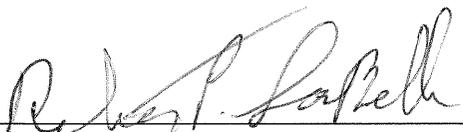


Record of Decision

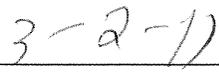
Use of OCS Sand Resources in NASA's Wallops Flight Facility Shoreline Restoration and Infrastructure Protection Program

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U.S. Department of the Interior
Bureau of Ocean Energy Management, Regulation and Enforcement



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I. Introduction

The National Aeronautics and Space Administration (NASA) has requested that the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) authorize the use of Outer Continental Shelf (OCS) mineral resources (sand) from an offshore shoal located northeast of the NASA's Wallops Flight Facility on the Eastern Shore of Virginia. The sand will be used in NASA's *Wallops Flight Facility (WFF) Shoreline Restoration and Infrastructure Program (SRIPP)*. Under this program, NASA proposes to extend an existing seawall and implement an initial beach fill in late 2011 with re-nourishment projects about every 5 years. The proposed connected action considered in this Record of Decision (ROD) is the BOEMRE's entering into a negotiated agreement for the purpose of making available sand from a shoal on the OCS for placement on the beach in support of the WFF SRIPP. This decision is limited to authorization of NASA's proposed use of OCS sand for the initial beach fill operation. Each subsequent beach fill proposal will require a new negotiated agreement and an updated environmental analysis.

The environmental impacts of the offshore dredging and the placement of sand at the WFF shoreline have been evaluated in a Programmatic Environmental Impact Statement (PEIS) prepared by NASA, with the U.S. Army Corps of Engineers (USACE) Norfolk District and BOEMRE as cooperating agencies. The USACE and BOEMRE are serving as cooperating agencies because they both possess regulatory authority and specialized expertise pertaining to NASA's proposed action. NASA would require authorizations from both the USACE and BOEMRE for the SRIPP. Under Section 404 of the Clean Water Act (CWA), the USACE has jurisdiction over the disposal of dredged and fill material in Waters of the U.S. In addition, under Section 10 of the Rivers and Harbors Act of 1899 (RHA), the USACE has jurisdiction over the placement of structures and work, such as dredging, conducted in navigable waters of the U.S. The USACE Norfolk District is designing the SRIPP and would serve in a construction management capacity during project implementation, including hiring construction contractors. The BOEMRE has jurisdiction over mineral resources on the Federal Outer Continental Shelf (OCS). NASA published the Final PEIS in October 2010 and their ROD in December 2010.

The PEIS was developed to fulfill all three Federal agencies' obligations under NEPA and the environmental impacts of their connected actions were encompassed in the analysis. The BOEMRE was involved in extensive reviews of draft documents, provided comments, and participated in discussions on technical issues, public meetings and consultations with other Federal agencies. The BOEMRE finds that the Final PEIS adequately assesses the environmental effects of the Bureau's Proposed Action and reasonable alternatives to its action. The BOEMRE independently reviewed the Draft PEIS and Final PEIS and found that the Bureau's comments

were adequately addressed. The BOEMRE is adopting the Final PEIS to comply with the requirements of the National Environmental Policy Act (NEPA).

II. Purpose and Need for the Proposed Action

Loss of sand from the Nation's beaches, dunes, and barrier islands is a serious problem that affects both the coastal environment and the economy. Beach nourishment and other coastal restoration projects are addressing this problem, and sand from the Outer Continental Shelf (OCS) is often used to stem this erosion. NASA has proposed the SRIPP to reduce the potential for damage to, or loss of, NASA, U.S. Navy, and Commonwealth of Virginia assets on Wallops Island from storm-induced wave impacts and coastal erosion. The purpose of the BOEMRE's connected action is to respond to a request for use of OCS sand under the authority granted to the Department of the Interior by the Outer Continental Shelf Lands Act (OCSLA). The Proposed Action is necessary because the Secretary of the Interior delegated the authority granted in the OCSLA to the BOEMRE to authorize the use of OCS sand resources for the purpose of shore protection and beach restoration.

III. Authority

The legal authority for the issuance of negotiated noncompetitive leases for OCS sand and gravel is provided by Outer Continental Shelf Lands Act (OCSLA) (43 U.S.C. 1337(k)(2)). In 1994 OCSLA was amended to allow the BOEMRE to convey, on a noncompetitive basis, the rights to OCS sand, gravel, or shell resources for use in a program for shoreline protection or beach restoration undertaken by a Federal, State, or local government agency (43 U.S.C. 1337(k)(2)(A)(i)).

The BOEMRE uses two types of lease conveyances for sand and gravel and other non-energy minerals from the OCS. These are (1) a non-competitive negotiated agreement, which can only be used for obtaining sand and gravel for public works projects funded in part or whole by a federal, state, or local government agency, and (2) a competitive lease sale in which any qualified person may submit a bid.

In this instance under the Proposed Action, the BOEMRE would enter into a negotiated agreement with NASA, the lead Federal agency for implementation of the SRIPP, as well as the USACE, who is acting in a technical capacity on behalf of NASA.

IV. Project Location and Setting

Wallops Island is one of eighteen barrier islands along Virginia's Eastern Shore. NASA has maintained infrastructure on the island that support a test site for aerospace technology experiments. It also has facilities that are part of the U.S. Navy and Virginia Commercial Spaceflight Authority's Mid-Atlantic Regional Spaceport (MARS). NASA, U.S. Navy, and Commonwealth of Virginia assets are at risk for damage or loss from storm-induced wave impacts. Part of the island has an existing seawall that is being undermined by wave action as there is little or no protective sand beach to prevent persistent erosion. Other parts of the island are essentially unprotected. The goal of SRIPP is to provide long-term protection of essential assets on the WFF.

For all three action alternatives evaluated in the PEIS, NASA evaluated three different potential borrow sites as sources of fill material for constructing and renourishing the Wallops Island beach: Unnamed Shoal A, Unnamed Shoal B, and the north end of Wallops Island Beach. The two offshore borrow areas, Unnamed Shoals A and B, are located on the OCS northeast of Wallops Island. Other borrow areas were originally considered by NASA but were eliminated during scoping due to a greater potential for environmental effects and multiple-use conflicts.

Due to its closer proximity to Wallops Island, NASA identified Unnamed Shoal A as the source of OCS sand for the initial beach fill under all three action alternatives, including the preferred action alternative ultimately selected in NASA’s ROD. Unnamed Shoal A is located approximately 11 miles (18 kilometers) northeast of Wallops Island. The proposed borrow area is divided into two sub-areas: A-1 and A-2. The water depth in the dredge areas ranges from about 30 ft (9 m) to 80 ft (24 m). The coordinates of the four corners for the two subareas are presented in Table 1.

A-1	A-2
37.85752° N, 75.19557° W	37.86170° N, 75.19816° W
37.85260° N, 75.19268° W	37.85752° N, 75.19557° W
37.83379° N, 75.22102° W	37.83943° N, 75.22417° W
37.83943° N, 75.22417° W	37.84362° N, 75.22732° W

V. Alternatives Including the Proposed Action

NASA’s Final EIS considers a wide range of structural and non-structural alternatives. Those alternatives are described in detail in NASA’s ROD, available for review at http://sites.wff.nasa.gov/code250/docs/SRIPP_ROD_SIGNED.pdf. NASA selected its preferred alternative to construct the SRIPP, including use of OCS sand from Unnamed Shoal A for the initial beach fill (which is described below as BOEMRE’s Proposed Action). Under their preferred alternative, NASA would also repair and extend an existing seawall. NASA has requested authorization for use of Unnamed Shoal A for the initial beach fill consistent with its preferred alternative. The BOEMRE has considered two alternatives upon this request: (1) the Proposed Action and (2) No Action. The Proposed Action is the preferred alternative of the BOEMRE after evaluation of the environmental impacts and implementation and enforcement of mitigation measures, as described below. The BOEMRE’s Proposed Action is the same under all three of NASA’s action alternatives evaluated in the PEIS, because all three of NASA’s action alternatives proposed use of OCS sand for the initial beach fill. For the initial beach fill, NASA’s action alternatives only considered that Unnamed Shoal A would be used since it is closer than Unnamed Shoal B and will require less transit time and fuel and thereby reduce overall project costs. As such, BOEMRE’s Proposed Action is limited to entering into a negotiated agreement with NASA to use OCS sand from Unnamed Shoal A for the initial beach fill.

Proposed Action – Enter into a Negotiated Agreement

The BOEMRE would negotiate an agreement with NASA that would allow the agency, in collaboration with the USACE, acting as its technical agent, to use 3,199,000 cubic yards (yd³) (2,446,000 m³) of OCS sand for sand placement at the Wallops Island shoreline. The agreement will be in the form of a 3-party Memorandum of Agreement between NASA, USACE Norfolk District, and BOEMRE. Although NASA plans to conduct renourishment projects, each using a volume of approximately 806,000 yd³ (616,000 m³) about every 5 years with a total of 9 renourishment cycles over a 50-year period, the Proposed Action is limited to authorization of the use of OCS sand for the initial beach fill. Subsequent beach fills using OCS sands would require separate negotiated agreements and environmental analyses. NASA and USACE have committed to implementing the mitigation measures and monitoring requirements identified in this ROD. BOEMRE will require implementation of the mitigation measures and monitoring requirements identified in this ROD that are under its jurisdiction.

The amount of shoal area needed for the initial beach fill is approximately 1,280 acres (520 hectares) or 2.0 mi² (5.2 km²). NASA's description of their proposed action was evaluated on the basis that a hopper dredge will be used to obtain and transport the OCS sand. The dredge is self-propelled and uses large pumps to suction sediment from the ocean bottom and place it in a hopper. Once the dredge hopper is filled, the dredge would transport the material to a pump-out buoy placed in state waters at a water depth of about 30 ft (9 m), approximately 2 mi (3 km) offshore of the placement area. The dredgers are expected to be equipped with a hopper with a capacity of 4,000 yd³ (3,000 m³). Since the hopper carries a mix of sand and water, the actual volume of sand would be approximately 3,000 yd³ (2,300 m³). Construction equipment would be used to shape the dewatering sediment to the design template.

To the extent practicable, dredging would occur in areas that are accreting, avoiding areas subject to erosion. The dredge depth would be about 2 m (6.6 ft). However, due to wave motion, the actual maximum dredged depths would likely be closer to 3 m (9.8 ft). NASA would not dredge the entire length of the shoal. The total amount of calendar time for the dredging activities would be about 7.5 months (a total of approximately 1,100 dredge trips).

The beach fill would extend along the shoreline of Wallops Island for a distance of about 3.7 mi (6.0 km). The beach fill would be placed such that there would be a 6 ft (1.8 m) high berm that would extend at least 70 ft (21 m) seaward of the existing seawall into the shallow nearshore zone. In addition, there would be a dune constructed at the seawall with a height of about 14 ft (4.3 m). Sand fencing and vegetative plantings would be used to stabilize the placed sand.

No Action Alternative – Deny Request for Use of OCS Sand

Under the BOEMRE's No Action alternative, an agreement for use of OCS sand would not be negotiated. Under the BOEMRE's No Action alternative, NASA would be unable to use sands from the OCS bottom borrow area identified and the SRIPP's feasibility and effectiveness could be jeopardized. If the SRIPP is not constructed on Wallops Island but maintenance and emergency repairs to existing structures continue, as identified in NASA's No Action alternative in the PEIS, the seawall can be expected to continue to deteriorate and would be increasingly

vulnerable to massive failure during large storm events as waves break directly on the structure and also undercut the leading edge of the seawall. The southern end of the barrier island would continue to erode. If NASA were to pursue a smaller scale project using different resources, one potential borrow source could be the existing beach on the accreting, northern end of Wallops Island which was evaluated in the PEIS. NASA could obtain sand from another area, but such an area and viable source of compatible sand (including any other potential source of OCS sand) has not been identified or evaluated for environmental impacts.

VI. Environmental Consequences

Proposed Action

The beach fill would have a beneficial effect in terms of reducing the rate of erosion, including the northern end of the U.S. Fish and Wildlife Service (U.S. FWS)-owned Assawoman Island. There would be a very short-term increase in turbidity during the placement of sand on the Wallops Island beach and burial of beach and surf zone fauna. Air quality and noise effects would be highly localized and short-term. Underwater noise impacts to listed whales would be monitored by marine mammal observers, and mitigation measures are in place to halt activities when listed whales are present within 1 km (0.62 mi) of the dredge to avoid injury from noise and vessel strike.

Dredging the offshore shoals would change shoal topography and could adversely affect foraging by seabirds, but impacts would be insignificant because of the abundance of shoals on a regional scale. Temporary noise disturbances from construction machinery would adversely affect beach nesting and foraging birds. There also would be adverse effects from a reduction in available food sources during and after the placement of sand on the shoreline. Over the long-term, there would be newly created shorebird nesting habitat. Adverse effects would occur on bottom dwelling communities within the dredging area and at the beach fill placement area. However, a rapid recovery would be expected after the project is completed.

Adverse effects on Essential Fish Habitat (EFH) would occur in the dredge area and the fill placement area due to the removal of benthic habitat. An impact to fisheries would also occur due to a temporary increase in turbidity in the area of dredging and sand placement. Potential adverse impacts on marine mammals would exist due to physical disturbance of habitat, vessel strikes, and increased noise from vessels. With the mitigation measures that would be taken, impacts would be minimal.

Adverse impacts, including sublethal and lethal injury, to loggerhead and Kemp's Ridley sea turtles, could occur during dredging. The U.S. FWS and National Marine Fisheries Service (NMFS) have concurred with the BOEMRE that none of NASA's action alternatives would jeopardize the continued existence of turtle species or modify critical habitat at this time (*see* the U.S. FWS Biological Opinion in Appendix D and NMFS Biological Opinion in Appendix E of the PEIS). Adverse effects are not expected to Atlantic green and leatherback sea turtles as they are not likely to occur in the project area. Effects will be mitigated using draghead deflectors and observers to avoid dredge-turtle interactions. Any potential adverse impacts on right, fin, or humpback whales, which are threatened or endangered species, would also be mitigated using

observers and following speed restrictions. Temporary adverse impacts on shorebirds (including piping plovers), seabirds and migratory birds known to breed, nest, and forage along the shoreline of Wallops Island are anticipated. The habitat value of north Wallops Island to shorebird species is high. Additionally, during planning for this component of the SRIPP, NASA would consult with the U.S. FWS and Virginia Department of Game and Inland Fisheries (VDGIF) to identify more site-specific means (targeting certain areas over others) for mitigating impacts. Over the long term, there would be an increase in potential habitat because of the increase in beach area.

There would be beneficial impacts from a reduced risk of serious damage to economically-important infrastructure, including commercially-important launch facilities. There could be some temporary minor adverse effects on commercial and recreational fishing due to dredge entrainment, sedimentation, and disruption of fish and benthos. No archaeological resources or historic properties are present in the project area. During construction there would be a temporary increase in upland traffic.

No Action

Under the BOEMRE's No Action alternative, use of OCS sands from Unnamed Shoal A would not be granted. Under the BOEMRE's No Action alternative, NASA could choose to use another borrow area for beach fill, such as the north end of Wallops Island Beach, which is fully analyzed in the PEIS. If NASA chose another borrow area for the beach fill, including any other potential area of OCS sands, the area would need to be thoroughly reviewed and analyzed for environmental impacts. Under the BOEMRE's No Action, NASA would likely choose not or be otherwise unable to undertake the SRIPP on Wallops Island. Without a beach fill, the environmental impacts on the shoal would be eliminated. Shorter-term adverse and longer-term beneficial impacts along the shoreline from beach fill would be reduced or eliminated. The remaining impacts would result from needed emergency repairs to structures and the seawall. The seawall would continue to deteriorate and be subject to massive failure, putting infrastructure and the coastal environment at risk of further degradation and potential catastrophic failure due to storm damage and coastal erosion. The southern end of the barrier island would continue to erode. There would be an increased risk to NASA's infrastructure on the island and to the agency's critical mission. The shoreline would continue to retreat, resulting in loss of available and deterioration of the quality of nesting habitat at the southern end of the barrier island.

VII. Consultation and Coordination

NASA served the role of the lead agency in environmental coordination and consultations with the Federal agencies. The BOEMRE and USACE were active participants in these efforts, and all resource agencies were notified of the BOEMRE's involvement. For purposes of the BOEMRE consultation and coordination requirements associated with issuing the proposed negotiated agreement, NASA served as the lead for environmental consultations fulfilling BOEMRE's obligations.

NASA submitted its Biological Assessment to the U.S. FWS and NMFS as required by Section 7(c) of the Endangered Species Act (ESA). The U.S. FWS and NMFS issued their Biological Opinions and consultations were concluded in July 2010 and the agencies' affect determinations for all protected species in the project area are provided in the Final PEIS (Table 52). NASA conducted remote sensing surveys of two potential shoals, including Unnamed Shoal A in 2009 in order to meet compliance with the National Historic Preservation Act (NHPA) and the Abandoned Shipwreck Act. No significant submerged cultural resources were identified at either shoal studied. Consultations were conducted with the Virginia Department of Historic Resources. NASA submitted to the Commonwealth of Virginia a Federal Consistency Determination in accordance with Section 307 (c) (1) of the Coastal Zone Management Act (CZMA).

Extensive discussions were held between NASA, BOEMRE, USACE, and NMFS concerning EFH. NMFS maintained that the proposed dredge activities were detrimental to the long-term physical recovery of the shoal. NMFS requested a number of modifications in the dredging operations. However, NASA, BOEMRE, and USACE did not concur with all of the recommendations because their implementation would make it too difficult to carry out the project in a cost-effective manner and/or their recommendations were not technically feasible. Moreover, the scientific studies conducted by the BOEMRE off the mid-Atlantic partially concurred with, but did not fully support the need for and justify the costs of NMFS's Conservation Recommendations. As a result, the consultations were concluded without full agreement with NMFS. NASA, as the lead agency, responded to the NMFS's Conservation Recommendations per the requirements of 50 CFR 600.920. This is explained in more detail in the discussion on mitigation (also see Appendix J, Attachments A and B of the PEIS).

VIII. Mitigation, Monitoring, and Reporting

Adopted through this ROD and identified below are the means deemed practicable by the BOEMRE to avoid, minimize, reduce, or eliminate adverse environmental effects that could result from the proposed activities. These mitigation, monitoring, and reporting requirements were developed during preparation of the EIS, through consultation and coordination with Federal and state governmental agencies, and on the basis of Bureau experience with similar beach nourishment projects.

First, mitigation, monitoring, and reporting requirements of the BOEMRE are identified. The second part summarizes mitigation and monitoring to be implemented by other agencies under other authorities. These are not BOEMRE-enforceable requirements, but are identified here because they are relevant in addressing impacts to the whole project, including the BOEMRE's Proposed Action. NASA, as the lead Federal agency, will be responsible for implementing and enforcing all other mitigation and monitoring commitments in Chapter 5 of the Final PEIS and adopted in their ROD. NASA, in its ROD for the SRIPP, has committed to implementing the mitigation measures and monitoring requirements identified in this ROD. These mitigation and monitoring requirements apply to initial construction, and NASA will report to the BOEMRE on the implementation and effectiveness of the mitigation. NASA will use an adaptive management strategy to develop and/or revise mitigation measures for subsequent actions.

The USACE plans on issuing Clean Water Act Section 404 and Rivers and Harbors Act Section 10 permits and may specify additional mitigation not yet identified.

BOEMRE Requirements

The negotiated agreement will stipulate that NASA is the lead Federal agency on behalf of the Federal government to ensure that activities comply with applicable environmental laws, including but not limited to the ESA, Magnuson-Stevens Fishery Management and Conservation Act (MSA), Migratory Bird Treaty Act, NHPA, and CZMA. NASA has assumed the role of lead Federal agency for ESA Section 7 compliance concerning threatened and endangered species under the purview of U.S. FWS and NMFS. Likewise, NASA has assumed the role of lead Federal agency for complying with Section 305 of the MSA, Section 106 of the NHPA, and Section 307 of the CZMA. NASA and USACE will instruct the contractor(s) to implement the mitigation terms, conditions, and measures required by the U.S. FWS, NMFS, Virginia Marine Resources Commission (VMRC) and Virginia Department of Environmental Quality (DEQ) pursuant to applicable federal and state laws and regulations. The required mitigation terms, conditions, and measures are reflected in the Biological Opinions, Conservation Recommendations, and Consistency Concurrence attached to the Final PEIS. Copies of all relevant correspondence, monitoring, and reporting related to the above resource agencies concerning these requirements will also be provided to the BOEMRE.

Specific mitigation, monitoring, and reporting required by the BOEMRE is provided in Attachment 1. The terms and conditions in Attachment 1 will be incorporated into the negotiated agreement. Mitigation measures were identified to reduce potential effects to habitat and sand resources in the borrow area, water quality, and cultural resources. The suite of relevant notification and reporting requirements are also summarized in Attachment 1.

Use of Borrow Area

Borrow Area Unnamed Shoal A is an offshore sand ridge. The BOEMRE will require NASA to continuously record dredge location, draghead depth, and dredge activity data and transmit the data to the BOEMRE on a biweekly basis. Dredge track lines and draghead depths will be provided in a format so that the BOEMRE can ensure the activity is limited to approved areas and dredging cut depths. NASA will be required to undertake pre- and post-bathymetric surveys to document the nature of seafloor changes in Unnamed Shoal A. NASA will use the pre-construction bathymetric survey to ensure that the cut depth does not exceed 3 meters. Although not required, the BOEMRE recommends that NASA perform additional bathymetric surveys one year and three years after construction to document morphologic changes within the borrow area.

The profile and volume of the shoal will be reduced by dredging. Based on the best available science sponsored by BOEMRE, NASA and the USACE have developed a dredging plan designed to minimize adverse effects to the extent practicable (Appendix J of the Final PEIS). Dredging will occur preferentially in naturally accreting areas (subarea A-1 in Unnamed Shoal A), and dredging will be avoided in erosional areas of the shoal to the extent practicable. Dredging will be performed so that the hopper dredge excavates material using relatively shallow, uniform passes with a maximum overall cut depth of 2-3 m. NASA will use the contour method to maintain the relative profile and shape of the sand ridge. Longitudinal passes along the

entire length of the sand ridge are prohibited to minimize effects on natural shoal maintenance. Anchoring, spudding, or other bottom-disturbing activity is otherwise prohibited outside the approved borrow area. NASA must immediately notify the BOEMRE if dredging occurs outside of the approved borrow area. Since subarea A-2, in part, is located in an area exhibiting a long-term erosional trend, NASA will also notify the BOEMRE in advance if dredging must occur in subarea A-2 in Unnamed Shoal A in order to obtain the necessary volume. The BOEMRE will notify NMFS Habitat Conservation Division (HCD) in the event of NASA's use of subarea A-2. The mitigation measures adopted to avoid impacts to EFH would also apply to dredging subarea A-2.

Water Quality

NASA will be required to prepare and implement a marine pollution control plan to address and ensure proper treatment of waste and prohibit disposal of debris.

Cultural Resources

No cultural resources have been identified in or within the immediate vicinity of the borrow area. If an unanticipated discovery of archaeological resources occurs on the OCS, the dredge would immediately halt operations within 305 m (1,000 ft) of the area of the discovery. NASA would report the discovery to the BOEMRE. If investigations determine that the resource is significant, the parties shall together determine how best to protect it.

Additional Notification and Reporting

Prior to construction, NASA will be required to submit a final construction plan and contract specifications, including design drawings, to the BOEMRE to ensure the project is consistent with activities previously described and analyzed. During construction, NASA or their agents will allow the BOEMRE inspectors access at the site of any operation subject to safety and environmental regulations and shall provide the BOEMRE any documents and records that are pertinent to occupational or public health, safety, or environmental protection as may be requested. NASA will notify mariners of construction activities through a Local Notice to Mariners, report all pollution incidents should any accidentally occur, and report findings of ordnance or munitions on the OCS. Upon completion of construction operations, NASA will prepare and submit to the BOEMRE a detailed project completion report, describing all phases of construction, including duration, equipment use, and project costs. The completion report will be accompanied by as-built drawings, dredged and placed volume calculations, pre-post bathymetric comparison, and all environmental reports.

Mitigation and Monitoring Adopted by NASA

In Chapter 5 of the Final PEIS, NASA identified an extensive list of mitigation and monitoring measures by resource and phase of construction. The Final PEIS includes a series of measures to avoid, minimize, reduce, or otherwise monitor effects to water quality, coastal habitat, essential fish habitat, munitions and explosives of concern, shorebirds, nesting and in-water sea turtles, marine mammals, and cultural resources. These measures were either proposed by NASA as design measures or were required by other Federal or State authorities. The BOEMRE is not responsible for the implementation or enforcement of mitigation or monitoring requirements

directly required under other Federal or State authorities. Likewise, the BOEMRE does not have jurisdiction over the extension of the sea wall, nearshore pump-out and submerged pipeline conveyance, or beach fill placement. On December 13, 2010, NASA adopted all mitigation and monitoring components identified in Chapter 5 of the Final PEIS in its ROD. NASA committed in its own ROD to implement the same mitigation measures and monitoring requirements identified in this ROD. Key mitigation and monitoring components are identified below.

- To minimize impacts on nesting habitat for shorebirds and sea turtles, the inter-tidal and sub-aerial beach will be restored using sand of a grain size and color comparable to existing beach material.
- Sediment control and spill prevention best management practices will be implemented to minimize erosion of placed material, turbidity, and impairment of water quality due to accidental spills from heavy equipment used during construction.
- Piping plover, seabeach amaranth, as well as leatherback, Atlantic green, Kemp's Ridley, and loggerhead sea turtles may be adversely impacted by the proposed activities. A training program for construction personnel, routine surveys and remote monitoring for shorebirds, seabeach amaranth and nesting sea turtles, survey and monitoring results reporting, and coordination procedures are non-discretionary mitigation under the terms of the ESA Section 7 Biological Opinion and associated Incidental Take Statement issued by the U.S. FWS. Appendix D of the Final PEIS contains a complete description of the mitigation measures. Since a restored beach may provide additional nesting and foraging habitat to protected shorebirds and sea turtles, NASA will perform monitoring of effects to these species, including video, related to rocket noise and contaminant exposure from rocket emissions.
- Protected sea turtles and right whales may be adversely impacted by the proposed activities. To avoid entrainment and strike, NASA will require the seasonal use of trained observers for sea turtles and bridge watch for marine mammals. If species are observed, dredging activities will cease in those areas and avoidance buffers be established. From April to November, rigid deflectors will be installed on dragheads to minimize entrainment. NASA will implement all reporting requirements and follow preservation and sampling procedures in the case of incidental take. Appendix E of the Final PEIS includes all the non-discretionary mitigation under the terms of the ESA Section 7 Biological Opinion and associated Incidental Take Statement issued by NMFS.
- NASA will stabilize dunes using sand fencing and native plants to maximize sand retention and reduce overall frequency and volume requirements for subsequent maintenance.
- As funding allows, NASA will conduct pre- and semi-annual post-construction monitoring following the initial beach fill to evaluate the post-construction performance of the seawall extension and beach fill project. This evaluation would also be used to identify the need for beach maintenance. The monitoring program would consist of data

collection, including sub-aerial beach cross-section surveys, subaqueous beach profile surveys, aerial photographs, and storm data summaries. The monitoring program would also compare the post-construction data with the preconstruction data and evaluate the performance of the project.

Additional mitigation may also be developed to avoid potential effects to undocumented cultural resources that may be located in the vicinity of nearshore pump-out operations and submerged pipeline conveyance (Appendix K of Final PEIS). Although no known resources are located in this area, if cultural resources were discovered to be present, anchoring of the pump-out equipment and placement, retrieval, and relocation of submerged pipeline could result in the damage to these non-renewable resources. It is unknown at this time what exact method and location a dredge contractor may use to deliver dredged material from pump-out locations to the beach. Because these methods may affect unidentified cultural resources, NASA plans on consulting with the Virginia State Historic Preservation Officer (SHPO) prior to construction activities. NASA and the SHPO will review and use the dredge contractor's dredge plan to decide whether further investigation is required and, if warranted, agree on a survey method. If a survey is performed and underwater resources discovered, a 1000 ft exclusion zone would be implemented.

Adoption of All Practical Means to Minimize Environmental Harm

All practical measures have been adopted to avoid or minimize environmental harm. Three other measures that may have further reduced environmental effects from the project were not adopted: 1) limit construction activities to winter months during which potential effects to benthic, fish, sea turtles, and nesting birds are minimized ; 2) require substantially more conservative volume and operational restrictions in the borrow area; and 3) perform dredged material screening in the borrow area. A rigorous scientific and economic analysis has been prepared to balance the costs and benefits of these recommendations. NASA, as the lead Federal agency, determined that such measures were not practical in terms of potential costs and technical feasibility. The BOEMRE has reviewed and concurred with NASA's position as described below.

A major factor dictating the severity of environmental impacts is the timing of sea wall construction, dredging and placement activities. As discussed in Chapter 4 of the Final PEIS, construction during winter months limits the potential for environmental impacts to shorebird nesting, sea turtle nesting, and benthic productivity. Given the scope of seawall construction, volume needs, and associated schedule necessary to complete initial construction, NASA, advised by the USACE, believes the agency would not be able to complete construction operations within a single winter season. NASA currently anticipates beginning a nine month construction window for seawall extension in the spring. Shortly thereafter, dredging would commence in the following winter and last for approximately 8 months through the following spring. The only possible alternative would be to undertake two smaller fill cycles over two years. However, given the high cost of mobilization and remobilization of dredging equipment (estimated to be at least \$1 million per occasion), the project budget can not support two such phases or NASA would have to build a smaller project, which would not protect the

infrastructure on the barrier island. NASA has committed to constructing the project during less biologically-sensitive periods to the extent practicable.

NMFS recommended 1) shoal volume use restrictions, 2) a novel, expensive method of dredging, and 3) dredging location restrictions on the basis that OCS sand ridges serve as important fish habitat (Appendix J of the Final PEIS). The BOEMRE, in coordination with NASA, as the lead agency, and the USACE, analyzed the best available scientific information and consulted with expert geologists, oceanographers, benthic and fisheries biologists, and dredging contractors to evaluate the feasibility and merits of NMFS's Conservation Recommendations. NMFS recommended that the extraction volume for any one shoal be reduced from that proposed given that cumulative, large-quantity and large-scale dredging can affect the habitat value of the Unnamed Shoal A shoal. A cumulative, large-quantity and large-scale scenario is not currently being proposed. The BOEMRE does not agree with NMFS's view of the habitat value of a singular sand ridge located in the Mid-Atlantic Bight, which features the highest density of such shoals in the world. Existing scientific studies do not substantiate NMFS's position that the relative habitat value of a singular shoal, located in a high density of similar shoals, indicates that the volume used from the single shoal should be restricted to less than five percent. The project area is centrally located in a substantially larger region of equivalent habitat. NASA proposes to use less than 10 percent of the Unnamed Shoal A shoal volume. Recent BOEMRE research shows that habitat value is not necessarily associated with absolute shoal size or relief, but with gradients in relief and availability of microhabitat. The adjacent trough areas tend to be the more biologically productive areas. Critical gradients in relief (transition between trough and ridge crest) and microhabitat (differences in grain size, seafloor roughness, and biological communities) will remain after dredging. Dredging less material from Unnamed Shoal A and using another borrow area further offshore may increase the overall footprint of adverse effects and substantially increase project duration and costs. To account for increased costs, less sand could be placed on the beach reducing the overall effectiveness of the project. NMFS also recommended that dredging be avoided on the shoal crest. Dredging on the shoal crest cannot be entirely avoided since a relatively large percentage of beach compatible material is located on and adjacent to the shoal crest. Recent BOEMRE research suggests that the shoal crest height may recover to pre-dredge elevations given dominant wave, current, and sediment transport processes, which tend to build the crest region of the shoal, provided dredge cuts are not excessive. NMFS also recommended that NASA pursue a stripped dredging technique. This technique, similar to using a borrow area further offshore, increases both project duration and cost. Increasing project duration and consequently the line miles of vessel traffic may increase the risk of injury to sea turtles and marine mammals. In its response to NMFS's Conservation Recommendations, NASA, as lead agency for the EFH consultation, provided scientific reasoning for the agencies' position and identified the subset of mitigation measures that NASA would implement.

The Virginia DEQ suggested that all dredged materials for the SRIPP be screened for munitions and explosives of concern (MEC) given the history of military exercise in the vicinity of Wallops Island. Since MEC have not been documented in the offshore borrow area, as compared to the placement area, screening of dragheads is not warranted. As a precautionary measure, NASA will ensure that all personnel working on the project receive MEC Awareness training.

Additionally, if unexpected MEC is discovered at any point during project construction, NASA and USACE will implement additional preventive measures which could include screening or avoidance.

IX. The Environmentally Preferred Alternative

The environmentally preferred alternative is BOEMRE's No Action alternative. Negative environmental impacts would generally be less under the No Action alternative, since no OCS sand would be used and dredging would not occur on the OCS. Therefore no dredging-related changes to the physical, biological, and cultural resources would be expected. However, if the SRIPP is not constructed because of the BOEMRE's decision not to authorize access to OCS sand resources, the infrastructure and coastal environment on Wallops Island would continue to be at risk from storm damage and coastal erosion. The availability and quality of nesting habitat at the southern end of the barrier island would likewise be expected to continue to deteriorate. The environmentally preferred alternative would not, however, meet NASA's purpose and need, and after consideration of the beneficial and adverse environmental consequences of both alternatives and the available mitigation measures to be implemented under NASA's Proposed Action, the BOEMRE has decided that NASA's Proposed Action is the preferable option in this ROD.

X. Bureau Decision

It is my decision to enter the negotiated agreement with NASA to use OCS sand for the purpose of the initial beach fill in their shoreline restoration and infrastructure protection project at the Wallops Flight Facility. The Bureau finds that the potential environmental effects of the Proposed Action are generally reversible over the long term, because they will be minor to moderate in intensity, localized, and short-lived. Potential longer-term beneficial effects include increased nesting and foraging habitat for protected sea turtles and migratory birds. The beach fill will also be a critical part of a project to ensure the success of NASA's important space mission at the Wallops Flight Facility. A suite of mitigation and reporting requirements will be incorporated into the negotiated agreement to avoid, minimize, and/or reduce and track any foreseeable adverse impacts. In its ROD, NASA committed the agency and its technical partner the USACE to implement the mitigation measures and monitoring requirements identified herein, including those mandated by the BOEMRE. This action is taken with the understanding that any proposed use of OCS sand in future beach re-nourishment activities by NASA will require a new negotiated agreement and an updated environmental analysis.

Record of Decision Attachment 1

The following mitigation measures and reporting requirements will be required by the BOEMRE to avoid, reduce, or eliminate environmental impacts associated with the Proposed Action (herein referred to as the “Project”). Mitigation measures in the form of terms and conditions are added to the negotiated agreement and are considered enforceable as part of the agreement.

Plans and Performance Requirements

NASA will provide the BOEMRE with a copy of the Project’s “Construction Solicitation and Specifications Plan” prior to construction (herein referred to as the “Plan”). No activity or operation authorized by the negotiated agreement (herein referred to as the Memorandum of Agreement or MOA) at Unnamed Shoal A (Subarea A1 / Subarea A2) shall be carried out until the BOEMRE has had an opportunity to review the Plan, thus ensuring that each activity or operation is conducted in a manner that is in compliance with the provisions and requirements of the MOA. NASA will ensure that all operations at Unnamed Shoal A (Subarea A1 / Subarea A2) are conducted in accordance with the final approved Plan and all terms and conditions in this MOA, as well as all applicable regulations, orders, guidelines, and directives specified or referenced herein.

The preferred method of obtaining and conveying sediment from Unnamed Shoal A (Subarea A1 / Subarea A2) involves the use of a hopper dredge. NASA will allow the BOEMRE to review and comment on modifications to the Plan, including the use of a cutterhead dredge and/or submerged or floated pipelines to convey sediment that may affect the project area, before implementation of the modification. Said comments shall be delivered in a timely fashion in order to not delay the Corps’ construction contract or schedule.

NASA, at the reasonable request of the BOEMRE, shall allow access, at the site of any operation subject to safety regulations, to any authorized Federal inspector and shall provide the BOEMRE any documents and records that are pertinent to occupational or public health, safety, or environmental protection as may be requested.

Environmental Responsibilities and Environmental Compliance

NASA is the lead agency on behalf of the Federal government to ensure the Project complies with applicable environmental laws, including but not limited to the Endangered Species Act, Magnuson-Stevens Fishery Management and Conservation Act, Migratory Bird Treaty Act, National Historic Preservation Act, and Coastal Zone Management Act.

NASA will serve as the lead federal agency for Endangered Species Act (ESA) Section 7 consultation concerning protected species under the purview of U.S. Fish and Wildlife Service (U.S. FWS) and National Marine Fisheries Service (NMFS). NASA will instruct its contractor(s) to implement the mitigation terms, conditions, and measures required by the U.S. FWS, NMFS, Virginia Department of Environmental Protection Quality (VDEQ), Virginia Marine Resources Commission (VMRC), and the BOEMRE pursuant to applicable federal laws and regulations. The required mitigation terms, conditions, and measures are reflected in the attached Biological Opinions, Conservation Recommendations, and Consistency

Determination/VMRC Permit. Copies of all relevant correspondence, monitoring, and reporting shall be provided to the BOEMRE at dredgeinfo@boemre.gov.

Notification of Activity in or near the Borrow Area

NASA will notify the BOEMRE at dredgeinfo@boemre.gov of the commencement and termination of operations at Unnamed Shoal A (Subarea A1 / Subarea A2) within 24 hours after NASA receives such notification from its contractor(s) for the Project. The BOEMRE will notify NASA in a timely manner of any OCS activity within the jurisdiction of the DOI that may adversely affect NASA's ability to use OCS sand for the Project.

Dredge Positioning

During all phases of the Project, NASA will ensure that the dredge and any bottom disturbing equipment is outfitted with an onboard global positioning system (GPS) capable of maintaining and recording location within an accuracy range of no more than plus or minus 3 meters. The GPS must be installed as close to the cutterhead or draghead as practicable. During dredging operations, NASA will immediately notify the BOEMRE at dredgeinfo@boemre.gov if dredging occurs outside of the approved borrow area. Anchoring, spudding, or other bottom disturbing activity is to be avoided outside the authorized borrow area on the OCS.

NASA will provide the BOEMRE all Dredging Quality Management (DQM) data acquired during the project using procedures jointly developed by the U.S. Army Corps of Engineers' National Dredging Quality Management Data Program Support Center and the BOEMRE. NASA will submit the DQM data, including draghead depth, to dredgeinfo@boemre.gov biweekly. A complete DQM dataset will be submitted within 45 days of completion of the Project.

Dredge Operation

Dredging will occur preferentially in naturally accreting areas (subarea A-1 in Unnamed Shoal A), and dredging will be avoided in erosional areas of the shoal. Dredging will be performed so that the hopper dredge excavates material using relatively shallow, uniform passes with a maximum overall cut depth of 2-3 m. NASA will use the contour method to maintain the relative profile and shape of the sand ridge. Longitudinal passes along the entire length of the sand ridge are prohibited to minimize effects on natural shoal maintenance. NASA will notify the BOEMRE if dredging must occur in subarea A-2 in Unnamed Shoal A in order to obtain the necessary volume.

Submittal of Production and Volume Information

NASA, in cooperation with the dredge operator, shall submit to the BOEMRE on a biweekly basis a summary of the dredge track lines, outlining any deviations from the original Plan. A color-coded plot of the cutterhead or drag arms will be submitted, showing any horizontal or vertical dredge violations. The dredge track lines shall show dredge status: hotelling, dredging, transiting, or unloading. This map will be provided in PDF format.

NASA will provide at least a biweekly update of the construction progress including estimated volumetric production rates to the BOEMRE. The biweekly deliverables will be provided

electronically to dredgeinfo@boemre.gov. The project completion report, as described below, will also include production and volume information, including Daily Operational Reports.

Local Notice to Mariners

NASA shall require its contractor(s) for the Project to place a notice in the U.S. Coast Guard Local Notice to Mariners regarding the timeframe and location of dredging and construction operations in advance of commencement of dredging.

Marine Pollution Control and Contingency Plan

NASA will require its contractor(s) and subcontractor(s) to prepare for and take all necessary precautions to prevent discharges of oil and releases of waste and hazardous materials that may impair water quality. In the event of an occurrence, notification and response will be in accordance with applicable requirements of 40 C.F.R. 300. All dredging and support operations shall be compliant with U.S. Coast Guard regulations and the Environmental Protection Agency's Vessel General Permit, as applicable. NASA will notify the BOEMRE of any occurrences and remedial actions and provide copies of reports of the incident and resultant actions at dredgeinfo@boemre.gov.

Encounter of Ordinance

If any ordinance is encountered while conducting dredging activities at Unnamed Shoal A, NASA will report the discovery within 24 hours to Ms. Renee Orr, Chief, BOEMRE Leasing Division, at (703) 787-1215 and dredgeinfo@boemre.gov.

Bathymetric Surveys

NASA will provide the BOEMRE with pre- and post-dredging bathymetric surveys of Unnamed Shoal A. The pre-dredging survey will be conducted within 30 days prior to dredging. The post-dredging survey will be conducted within 30 days after the completion of dredging. Additional bathymetric surveys are recommended at 1 year and 3 years following the completion of dredging. Hydrographic surveys will be performed in accordance with the USACE Hydrographic Surveying Manual EM 1110-2-1003 unless specified otherwise. One hundred percent coverage using interferometric swath or multibeam bathymetry data is preferred over single-beam data. All bathymetric data shall be roll, pitch, heave, and tide corrected. Survey lines of the specific dredge area, within Unnamed Shoal A, will be established at no greater than 50 m intervals perpendicular to a baseline. Three equidistant cross-tie lines will be established parallel to the same baseline. Survey lines will extend at least 50 m beyond the edge of the dredge areas. All data shall be collected in such a manner that post-dredging bathymetry surveys are compatible with the pre-dredging bathymetric survey data to enable the latter to be subtracted from the former to calculate the volume of sand removed, the shape of the excavation, and nature of post-dredging bathymetric change.

Copies of pre-dredging and post-dredging hydrographic data will be submitted to the BOEMRE via dredgeinfo@boemre.gov within thirty (30) days after each survey is completed. The delivery format for data submission is an ASCII file containing x,y,z data. The horizontal data will be provided in the North American Datum of 1983 (NAD '83) Virginia State Plane, U.S. survey feet. Vertical data will be provided in the North American Vertical Datum of 1988 (NAVD '88),

U.S. survey feet. An 8.5x11” plan view plot of the pre- and post-construction data will be provided showing the individual survey points, as well as contour lines at appropriate elevation intervals. These plots will be provided in PDF format.

Archaeological Resources

Onshore Prehistoric or Historic Resources

If NASA discovers any previously unknown historic or archeological remains while accomplishing activity on Wallops Island, NASA will notify the BOEMRE of any finding. NASA will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

Offshore Prehistoric or Historic Resources

In the event that the dredge operators discover any archaeological resource while conducting dredging operations in Unnamed Shoal A or in the vicinity of pump-out operations, NASA shall require that dredge and/or pump-out operations be halted immediately within 305 m (1000 ft) of the area of discovery. NASA shall then immediately report the discovery to Ms. Renee Orr, Chief, BOEMRE Leasing Division, at (703) 787-1215. If investigations determine that the resource is significant, the parties shall together determine how best to protect it.

Project Completion Report

A project completion report will be submitted by NASA to the BOEMRE within 120 days following completion of the activities authorized under this MOA. This report and supporting materials should be sent to Ms. Renee Orr, Chief, BOEMRE Leasing Division, 381 Elden Street, MS 4010, Herndon, Virginia 20170 and dredgeinfo@boemre.gov. The report shall contain, at a minimum, the following information:

- the names and titles of the project managers overseeing the effort (for USACE, the engineering firm (if applicable), and the contractor), including contact information (phone numbers, mailing addresses, and email addresses);
- the location and description of the project, including the final total volume of material extracted from the borrow area and the volume of material actually placed on the beach or shoreline (including a description of the volume calculation method used to determine these volumes);
- ASCII files containing the x,y,z and time stamp of the cutterhead or drag arm locations;
- a narrative describing the final, as-built features, boundaries, and acreage, including the restored beach width and length;
- a table, an example of which is illustrated below, showing the various key project cost elements;

	Project Cost Estimate (\$)	Cost Incurred as of Construction Completion (\$)
Construction		
Engineering and Design		
Inspections/Contract Administration		
Total		

- a table, an example of which is illustrated below, showing the various items of work construction, final quantities, and monetary amounts;

Item No.	Item	Estimated Quantity	Unit	Unit Price	Estimated Amount	Final Quantity	Bid Unit Price	Final Amount	% Over/Under
1	Mobilization and Demobilization								
2	Beach Fill								
3	Any beach or offshore hard structure placed or removed								

- a listing of construction and construction oversight information, including the prime and subcontractor(s), contract costs, etc.;
- a list of all major equipment used to construct the project;
- a narrative discussing the construction sequences and activities, and, if applicable, any problems encountered and solutions;
- a list and description of any construction change orders issued, if applicable;
- a list and description of any safety-related issues or accidents reported during the life of the project;
- a narrative and any appropriate tables describing any environmental surveys or efforts associated with the project and costs associated with these surveys or efforts;
- a table listing significant construction dates beginning with bid opening and ending with final acceptance of the project by NASA;
- digital appendices containing the as-built drawings, beach-fill cross-sections, and survey data; and any additional pertinent comments.