

COASTAL CONSERVANCY

Staff Recommendation

October 2, 2014

**SEAL BEACH NATIONAL WILDLIFE REFUGE THIN-LAYER SALT MARSH
SEDIMENT AUGMENTATION PILOT PROJECT**

Project No. 14-029-01

Project Manager: Evyan Borgnis

RECOMMENDED ACTION: Authorization to disburse up to \$550,000 to Southwest Wetlands Interpretive Association for implementation, in conjunction with the U.S. Fish and Wildlife Service, of a pilot project studying the effectiveness of sediment augmentation in a salt marsh in the Seal Beach National Wildlife Refuge, and adoption of the Final Mitigated Negative Declaration and the Mitigation Monitoring and Reporting Program for the pilot project.

LOCATION: Seal Beach National Wildlife Refuge, Seal Beach, Orange County

PROGRAM CATEGORY: Coastal Resource Enhancement

EXHIBITS

Exhibit 1: [Project Location and Site Map](#)

Exhibit 2: [Project Letters](#)

Exhibit 3: [Final Mitigated Negative Declaration with Mitigation Monitoring and Reporting Program](#)

Exhibit 4: [Final Initial Study/ Environmental Analysis](#)

RESOLUTION AND FINDINGS:

Staff recommends that the State Coastal Conservancy adopt the following resolution pursuant to Sections 31251-31270 of the Public Resources Code:

“The State Coastal Conservancy hereby authorizes the disbursement of an amount not to exceed five hundred fifty thousand dollars (\$550,000) to Southwest Wetlands Interpretive Association (“SWIA”) to implement a pilot project studying the effectiveness of sediment augmentation in a salt marsh within the Seal Beach National Wildlife Refuge, and adopts the Final Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program for the pilot project, attached to the accompanying staff recommendation as Exhibits 3. This authorization is subject to the condition that, prior to the disbursement of any funds, SWIA shall submit for the review and written approval of the Conservancy’s Executive Officer:

1. A work program, budget, schedule, and the names of any contractors to be employed in carrying out the work.
2. Evidence that all required permits and approvals have been obtained for the pilot project.
3. Evidence that the U.S. Fish and Wildlife Service (“USFWS”) has committed to implementing all mitigation measures identified in the Final Mitigated Negative Declaration attached to the accompanying staff recommendation as Exhibit 3.
4. A written agreement between SWIA and USFWS authorizing SWIA’s role in implementation of the pilot project and including USFWS’s commitment to preparation of a guidance document, based upon the results of the pilot project monitoring, setting forth a protocol for sediment augmentation as an adaptive strategy.”

Staff further recommends that the Conservancy adopt the following findings:

“Based on the accompanying staff report and attached exhibits, the State Coastal Conservancy hereby finds that:

1. The proposed authorization is consistent with Chapter 6 of Division 21 of the Public Resources Code, regarding Coastal Resource Enhancement Projects.
2. The pilot project is consistent with the current Conservancy Project Selection Criteria and Guidelines.
3. The Southwest Wetlands Interpretive Association is a nonprofit organization existing under section 501(c)(3) of the Internal Revenue Service, and whose purposes are consistent with Division 21 of the Public Resources Code.”
4. In light of the whole record, including the Final Initial Study/Environmental Assessment and any comments received, there is no substantial evidence that the pilot project will have a significant effect on the environment, and the Final Mitigated Negative Declaration, attached as Exhibit 3 to the accompanying staff recommendation, reflects the Conservancy’s independent judgment and analysis.

PROJECT SUMMARY:

Staff recommends that the Conservancy authorize disbursement of up to \$550,000 to the Southwest Wetlands Interpretive Association (“SWIA”) to implement, in conjunction with the U.S. Fish and Wildlife Service (“USFWS”), the Seal Beach National Wildlife Refuge Thin-layer Salt Marsh Sediment Augmentation Pilot Project (“pilot project” or “proposed project”). The pilot project consists of the addition of a thin-layer (8-10 inches) of dredge material to 10 acres of a low elevation salt marsh within the Seal Beach National Wildlife Refuge (“the Refuge”), preparation of a pre-addition baseline analysis of the marsh, 5 years of monitoring the effects of the sediment addition, and preparation of a guidance document concerning sediment augmentation as an adaptive strategy. The monitoring data will answer the question of whether adding a thin layer of sediment to an existing, cordgrass-dominated marsh plain will improve elevations to resist sea-level rise effects and improve habitat quality for associated flora or fauna (i.e. clapper rail).

Coastal wetlands around the world are threatened by sea-level rise (“SLR”). While current research and modeling demonstrates that many wetlands in California are keeping pace with SLR via sediment accretion, this resiliency is expected to only resist SLR projections for 2030 and likely 2050. In order to survive SLR projections for 2100 and beyond, wetlands will require: 1) inland area for migration; 2) high sediment supply; and/or 3) uplift and/or no subsidence. With the Refuge lacking all three necessary components, the goal of the pilot project at the Refuge is to improve habitat quality within cordgrass (*Spartina foliosa*)-dominated salt marsh habitat to support the endangered light-footed Ridgeway’s rail (*Rallus obsoletus levipes*), as well as to document the overall effectiveness of sediment augmentation as an adaptation strategy in conserving salt marsh habitat threatened by sea-level rise along the California coast. The project has been designed by the USFWS.

OC Parks, a department within Orange County, has agreed to supply dredge material from its dredging project within Sunset/Huntington Harbor, a portion of Anaheim Bay located southwest of the Refuge. The County will transport 10,000 to 13,500 cubic yards of material dredged from the Main Channel West site to the 16-acre project site for distribution on 10 acres of the project site. The County will either transport the dredge material by small containment barge or by pipeline. If transported by barge, once at the project site, the dredge material would be mixed with water (i.e. slurry) and distributed on to the site using a rainbow sprayer, open pipe, or end-of-pipe baffle impingement. Alternatively, if a pipeline is used for transport, the material would be transported as a slurry and once at the project site, the slurry would be applied using a rainbow sprayer, open pipe or end-of-pipe baffle impingement. The entire sediment application process, which could take from four to six weeks to complete, will be adaptively managed to meet project design criteria, including achieving the desired depth of sediment within the confines of the 10-acre application site and minimizing the potential for introduction of sediment into the tidal channels that abut the site.

Monitoring is an essential component of the proposed project because sediment application is a new method not previously used on the west coast of the U.S. The effectiveness and ecological response within the Refuge’s coastal salt marsh habitat after implementing thin-layer sediment augmentation will be quantified by the pre- and post-construction monitoring efforts performed by wetland scientists. The monitoring component of the proposed project will include monitoring of vegetation, sediment dynamics, elevation, invertebrates, birds, and wetland biogeochemistry.

More specifically, the monitoring will entail measuring suspended sediment concentrations, sediment accretion (short and long-term rates), sediment elevation table measurements, and basic plant community composition. Additionally, abiotic factors (salinity, redox potential, and temperature), plant community composition, physiological condition of plants, and invertebrate community will be monitored. The Refuge and Navy will continue to provide data on bird diversity and general abundance in the area, as well as monitor the area’s light-footed clapper rail population. The results of the monitoring component of the proposed project will inform future management decisions on the Refuge, as well as at other coastal salt marshes on the Pacific coast, with the intent of providing a key adaptation strategy for preserving coastal habitats threatened by SLR.

The proposed project includes the development of a guidance document containing lessons learned and a protocol of the sediment augmentation adaptive strategy. USFWS intends to share

the guidance document via workshops and webinars with Federal, State, and local regulatory and resource agencies, land managers, and other stakeholders to assist in the further development of sea-level rise adaptation strategies for coastal California. Success levels for program outreach will be measured via attendance and web traffic and documented in quarterly and annual reports to the Conservancy.

To ensure wetland resilience to SLR, wetland management must incorporate a range of tools at various scales. One common strategy to combat SLR is to create a minimum 100-foot inland buffer with adequate slope and tidal range for wetland migration. For urbanized areas, this may require the removal of large infrastructure (e.g. freeways), which is unlikely in most instances. An additional strategy is to improve sediment supply to match historic conditions. Channelization and damming of rivers has greatly altered sediment dynamics in coastal wetlands. Actions such as removing large dams would allow sediment to travel downstream and ultimately settle on the marsh plain. This would facilitate wetlands to build in elevation and help keep pace with SLR. Finally, regulatory actions to improve subsidence can increase wetland resilience. Land subsidence can occur when areas experience excessive fluid extraction (i.e., water, oil), natural tectonic activity, and possibly high nutrient loading. Subsidence may be controlled with regulatory actions including bans on drilling or changing water injection procedures. While addressing these large-scale issues is the most sustainable approach, other strategies may be necessary for wetlands under immediate threat.

Wetlands under immediate threat are those experiencing reduced sediment input and/or land subsidence. With current SLR rates, either of these factors increases the likelihood that tidal wetlands will be inundated. In order to buy time for large-scale changes (i.e., infrastructure or dam removal), many wetlands may need short-term strategies for survival. One such technique is adding a thin layer of sediment to an existing marsh plain. This SLR adaptation technique originated with the recognition that marshes are adapted to respond to the natural process of sediment deposition on to the marsh plain. Sediment augmentation has been successfully implemented and studied in coastal salt marshes in Louisiana and North Carolina, but has never been attempted on the California coast. Future management strategies like sediment augmentation need to be developed and tested now before wetlands subside too low to rebound.

Site Description: The project site is located in the Seal Beach National Wildlife Refuge in northwestern Orange County (Exhibit 1, Figure 1). The Seal Beach Refuge is an excellent site to test adaptation strategies to conserve coastal salt marsh. It already suffers from symptoms associated with SLR because it experiences low rates of sediment accretion as well as subsidence. Considering the current rate of SLR in Southern California, estimated at 2.1 mm/yr combined with the subsidence rates at the Refuge, the project site is experiencing a relative SLR of 6.23 mm/yr—a rate three times higher than that of similar southern California marshes not experiencing subsidence.

While conversion to open water is a serious possibility for the Refuge and other wetlands along the California coast, low sediment and freshwater inputs, local subsidence, and sea-level rise are also affecting light-footed clapper rail habitat within the Refuge specifically. The combined effects of reduced freshwater and frequent inundation have stunted native cordgrass (clapper rail habitat) growth in comparison to nearby wetlands in Southern California. The short statured cordgrass at the Refuge provides severely limited clapper rail nesting habitat. While USFWS has successfully constructed nesting platforms for the rails, sediment augmentation may raise

elevations, thus reducing inundation stress, and ultimately allowing the plants to allocate energy to growth rather than survival. Taller cordgrass stems would provide suitable, natural habitat for clapper rails at high tides, which they currently lack at the Refuge.

The 16-acre project site is located within a 565-acre tidal salt marsh protected within the boundaries of both the Refuge and Naval Weapons Station Seal Beach (Exhibit 1, Figure 2). The proposed project boundary encompasses approximately 16 acres, in which approximately 10 acres would be covered within a thin-layer of sediment and the remaining acreage would serve as a buffer between the application site and the adjacent channels. The 16-acre site includes property owned by the U.S. Navy, as well as sovereign land held by the California State Lands Commission for the benefit of the people of California and leased to the Service for management as a National Wildlife Refuge.

Project History: The concept for and development of the sediment augmentation strategy at the Refuge occurred during the development of the Seal Beach National Wildlife Refuge Comprehensive Conservation Plan (CCP) (USFWS 2012). During that process, the Refuge staff reviewed the effects of climate change on Refuge resources and following the steps in the climate-smart conservation cycle, assessed climate impacts and vulnerability and identified potential adaptation options. Following completion of the CCP, the Refuge began to seek partners to further assess vulnerabilities and assist in the implementation of adaptation actions.

After communicating with a variety of coastal land managers throughout California, including the Conservancy, the project team discovered considerable interest in identifying an adaptation strategy for preserving coastal salt marsh habitat, particularly in locations experiencing marsh degradation/subsidence (i.e., Elkhorn Slough and Humboldt Bay), no room for inland migration from surrounding development (i.e., most South Coast marshes), and depleting sediment supplies (i.e., San Francisco Bay-Delta). Through a unique partnership with the County of Orange, the project team has an opportunity to implement an adaptation action that may be effective in addressing the adverse effects of sea-level rise, while also maintaining the essential physical and biological functions of coastal marsh ecosystems.

The grantee, SWIA, is a 501(c)(3) non-profit organization dedicated to education in, and the preservation and restoration of wetlands. SWIA works in collaborative partnerships with federal, state, county, and local agencies, and holds cooperative agreements with California State Parks and USFWS. Since 1979, SWIA has successfully managed more than \$40 million in wetlands projects in the Tijuana River Valley and South San Diego Bay, several of which have been funded by the Conservancy.

PROJECT FINANCING

Orange County	\$300,000
Coastal Conservancy	\$550,000
UCLA (pending authorization)	<u>\$150,000</u>
Project Total	\$ 1,000,000

The expected source of Conservancy funds for the proposed project is the 2013-2014 fiscal year appropriation to the Conservancy from the Habitat Conservation Fund (“HCF”) established by the California Wildlife Protection Act of 1990 (Proposition 117), Fish and Game Code §2780 *et seq.* HCF funds may be used for enhancement of wetlands. Fish and Game Code § 2786(d). For purposes of the HCF, the term “wetlands” includes saltwater marshes. Fish and Game Code § 2785(g). The proposed project will enhance a salt marsh by raising its elevation through sediment augmentation, which is expected to improve its capacity to support nesting of a federally protected species, the light-footed clapper rail, as well as its ability to withstand sea-level rise. As a pilot project with 5 years of monitoring, the proposed project should generate the information needed to facilitate the enhancement of other coastal wetlands in California. Thus, the proposed project is an appropriate use of HCF funds.

The actual project cost is \$1,139,565 when taking into account significant in-kind contributions from the U.S. Navy (\$39,155) and USFWS (\$100,410).

CONSISTENCY WITH CONSERVANCY’S ENABLING LEGISLATION:

This proposed funding authorization is consistent with Chapter 6 of Division 21 of the Public Resources Code (Sections 31251-31270) regarding coastal resource enhancement projects. Consistent with Section 31251, the proposed authorization will award a grant to a nonprofit organization to enhance coastal resources that have become degraded due to natural and human-induced events. The proposed project will enhance a salt marsh that is degraded due to subsidence caused by human activity, including development and channelization of rivers. The salt marsh will be enhanced by raising the marsh plain elevation, which is expected to improve the quality of the salt marsh vegetation and promote resiliency of the marsh to sea-level rise.

Section 31252 states that all areas proposed for resource enhancement shall be identified in a certified local coastal plan or program (LCP) as requiring public action to resolve existing or potential resource protection problems or, in the absence of an applicable LCP, under a plan determined by the Coastal Commission to be consistent with the Coastal Act. The City of Seal Beach has not completed its Local Coastal Program (to be completed in April 2016). Moreover, the proposed project is located mostly on land owned by the federal government, and partly on land owned by the State Lands Commission but leased to USFWS for use as a wildlife refuge. In such a circumstance, consistency with the Coastal Act should be determined by the Coastal Commission under section 31252. As required by the federal Coastal Zone Management Act for

any federal projects undertaken within the coastal zone, USFWS will seek a determination by the Coastal Commission that the project is consistent to the maximum extent practicable with the California Coastal Act. Further, the Final Comprehensive Conservation Plan for the Seal Beach National Wildlife Refuge (“Seal Beach NWR CCP”) (USFWS 2012) specifically identified the need to address SLR in the project area and various potential adaptive strategies, including the work under the proposed project - application of “a thin layer of sediment” over the existing vegetation to help achieve goals and objectives for recovery and protection of the light-footed clapper rail. By letter dated September 22, 2011, the California Coastal Commission concurred with the USFWS negative determination for the Seal Beach NWR CCP.

**CONSISTENCY WITH CONSERVANCY’S 2013
STRATEGIC PLAN GOAL(S) & OBJECTIVE(S):**

Consistent with **Goal 5, Objective B** of the Conservancy’s 2013-2018 Strategic Plan, the proposed project will enhance 10-acres of coastal wetlands. The proposed project is also consistent with **Goal 7, Objective D** as it will implement an adaptation pilot project to reduce the hazards of sea-level rise while protecting natural resources and maximizing public benefits.

**CONSISTENCY WITH CONSERVANCY’S
PROJECT SELECTION CRITERIA & GUIDELINES:**

The proposed project is consistent with the Conservancy’s Project Selection Criteria and Guidelines, last updated on November 10, 2011, in the following respects:

Required Criteria

1. **Promotion of the Conservancy’s statutory programs and purposes:** See the “Consistency with Conservancy’s Enabling Legislation” section above.
2. **Consistency with purposes of the funding source:** See the “Project Financing” section above.
3. **Support of the public:** The project is supported by the Orange County Water District, the El Dorado Audubon Society, Friends of Seal Beach National Wildlife Refuge, the Cabrillo Marine Aquarium, and the U.S. Geological Survey (see Exhibit 2).
4. **Location:** The proposed project is located within the coastal zone of the City of Seal Beach, County of Orange.
5. **Need:** Without Conservancy funding, SWIA and the USFWS would not have sufficient funding to proceed with the pilot project. If the pilot project does not occur, the Refuge and other wetland resource managers along the west coast would not know whether sediment augmentation is an adaptation strategy for coastal wetlands under threat of sea-level rise.
6. **Greater-than-local interest:** The results of the proposed project are particularly relevant to any tidal wetlands experiencing subterranean subsidence, low sediment supply, and/or surrounding development that prevents migration. In southern California, this is particularly important as the latest National Research Council report (2012) found that along the southern

California coast land is subsiding and is projected to continue subsiding in the future. Most of southern California's coastal wetlands are trapped by development and have no room to migrate inland. Other regions, such as San Francisco Bay, are experiencing similar issues in terms of inland migration and a depleting sediment supply. In central California, in areas like Elkhorn Slough, salt marshes are threatened by subsidence and excessive inundation. Further, wetland managers in Elkhorn Slough are currently in need of sediment augmentation results to use as a reference in future proposals. In the northern coast of California, many areas are experiencing uplift (1.5-3 mm/yr north of Cape Mendocino), which will help these regions combat SLR, although rates are slow and areas south of Cape Mendocino are in fact subsiding due to tectonic activity. However, Humboldt Bay is special case because while it is north of Cape Mendocino, it is also experiencing subsidence and high relative rates of sea-level rise (6.06 mm/yr in South Humboldt Bay—nearly as high as the Refuge) in California.

7. **Sea level rise vulnerability:** The proposed project will develop, implement, and test the effectiveness of an adaptive strategy for coastal wetlands to resist current and future sea-level rise.

Additional Criteria

8. **Urgency:** The Project is urgent in terms of saving the salt marsh within the Refuge from transitioning to open water due to lack of sediment supply, subsidence rates, and current sea-level rise. Further, the Project is urgent in terms of developing a needed resiliency method that will buy time for California's coastal wetlands under immediate sea-level rise threat. Finally, the proposed project relies upon the dredging in Sunset/Huntington Harbor for sediment, which is planned for December of either 2014 or 2015. The monitoring component of this project must begin as soon as possible in order to capture thorough and scientifically-sound baseline (pre-construction) data that will ultimately assess the pilot project's effectiveness.
9. **Resolution of more than one issue:** The proposed project will test the use of an adaptation strategy that could be utilized in threatened coastal wetlands through-out California as well as provide suitable habitat for the light-footed clapper rail within the Refuge.
10. **Leverage:** See the "Project Financing" section above.
11. **Innovation:** The proposed project will test the viability of a coastal adaptation strategy that has never been used in California. While it is a beneficial strategy used in the east and Gulf coasts, sediment augmentation must be pilot tested on the west coast before utilization due to differing wetland conditions in the west coast than in the Gulf or east coasts.
12. **Readiness:** The Refuge will submit a Section 404 Nationwide Permit 27 to the U.S. Army Corps of Engineers, a 401 Certification to the Regional Water Quality Control Board, and a Coastal Consistency Declaration to the California Coastal Commission following the Finding of No Significant Impact, approximately on September 17th 2014. Following those approvals, the Refuge will have the necessary permits to implement the proposed project.
13. **Cooperation:** Implementation of the proposed project will entail cooperation between USFWS, Orange County, and the U.S. Navy.

CONSISTENCY WITH LOCAL COASTAL PROGRAM POLICIES:

The City of Seal Beach has not completed its Local Coastal Program. However in 2012 the US Fish and Wildlife Service approved the Seal Beach NWR CCP, and the proposed project is consistent with the recommendations presented in the Seal Beach NWR CCP and would implement one of the strategies identified in the CCP for achieving Refuge goals and objectives as they relate to the recovery and protection of the light-footed clapper rail. Further, the California Coastal Commission concurred with the USFWS' negative determination, pursuant to 15 CFR 930.35 of the NOAA regulations, and acknowledged that the Seal Beach NWR CCP is consistent with and mirrors Coastal Act policy goals.

COMPLIANCE WITH CEQA:

The Conservancy, as lead agency under the California Environmental Quality Act ("CEQA") and the USFWS have jointly prepared a Mitigated Negative Declaration ("MND", Exhibit 3) and an Initial Study/Environmental Assessment ("IS/EA", Exhibit 4) for the Seal Beach National Wildlife Refuge Thin-layer Salt Marsh Sediment Augmentation Pilot Project. The IS/EA describes and analyzes the potential significant effects of the proposed project on the environment. The IS/EA indicates that the proposed project could have significant effects on the environment associated with impacts to water quality, cultural resources and biological resources. However, mitigation measures have been incorporated into the proposed project design to mitigate these potential effects below a level of significance.

The MND and IS/EA were prepared in accordance with CEQA (Public Resources Code § 21000 et seq.) and the CEQA Guidelines (California Code of Regulations Title 14, section 15000 et seq.) as well as in accordance with the National Environmental Policy Act ("NEPA"). The Conservancy submitted a draft MND and draft IS/EA for public review on August, 6th 2014. During the 30-day public comment period, three comment letters were received; the letters were from the State Lands Commission ("SLC"), the Department of Transportation ("Caltrans") and the California Department of Fish and Wildlife ("DFW"). SLC requested an expansion of the description of their leasing agreement with USFWS and their responsibilities with respect to state public trust lands. Caltrans requested to be informed throughout the project's progress. DFW requested a more explicit description of how species protected by the California Endangered Species Act might be affected by the proposed project and also suggested using physical presence to guide birds out of the project area. A response to each of the comments is set forth in Attachment 2 to the Final MND, which is attached as Exhibit 3 to this staff recommendation.

The Final MND and Final IS/EA have been revised from the draft documents that were circulated for public comment. Most of the revisions were to clarify or amplify information provided in the draft documents, in response to comments. In addition, one mitigation measure (Mitigation Measure BIO-3), has been added; however, the measure consists of actions that were identified as part of the proposed project in the draft MND and draft IS/EA. Thus, the revisions to MND and IS/EA are not substantial revisions that trigger the need for recirculation. The revisions to the IS/EA are shown in underline in the Final IS/EA.

The Final MND and Final IS/EA indicate that the proposed project will not have a significant effect on the environment. The only potential effects, which have been mitigated, are in the areas of water quality, cultural resources and biological resources. USFWS will be responsible for compliance with the mitigation measures. The potential significant effects on biological resources, water quality and cultural resources will be mitigated by the following mitigation measures:

Mitigation Measure BIO-1(Biological Resources) - If, five years after sediment augmentation, reestablishment of native salt marsh vegetation to a density and percent cover similar to that present within the project site prior to sediment application has not occurred, the USFWS shall develop and implement a restoration plan to reestablish native salt marsh vegetation at a density and percent cover similar to pre-project site conditions. Site management and monitoring shall continue until salt marsh vegetation has been restored to the site in accordance with the specifications of the restoration plan.

Mitigation Measure BIO-2 (Biological Resources) - A qualified biologist shall be on site during construction to monitor for the presence of sensitive species and other wildlife. The biologist shall have the authority to halt construction when wildlife is observed within or near the project site. Work crews will be briefed on how to identify sea turtles and marine mammals that could occur in water areas affected by the implementation of the pilot project. The biological monitor will prepare incident reports of any observed sea turtle activity and shall provide such reports to National Marine Fisheries Service (NMFS) within 24 hours of an observation.

Any work vessels (e.g., containment barge, workboat) moving about the project site shall comply with a five-mile per hour speed limit. In the event of a collision between the containment barge or workboat and a marine mammal or sea turtle, the USFWS shall immediately contact the NMFS Southwest Regional Office's Stranding Coordinator, and submit a report to the NMFS within 24 hours.

To reduce the potential for impacts to sea turtles, sediment transport and application within the Refuge shall only occur between November 1 and February 15, when water temperatures are lower.

Mitigation Measure BIO-3 (Biological Resources) - A vegetated buffer shall be maintained around the 10-acre application site, and the buffer area shall be monitored during sediment application to ensure that any sediment moving off the pilot project site is being trapped within the vegetated buffer area. If monitoring indicates that the sediment has the potential to migrate from the marsh into the adjacent tidal channel, additional measures shall be implemented to minimize the loss of sediment from the site. Such measures could include, but are not limited to, installing silt fencing, silt curtains, or straw wattles along the edge of the site.

Mitigation Measure BIO-4 (Biological Resources) Eelgrass surveys shall be conducted within the tidal channels that abut the 16-acre pilot project site, as well as another reference site within the Refuge, during the active growth phase for the vegetation (typically March through October). The distribution, density, and relationship to depth contours of any eelgrass beds that may be impacted by project implementation shall be thoroughly mapped and mapping protocols shall be consistent with those outlined in the Southern California Eelgrass Mitigation Policy (SCEMP). The same surveys shall be conducted within 30 days of completing the sediment application process and then annually for two years following application.

If impacts to eelgrass from project implementation are identified, compliance with the SCEMP shall be initiated and monitoring of the mitigation area(s) and a suitable local reference site shall be implemented per the requirements of the SCEMP. Monitoring reports shall be filed with the resource agencies and the California Coastal Commission.

Mitigation Measure BIO-5 (Biological Resources) - To avoid impacts to light-footed Ridgway's rails and other avian species in the vicinity of the project site, sediment application shall not occur during the nesting season. Additionally, the three artificial light-footed Ridgway's rail nesting platforms located within and adjacent to the project site shall be removed after the end of the breeding season (after September 15) preceding sediment application to minimize the presence of rails in the area.

Prior to the daily application of sediment onto the pilot project site, a qualified biologist shall survey the 16-acre site and adjacent areas for the presence of rails and other birds. If any are present, an air horn or cracker shells will be deployed to move the birds off the site prior to sediment application. If noise proves ineffective, physical presence may be used to haze birds to move to other parts of the Refuge. Also, monitoring shall continue throughout the day to discourage rails and other birds from moving into the project site, particularly during periods when sediment is not being sprayed, such as during breaks or when adjustments in the application process are being implemented.

Mitigation Measure CR-1 (Cultural Resources) - In the event that cultural resources are discovered during any disturbance to subsurface material on the 16-acre pilot project site, the ground disturbing activity shall be halted, the Service's Regional Archaeologist and the Conservancy shall be notified, and additional consultation shall be initiated to ensure compliance with the NHPA and other applicable Federal regulations and policies. If any cultural resources are discovered on State lands during the implementation of this project, the USFWS and Conservancy shall also consult with the California State Lands Commission's Assistant Chief Counsel.

Mitigation Measure WQ-1 (Water Quality) - Prior to initiation of sediment transport and application to the pilot project site, the USFWS shall submit an application to the Santa Ana Regional Water Quality Control Board for coverage under a 401 Certification. The USFWS shall implement all conditions included in the 401 Certification, including the implementation of measures to reduce potential increases in sedimentation, turbidity, and

other impacts associated with the transport and beneficial use of dredge material for habitat enhancement.

Mitigation Measure WQ-2 (Water Quality) - To reduce the potential for sediment to enter adjacent waterways, best management practices (BMPs) shall be implemented during all phases of the project. BMPs shall include providing approximately six acres of vegetated buffer around the application site; periodic inspection of the slurried sediment pipeline (if used); and monitoring for excessive turbidity near the transport pipeline or containment barge and associated sediment distribution apparatus (e.g., rainbow sprayer, open pipe, end-of-pipe baffle impingement). If a substantial leak is identified in the slurry pipeline, the affected pipeline segment shall be immediately repaired or replaced, or a silt curtain or similar measure shall be employed to capture and retain sediment at the source of the leak.

Monitoring of sediment movement and turbidity levels shall occur during and after sediment application. Movement of sediment on the site shall be adaptively managed until adequately compacted to ensure that movement of sediment off the site is minimized. Measures such as installation of silt fencing, a silt curtain, or straw wattles shall be installed if proposed vegetative buffers around the site cannot adequately maintain the sediment within the project boundary.

A Mitigation Monitoring and Reporting Program (“MMRP”) is set forth in Attachment 1 to the Final MND (Exhibit 3). This MMRP will enable the Conservancy to confirm that the mitigation measures are being implemented.

If the Final MND is adopted and the proposed funding authorization approved, Conservancy staff will file a notice of determination.