EXECUTIVE SUMMARY

NATIONAL REGIONAL SEDIMENT MANAGEMENT PROGRAM
WRDA 2016 SECTION 1122
BENEFICIAL USE PILOT PROJECT

SAN FRANCISCO BAY STRATEGIC SHALLOW WATER PLACEMENT

September 23, 2022

US Army
Corps of Engineers
San Francisco District

Water Boards

Coastal Conservancy

1 PURPOSE

The proposed project would place sediment dredged from a federal San Francisco Bay navigation channel in shallow water on the periphery of the Bay to examine the ability of tides and currents to move the placed material to existing mudflats and marshes. This aquatic placement technique – placing dredged sediment in shallow water in the nearshore adjacent to a tidal wetland and utilizing natural hydrodynamic and morphodynamic processes to move the sediment onto the mudflat and marsh – is referred to as strategic shallow water placement. This strategic shallow-water placement pilot project is expected to move a portion of the placed sediment to the mudflats and the marsh plain, mimicking natural sediment supply to wetland ecosystems to improve habitat and increase mudflat and marsh resilience to sea level rise (SLR).

This Engineering with Nature (EWN) approach will augment sediment supply in a sediment-starved system to leverage existing morphodynamic processes to transport sediment toward mudflat-marsh systems for habitat reconstruction. This project aims to understand the scale of sediment deposition post-placement at the placement site, on the intertidal mudflat, and on the adjacent tidal marsh; and the wind, wave, and sediment flux conditions pre- and post-placement across the interconnected subtidal-mudflat-marsh complex. Other objectives of this project are to understand the environmental impacts to benthic (i.e., Bay bottom) habitats and communities; the spatial extent of the effect zone; the temporal scale of disturbance and recovery time; and whether there will be any detrimental impacts to eelgrass beds, oyster beds, or similar environmental resources. This project will include robust monitoring protocols using appropriate methods and techniques to determine sediment deposition and environmental impacts resulting from strategic placement.

2 AUTHORITY

This San Francisco Bay Strategic Shallow Water Placement Pilot Project is funded by Section 1122 of the Water Resources Development Act (WRDA) of 2016. The environmental analysis complies with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321 *et seq*), as amended; the California Environmental Quality Act (CEQA) of 1970 (Pub. Res. Code, §§ 21000 *et seq*.)

3 SCOPE

This draft report comprises two documents:

- A Decision Document describing the describing the study and authority planning process the Project Delivery Team (PDT) used to choose a placement site, optimal placement depth and location, placement volume, and federal navigation channel to supply the sediment.

- A joint environmental assessment (EA) initial study (IS) and mitigated negative declaration (MND), with appendices that include all environmental compliance and supporting technical memorandums associated with the EA/IS/MND.

4 STUDY LOCATION

This pilot project will be implemented in San Francisco Bay in Northern California (Figure 1), which is a large tidal estuary receiving the outflow of two large rivers (Sacramento and San Joaquin Rivers) and other, smaller rivers and creeks in its watershed. Specifically, the project site will be adjacent to the Whale's Tail part of the Eden Landing Ecological Reserve in South San Francisco Bay, which is bounded by the San Mateo Bridge to the north and the southern shoreline of the Bay to the south (Figure 2). Tidal mudflats, salt-water tidal marshes, and subtidal shallow-water environments occur in that part of the Bay.

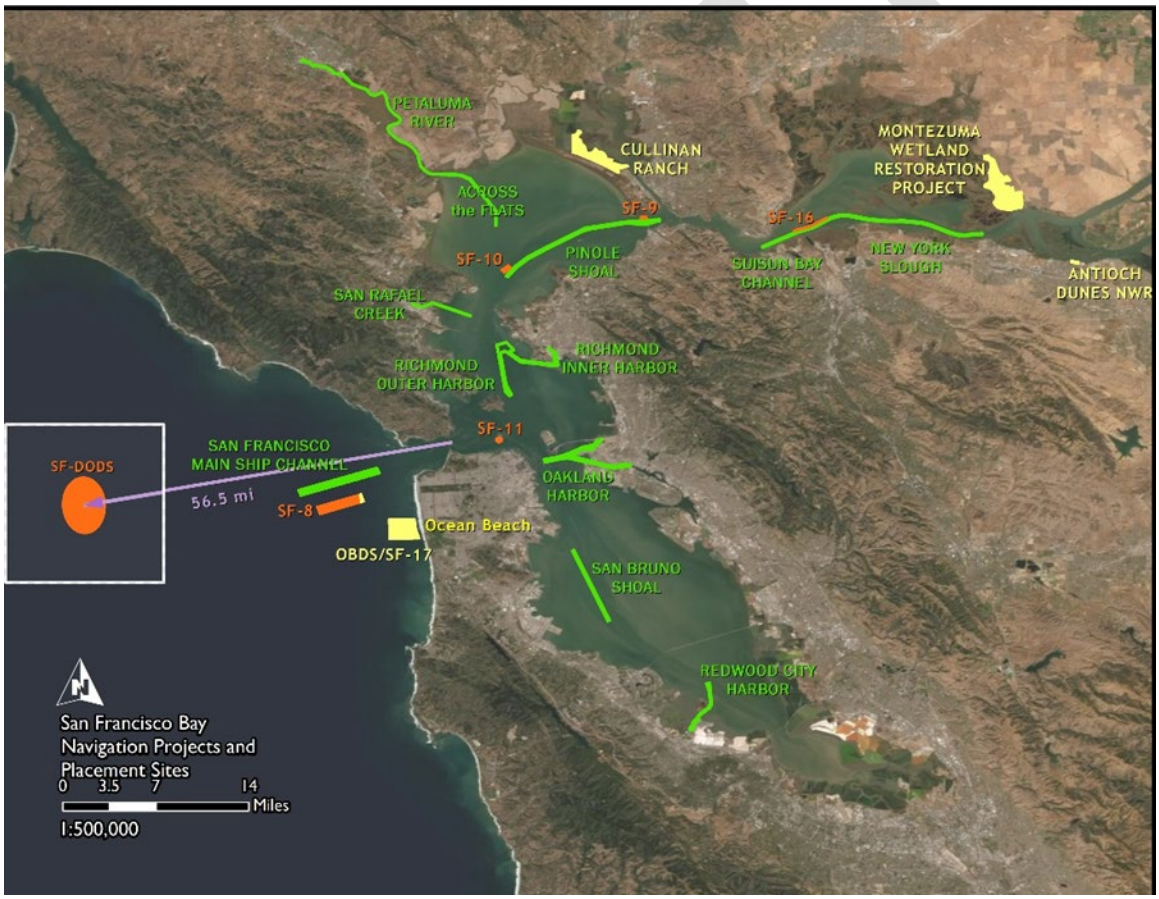

Figure 1. San Francisco District federal navigataion projects (green) and traditional placement sites (orange [aqueous] and yellow [beneficial use]).

Figure 2. South San Francisco Bay extends from the San Mateo Bridge to the Bay's south shoreline. Project implementation will be just bayward of Whale's Tail Marsh (Google Earth image).

As part of its operation and maintenance (O&M) program for federal channels in the San Francisco Bay area, USACE annually dredges five federal channels (Suisun, Richmond Inner Harbor, Oakland Harbor, Redwood City Harbor, Main Ship Channel), biannually dredges two federal channels (Pinole Shoal and Richmond Outer Harbor), and periodically dredges several other federal channels Figure 1). This project proposes sourcing dredged sediment from the Redwood City Harbor federal navigation channel.

5 PROJECT

5.1 BACKGROUND

Before 1850, the San Francisco Bay region sustained 350,000 acres of freshwater wetlands and 200,000 acres of salt marshes (Figure 1). Since then, the region has lost over eighty-five percent of that acreage through diking, dredging, and development. Federal, state, and local agencies and organizations are currently on a path to restore 60,000 acres of tidal wetlands to augment the already-restored 40,000 acres. The resulting 100,000 acres of restored natural infrastructure will help protect the region from tidal flooding and reduce storm damage, especially as sea level rise as predicted. These agencies, through a variety of partnerships, have acquired lands, developed regional plans, conducted environmental reviews, received permits, and are implementing multiple projects to restore many of these critical tidal wetlands for both ecosystem benefits and shoreline protection. Furthermore, a change in sediment regimes, sea level rise (SLR), and localized erosion will lead to a long-term loss of mudflats and marshes in the San Francisco Bay. Sediment is key to addressing the historical

subsidence that has occurred along the Bay shoreline (up to 15 feet in some areas), as well as increased projections for marsh drowning or downshifting as sea levels rise. Sediment from dredging navigation channels is critical for adapting and restoring marshes and mudflats that protect the region from rising seas and storms.

5.2 Alternatives

This phase of the project involves reviewing existing conditions, proposing alternatives, preparing preliminary designs, communicating with local stakeholders, and assessing the potential for beneficially using sediments from a San Francisco Bay federal navigation channel for ecological improvement.

5.2.1 Sites

The first step in developing alternatives for this project was to reduce the number of suggested sites from 12 to 2 sites. Then, various combinations of source channels, placement volumes, and placement areas were used to create several alternatives at each location. Some federal navigation channels are more suited as sources of material for strategic placement than others.

Starting with twelve sites, the project team used eight criteria to reduce the list to two sites:

1. Eroding or drowning marsh; lack of natural sediment supply;
2. Sufficient wind-wave action to resuspend placed sediment;
3. Proximity to a federal channel;
4. Open to tidal exchange, existing marsh;
5. Water shallow enough to get scow close to shore;
6. Protection for disadvantaged communities;
7. Lower populations of critical species;
8. Avoiding large eelgrass beds and nearshore reef projects.

5.3 Modeling

5.3.1 Site Analysis

Two sites – Eden Landing Ecological Reserve (Whale's Tail Unit) and Emeryville Crescent Marsh – were analyzed using a quantitative modeling approach (i.e., the UnTRIM Bay-Delta model and the Short-Term Fate [STFATE] of dredged material in open water model) to determine sediment fluxes, shear stresses, transport pathways, and deposition zones for different placement depths and volumes within the placement grid. The analysis clearly showed that the best chance of notable transport to the mudflat and marsh was at Eden Landing.

5.3.2 Placement Depths

Three placement depths were selected based on local bathymetry: (1) shallowest and closest with smallest footprint; (2) intermediate depths with tidal timing; and (3) deepest depths with fully loaded scow. These placement depths were chosen to maximize sediment transport to target mudflats and marshes, while balancing the logistical challenges associated with scow accessibility and maneuverability in shallower depths. The PDT chose (2), which means that placements will only take place when the tide is higher than a certain stage.

5.3.3 Placement Volumes

Four placement volumes were evaluated: 50,000 yd^3; 75,000 yd^3; 100,000 yd^3, and 125,000 yd^3. These placement volumes were chosen to maximize sediment transport to target mudflats and marshes and to minimize the benthic impacts of placement. The PDT chose a placement volume of 100,000 yd^3.

5.3.4 Federal Navigation Channel

Navigation projects were assessed for their proximity to selected project locations (Figure 1), their frequency of interannual dredging, the dredged sediment quality and grainsize characteristics, and the logistical feasibility of utilizing said channels as sediment sources to determine channel material suitability for beneficial use. Redwood City Harbor is the closest navigation channel to Eden Landing (~6.5 miles), and its grain-size distribution sufficiently matches the grain sizes on the marsh and mudflat near Eden Landing. Consequently, the Redwood City Harbor navigation channel is the proposed source of material for this project.

5.3.5 Site Selection

Based on the modeling results, and other site selection criteria, the proposed project evaluates the potential impacts associated with strategically placing approximately 100,000 cubic yards (yd^3) of dredged sediment from the Redwood City Harbor (Figure 1) federal navigation channels over approximately 19 – 56[1] days using a clamshell dredge and a dump scow at a shallow-depth (9 - 12 feet [ft]), at a 138-acre subtidal site two miles offshore of the Eden Landing Ecological Reserve in southern San Francisco Bay (Figure 2). This proposed pilot project addresses tidal mudflat and salt marsh responses to strategic sediment placement at one South-Bay location.

[1] The range of 19 – 56 days was calculated assuming a 400 CY/hour maximum production rate for a clamshell dredge plant and the corresponding range of 1 – 3 placements using 900 CY scows every high tide with two high tides per day. This resulted in between 1,800 – 5,400 CY/day of dredged material placement at the placement site, and consequently, 19 – 56 days to achieve the target 100,000 CY of dredged material.

5.4 Environmental Analysis

5.4.1 NEPA Determination

Under the No Action Alternative and the proposed alternatives, impacts to the Physical, Biological, or Human Environments, including special-status species, critical habitat, and adjacent communities would be temporary and less than significant. This determination includes the mitigation measures and best management practices outlined under the CEQA determination below and described in the Federal Navigation Maintenance Dredging Environmental Assessment and Environmental Impact Report in San Francisco Bay, 2014 – 2024. The project's action alternatives in combination with other restoration projects in the bay would have a cumulative beneficial impact on adjacent marsh.

There are expected to be less than significant indirect and cumulative impacts to hydraulics and hydrology, water quality, biological resources, special status species, navigation/transportation, air quality/greenhouse gas emissions, noise, recreation, visual resources, marshes, mudflats, and shorelines. Of these categories, there may be cumulative impacts on air quality/greenhouse gas emissions, but with minimization and avoidance measures, as well as the short time span of project duration (approximately 19 - 56 days), it is unlikely that any emissions resulting from this project will result in significant cumulative impacts.

One possible indirect impact is sediment deposition in nearby flood control channels and federal navigation channels. About 0.2% of the dredged material was predicted to be transported into Redwood City Harbor, and 0.3% was transported into the Alameda FCC (Appendix E). A second potential indirect impact is sediment deposition in non-target subtidal and tidal mudflat areas. About 18% of the placed dredged material was predicted to be dispersed within the South Bay below MLLW, 2% dispersed north of Dumbarton Bridge, and 4% dispersed north of the Bay Bridge (Appendix E). Given the volume of sediment placed for this project, the indirect impacts outlined above are expected to be less than significant. On the contrary, the indirect impact of sediment deposition on adjacent tidal mudflats will provide additional benefits for the Bay's mudflat-marsh systems more broadly.

5.4.2 CEQA Determination

The purpose of the project is to support native and special-status plants, fish, and wildlife by supporting the health, diversity, and resilience of sensitive estuarine habitats in the vicinity of Eden Landing and within restoring former salt ponds that are part of the South Bay Salt Pond Restoration Project. The project will result in temporary impacts to estuarine habitats and dependent fish and wildlife communities (including special-status species) offshore of Eden Landing, primarily via burial of sessile organisms in the benthos at the sediment placement site and localized temporary increases in turbidity. Buried portions of the Bay bottom are expected to be recolonized by nearby populations of benthic organisms, and turbidity is not

expected to increase beyond levels naturally experienced in nearshore habitats. Impacts to eelgrass and water quality from the proposed project are potentially significant, and would be reduced to **less than significant with the incorporation of mitigation** measures AQ-1, BIO-1, and BIO-2.

The project, with mitigation measures in place, would not contribute to adverse cumulative impacts. Cumulative impacts would be **less than significant**.

5.4.3 Mitigation Measures

There are no significant impacts anticipated from this project, but the following avoidance and minimization and possible mitigation are proposed for biological resources and air quality.

1. Biological Resources Mitigation Measure (BIO-1)
    a. The project shall comply with the provisions of the U.S. Fish and Wildlife Service and the National Marine Fisheries Service in the project's Endangered Species Act consultations.
2. Biological Resources Mitigation Measure (BIO-2)

Eelgrass

a. Consistent with the June 9, 2011, Programmatic Essential Fish Habitat Consultation Agreement (Agreement) between the U.S. EPA, USACE, and the National Marine Fisheries Service (NMFS), the Permittee shall conduct pre- and post-dredge surveys of eelgrass areal coverage and density within the dredge footprint where it overlaps the 45-meter direct impact buffer zone.
b. Consistent with the Agreement, the Permittee shall implement operational control best management practices (BMPs) to protect eelgrass beds within 250 meters of dredging activity from adverse impacts due to excess turbidity in the water column.

If the Project adversely impacts eelgrass, the Permittee shall submit and implement a mitigation plan and schedule, acceptable to Water Board staff. A NMFS-approved mitigation plan and schedule shall be considered acceptable to Water Board staff.

This mitigation measure is required pursuant to CWC Section 13267; 33 CFR 332.4(a)(C)(4); and 33 CFR 332.6(a)(1).

3. Air Quality Mitigation Measure (AQ-1)

Basic Exhaust Emissions Reduction Measures

BAAQMD's CEQA Air Quality Guidelines require several best management practices to control exhaust emissions regardless of the estimated construction emissions. The BAAQMD requires that the following measures be implemented by the construction contractor:

- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

5.4.4 Compliance with Applicable Laws and Regulations

Prior to initiating any work, all applicable Federal laws and Executive Orders will be complied with. Table 1 summarizes the status of the proposed action's compliance with applicable Federal environmental requirements.

Table 1. Summary of environmental compliance with applicable laws

STATUTE	STATUS OF COMPLIANCE
Clean Air Act	An emissions inventory has been completed and the emissions are below the de minimis threshold. No general conformity analysis is needed.
Clean Water Act	Water Quality certification will be requested in parallel with Release of EA/IS/MND for Public Comment
Coastal Zone Management Act of 1972 (16 USC 1451 et seq)	A Consistency Determination has been prepared and is being coordinated with the BCDC
Endangered Species Act	Request for concurrence from NMFS with Not Likely to Adversely Affect determination prepared. Consultation will be initiated in parallel with EA/IS/MND release for Public Comment
Fish and Wildlife Coordination Act	Planning Aid Letter is underway by USFWS and will be obtained prior to NEPA decision.
Magnuson-Stevens Fishery Conservation and Management Act	EFH Assessment prepared. Will be submitted to NMFS when EA/IS/MND is circulated for Public Comment
Migratory Bird Treaty Act	No impacts to migratory birds are expected from the proposed action.
Marine Mammal Protection Act	No impacts to marine mammals are expected from the proposed action.
National Environmental Policy Act Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA (40 CFR 1500-1508) dated July 1986	This EA has been prepared in compliance with NEPA and CEQA regulations. All agency and public comments will be considered and evaluated. If appropriate, a Finding of No Significant Impact (FONSI will be signed with a conclusion of no significant impacts from this proposed action. A Draft FONSI is included in this EA/IS/MND.
National Historic Preservation Act Executive Order 11593: Protection and Enhancement of the Cultural Environment Archaeological and Historic Preservation Act of 1974, (16 USC 469 et seq)	The proposed action would not affect any historical and cultural resources as none occur within the proposed action area. Concurrence request sent to SHPO on 25 Jul 22. Currently responding to subsequent information request
Marine Protection Research and Sanctuaries Act of 1972 (33 USC 1401 et seq)	Dredged material will not be disposed at an established ocean dumping site.

6 MONITORING PLAN

Monitoring will begin two months before placement and extend one year after placement. Decisions about specific timing and duration will be made adaptively in consultation with the monitoring team, and PDT. Monitoring will focus on assessing the following questions and methods:

- How quickly does the sediment disperse from the placement area?

- How do the local wave energy, storms, and the spring-neap tidal cycle influence sediment flux and dispersal of the disposed sediment in the study area?
- Does placement material deposit on the marsh surface or in the restoration area? How long and what abiotic processes determined arrival?
- Are sediment tracers an effective monitoring tool for sediment addition projects?
- How does shallow dredge placement influence the benthic community and foraging resources for demersal fishes and waterbirds? What is the spatial extent of impacts on the benthic community? How long does it take for functional recovery of the benthic community to occur?
- How does eelgrass respond to strategic shallow water placement?

7 REAL ESTATE PLAN

A Real Estate Plan has been prepared in support of the Environmental Assessment (with Draft FONSI) and 404 (b)(1) Analysis & Initial Study (with Draft Mitigated Negative Declaration), San Francisco Bay Strategic Shallow-Water Placement Pilot Project and is in accordance with ER 405-1-12. There are no lands, easements or rights-of-way necessary for the project because placement of the dredged material will be below the Ordinary Mean High Water Mark and therefore available under the government's dominant right of navigation servitude.

8 IMPLEMENTATION SCHEDULE

Placement is planned to take place during the FY 2023 Dredging Window. Table 2 describes the implementation schedule moving forward.

Table 2. Implementation Schedule for Strategic Shallow-Water Placement 1122 Pilot Project

Task	Dates
Draft NEPA/CEQA document public/MSC review, Draft permit requests included in NEPA/CEQA draft release	23 SEPT – 24 OCT 2022
Final permits submitted	NOVEMBER 2022
Final Approvals needed	JANUARY–FEBRUARY 2023
Contracting & Final Design	JANUARY 2023
Solicitation	SPRING 2023
Monitoring	APRIL 2023–APRIL 2024
Implementation	JUNE–JULY 2023

9 LOCATION OF FULL DOCUMENT

The draft EA/IS/MND can be accessed by navigating a web browser to the website below and clicking on the "Section 1122 Strategic Shallow Water Placement Pilot Project - Draft Environmental Assessment and Mitigated Negative Declaration [PDF]" title in the center of the page to open the report document. The associated appendices can be accessed by clicking on their respective titles listed immediately below the title of the main report on the same website. https://www.spn.usace.army.mil/Missions/Environmental/

Electronic comments can be sent to Dr. Arye Janoff, Environmental Manager, at Arye.M.Janoff@usace.army.mil. All comments must be received prior to the close of the comment period on October 24, 2022.