DECISION DOCUMENT AND PLANNING ANALYSIS

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

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1 AUTHORITY REQUIREMENTS

Section 1122 of the Water Resources Development Act (WRDA) of 2016 directs the U.S. Army Corps of Engineers (USACE) to establish a pilot program to carry out 10 projects for the beneficial use of dredged material (BUDM), including for the project purposes of:

- reducing storm damage to property and infrastructure;
- promoting public safety;
- protecting, restoring, and creating aquatic ecosystem habitats;
- stabilizing stream systems and enhancing shorelines;
- promoting recreation;
- supporting risk management adaptation strategies; and
- reducing the costs of dredging and dredged material placement or disposal, such as for projects that use dredged material as construction or fill material, civic improvement objectives, and other innovative uses and placement alternatives that produce public economic or environmental benefits.

The Acting Assistant Secretary of the Army (Civil Works) signed the Implementation Guidance for Section 1122 on January 3, 2018. The USACE Director of Civil Works provided Draft Guidance for Major Subordinate Commands (MSC) and District Commands in January 2019. The Guidance indicates that the Section 1122 Pilot Projects should follow the policies outlined in the USACE Planning Guidance Notebook (ER 1105-2-100) for Section 204 of the Continuing Authorities Projects (CAP). Section 204 of the Water Resources Development Act of 1992, as amended, authorizes the U.S. Army Corps of Engineers to implement projects for the protection, restoration and creation of aquatic and ecologically related habitats, including wetlands, or to reduce storm damage to property, in connection with dredging for the construction or operations and maintenance of an existing authorized Federal navigation project.

In general, Section 1122 projects will be cost shared in accordance with Section 204 of the CAP; however, if the 204 project relies on dredged material from a federal navigation project, the transportation of the material beyond the Federal Standard will be at a 100% federal cost.

Of 95 proposals evaluated based on the Section 1122 criteria, the 10 selected by the USACE Headquarters evaluation board were deemed to have a high likelihood of environmental, economic, and social benefits, and exhibit geographic diversity. One of the 10 pilot projects selected is in USACE's San Francisco District; it is the subject of this Decision Document and the Environmental Assessment: San Francisco Bay Strategic Shallow-Water Placement (the Strategic Placement project or project). The *Programmatic Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for Implementation of Section 1122 of the Water*

Resources Development Act of 2016 Selection of Recommended Projects describes and documents the evaluation and selection process used to determine the 10 projects recommended for inclusion in the pilot program.

This Section 1122 pilot project will be implemented during the summer of 2023 in conjunction with maintenance dredging of the federal navigation channel at Redwood City Harbor.

2 CONGRESSIONAL DELEGATION AND SPONSOR

a) **Congressional Delegation:** Senators Dianne Feinstein and Alex Padilla (CA), Representative Jeff Eric Swalwell (CA–15).
b) **Sponsor:** California State Coastal Conservancy

3 STUDY LOCATION

The Section 1122 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 (i.e., 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.

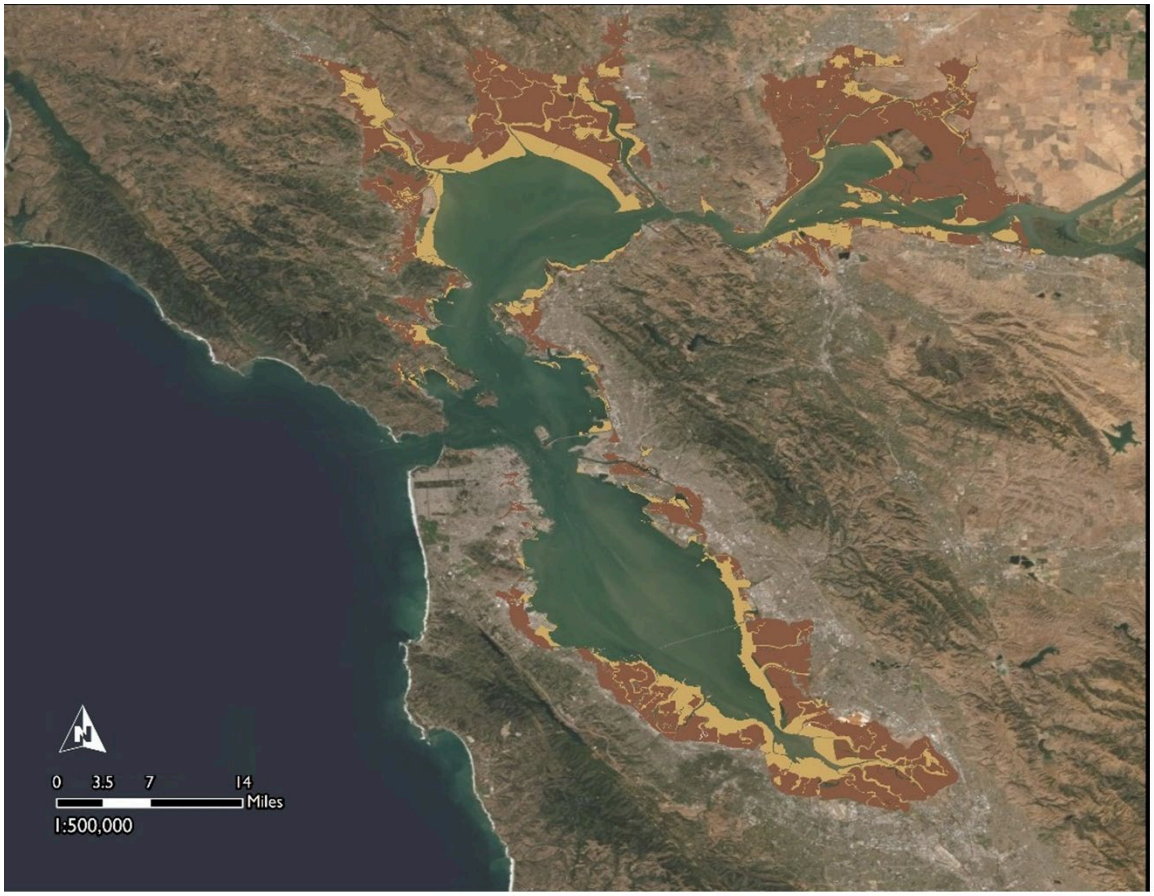

Figure 1. Bay area historical (dark brown) and modern (light brown) baylands.

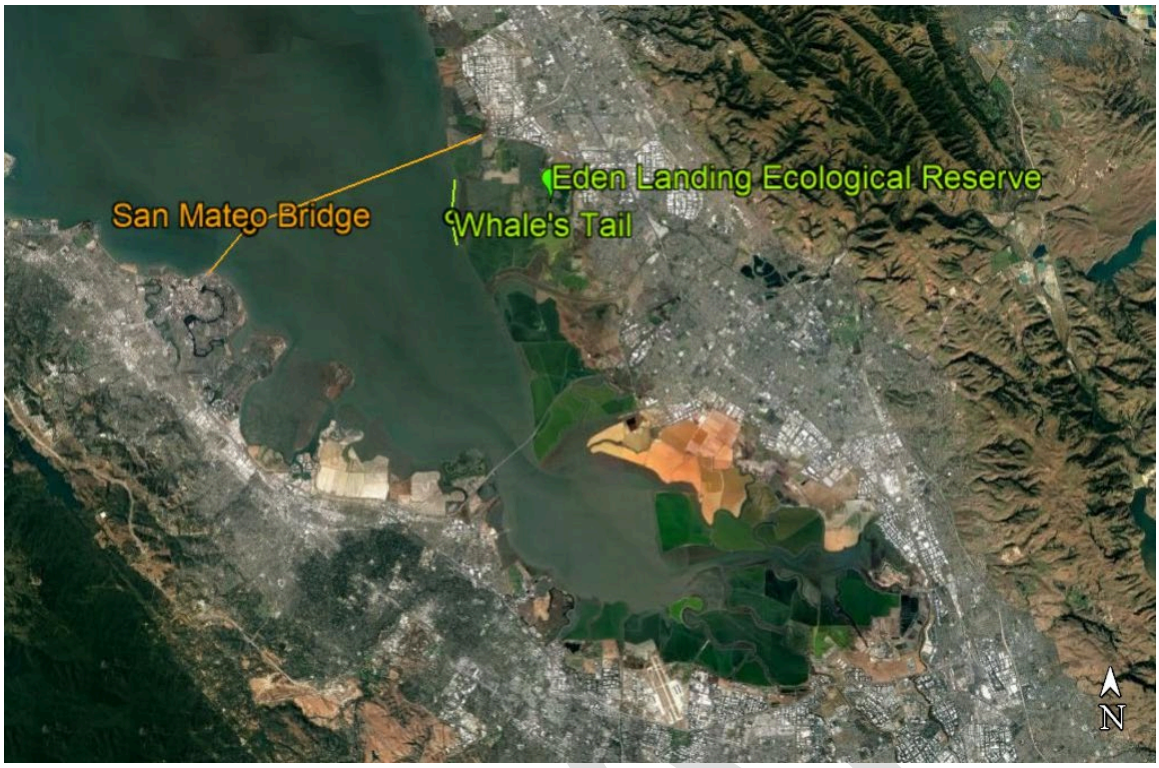

Figure 2. South San Francisco Bay extends from the San Mateo Bridge to the Bay's south shoreline. Project implementation will be just bayward of Whale's Tail Marsh (Google Earth image).

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 3). This project proposes sourcing dredged sediment from the Redwood City Harbor federal navigation channel.

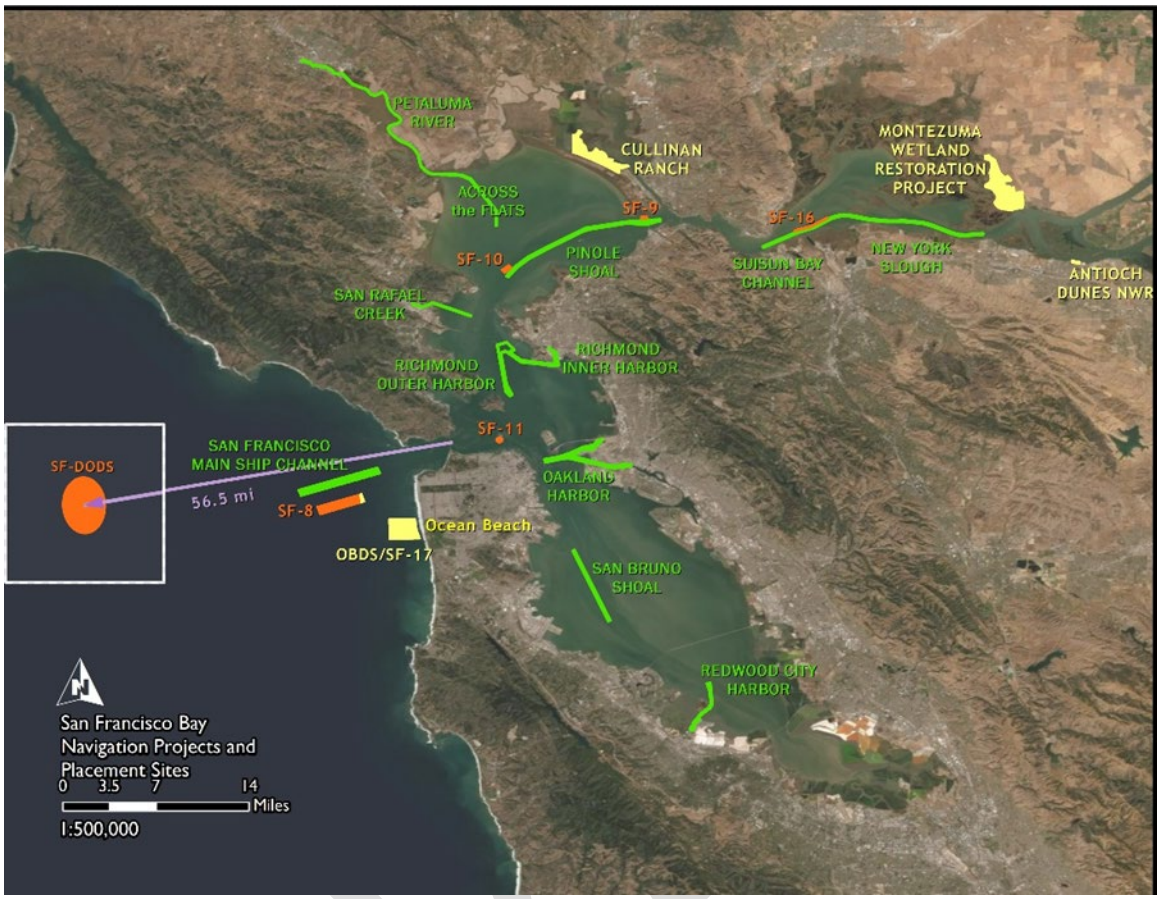

Figure 3. San Francisco District federal navigataion projects (green) and traditional placement sites (orange [aqueous] and yellow [beneficial use]).

4 PROBLEMS

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 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 can be a good source. Dredged sediment is critical for adapting and restoring marshes and mudflats that protect the region from rising seas and storms.

In a show of strong public support for these activities, the Bay Area voted in 2016 to tax themselves $500 million over the subsequent 20 years to fund efforts that accelerate wetlands restoration in view of rising seas and potential tidal flooding. The Resilient San Francisco Bay Project, in its focus on protecting, restoring, and creating aquatic ecosystem habitats, is intended to be a significant tool in the Bay's partnership effort to restore 60,000 acres of tidal wetlands in the Bay. The Resilient San Francisco Bay Project could also pave the way for new methods and technologies to better complement the way beneficial uses of dredge materials are currently conducted around the Bay and throughout the nation. The Strategic Placement Project investigates the use of aquatic placement in the nearshore zone and sediment resupply under natural transport processes to deliver material directly to existing wetlands.

5 OPPORTUNITIES

The proposed project would place sediment dredged from a federal in-bay navigation channel in shallow waters 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. Monitoring will be integrated to evaluate the success of the pilot project and its environmental effects.

Strategic shallow-water placement may offer one of many possible solutions to the problem of downshifting or drowning mudflats and marshes caused by sea level rise (SLR) in San Francisco Bay. This pilot project offers the potential to lower the cost of beneficially using dredge material by using natural processes to bring the material onshore. This pilot project also presents an opportunity to further understand sediment dynamics and transport between the shallow water of the Bay and the mudflats and marshes that ring the edges of the Bay.

6 PROJECT PURPOSE AND OBJECTIVES

The basic purpose of this project is to ascertain the feasibility of using strategic, in-water, dredged-sediment placement to maintain mudflats and tidal marshes. This is a water-dependent project under Section 404(b)(1).

The overall purpose is to test a novel approach to increase mudflat and salt-marsh resilience to SLR in SF Bay via strategic placement of sediment – dredged from federal navigation channels – at a shallow, in-Bay location adjacent to the mudflat and tidal marsh. 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. The goal is to determine if this EWN approach can be a successful, lower-cost method to achieve beneficial use relative to the cost of traditional placement options (i.e., ocean, in-Bay, or upland sites). 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 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 impacts resulting from strategic placement.

Specific project objectives include:

- Use an RSM approach to keep dredged sediment in the natural system most effectively and optimized in support of the ecosystem services.
- Improve coastal resiliency by placing sediment in the nearshore area to support mudflats and marshes.
- Improve recreational opportunities by protecting shorelines, protecting habitat for wildlife viewing, and promoting safe and reliable navigation channels.
- Reduce dredging and dredged material placement costs by combining dredge mobilizations, leveraging funds and objectives across business lines and promoting beneficial use to build natural infrastructure.
- Monitor and evaluate the effectiveness of near shore placement of dredge material for increased sediment delivery to adjacent marshes and mudflats.

- Enhance coordination and collaboration with stakeholder groups and natural resource agencies through the 1122 project alternatives.
- Use monitoring results to improve understanding of coastal processes associated with sediment transport between the shallows and Baylands for future shoreline protection projects.
- Use design lessons learned and monitoring results to understand best practices for mudflat and marsh restoration.

The initial objective of this Section 1122 project is to beneficially use fine-grain sediment dredged from the Redwood City Harbor federal navigation channel by placing the material in shallow water (<10 ft at the existing state of tide) fronting the Whale's Tail section of the Eden Landing Ecological Reserve. Hopefully, local waves and currents will move the sediment onto the mudflats and into the marsh. This process will support wetland health and shoreline resiliency by increasing growth of the shoreline, compared to without project alternative.

Through the 1122 Program, the nearshore placement pilot projects will be constructed as one-time efforts, with the goal of providing significant environmental, social, and economic benefits. Subsequent overall operation and maintenance cost savings for the San Francisco Bay Dredging program will result from these efforts through an improved understanding of sediment pathways and optimization of future dredging and placement strategies.

7 PLAN FORMULATION AND ALTERNATIVE PLANS

The study involved 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 as provided under Section 204 of the CAP and WRDA Section 1122.

The alternative plans presented provide a basis for the alternative analysis in Section 9. The range of alternatives considered here and assessed in the EA/IS include the no action alternative (not placing sediment offshore of the wetland) and the proposed pilot project (recommended plan or beneficial use project).

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. For example, Pinole Shoal, Richmond Outer Harbor, and the Main Ship Channel are regularly dredged with a hopper dredge that cannot access shallow water placement sites (i.e., between 13 feet depth NAVD and 0 feet NAVD, or approximately mean lower low water)

because these ships have a draft of about 35 feet. Therefore, those channels will not be sources for the material to be placed in shallow water. Because availability of the periodically dredged channels is uncertain, dredged material is expected to be sourced from one or two of the five annually dredged channels. Finally, a sediment-transport model was used to eliminate all but two alternatives (one at each location), which were carried forward for final analysis.

7.1 Sites

Starting with twelve sites (Figure 4), the PDT used eight criteria to reduce the list to two sites (Table 1):

a) Eroding or drowning marsh; lack of natural sediment supply;
b) Sufficient wind-wave action to resuspend placed sediment;
c) Proximity to a federal channel;
d) Open to tidal exchange, existing marsh;
e) Water shallow enough to get scow close to shore;
f) Protection for disadvantaged communities;
g) Lower populations of critical species;
h) Avoiding large eelgrass beds and nearshore reef projects.

Figure 4. Potential sites for strategic placement across San Francisco Bay.

Table 1. Initial site selection – the checks mark appliable criteria.

Site (south to north)	Criteria								Reject
	1	2	3	4	5	6	7	8	
Pond A6								✔	✔
Faber Tract		✔	✔	✔	✔	✔		✔	✔
Cogswell Marsh	✔	✔	✔	✔	✔	✔			✔
Eden Landing (Whale's Tail)	✔	✔	✔	✔	✔	✔		✔	
Arrowhead Marsh	✔		✔	✔		✔		✔	✔
Emeryville Crescent	✔	✔	✔	✔	✔	✔	✔		
Bothin Marsh	✔			✔				✔	✔
Stege Marsh	✔	✔		✔		✔			✔
Corte Madera Marsh	✔	✔		✔					✔
Giant Marsh		✔	✔	✔	✔	✔		✔	✔
China Camp		✔			✔			✔	✔
Point Edith	✔	✔	✔			✔		✔	✔

7.2 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.

7.3 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.

7.4 Federal Navigation Channels

Navigation projects were assessed for their proximity to selected project locations, 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. As such, Redwood City Harbor navigation channel is the proposed source of material for this project.

7.5 Proposed Action Determination – Modeling

Two sites – Eden Landing and Emeryville Crescent Marsh – were analyzed using a quantitative modeling approach (UnTRIM Bay-Delta model and 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 (Figure 5).

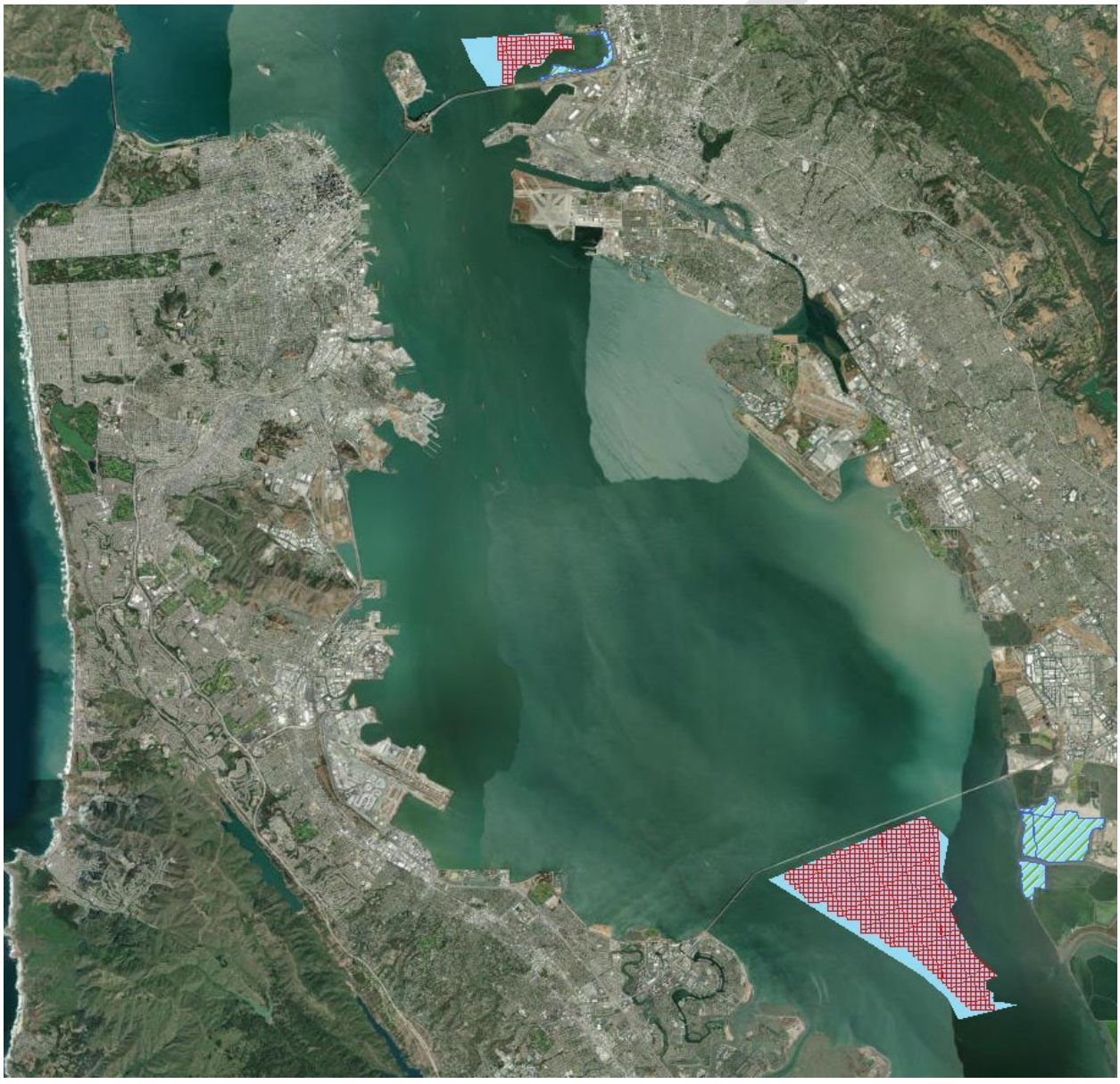

Figure 5. Strategic placement sites narrowed down from twelve to two: Emeryville (top) and Eden Landing (bottom). Site map includes both placement footprint (red grid) and target marsh for restoration (aqua hatch).

Placement alternatives incorporated information on flood tides at various stages of the tidal cycle, including Mean Higher High Water (MHHW), Mean Sea Level (MSL), and Mean Lower Low Water (MLLW), during the San Francisco Bay's environmental dredging window (June 1 – November 30). This determined specific depths for each cell in the placement grid, and ultimately, the design footprints based on depth isolines. The first set of alternatives all utilized the same placement volumes (100,000 yd^3) distributed across the footprint based on scow loading capability as correlated with depths of greater than 9 feet for the shallowest placement; 10 feet for the intermediate placement; and 11 feet for deepest placement. In the first round of modeling, six placement alternatives were analyzed – three for Eden Landing and three for Emeryville Crescent Marsh. The first six scenarios were used to determine whether Emeryville or Eden Landing is most suitable for the pilot project. Different placement strategies at each location were then analyzed to determine the second round of modeling scenarios, and ultimately, to narrow in on the most effective placement strategy (Table 2).

Table 2. First round modeling scenarios testing placement locations, scow volumes, and tidal timings at Emeryville and Eden Landing locations.

Scenario	Placement Grid	Location	Placement Volume (10^3 yd^3)	Scow Volume (yd^3)	Minimum Time Between Placements (hrs)	Notes
1	Emeryville	Deep	100	1,400	6	
2	Emeryville	Middle	100	1,150	2	Placements during flood tide
3	Emeryville	Shallow/East	100	900	2	
4	Eden Landing	Deep	100	1,400	5	
5	Eden Landing	Middle	100	1,150	1.5	Placements during flood tide
6	Eden Landing	Shallow/East	100	900	1.5	

The second round of modeling consisted of six scenarios to evaluate the effect of different placement volumes, seasonal differences (summer versus winter), alternate sediment sourcing, and placement footprints (Table 3).

Table 3. Second round of modeling scenarios testing the effect of different placement volumes, seasonality, alternate sediment sourcing and footprint sizes at the Eden Landing location.

Scenario	Placement Grid	Location	Placement Volume (10^3 yd^3)	Scow Volume (yd^3)	Minimum Time Between Placements (HRS)	Notes
6	Eden Landing	Shallow/East	100	900	1.5	From First Set
7	Eden Landing	Shallow/East	50	900	1.5	
8	Eden Landing	Shallow/East	75	900	1.5	
9	Eden Landing	Shallow/East	100	900	1.5	Winter Placement
10	Eden Landing	Shallow/East	100	900	1.5	Oakland Sediment
11	Eden Landing	Expanded East	100	900	1.5	
12	Eden Landing	Expanded East	125	900	1.5	

This second round of modeling first examined how efficient different placement volumes (50,000 yd^3; 75,000 yd^3; and 100,000 yd^3) were at Eden Landing assuming the Shallow/East placement strategy. Another sensitivity analysis examined 100,000 yd^3 placements subject to wind and wave climate conditions during summer and winter months. Modeling also examined placement sensitivity to the original east/shallow placement footprint versus an expanded east footprint that represented a hybrid of the shallow and intermediate depth scenarios with an overall footprint over twice the size of the original shallow-east size (Table 2). Different sediment-source channels (i.e., Oakland Harbor versus Redwood City Harbor) were tested to understand the impact of different grain sizes on sediment resuspension and mobility, with coarse sediments from Oakland Harbor channel and fine sediments from Redwood City Harbor channel. Finally, different placement volumes (100,000 yd^3 versus 125,000 yd^3) were tested within this expanded east footprint.

Modeling results indicated that summer placements were more efficient at delivering sediments to the target mudflat and marsh system. Analysis of wave resuspension potential indicated significantly higher transport due to waves in summer months than in winter months, due to higher wind speeds. Significantly more placed sediment transported to Eden Landing mudflat/marsh complex in the two months following summer placement than in the three months following winter placement. There was also more regional sediment transport north out of the South Bay following winter placement. Dredged material placements earlier in the summer when wind speeds are seasonally high are likely to be more effective at transporting sediment into the marsh than late-fall and winter placements.

Larger placement volumes resulted in more sediment reaching the target mudflat and marsh on short time scales (on the order of one to two millimeters) and will therefore be more measurable to determine pilot project success, although millimeter-scale deposition is difficult to measure over a wide area. Placement volume and mudflat and marsh deposition volume were linearly correlated with higher detectability for the 100,000 yd^3 placement at

the shallow/east footprint (Figure 6). A larger fraction of Oakland Harbor sediment remains in the placement footprint at end of the two-month analysis period.

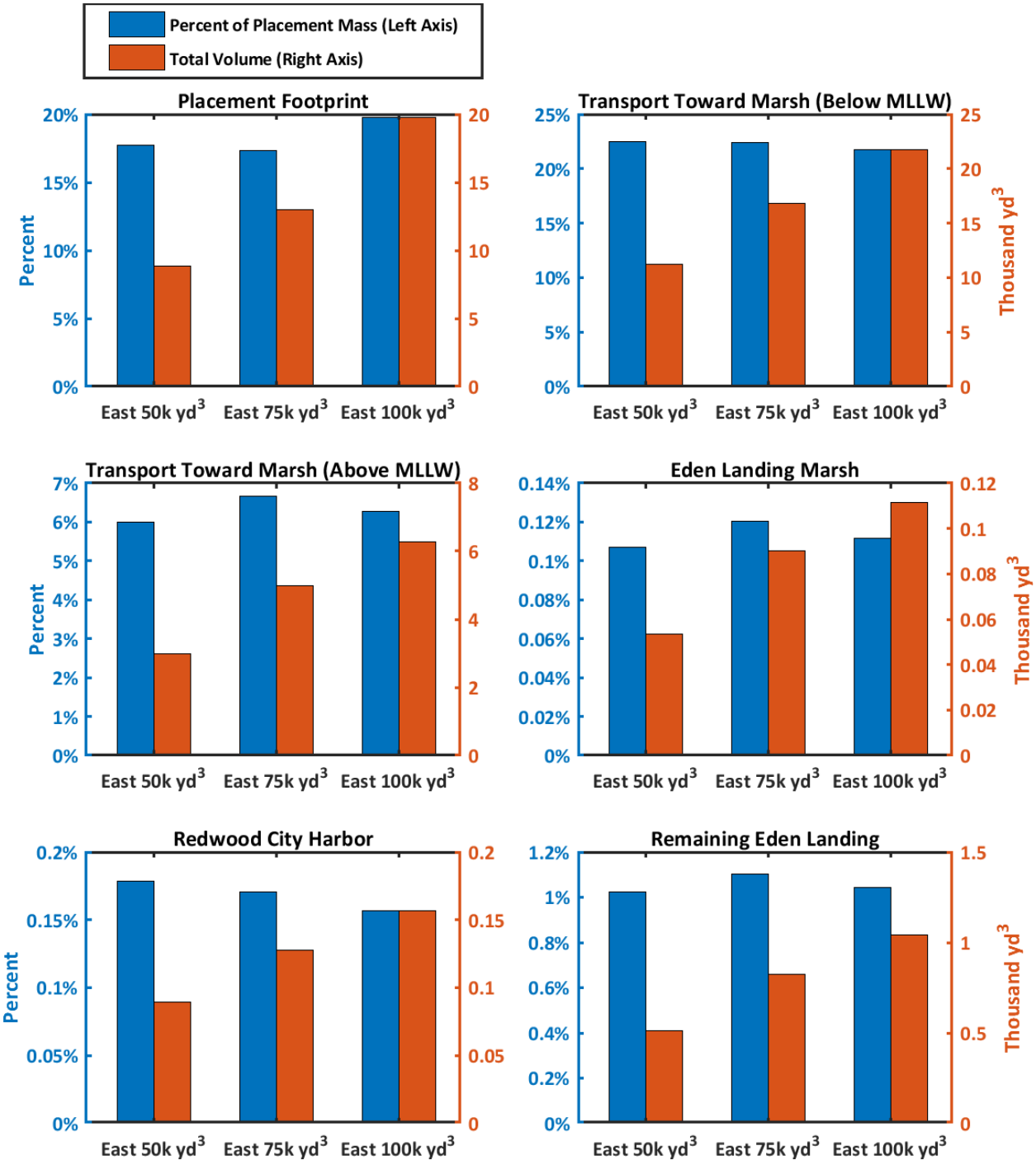

Figure 6. Predicted percentage of dredged sediment mass and dredged material volume in each region at the end of the 2-month simulations for evaluating the placement volume in the shallow/east placement footprint.

The expanded footprint includes areas of greater depth than the original footprint but allowed for thinner placements over the placement footprint. Less sediment was transported out of placement footprint in the two months following placement for the expanded footprint. Overall, results indicate that placements closest to the target marsh at the shallowest depths possible, where wave energy is highest, are most effective at transporting sediment to the marsh.

The final site selection process analyzed the percentage and volume of sediment delivered to the transition tidal flat and upland marsh, as well as the percentage dispersed outside the placement footprint but not to the target locations (i.e., nearshore tidal flat and adjacent marsh) and the percentage re-deposited in federal navigation channels or in nearby flood control channels (Figure 7). These criteria describe the efficiency and impacts of each design alternative, with the goal of maximizing sediment deposition to tidal flats and marshes, and minimizing sediment lost to the Bay, navigation channels and flood control channels. Modeling results indicated that the 100,000 yd^3 shallow/east placement alternative at Eden Landing in the summer months using dredged material from the Redwood City Harbor federal navigation channel was the optimal strategy, which corresponds to scenario 6 (Figure 8, Figure 9, Table 2, Table 3).

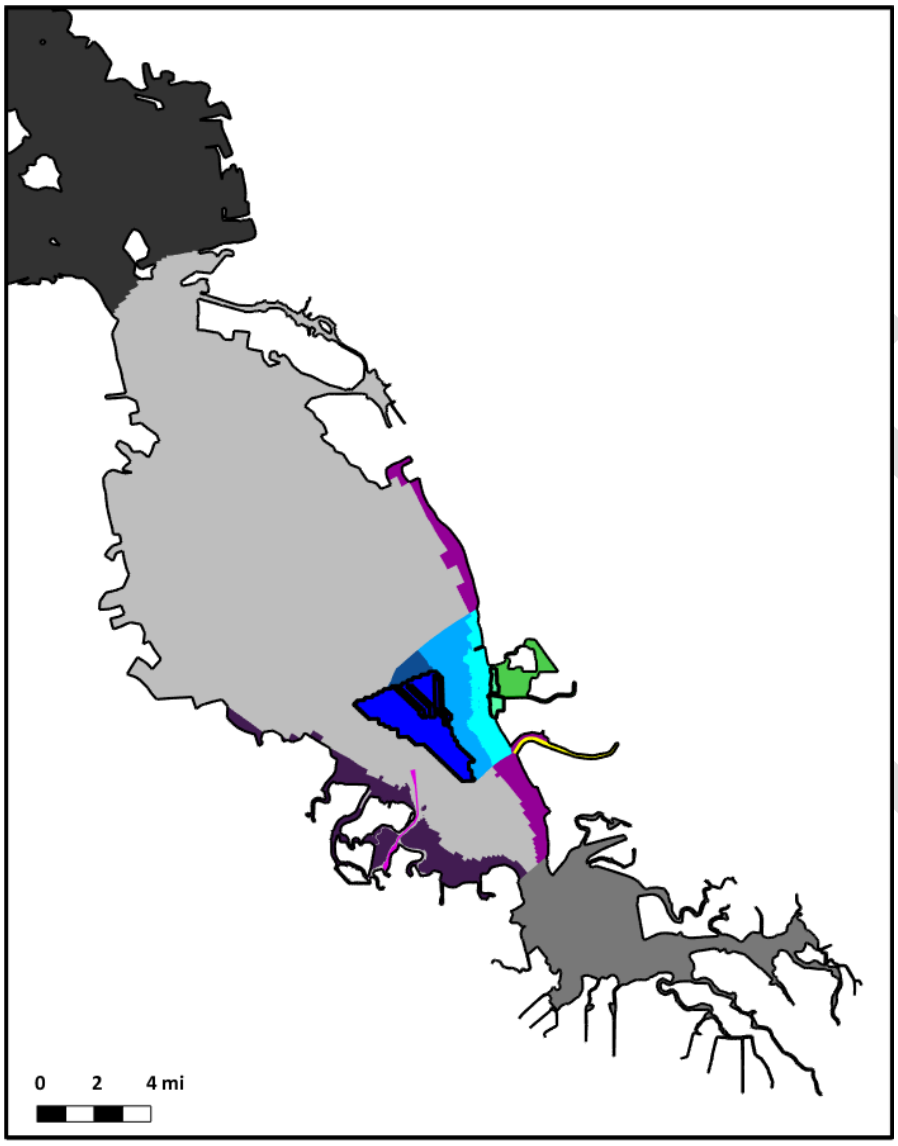

Figure 7. Binned regions to determine sediment transport fate from strategic placements toward target mudflats and marshes, ancillary mudflats and marshes, federal navigation channels, flood control channels, etc.

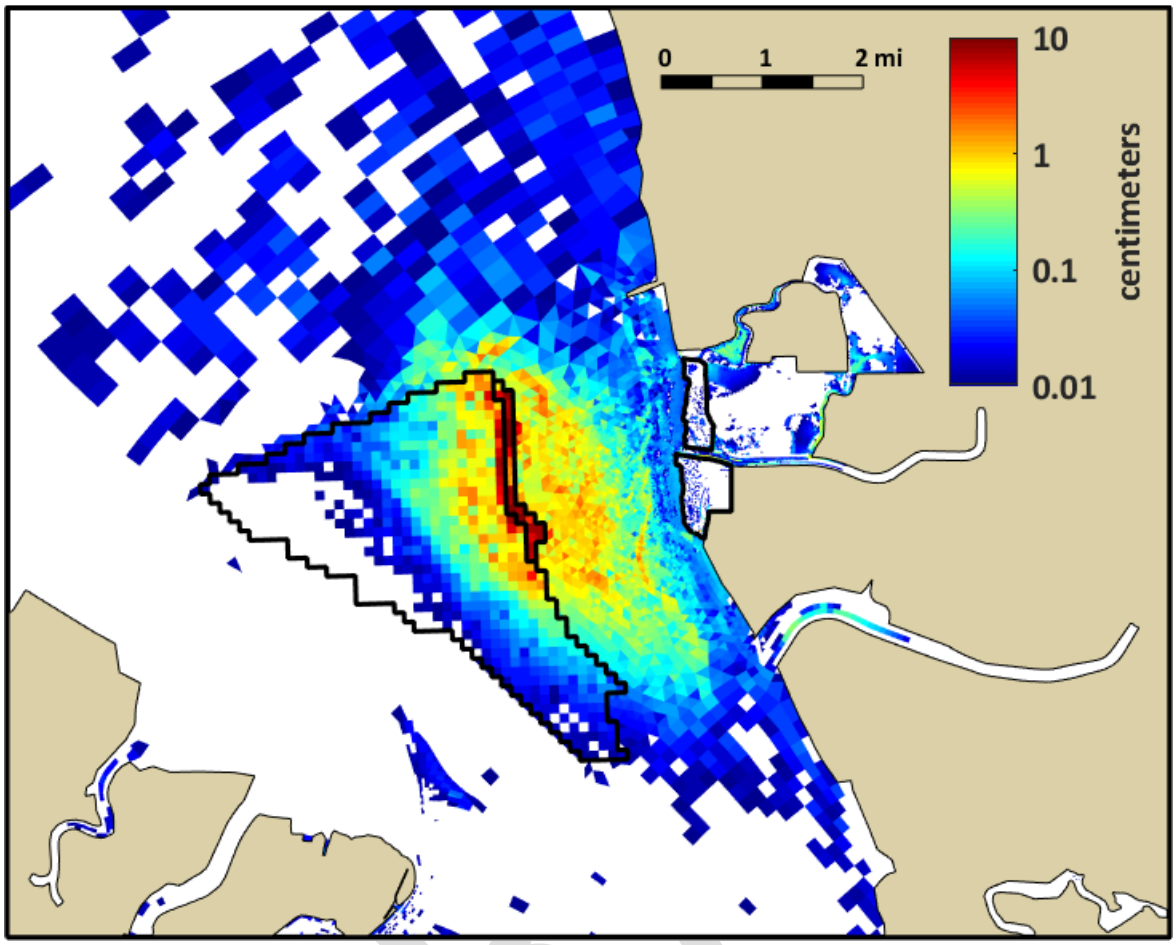

Figure 8. Eden Landing shallow/east placement planview indicating sediment deposition thickness after two-month summer model run for 100,000 yd^3. Note that deposition thickness is on the order of one to two millimeters in the target mudflat and marsh complex.

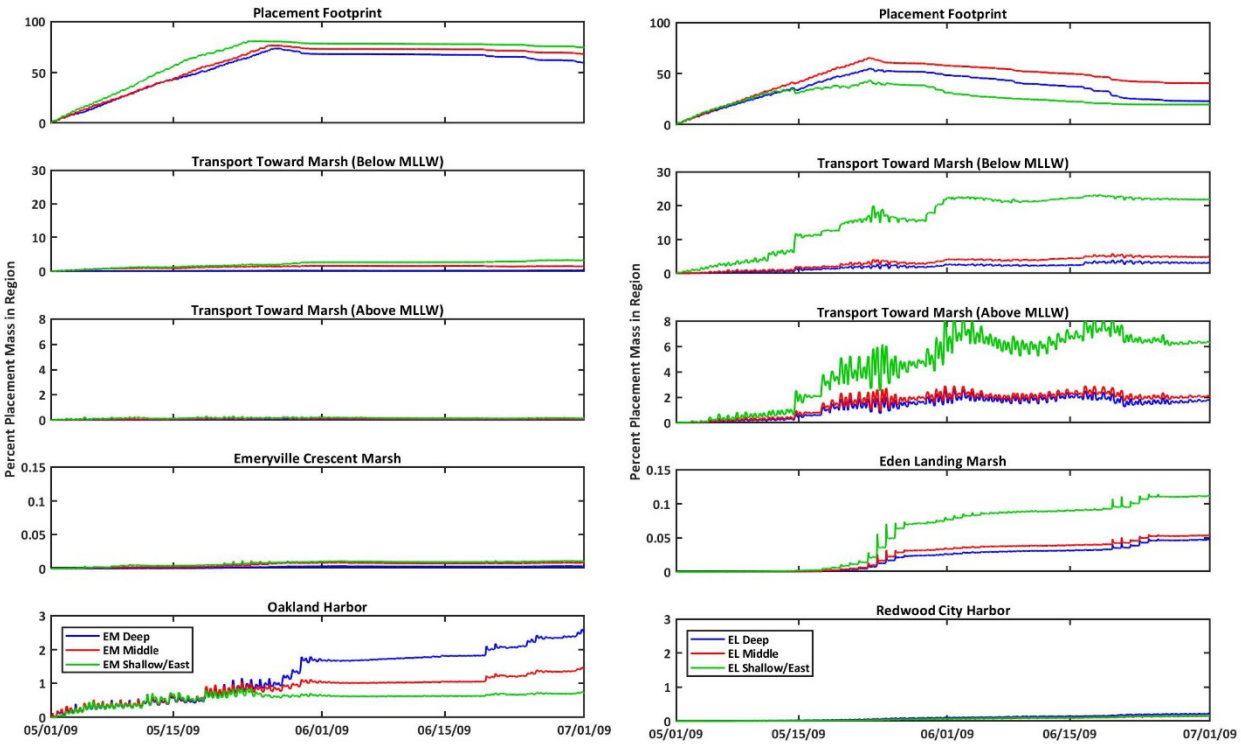

Figure 9. Predicted percentage of dredged sediment mass in each region during the 2-month simulations for the initial three Emeryville scenarios (left) and Eden Landing scenarios (right).

8 AFFECTED ENVIRONMENT AND POTENTIAL ENVIRONMENTAL EFFECTS

The San Francisco District has prepared an EA/MND in accordance with the National Environmental Policy Act of 1969, as amended for the San Francisco Bay Strategic Shallow-Water Placement Pilot Project. The EA/MND describes the existing environment in the project area, assesses the potential environmental impacts of the proposed alternatives, and documents compliance with the applicable environmental statutes.

9 ALTERNATIVE ASSESSMENT:

In accordance with the Planning Guidance Notebook (ER 1105-2-100), the alternative plans were assessed based on a standard set of four criteria: completeness, effectiveness, efficiency, and acceptability (Table 1 and Table 2). Alternative plans must be complete in that they provide and account for all necessary investments or other actions to ensure the realization of the planned effects. And alternative plans must effectively alleviate the specified problems and achieve the desired goals.

Efficiency demonstrates the alternative plan's cost effectiveness of alleviating the specified problems and realizing the specified opportunities. Alternative plans must also be compatible with existing laws, regulations, and public policies. Through the Section 1122 program, the placement would be a one-time effort, with the goal of providing significant environmental,

social, and economic benefits for using strategic shallow water placement of dredged sediment for marsh and mudflat resilience.

Alternative A - Eden Landing: The proposed action would place approximately 100,000 yd^3 of sediment from a San Francisco Bay federal operation and maintenance (O&M) dredging project in a shallow-water placement area adjacent to the mudflat and marsh at Eden Landing to evaluate the ability of tides and currents to move dredged sediment placed in the nearshore environment to the adjacent mudflat and marsh. Throughout one dredging episode[1] the Redwood City Harbor scows with dredged material will be diverted from the federal standard placement site SF-11 or SF Deep Ocean Disposal Site (SF-DODS) respectively. The material will be placed at the in-bay, strategic placement site with a target thickness between about 0.33 ft and 1 ft. Based on wave and current modeling, it is expected that the scows will need to unload in water depths between 9 and 12 feet in absolute depths (i.e., placement location will vary depending on the stage of the tide, or how deep the water is at any given point) to maximize marsh-ward transport by waves and currents. The total volume of placed material will be approximately 100,000 yd^3, and placements will take place during flood tides in a 138-acre placement footprint (See yellow-blue polygon in Figure 10) that was determined by computer modeling and geospatial analysis to be most suitable for successful dispersal. Scows, which will be light loaded to approximately 900 yd^3, will make approximately 112 round trips between Redwood City Harbor and the placement site. The placement area and adjacent mudflat-marsh complex will be monitored before and after placement.

[1]

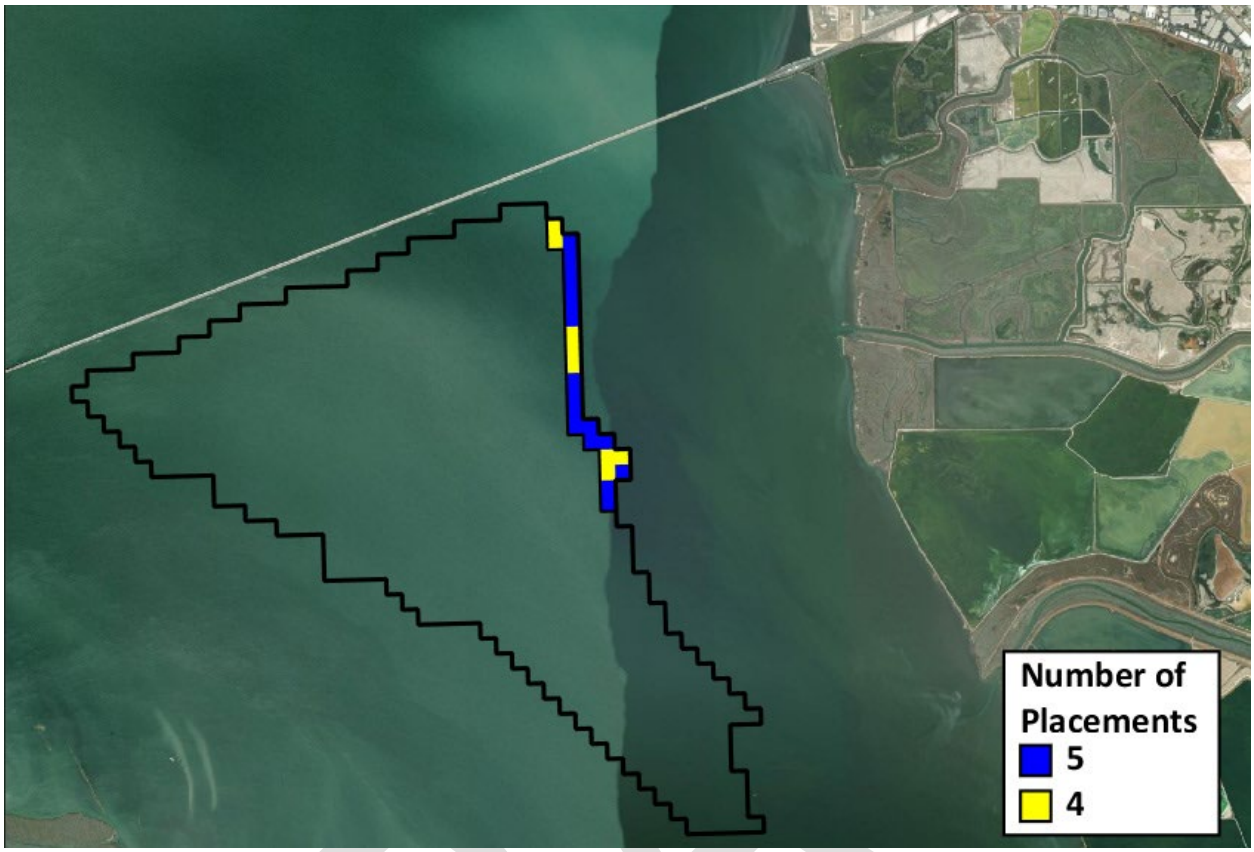

Figure 10. Placement cells in shallow water aproximately two miles off the marsh at Eden Landing (i.e., Whale's Tail) for the Shallow/East placement. The black outline represents the entire placement grid, while the blue and yellow cells represent the Eden Landing.

Alternative B - Emeryville Crescent: Under this alternative the proposed action would place approximately 100,000 yd^3 of sediment from a San Francisco Bay federal operation and maintenance (O&M) dredging project in a shallow-water placement area adjacent to the mudflat and marsh at Emeryville Crescent to evaluate the ability of tides and currents to move dredged sediment placed in the nearshore environment to the adjacent mudflat and marsh. Throughout one dredging episode of Oakland Harbor Operations and Maintenance (O&M) Project scows with dredged material would be diverted from the federal standard placement site SF-DODS. The material would be placed at the in-bay, strategic placement site with a target thickness between about 0.33 ft and 1 ft. Based on wave and current modeling, the scows would need to unload in water depths less than 10 ft in absolute depth (i.e., placement location will vary depending on the stage of the tide) to maximize marsh-ward transport by waves and currents. The total volume of placed material would be approximately 100,000 yd^3, and placements would take place during flood tides within a 69-acre placement footprint that was determined by computer modeling and geospatial analysis to be most suitable for successful placement (Figure 11 shows the target placement areas shaded in blue and yellow). Scows which will be light loaded to approximately 900 yd^3, will make approximately

112 round trips between Oakland Harbor federal navigation channel and the Emeryville Crescent Marsh placement site.

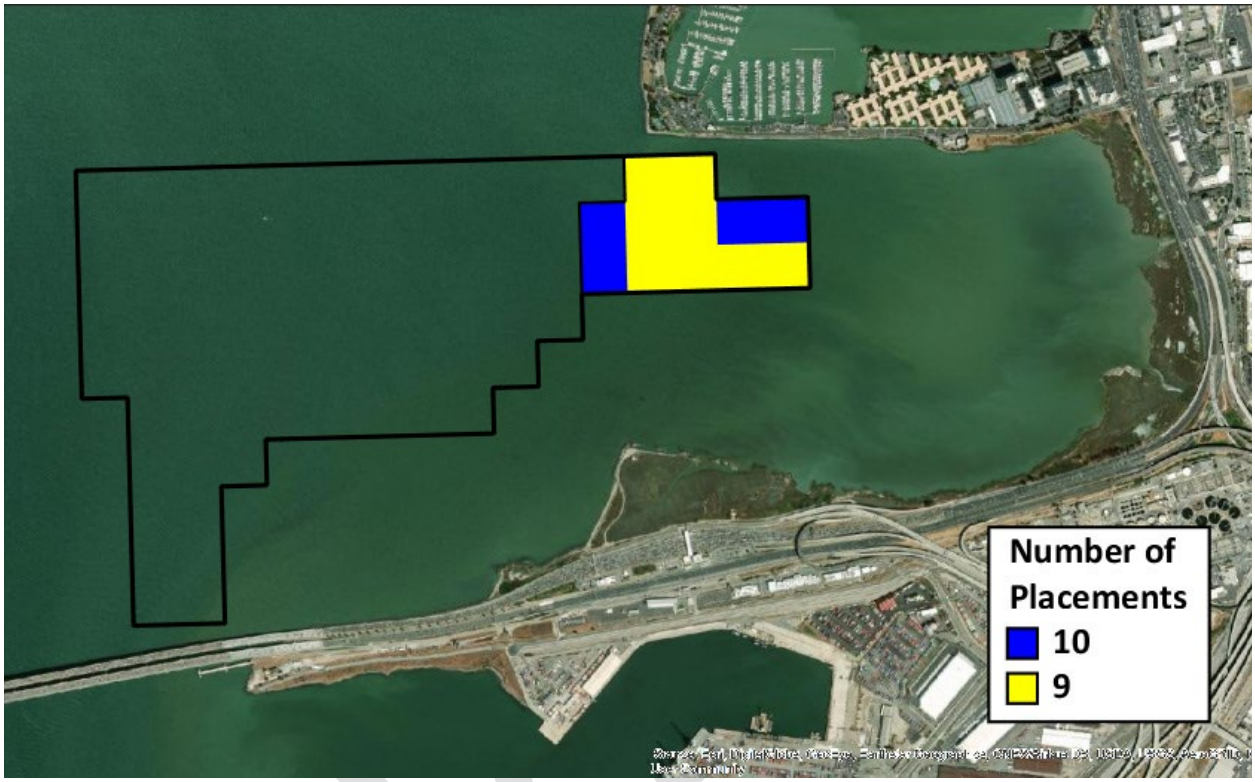

Figure 11. Placement cells in shallow water aproximately 2/3rd mile off the marsh at Emeryville Crescent for the Shallow/East placement.

The black outline represents the entire placement grid, while the blue and yellow cells represent the Emeryville Crescent Shallow/East placement footprint cells with 10 and nine placements respectively depending on the water depths and tidal timings. The placement footprint is approximately 2,500 feet long and 1,250 feet wide.

The no action alternative comprises placing material from a San Francisco Bay federal navigation channel O&M project at its Federal Standard (aka, Base Plan)[2] location. In the case of Redwood City Harbor, this material would be placed at SF-11, the in-bay placement site near Alcatraz Island; in the case of Oakland Harbor, this material would be placed at the offshore location, SF-DODS. In either case, the no action alternative would result in sediment being lost either to the deep ocean or dispersed to deeper subtidal, Bay environments. The consequence is a lost opportunity to maximize BUDM in the Bay.

[2] The Federal Standard is defined in USACE regulations as the least costly dredged-material disposal or placement alternative (or alternatives) identified by USACE that is consistent with sound engineering practices and meets all federal environmental requirements, including those established under the Clean Water Act (CWA) and the Marine Protection, Research, and Sanctuaries Act (MPRSA) (see 33 CFR 335.7, 53 FR 14902). The term "Base Plan" is a more accurate operational description of the Federal Standard, because it defines the disposal or placement costs that are assigned to the "navigational purpose" of the project.

Additionally, while current dredging and disposal practices are the Federal Standard, it is not an innovative RSM beneficial use project and is not consistent with the planning criteria of the 1122 pilot program. Based on this assessment, the recommended plan is an innovative beneficial use project that is consistent with all four planning criteria and has been selected for implementation.

Table 4: Plan evaluation using the four planning criteria

	Completeness	Effectiveness	Efficiency*	Acceptability
Current Practice: Federal Standard	Accounts for all necessary investments and actions	Is not a beneficial use project as authorized by Section 1122 of WRDA.	Allows mudflats and marshes to drown as sea levels rise	Acceptable to federal, state, and local agencies, though the community at large is in favor of beneficial use for mudflat and marsh adaptation to climate impacts
Recommended Plan: Beneficial Use of Sediments for Shallow Water Placement at Eden Landing	Accounts for all necessary investments and actions	Innovative pilot project that meets the requirements of WRDA Section 1122. If successful, can provide less environmentally impactful sediment supply to drowning mudflats and marshes.	If successful would provide significant environmental, social and economic benefits; and subsequent potential overall future cost savings.	Acceptable to federal, state, and local agencies, including South Bay Salt Ponds project which would benefit from sediment deposition in newly breached tidal ponds
Alternative B: Beneficial Use of Sediments for Nearshore Placement at Emeryville Crescent	Accounts for all necessary investments and actions	Innovative pilot project that meets the requirements of WRDA Section 1122. If successful, can provide less environmentally impactful sediment supply to drowning mudflats and marshes.	If successful would provide significant environmental, social and economic benefits; and subsequent potential overall future cost savings.	Acceptable to federal, state, and local agencies, however could negatively affect nearby eelgrass beds.

10 REAL ESTATE REQUIREMENTS

A Real Estate Plan (REP) for the project was prepared by the USACE Los Angeles District and is provided as Appendix E. No real estate acquisition and no local cooperation agreements are required for the project.

11 SPONSORSHIP AND FUNDING

The California State Coastal Conservancy (SCC) will be acting as the non-Federal sponsor for this 1122 Pilot Project. The SCC will not have a cost-share responsibility since the

Recommended Plan will be funded 100% at Federal expense. The SCC is fully supportive of the Recommended Plans and has been a valuable partner for the San Francisco District on multiple other coastal storm risk management, navigation, and ecosystem restoration projects.

12 COMPLIANCE WITH APPROPRIATE REGULATORY REQUIREMENTS

A draft joint NEPA/CEQA Environmental Assessment (EA)/Initial Study (IS)/Mitigated Negative Declaration (MND) was released for public comment on September 23, 2022 for 30 days. Following a review of the public and agency comments by the PDT, the document was finalized for submission to USACE South Pacific Division (SPD). On approval of the EA/IS/MND by SPD, a Finding of No Significant Impact (FONSI) will be signed by the San Francisco District Commander.

Compliance with environmental quality protection statutes and other environmental review requirements has been completed and documented. Table 5 provides a listing of compliance with federal environmental statutes.

Table 5. Compliance with Environmental Protection Statutes and other Environmental Requirements

STATUTE	STATUS OF COMPLIANCE
Endangered Species Act	Not Likely to Adversely Affect determination prepared. Consultation will be initiated in parallel with EA/EIR release
Clean Air Act	An emissions inventory has been completed and the emissions are below the de minimis threshold.
Clean Water Act	Water Quality certification will be requested in parallel with Release of EA/EIR
Rivers and Harbors Act of 1899 (33 USC 403)	See 33 CFR § 323.3
Executive Order 11990, Protection of	No wetlands will be impacted the proposed project.
National Oceanic and Atmospheric Administration Federal Consistency Regulation (15 CFR 930)	See CZMA
Coastal Zone Management Act of 1972 (16 USC 1451 et seq)	A negative determination has been prepared and is being coordinated with the BCDC
California Coastal Act of 1976	See CZMA
Fish and Wildlife Coordination Act	Funding and requested project information have been provided to USFWS
Magnuson-Stevens Fishery Conservation and Management Act	EFH Assessment prepared. will be submitted to NMFS when EA/EIR is circulated
Migratory Bird Treaty Act	No impacts to migratory birds are expected from the proposed action. Bird surveys will be performed in the mudflats and tidal marsh pre and post placement.
Marine Mammal Protection Act	No impacts to marine mammals are expected from the proposed action.
National Marine Sanctuaries Act (16 USC	The proposed action would not take place in or near a national marine sanctuary.
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. The proposed action will adhere to the conditions for transportation of dredged material pursuant to section 103 of the MPRSA
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 CEQ 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 provided below.
• 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
Federal Water Project Recreation Act (16 USC 4601 et seq)	NA
Submerged Lands Act	NA

Abandoned Shipwreck Act	None occur on site

13 IMPLEMENTATION SCHEDULE

Placement is planned to take place during the FY 2023 Dredging Window. Table 6 describes the implementation schedule moving forward.

Table 6. 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

14 RECOMMENDATIONS

The USACE recommends that the project delivery team proceed to Design and Implementation. Further, this Decision Document, EA/IS/MND, and Real Estate Plan have all the analyses that demonstrate that Federal participation is warranted, and no additional feasibility-level work is required.

_____ _____

Date

Thomas Kendall
Chief of Planning, SPN
US Army Corps of Engineers