

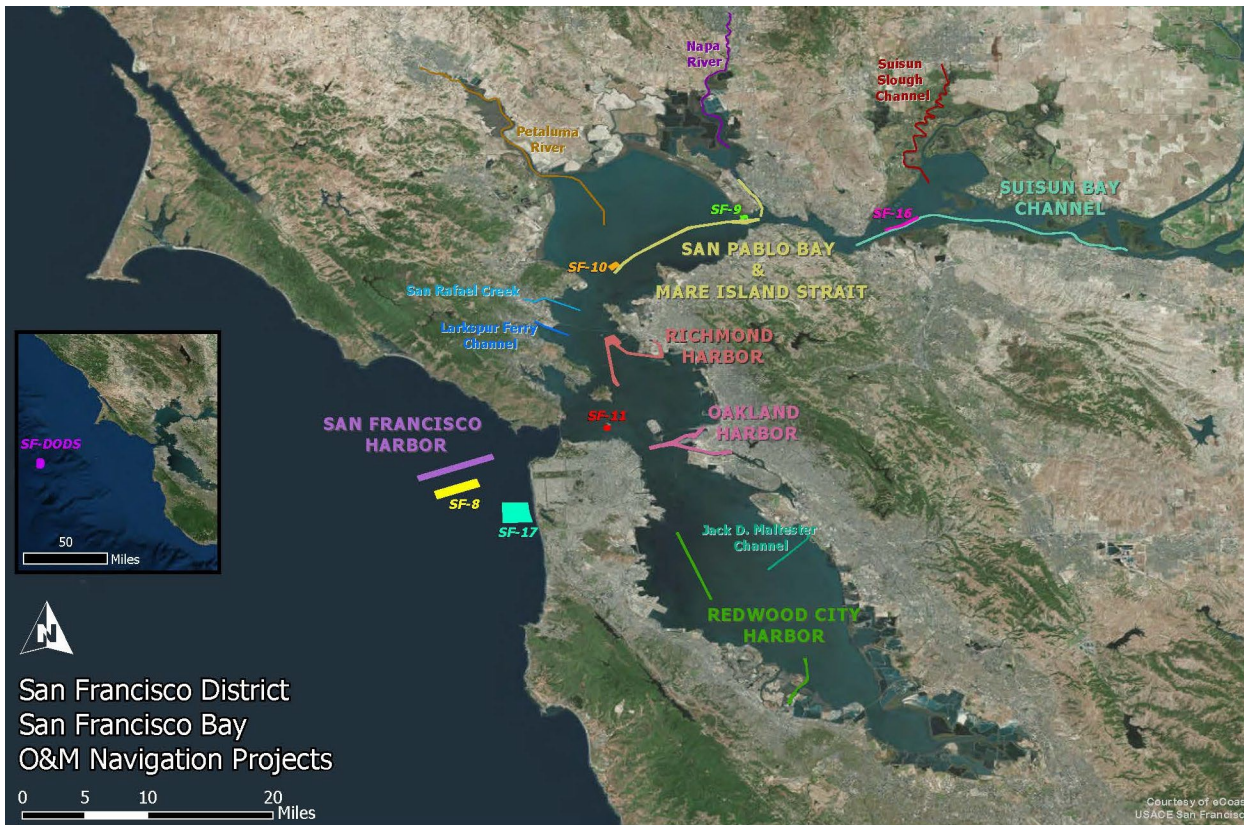


US Army Corps of Engineers®

San Francisco District O&M Navigation Program

PROJECT MANAGEMENT PLAN

Project Name: San Francisco Bay Regional Dredged Material Management Plan Project
County, State: The Nine Counties of San Francisco Bay, CA



May 2021

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LIST OF ACRONYMS/ABBREVIATIONS

Acronym/Abbreviation	Meaning
BCDC	Bay Conservation and Development Commission
BU	Beneficial Use
CWA	Clean Water Act
EPA	Environmental Protection Agency
GGBHTD	Golden Gate Bridge Highway and Transportation District
LTMS	Long Term Management Strategy
NMFS	National Marine Fisheries Service
RDMMP	Regional Dredged Material Management Plan
SFEI	San Francisco Estuary Institute
SFRWQCB	San Francisco Bay Regional Water Quality Control Board
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WRDA	Water Resource Development Act

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1.0 INTRODUCTION

Per the guidance given in the U.S. Army Corps of Engineers (USACE) Planning Guidance Notebook (Engineer Regulation (ER) 1105-2- 100), Appendix E, Section E-15:

- All Federally maintained navigation projects must demonstrate that there is sufficient dredged material placement capacity for a minimum of twenty years;
- Dredged Material Management Plans (Management Plans) shall be prepared, on a priority basis, for all Federal navigation projects, or groups of inter-related harbor projects, or systems of inland waterway projects (or segments);
- Management Plans shall identify specific measures necessary to manage the volume of material likely to be dredged over a twenty-year period, from both construction and maintenance dredging of Federal channel and harbor projects. Non-Federal, permitted dredging within the related geographic area shall be considered in formulating Management Plans to the extent that disposal of material from these sources affects the size and capacity of disposal areas required for the Federal project(s). In those cases where two or more Federal projects are physically inter-related (e.g., harbors which share a common disposal area or a common channel) or are economically complementary, one Management Plan may encompass that group of projects; and,
- Base Plan (Federal Standard). It is the Corps of Engineers policy to accomplish the disposal of dredged material associated with the construction or maintenance dredging of navigation projects in the least costly manner. Disposal is to be consistent with sound engineering practice and meet all Federal environmental standards including the environmental standards established by Section 404 of the Clean Water Act of 1972 or Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended. This constitutes the base disposal plan for the navigation purpose. Each management plan study must establish this "Base Plan", applying the principles given in ER 1105-2-100.

Management Plan development shall proceed in two phases: preliminary assessments, and if needed, Management Plan studies. A preliminary assessment is required for all Federal navigation projects to document the continued viability of the project and the availability of dredged material placement capacity sufficient to accommodate twenty years of dredging. If the continued viability of the project is uncertain, then Management Plan studies are required.

Management Plan studies are then further divided and conducted in two phases: an initial phase and a final phase. The initial phase concentrates on developing a detailed Scope of Work, and the final phase executes that Scope of Work. The initial phase shall be completed within twelve months of receipt of funds by the San Francisco District (SPN) and shall produce a Scope of Work for the final phase of the study. The Scope of Work shall be the basis for estimating the total study cost and local share, if any, and shall allow not longer than thirty-six months to complete the final phase.

SPN has recently completed preliminary assessments for the six deep-draft Operations and Maintenance (O&M) navigation projects (Oakland, Redwood City, Richmond, San Francisco Main Ship Channel, San Pablo Bay, and Suisun Bay) in the San Francisco Bay (Bay) area that

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recommend the development of Management Plans, due to the large uncertainties in future placement sites availability, environmental conditions, and beneficial use opportunities. The preliminary assessments recognized the inter-dependence of these projects and recommended a single Regional Dredged Material Management Plan (RDMMP) for the Bay be implemented. In addition, there are also six shallow-draft navigation projects in the Bay and they shall also be included in the RDMMP, as they also share the same regional economy, placement sites, and similar ecological and physical conditions.

The planning effort described in this Project Management Plan (PMP) will address all federally authorized and maintained navigation channels in the San Francisco Bay System. The main impediments to continued dredging are associated with limited placement capacity. Efficient execution of the Federal O&M dredging program in San Francisco Bay requires a strategic and regional approach that addresses these challenges. Once the San Francisco Bay RDMMP is complete, a 20-year vision for the Federal O&M dredging program will be established. If site conditions change within a particular Federal project, or at a placement site, warranting additional in-depth study, USACE can initiate a project specific Preliminary Assessment, and if needed a project specific Dredge Material Management Plan (DMMP) to address the changing conditions. USACE typically reviews project specific DMMPs every 5 years making necessary adjustments as needed. A 5-year review of the RDMMP will also be implemented.

1.1 Purpose and Scope

The purpose of this PMP is to manage the development and approval of a RDMMP for the Bay. This PMP serves as a guide and reference on how to manage the project delivery team, project acquisitions, changes to the project, quality of work products, risks to project execution, internal and external communications, and most importantly the overall scope, schedule, and budget for the RDMMP.

This PMP is not intended to anticipate or include all possible changes to the project during execution. It is a dynamic "living" document that requires periodic update. Revisions to the PMP will reflect significant changes to the costs, schedule, and/or scope of the RDMMP. The Project Manager (PM) will facilitate discussions related to changes to this PMP and coordinate the schedule and budgets with the various Chiefs prior to finalizing and issuing a revised or updated PMP. This PMP focuses on study topics that are covered in section 4 of this PMP.

As mentioned previously, Management Plan development consists of preparation of Preliminary Assessments and, if necessary, Management Plan Studies. The Management Plan studies are further subdivided into a Scope of Work Development Phase and a Studies Execution Phase. This PMP focuses on the development of the Scopes of Work Phase. The PMP will be updated again once the Scopes of Work have been developed and approved by USACE.

This RDMMP has a focus on all available placement options and capacities, specifically with a focus on beneficial use of dredged materials and coastal resilience, especially given the uncertainty of future climate and sea level conditions.

1.2 Project Descriptions



Figure 1. The Study Area for the RDMMP showing the 12 Projects and 7 Placement Sites

The RDMMP study area extends from approximately 50 nautical miles offshore at the San Francisco Deep Ocean Disposal Site (SF-DODS), through the Golden Gate Bridge, covering the entire Bay, to the border of the Sacramento-San Joaquin Delta (Delta); the Delta border being defined herein as the upstream limit of the Suisun Bay Channel (Figure 1).
Deep-Draft Federal Navigation Projects.

Descriptions of the six deep-draft Federal navigation projects are given herein:

Oakland Harbor: Oakland Harbor is on the eastern shore of San Francisco Bay immediately south of the San Francisco-Oakland Bay Bridge. The authorized project includes the Entrance Channel, Outer Harbor Channel, Inner Harbor Channel, Brooklyn Basin South Channel, Brooklyn Basin North Channel, and Tidal Canal. Oakland Harbor is in the City of Oakland, on the eastern shore of central San Francisco Bay immediately south of the San Francisco-Oakland Bay Bridge. Deepening of the Entrance Channel, Outer Harbor Channel, and Inner Harbor Channel to 50 feet MLLW was completed early in 2010. The Entrance Channel, Outer Harbor Channel, and Inner Harbor Channel are typically dredged annually. Dredged material from Oakland Harbor has typically been less than 80 percent sand. Prior to 1999, all dredged material from Oakland Harbor was placed at SF-11. Since 1999, maintenance dredged material has been primarily disposed at SF-DODS, with placement occasionally diverted to Montezuma Wetlands Restoration Project under certain circumstance. During the Oakland 50 Foot Deepening Project from 2001 to 2010, material was placed at the Middle Harbor Enhancement Area, the Hamilton Wetlands Restoration Project, the Montezuma Wetlands Restoration Project, and at SF-DODS.

Redwood City Harbor: The Port of Redwood City is approximately 18 miles south of San Francisco on the western side of South San Francisco Bay. It provides deep-draft access to the

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mid-Peninsula and San Jose metropolitan areas. The authorized project consists of San Bruno Channel, an Entrance Channel, an Outer Turning Basin, a Connecting Channel, an Inner Turning Basin, and Inner Channel. The Inner Channel mainly supports recreational craft, and is currently not maintained by the federal government. Redwood City Harbor was last deepened in 1962. Project maintenance provides for dredging of the channels and turning basins, which range in width from 300 feet to 900 feet, to 30 feet MLLW. The Entrance Channel, Outer Turning Basin, Connecting Channel, and Inner Turning Basin are typically dredged every 1 to 2 years. San Bruno Channel is 510 feet wide by 1,800 feet long and is dredged on a 10-year interval or greater, and was last dredged in 2005. Dredged material from Redwood City Harbor has typically been less than 80 percent sand, and placed at SF-11, Montezuma or at Bair Island for beneficial use.

Richmond Harbor: The Richmond Harbor authorized project is located between San Francisco Bay and San Pablo Bay in Contra Costa and San Francisco Counties. The project consists of the Santa Fe Channel, Inner Harbor Approach Channel, Inner Harbor Entrance Channel, Outer Harbor at the Long Wharf, and the Southampton Shoal. The Outer Harbor is dredged by a hopper and therefore has been placed in-Bay. Dredged material from the Outer Harbor has typically been less than 80 percent sand, and placed at the Alcatraz Island placement site (SF-11), while dredged material from the Inner Harbor, which has been mechanically dredged, is also less than 80 percent sand, and placed at SF-DODS, Cullinan Ranch, Montezuma and SF-11. The project was last deepened in August 1998. It is important to note that the Santa Fe Channel has not been dredged since 1984 due to unsuitable material, stemming from an upstream Environmental Protection Agency (EPA) managed Super Fund site.

San Francisco Harbor (Main Ship Channel): San Francisco Harbor consists of a deep-draft navigation channel (“Main Ship Channel”; MSC) immediately offshore of the Bay and its in-bay components. The MSC was last deepened in 1974. Current project depth is 55 feet MLLW. The channel is located approximately 5 miles west of the Golden Gate Bridge and extends across the arc-shaped, submerged San Francisco Bar in the Gulf of the Farallones. It is approximately 16,000 feet long and 2,000 feet wide. The channel is the only deep-draft ocean entrance to San Francisco Bay and is used by all ocean-going shippers to San Francisco Bay and inland ports. It is typically dredged annually. Dredged material from the MSC is greater than 80 percent sand and has been placed at SF-8 and the nearshore Ocean Beach placement site (SF-17).

San Pablo Bay and Mare Island Strait: The San Pablo Bay and Mare Island Strait authorized project includes these general navigation features: (1) The Pinole Shoal Channel, a 600-foot-wide channel to a depth of 35 feet MLLW, which is approximately 11 miles long; (2) A 600-foot-wide channel to 30 feet MLLW through Mare Island Strait; (3) A channel to 30 feet MLLW up the Napa River, except (4) at the northerly end, at the City of Vallejo Marina, where the project depth is 26 feet MLLW.

The Pinole Shoal Channel provides deep-draft navigation in and through San Pablo Bay and is an integral part of the San Francisco Bay to Stockton project. The sediment composition of dredged material from Pinole Shoal Channel varies along the channel, with the eastern and western ends of the channel typically being sandy. Dredged material from Pinole Shoal Channel is typically placed at the San Pablo Bay placement site (SF-10). The channel is authorized for a depth of 45 feet MLLW but is only maintained to a depth of 35 feet MLLW plus 2 feet of allowable overdepth (i.e., total maintained depth of 37 feet MLLW) based on current economic needs. The project was

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last deepened in 1982. Beginning in 2011, the western section of Pinole Shoal Channel was slightly realigned to the north. The realigned channel experiences substantially less shoaling than the old alignment, and thus requires less dredging. Beginning in 2009, USACE conducted two feet advance maintenance dredging in areas that tended to aggressively shoal. The advance maintenance dredging areas include the southern edge of the channel between buoy markets 10 and 12, and along the northern edge of the channel from buoy market 11 to just east of buoy market 13.

The Mare Island Strait portion of this authorized project has not been dredged since the closure of the Navy base in April 1996. It is currently being re-evaluated for dredging, as there are now commercial interests in allowing deeper draft vessels to use commercial port facilities.

Suisun Bay Channel: Suisun Bay Channel consists of Bulls Head Reach, Suisun Bay Main Channel, New York Slough, and the South Seal Island Channel. The Suisun Bay Channel is located 30 miles northeast of San Francisco in the counties of Contra Costa and Solano. Suisun Bay Channel was deepened to 35 feet MLLW in 1960. Bulls Head Reach and New York Slough were deepened to 35 feet MLLW in 1968. The channel is an integral part of the San Francisco Bay to Stockton project, providing deep-draft access from the Pacific Ocean to the inland ports of Stockton and Sacramento. The Main Channel and New York Slough are typically dredged annually. Dredged material from Suisun Bay Channel is typically greater than 80 percent sand and placed at the Suisun Bay placement site (SF-16) and occasionally the Carquinez Strait placement site (SF-9). At Bulls Head Reach, past maintenance has included dredging up to 4 feet of advance maintenance material to accommodate rapid shoaling. Because of the variable shoaling rate at this location, this practice is reviewed annually to determine if it remains effective. In the case of Bulls Head Reach Shoal, USACE typically elects to perform advance maintenance every year because that area shoals faster than the annual dredging cycle. Suisun Channel is dredged via clamshell under a Biological Opinion issued by the United States Fish and Wildlife Service (USFWS) for the endangered Delta Smelt.

Shallow Draft Federal Navigation Projects:

Jack D. Maltester Channel (San Leandro Marina): The Jack D. Maltester project is located in the San Leandro Marina, on the eastern shore of the Bay in Alameda County. The project includes the Main Access Channel and the Interior Access Channel. The channels were last deepened in 1965. Project maintenance provides for dredging of the 200-foot-wide Main Access Channel to 6 and 7 feet MLLW, and the 140-foot-wide Interior Access Channel to 7 feet MLLW. The project was last dredged in 2009. Dredged material has typically been less than 80 percent sand and placed at a sponsor-provided upland site. However, the upland site is no longer available, and in 2009 the dredging was limited to the removal of 90,000cy to minimize the volume placed in the upland site. This meant that the full project dimensions were not achieved. The channels provide access for recreational boating, access to the East Bay Authority sanitary outfall, and access to Oakland International Airport for waterborne search and rescue operations.

Larkspur Ferry Channel: The project is approximately 12 miles north of San Francisco in Marin County, and primarily provides for public ferryboat transit service between Marin County and San Francisco. The project consists of a main navigation channel and a turning basin. The main channel has a project depth of 13 feet at MLLW, with channel dimensions of 232 feet wide by 13,560 feet long; from the head-of-navigation at the Ferry Terminal. The turning basin has a

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project depth of 15 feet MLLW, with variable dimensions. The ferry service, terminal facilities, and berthing improvements are directly dependent upon the channel being dredged. The project was last dredged in fiscal year 2003 by the USACE and fiscal year 2006 at the local sponsor's expense. The project reverted to federal maintenance of the channel in 2007 (per Sec. 3012 of Water Resources Development Act (WRDA) 2007) but has not yet received funds for dredging. In 2015 and 2015 the project was dredged by the Golden Gate Bridge Highway and Transportation District (GGBHTD). In-bay aquatic placement at SF-11 is utilized for qualified suitable material. Additional placement sites include SF-DODs and reuse sites. Characteristically, shoaling deposition is uniform and material type is predominantly mud and silt.

Napa River: The Napa River navigation project consists of a downstream reach from Mare Island Strait Causeway to Asylum Slough, and an upstream reach from Asylum Slough to Third Street. This project is a shallow-draft, predominately light commercial and recreational channel. Project maintenance provides for dredging of the Napa River Channel to a depth of 15 feet MLLW from Mare Island Strait Causeway to Asylum Slough, and to a depth of 10 feet MLLW to the head of navigation at the Third Street Bridge in the City of Napa; the channels were deepened to these depths in 1952. The project is approximately 100 feet wide and 16 miles long. Dredged material from the Napa River has typically been less than 80 percent sand and placed at the sponsor-provided upland sites. Napa River is on a 6-year dredging cycle and was last dredged in 2016.

Petaluma River: The Petaluma River navigation project is located in Sonoma and Marin counties, and consists of two segments: (1) the Petaluma “Across the Flats” segment, which starts in San Pablo Bay and extends up to the mouth of the river; and (2) the “River Channel” segment that extends up the river channel itself. Project maintenance provides for dredging the channel 200 feet wide to a depth of 8 feet MLLW for the Petaluma Across the Flats segment, and 100 feet wide to 8 feet MLLW thereafter (River Channel), including a turning basin 300 to 400 feet wide to 8 feet MLLW. Both segments were initially dredged to a depth of 8 feet MLLW in 1933. Dredged material from the Petaluma Across the Flats has typically been less than 80 percent sand and placed at the San Pablo Bay placement site (SF-10). Dredged material from the River Channel has typically been less than 80 percent sand and placed at sponsor-provided upland sites. The Petaluma Across the Flats Channel is on a 3-year dredging cycle, and the River Channel is on a 4-year dredging cycle. The River Channel was last dredged in the Fall of 2020 and the Petaluma Across the Flats was dredged in Fall of 2020. USACE has completed the required sediment sampling as well as applied for and obtained the required permits for dredge material placement at Shollenberger. Concurrently, the City of Petaluma is wrapping up the process for obtaining 10-year maintenance dredging permits to support future maintenance dredging events including the tentatively scheduled Marina dredging in 2021. The City will be applying for Measure AA grants to provide additional funding for dredging and beneficial reuse.

San Rafael Creek: San Rafael Creek consists of the San Rafael Across the Flats Channel, Inner Canal Channel, and a 200-foot-wide turning basin near the western terminus of the Inner Canal Channel. San Rafael Creek is in the north Bay in Marin County. This project is a shallow-draft, predominately light commercial and recreational channel. Project maintenance provides for dredging the San Rafael Across the Flats Channel in San Francisco Bay to the mouth of San Rafael Creek to a depth of 8 feet MLLW (plus 2 feet of allowable overdepth); and 6 feet MLLW (plus 2 feet of allowable overdepth) for the Inner Canal Channel to the head of navigation at the Grand Street Bridge in the City of San Rafael. On average, the San Rafael Across the Flats is

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dredged every 7 years, and the Inner Canal Channel and turning basin are dredged every 4 years. The San Rafael Across the Flats was last dredged in 2012 to a depth of 5 feet MLLW. The Inner Canal Channel was last dredged in 2011; the turning basin was last dredged in 2003. Dredged material has typically been less than 80 percent sand and placed at the Alcatraz Island Placement Site (SF-11). Past studies have shown contaminated soil in the San Rafael Creek. Sediment testing for the San Rafael Channel is scheduled for FY21.

Suisun Slough Channel: Suisun Slough Channel connects the City of Suisun (near Fairfield) to Grizzly Bay, and then to Suisun Bay 30 miles northeast of San Francisco. The authorized project includes: (1) an entrance channel in Grizzly Bay that is 13 miles long and 200 feet wide with a depth of 8 feet Mean Lower Low Water (MLLW); (2) a channel to the head of navigation at Suisun City that is 100 to 125 feet wide with a depth of 8 feet MLLW; and (3) a turning basin. The project is scheduled for an eight-year dredging cycle, but it was last dredged in FY 1991.

San Francisco Bay Area Placement Sites:

According to the LTMS goals, the in bay dispersive disposal volumes are limited to 1.25 million CY per year. In addition to this limitation, material from small dredging projects will, in general be exempt from restrictions on in bay disposal if it is demonstrated through an alternatives analysis that there are no practical alternatives to in bay disposal. And, a contingency volume of 250,000 CY per year will be established for emergencies or for years when sedimentation or other factors result in unanticipated material volume.

SF-8 (San Francisco Bar Channel): The SF-8 placement site is a 15,000-foot by 3,000-foot-wide rectangle 7,500 feet south of the MSC in the Pacific Ocean. Depths at SF-8 range from approximately 30 to 45 feet MLLW. Disposal is limited to sandy material dredged by USACE from the MSC. However, the easternmost portion of SF-8 is within the Clean Water Act (CWA) 3-mile limit, and sand from other San Francisco Bay Area dredging projects can be permitted there as beneficial reuse for littoral cell support. There is no set limit on placement of dredged material at SF-8. The site was thought to be dispersive, but operation reports from the captain of the USACE hopper dredge, Essayons, state that vessel maneuverability is impaired during times of rough seas because sand is being placed faster than it disperses.

SF-9 (Carquinez Strait Placement Site): The SF-9 placement site is a 1,000-foot by 2,000-foot rectangle, approximately 10 to 55 feet deep, 0.9 mile west of the entrance to Mare Island Strait in eastern San Pablo Bay in Solano County. Disposal is limited by LTMS Management Plan and the Bay and Basin Plan amendments to 1.0 million cubic yards of dredged material per month and a maximum of 3.0 million cubic yards per year during wet or above-normal water flow years; and 2.0 million cubic yards per year during all other years. Mounding at the site has resulted in USACE limited placement to the southern half of SF-9.

SF-10 (San Pablo Bay Placement Site): The SF-10 placement site is a 1,500-foot by 3,000-foot rectangle, approximately 30 to 45 feet deep, 3.0 miles northeast of Point San Pedro in southern San Pablo Bay in Marin County. Disposal is limited to 500,000 cubic yards of dredged material per year.

SF-11 (Alcatraz Placement Site): The SF-11 placement site is a 1,000-foot-radius circular area, approximately 40 to 70 feet deep, approximately 0.3 mile south of Alcatraz Island in the Central Bay. Since at least 1972, SF-11 has been the used disposal site in San Francisco Bay. Placement is currently regulated at a maximum of 400,000 cubic yards per month from October to April; and 300,000 cubic yards per month from May to September. Disposal is limited to 4.0 million cubic yards of dredged material per year.

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SF-16 (Suisun Bay Placement Site): The SF-16 placement site is a single-user in-bay unconfined disposal site reserved for sand dredged from the Suisun Channel and New York Slough only. SF-16 is a 500-foot by 11,200-foot rectangle adjacent to the northern side of Suisun Bay Channel, approximately 1 mile upstream of the Interstate-680 Bridge. The depth at this site is approximately 30 feet MLLW. Currently, the site is authorized to receive 200,000 cubic yards of dredged sand per year. The basis of the limit is LTMS goals to preserve the dispersive nature of the site and to prevent mounding.

SF-17 (Ocean Beach Nearshore Placement Site and Ocean Beach Demonstration Site): The SF-17 placement site is in waters of the Pacific Ocean adjacent to the south-of-Sloat-Boulevard stretch of Ocean Beach, and outside of the southern section of SF-8 (San Francisco Bar Channel). SF-17's eastern boundary is approximately 0.35 mile offshore from the back-beach bluff, its center is 4 miles southwest of SF-8, and the site's area is 3.3 square miles. Water depths along the shoreward boundary range from approximately 25 to 35 feet MLLW, and depths along the seaward boundary ranges from approximately 37 to greater than 50 feet MLLW. SF-17 is also known as the Ocean Beach demonstration site.

SF-DODS (San Francisco Deep Ocean Disposal Site): Approximately 50 nautical miles west of the Golden Gate Bridge, SF-DODS is the farthest offshore and deepest (8,000 to 10,000 feet MLLW) dredged material placement site in the United States. SF-DODS is authorized to receive up to 4.8 million cubic yards of dredged material per year. However, annual placement at SF-DODS since 2000 for all dredging projects in San Francisco Bay, not just the federal navigation channels, has averaged less than 1 million cubic yards. SF-DODS was designated by the EPA in 1995, specifically in coordination with development of the LTMS Management Plan to facilitate the reduction of in-Bay disposal volumes in accordance with that plan.

San Francisco Bay Area Beneficial Use Placement Sites:

Cullinan Ranch: Cullinan Ranch is a 1,575-acre beneficial reuse placement site in the San Pablo Bay National Wildlife Refuge in Solano County. The goal of the project is to restore nearby baylands to historic marsh conditions with the addition of beneficial reuse material. It has a current capacity of up to 3.8 million CY of dredged material, though as of 2014, USFWS is in the process of amending environmental documentation to restore an additional 240 acres of tidal marsh habitat through the importation of an additional 2.4 million CY of dredged material.

Hamilton Wetland Restoration Project (HWRP) Beneficial Use Placement Site: The Hamilton Wetland Restoration Project (HWRP) beneficial use site has twice been used for the placement of the Project's dredged material (in 2009 and 2010). HWRP is located in city of Novato, in Marin County, bordering San Pablo Bay. Currently HWRP is not accepting any more dredged material, but its status could change in the future due to sea level rise or other adaptive management needs for more dredged material. Bel Marin Keys Unit V is currently under construction and has a capacity of 14 million CY.

Montezuma Wetlands Restoration Project (MWRP) Beneficial Use Placement Site: The Montezuma Wetlands Restoration Project (MWRP) is a privately owned and operated restoration project, consisting of an approximately 1,800-acre site adjacent to the Montezuma Slough in Solano County, bordering Suisun Bay. Montezuma Wetlands have a capacity of 10 million CY. MWRP has received dredged material from the Project in 2014 and 2015.

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The site has deep-water access, as well as a docking area and dredged material off-loading equipment. The off-loading equipment can accommodate most dredged material transport scows with 1,000 CY or greater capacity.

1.3 Project Authority

There is no one single authority for the twelve active navigation projects in the Bay. Tables of authorities for the individual projects are given in the respective Preliminary Assessments for each project.

1.4 Project History

Brief descriptions of the individual project histories are given in the respective Preliminary Assessments for each project.

1.5 Applicable Regulations

Applicable Engineer Regulations (ERs) for this PMP for the San Francisco Bay RDMMP include ER 5-1-11, ER 5-1-14, and ER 1105-2-100. Additional guidance is also provided in Policy Guidance Letter Number 40. The studies produced from this PMP will also follow all applicable environmental, planning, and engineering regulations in their executions.

1.6 Scope Management Plan

The RDMMP is at low risk of negatively impacting the O&M navigation program, as the program will continue in parallel using currently approved methods for dredging and placement and be independent of any tasks associated with the studies. Therefore, scope creep or scope changes represents a very low risk to the overall O&M navigation program. Further details on scope change management are given in Section 6.

2.0 TEAM ROLES

The development of the Scope of Work for the Management Plan studies requires seven disciplines: project management, plan formulation, physical processes (water resources engineering), environmental planning, economics, cost engineering, and dredging and placement logistics (navigation engineering). The Project Delivery Team (PDT) members are listed in appendix C.

The roles and responsibilities for the PDT members are given in bulleted form below:

- **Project Manager:** manages the overall project execution and performance according to the PMP, communicates management strategy for the PDT, monitors project schedule, costs, and quality of the project tasks and work products, provides updates to the Project Review Board (PRB) - with corrective action plans for potential schedule slippage, cost over-runs, or quality-scope creep, responsible and accountable for the RDMMP work product for the duration of the project, and documents all approved changes in the PMP, P6, or CEFMS as necessary.
- **Lead Planner:** manages the overall development of Base Plan alternatives, produces the RDMMP using input from the other PDT members, manages the review of the Scope of Work for DQC and QA, organizes and/or attends PDT and other (resource agencies, stakeholder, etc.) meetings, and other miscellaneous duties as assigned by the project manager.
- **Coastal Engineer:** develops, or oversees the development of, the technical analyses needed to estimate the future placement capacity for the twelve Bay navigation projects for a minimum of twenty years, interfaces with other PDT members as necessary to develop the coastal engineering scope, produces the coastal engineering scope of work for the RDMMP, and attends PDT and other (resource agencies, stakeholder, etc.) meetings as required.
- **Environmental Planner:** evaluates the impacts associated with any proposed Base Plan alternatives and develops, or oversees the development of, the technical analyses needed to estimate these impacts for the twelve Bay navigation projects for a minimum of twenty years; produces the environmental scope of work for the RDMMP, attends PDT and other (resource agencies, stakeholder, etc.) meetings; and ensures compliance with environmental laws and regulations, as required.
- **Economist:** develops benefits for the twelve navigation projects for any proposed Base Plan alternatives and calculates benefit to cost ratios for the projects to determine if some or all of the navigation projects are still economically viable, produces the economics scope of work for the RDMMP, and attends PDT and other (resource agencies, stakeholder, etc.) meetings as required.
- **Cost Engineer:** develops cost estimates for any proposed Base Plan alternatives and develops, produces the cost engineering scope of work for the RDMMP, and attends PDT and other (resource agencies, stakeholder, etc.) meetings as required.

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- Navigation Engineer: determines if conventional dredging equipment and West Coast availability is sufficient for any proposed Base Plan alternatives, or if additional equipment or innovative techniques will be needed, produces the navigation engineering scope of work for the RDMMP, and attends PDT and other (resource agencies, stakeholder, etc.) meetings as required.
- Public Involvement Specialist: assists in planning and development of stakeholder engagement related aspects of the project. This may include developing a project communication plan and/or an engagement plan, designing meeting formats, meeting facilitation, coordination, developing outreach materials, developing and updating stakeholder outreach lists, and processing and analyzing stakeholder inputs.

The work product for the first year of this PMP is a Scope of Work for the Management Plan studies that will be executed in the following three years. As such, and in agreement with policy guidance given in EC 1165-2-217 (Section 8), review of the Scope of Work is limited to District Quality Control (DQC). In addition, the Major Subordinate Command (MSC), the South Pacific Division (SPD), will provide Quality Assurance (QA) of the Scope of Work. Both the DQC and QA review team members are listed in Table 2 below. The Scope of work will be delivered to SPD through the SPN designated District Support Team (DST) lead. In addition, all DQC and QA comments will be entered in the USACE approved review software 'ProjNet / DrChecks'. 'Over the shoulder' DQC is encouraged, but at least one comment must be entered in DrChecks for each role listed in Table 2 of appendix C.

3.0 ASSUMPTIONS AND CONSTRAINTS

3.1 Assumptions

The scope, schedule, and budget for this RDMMP are based on the following assumptions:

- The O&M navigation program will be run in parallel with the RDMMP studies and be independent of them, and therefore unaffected by the studies. The RDMMP endeavor will not utilize resources (funding or personnel) that would otherwise go towards the delivery of ongoing USACE O&M projects.
- The environmental resource agencies will actively participate in the development of the studies and have sufficient dedicated resources to respond in a timely manner to study requests.
- The LTMS EIS, Record of Decision, and Management Plan establish programmatic goals for the disposal of dredged material in the Bay Area. These goals are aspirational and do not have the force of regulation.
- Per policy guidance, more detailed scopes for the study will be developed during the first year of funding and be included in a revised PMP.

3.2

The RDMMP studies will follow all applicable Federal laws. The RDMMP attempt to avoid inconsistencies with existing State or local laws, regulations, and policies. However, where there are conflicts between Federal laws or policy and State or local laws or policy, the Federal law or policy will be followed.

Constraints

3.3 Non-Federal Partners Requirements

This RDMMP is 100% internally funded by the USACE. All but one of the navigation projects have identified Non-Federal Partners, listed in Table 1 below, whose operations may be affected by the results of the studies.

Table 1: Non-Federal Partners for the San Francisco Bay O&M Navigation Projects

SPN O&M Navigation Project	Non-Federal Partner
Oakland	Port of Oakland
Redwood City	Port of Redwood City
Richmond	Port of Richmond
San Francisco Harbor – Main Ship Channel	none
San Pablo Bay & Mare Island Strait	Contra Costa County & Stockton Port District
Suisun Bay Channel	Contra Costa County & Stockton Port District
Jack T, Maltester Channel (San Leandro Marina)	City of San Leandro
Larkspur Ferry Channel	Golden Gate Bridge Highway & Transportation District
Napa River	Napa County Flood Control & Water Conservation District
Petaluma River	City of Petaluma
San Rafael Creek	City of San Rafael
Suisun Slough Channel	Contra Costa County & Stockton Port District

4.0 PROJECT TASKS

This version of the PMP will only list tasks for Phase 1 (Scope of Work Development for the Management Plan Studies), as the tasks for the later phases will be developed in the Scope of Work to be produced by the end of Phase 1.

4.1 Phase 1 Tasks

Gap and Opportunity Analysis

Section 1116 of WRDA 2018 requires DMMPs to make maximum use of existing information although implementation guidance has not been released. A focused approach to use existing information will be adopted. This search of information will be supplemented through publications identified by Bay regional experts in the fields of sediment transport, dredging technology, Bay environment, and possibly others. The results of this literature review and gap analysis will be documented in an annotated bibliography.

The gap analysis will review relevant policy and environmental sources, in addition to scientific or academic information. Specific to documenting the current status of potential placement sites, and dredging types, the Gap Analysis will consider the past San Francisco Bay RDMMP effort (2010-2012).

The literature review and subsequent gap analysis will be conducted by the Engineer Research and Development Center for USACE and may include other independent science entities.

Initial Development of Scopes for the RDMMP Supporting Efforts

Based on the results of the gap analysis, the PDT in conjunction with other USACE organizations (SPD, ERDC, and possibly other Districts with specialized expertise) will develop initial scopes of work (SOW) for the gaps that require further study. In addition to placement site capacity information, factors that allow determination of the Federal Standard such as cost, Federal environmental compliance, other environmental impacts, and dredging frequency and methods (see 15 September 2015 CEWC-CO memorandum). The Corps recognizes that dredge material has value that varies based on the material composition and location. Beneficial use will be considered, and opportunities will be sought to create additional value through sediment management based on the needs of the bay.

The PDT also recognizes that regional engagement with multiple agencies and stakeholders must be undertaken for a successful long-term Management Plan, and that engagement should aid in the development of a scientifically supportable, risk-informed dredge material management approach. The initial draft scope provided a mechanism to engage others and identify improvement opportunities. This RDMMP will attempt to create a cooperative permitting framework that reduces redundancy and necessary delays in the permit processing to ensure that all relevant agencies apply their individual policies in a coordinated matter.

Through the initial round of public comments and with additional charettes, USACE has heard many suggestions recommending future work to be completed throughout the RDMMP process. The initial set of stakeholder comments were categorized by subject matter and then there was a series of 4 subject matter meetings before a concluding session. Stakeholders were invited to

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participate with oral comments, written comments and an open dialogue. The sessions were professionally moderated by an outside contractor. The suggestions are as follows:

Toxicology:

- Future protocols around material that is contaminated from previous land use issues that are now migrating into dredge channels.

Climate Change and Environmental Issues:

- Beneficial use evaluation for raising marshes and wetlands in a cost effective way.
- Cast a wider net for aquatic placement sites. Evaluation of possible sites closer to where the sediment is dredged.
- Changing sedimentation patterns and the increase of sea level in the production of sediment should be addressed.
- Focus on beneficial reuse sites specifically for waterfowl habitat, which includes the specific sediment key species need.
- Air quality impacts due to dredging equipment and off loaders.
- Flexibility in dredged material management as an important factor to adapt to sea level rise and a changing climate.

Physical Processes:

- A determination of gaps in hydrodynamic models and the created of a unified versatile model in order to study sediment transport modeling better.
- Improve beneficial reuse with the dredging community to lower the cost while still continuing to work within the Federal Standard.
- Determine what is “beneficial” concerning dredged material.

Economics, Social Studies and Policies:

- Recommend using the LTMS as a baseline.
- Consider redefining what in-bay placement is to include some/all beneficial reuse.
- Explore the potential for in-water “temporary” storage areas to create volumes that can be used to create an economy of scale for efficient re-handling.

With the charettes and other comments, the PDT identified the RDMMP would benefit from additional work in the following three focus areas: Sediment Transport; Strategic Placement and; Beneficial Use. Corps guidance on overall RDMMP scope and cost will be followed as SOW are developed.

Engagement of Outside Groups – Circulation of Draft Scope

A draft stakeholder communication plan is prepared and will be used by USACE to facilitate communication with stakeholders and outside groups. The initial Scopes of Work will be circulated among Federal dredging partners and stakeholders according to the Communication Plan outlined in Section 9. Meetings and workshops will be held with various target audiences to better understand concerns and refine the RDMMP supporting efforts. An iterative process that includes multiple engagement opportunities will be used until satisfactory scopes of work to USACE are developed.

Routing, Approval, and Budgeting of the Scopes of Work for the Management Plan Studies. USACE will consider implementing more efficient mechanisms to accept and utilize partner funding for the incremental cost of beneficial use.

A Vertical Team consisting of experienced technical and policy experts from throughout USACE will be engaged during the scope development process to ensure consistency with national policies and viability for budgeting purposes. Once agreements with the specific support effort SOW are reached with the Vertical Team, and District will submit, or update, work funding packages.

4.2 Tasks and Milestones

Table 2: PMP Tasks

<i>PMP DEVELOPMENT</i>
<i>Phase 1 (initial) SCOPE OF WORK DEVELOPMENT</i>
Gaps Analysis- Annotated Bibliography
Initial (internal) Draft Scope Development
Circulation of Draft Scope with Targeted Audiences
Revised 2 nd Draft Scope Development
Recirculation of 2 nd Draft with Targeted Audiences
Refined 3 rd Draft Scope Development
Recirculation of 3 rd Draft with Targeted Audiences
Final Draft-Internal Routing through Vertical Team
Approved Scope of Work for Management Plan Studies
<i>Phase 2A (final) EXECUTION OF SUPPORTING EFFORTS</i>
Volume Capacities/Physical Processes
Economics of Navigation Projects
Industry Survey of West Coast Dredging Equipment
<i>Phase 2B (final) MANAGEMENT PLAN REPORT & APPROVAL OF RDMMP</i>
Gather Background Information & Existing Conditions
Develop Future No Change/ No Action Conditions
Develop Alternative Base Plans Based on Management Plan Studies
Evaluate Base Plans against No Action Conditions
Management Plan Study/NEPA Document on Environmental Impacts
Trade-Off Analysis of Base Plans against Each Other
Selection of Recommended Base Plan
Circulation of Recommended Base Plan with Targeted Audiences
Local Consensus or Modification of Recommended Base Plan
Routing of Final Base Plan through Vertical Team
Approved Base Plan and RDMMP for SF Bay.

Initial milestones for the project are given in Table 3 below. It should be noted that only MS1 and MS2 milestones for Phase 1 are relevant to this PMP. Other milestones are subject to change, based on the SOW` produced by the end of Phase 1.

4.3 Work Breakdown Structure

A Work Breakdown Structure (WBS) organizes the work necessary to successfully complete the project in a logical manner and divides the work into multiple levels of activities, tasks, and

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subtasks to fulfill the objectives of the project. For the San Francisco Bay Regional DMMP, the project is divided into four major activities, with multiple tasks and no subtasks, as shown in Table 3 below.

At this time, this document only covers the PMP Development and Phase 1, and that Phases 2A and 2B are subject to change based on the scope of work developed by the end of Phase 1.

Table 3: Milestones for the San Francisco Bay Regional Dredged Material PMP

MS #	Phase	Milestone Name
MS1	1	Annotated Bibliography Complete
MS2	1	Scope of Work Complete
MS3	2A	Volume Capacity Study Complete
MS4	2A	Economics Study Complete
MS5	2A	West Coast Dredging Equipment Industry Survey Complete
MS6	2A	Alternative Base Plans Development Complete and Ready for Evaluation
MS7	2B	NEPA – Environmental Compliance / Impact Study Complete
MS8	2B	Recommended Base Plan Selected
MS9	2B	Final Regional DMMP Approved and Complete

4.4 Resource Estimate and Distribution

Resource estimation and distribution for the San Francisco Bay RDMMP comes for the scope of services from the individual disciplines needed to produce the RDMMP. A summary of costs by discipline for Phase 1 is provided in appendix A. The costs for Phases 2A and 2B will be produced as part of the scope of work developed by the end of Phase 1.

4.5 Schedule Management Plan

Schedule management will follow the guidance given in Section 6 of this PMP (Change Management Plan), and more specifically the 15% threshold set for schedule slippages given in Subsection 6.2. Day to day schedule management will be the responsibility of the PM, with assistance from the PDT. Major changes or slippages to the schedule shall follow the guidance given in Section 6.

5.0 ACQUISITION PLAN

All work related to the development of SOWs will be done through in-house SPN labor, with possible help from other USACE districts or the USACE Engineering Research and Development Center (ERDC), through cross-charge labor codes.

Management Plan supporting efforts may require conventional contracting processes to supplement in-house labor, other USACE district, or ERDC labor efforts. Indefinite Delivery Contract task orders may be used to obtain specific technical analyses for specific discipline's work effort. Other methods for obtaining needed work efforts or expertise, may include Military Interdepartmental Purchase Request to the U.S. Geological Survey (USGS) or the National Oceanic and Atmospheric Administration (NOAA), or sole source contracts to obtain specific expertise on very specialized topics from academia or other research institutes.

6.0 CHANGE MANAGEMENT PLAN

The purpose of a Change Management Plan is to define and manage the project's baseline performance measurement thresholds for changes in scope, schedule, and cost to determine if actual project execution has exceeded these thresholds. The first year is devoted to developing a more specific details for the supporting efforts to be executed during the following three years. The following change management plan is applicable through the duration of the study.

This Change Management Plan was created for the San Francisco Bay RDMMP in order to set expectations on how the approach to changes will be managed, what defines a change, the purpose and role of the change control board, and the overall change management process. All stakeholders to the RDMMP will be expected to formally submit or request changes in accordance with this Change Management Plan and all requests and submissions will follow the process detailed herein.

The PM must ensure that any approved changes are communicated to the PDT and other relevant project stakeholders. Additionally, as changes are approved, the PM must ensure that the changes are captured in the PMP where necessary. These updates must then be communicated to the PDT and relevant stakeholders as well.

6.1 Definitions of Change

There are several types of changes which may be requested and considered for the San Francisco Bay RDMMP. Depending on the extent and type of proposed changes, formal documentation and the communication of these changes will be required to include any approved changes into the PMP as well as ensure all relevant stakeholders are notified. There are three types of changes:

- Scheduling Changes: changes which will impact the approved project schedule. These changes may require fast tracking, crashing, or re-baselining the schedule depending on the significance of the impact.
-
- Budget Changes: changes which will impact the approved project budget (i.e. authorized cost). These changes may require requesting additional funding, releasing funding which would no longer be required or adding to project or management reserves. This may require changes to the cost baseline for the project.
-
- Scope Changes: changes which are necessary and impact the project's scope which may be the result of unforeseen requirements which were not initially planned for. These changes may also impact budget and schedule. These changes may require revisions to the WBS, project scope statement, and other project documentation as needed.

6.2 Decision Thresholds

Decision thresholds for the three types of changes that affect the San Francisco Bay RDMMP are given herein.

Schedule Change

Minor changes to a project's schedule occur frequently, and many of these changes can be

absorbed by adjusting either the sequence or duration of tasks. A critical milestone slip of more than 15% (e.g., a 2-month slip within a FY) will be considered to be a major schedule change for this project.

Cost Change

The PM will consistently monitor schedule progress and scope changes and assess how these changes will impact the project's cost. The PM will also attend monthly In Progress Reviews (IPRs) to alert branch and section chiefs of any resourcing issues that may affect the project's cost. If the progress or scope changes indicate that the project cost is likely to increase by more than 20% over the expected cost, the PM will consult with SPN Programs to determine the impact of these changes on the O&M Navigation Program budget. Any significant changes in costs will also be reported upward through the Vertical Team. If actual project costs exceed the expected project costs by more than 20% in a given FY, then the project is considered to have a cost change.

Scope Change

If a change to a project is determined to impact one or more of the project's technical disciplines, the PMSPN will consult PDT members from the appropriate disciplines to evaluate how the change can be best incorporated with the least impact. The threshold for determining whether a change to a project constitutes a significant change in the scope of the project depends on the cost impact of the change. Scope changes that result in a cost increase of 20% or more are considered a significant change in scope.

The plan to manage and contain scope creep includes the following check points:

- Regular assessments of completed tasks, work in progress, and study status.
- Regular team meetings to discuss and resolve unexpected issues.
- Regular updates on project expenditures.
- Regular updates on WBS revisions.

6.3 Change Control Board

The Change Control Board (CCB) is the approval authority for all proposed change requests for the San Francisco Bay RDMMP. The purpose of the CCB is to review all change requests, determine their impacts on the project risks, scope, cost, and schedule, and to approve or deny each change request. Table 4 provides the list of the SPN CCB members:

Table 4: Change Control Board Members for the San Francisco District

Name	Position	CCB Role
Stu Townsley	DPM/ Chief of PPMD	CCB Chair -- recommends
Susan Kelly	Chief of EPC	CCB Member -- recommends
Nick Malasavage	Chief of Operations	CCB Member -- recommends
LTC John Cunningham	District Engineer	Approves or Rejects Changes

As change requests are submitted to the PM by PDT members, the PM will log the requests in the change log and the CCB will convene as needed to review all change requests. For a change request to be approved, all CCB members must vote in favor of the change. In the event more information is needed for a specific change request, the request will be deferred and sent

back to the PM for more information or clarification. If a change is deemed critical, an ad hoc CCB meeting can be called in order to review the change prior to the next scheduled CCB meeting

6.4 Change Control Roles and Responsibilities

Change control management is everyone's duty. The roles and responsibilities for all change management efforts related to the San Francisco Bay RDMMP are given herein:

District Engineer:

- Approve/reject all changes to budget/funding allocations within approved thresholds.
- Approve/reject all changes to schedule baseline within approved thresholds.
- Approve/reject any changes in project scope within approved thresholds.

CCB Members:

- Meet monthly or on a more frequent ad hoc basis for urgent changes to critical projects.
- Recommend approval or rejection of changes brought before the CCB.
- Hold internal CCB meeting as needed to improve change control management processes.

Project Manager:

- Receive and log all change requests from project stakeholders.
- Conduct preliminary risk, cost, schedule, scope analysis of change prior to CCB.
- Seek clarification from change requestors on any open issues or concerns.
- Make documentation revisions/edits as necessary for all approved changes.
- Participate on the CCB.

Project Delivery Team:

- Submit all change requests on standard organizational change request forms.
- Provide all applicable information and detail on change request forms.
- Be prepared to address questions regarding any submitted change requests.
- Provide feedback as necessary on impact of proposed changes.

7.0 QUALITY MANAGEMENT PLAN

It is the policy of SPD and SPN to develop quality systems and implement quality management practices, including Quality Assurance (QA) and Quality Control (QC), that ensure that projects and technical products meet the agreed upon requirements of the customer and appropriate laws, policies and technical criteria, on schedule and within budget. Neither SPN, nor SPD has an updated Quality Management Plan (QMP) that reflects the latest USACE policy guidance. The SPN QMP is dated December 2003, and the SPD QMP is dated December 2002, however with a 2020 revision. The old process required the MSC to develop a QMP that covers all of its program and its districts, then the districts develop a QMP that covers all of its programs and projects, then individual projects at the districts develop individual Quality Control Plans (QCP). In recent years this approach has been replaced by a national standard for review of civil works projects that has been promulgated in various Engineer Circulars (EC). QC and QA of all work products now follows the guidance given in EC 1165-2-217 (Review Policy for Civil Works), dated February 2018. The QMP for the San Francisco Bay RDMMP is to follow the QA and QC practices given in EC 1165-2-217.

8.0 RISK MANAGEMENT PLAN

This section follows the guidance given in REF8007G (Risk Management Plan). Risk Management is a systematic process of identifying, analyzing, and responding to risk for the entire project life-cycle. In order to successfully address risk, an initial risk assessment must be performed at the start of the project, including mandatory risk elements and demonstrating active management of the risk throughout the project life, and updated periodically as necessary. At a minimum, the following risk elements must be assessed: (1) scope, (2) quality, (3) schedule, (4) safety and health, (5) cost, (6) security, (7) technical obsolescence, and (8) asset protection. The level of risk (low, medium, or high) is determined from the level of risk from the risk elements. When a project is determined to be other than low-risk, the risk must be identified, and actions to lower the risk and associated control procedures defined in the PMP. Only the District Engineer (DE) may provide final PMP approval in the event of an overall project risk rating of high, or extremely high, respectively.

The risk management plan will be developed by the PM and PDT members during the first year of the RDMMP, in parallel with the Management Plan studies Scope of Work development. The following sub-sections describe the content and process for developing a risk management plan.

8.1 Risk Management Plan Contents

- Identify what the risk management activity is in the WBS and describe how often risk management will be performed throughout the project life-cycle.
- Describe the budget for risk management plan development and monitoring.
- Risk Thresholds - Describe the amount of risk that is acceptable.
- Identify Risks and Characteristics – List of Risks and Triggers
- Evaluation and Analysis of Risks – Determine Probability and Severity Ratings.
- Complete Overall Risk Table.
- Describe Highest-Level Risk.
- Calculate Costs associated with Risk Elements.
- Describe Risk Response Control Procedures.
- Document identified risks, descriptions, causes, what is affected in the WBS, and impact on project objectives, risk owner and responsibility, agreed response to risk, and expected result of response.
- Risk Monitoring –Describe how the PDT will keep track of identified risks (risk register), identify new risks, determine if agreed responses to risks have been executed, and evaluate the effectiveness of risk responses to reduce identified risks.

8.2 Risk Management Roles and Responsibilities

- The PM is responsible for initiating the development of the Risk Management Plan.
- The PDT is responsible for participating in the development of the Risk Management Plan by identifying and defining potential risks and appropriate responses to risks for the project; and responsible for implementing the plan once it is developed and approved.

8.3 Risk Assessment

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- Establish Risk Management Team. Initiate risk management assessment meeting.
- Identify Risk. Identify risks (1-12 minimum), provide a short description, triggers and potential impact per example below.
- Determine Probability. Evaluate and analyze each risk identified. Determine the appropriate probability rating and severity rating (should the risk event occur) for each risk from Table 5 and Table 6 below.

Table 5: Risk Probability Descriptions

Probability	Description
Frequent	Occurs often, continuously experienced.
Occasional	Occurs several times
Likely	Occurs sporadically.
Seldom	Unlikely, but could occur at some time.
Unlikely	Can assume it will not occur.

Table 6: Severity Categories Descriptions

#	Category	Description
I.	Catastrophic	Death or permanent total disability, system destruction, major property damage. Lost the ability to accomplish mission.
II.	Critical	Permanent partial disability, temporary total disability, major system damage, or significant property damage. Cannot accomplish mission to standards or cannot execute portions of mission.
III.	Marginal	Temporary disabling injury, lost workday case, minor system damage, minor property damage. Degrades ability to accomplish mission capabilities to standards.
IV.	Negligible	First aid or minor supportive medical treatment, minor system impairment. Little or no impact on mission.

- Enter probability and severity ratings from above into Table 10 (Risk Table) below to characterize overall project risk as E (extremely high), H (high), M moderate), or L (low) for each of the four risk categories given in Table 10.
- Evaluate the above results along with the results of the safety and health risk (refer to Safety and determine the highest-level risk of all five categories).
- Overall project risk level is determined by the highest risk rating. Decisions to accept risks must be made at a level equal to the degree of risk. Project and Program Managers and Commanders must weigh the risks against the benefits of performing an activity.
- Decision responsibility is given in Table 7, the Severity Rating Table, where DE is the District Engineer, DPM is the Deputy District Engineer, PgM is the Navigation Program manager, and PM is the Project Manager.

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Table 7: Risk Table

		Probability of Occurrence				
		//////////	Frequent	Occasional	Likely	Seldom
SEVERITY	Catastrophic	DE		DPM		PgM
	Critical	DE	DPM		PgM	PM
	Marginal	DPM	PgM		PM	
	Negligible	PgM	PM			

9.0 COMMUNICATION PLAN

Management Plan studies must ensure that appropriate involvement is solicited from all resources and non-Federal interests affected by Federal dredging in the Bay (per Section E-15 e. [3] of ER 1105-2-100); thereby requiring good external communications outside of USACE for success. Additionally, good internal communications are required within USACE to produce Management Plan studies that are efficient in terms of time and costs. A good communication plan should have the following qualities:

- Identifies and defines issues that may impact the Management Plan study.
- Identifies the target audiences, key stakeholders, and their interests in the RDMMP.
- Develops key messages with partners.
- Identifies information strategy and budget.
- Identifies the media strategy.
- Plans the communication levels and types of stakeholder involvement.

A draft Communication Plan has been included for this project as a separate document.

9.1 Internal Communications

PDT Communications

Communication is the hallmark of a successful team. Timely, clear, and concise communication, both written and verbal, among all the team members will be critical in successfully completing the Management Plan studies. For the PDT to collaboratively work toward a goal of mutual respect, each team member must build a climate of trust through communication. Team members should consider the following guidelines during team interaction:

- Communicate openly and honestly with each other.
- Listen actively in order to understand.
- Communicate with awareness of the impact on others.
- Provide feedback with a focus on behavior, not the person.
- Keep each other informed.
- Proactively address rumors and harmful statements.
- Disagree respectfully and elevate as appropriate for resolution.

PDT communication will occur informally between the PM and PDT members, and the lead planner and PDT members, and more formally through regularly scheduled meetings. Informal communication will consist of verbal conversations and email, while formal communication will include the former methods and specific work products to be delivered to the lead planner and PDT. All team members are responsible for staying current with policies and processes affecting their work and checking for new communications.

Vertical Team Communications

The Vertical Team is defined herein as the Corps San Francisco District (SPN) upper management, the South Pacific Division District Support Team (SPD-DST), which includes the

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SPD Navigation Business Line Manager (BLM) and SPD Chief of Operations & Regulatory; and Corps Headquarters (HQUSACE) Navigation BLM and staff. All PDT communication with the Vertical Team shall be coordinated through the PM, or whoever the PM designates to communicate with the Vertical Team. The PM will communicate Management Plan study execution status and any issues to the Vertical Team at regularly scheduled meetings (once every two months), or on an ad-hoc basis as execution and strategy issues arise.

9.2 External communications

Project Management, Public Affairs, and Public Involvement

All external communication shall be coordinated through the Project Manager, while ensuring the Public Affairs Office has been consulted and kept informed about the external communications. The District's Public Involvement Specialist, or lead planner, is responsible for executing the communication plan, the planning and scheduling of meetings specific to external groups, and the day to day communications with external groups. In some cases, the Environmental Lead may lead or co-lead as needed.

Resource Agencies

It will be critical to engage the National Marine Fisheries Service (NMFS), the US Fish and Wildlife (USFWS), the EPA, the Regional Water Quality Control Board (RWQCP) and the the San Francisco Bay Conservation and Development Commission (BCDC) during the development, execution, and post-results discussion of the Management Plan studies. Any changes from current dredging practices that result from the Management Plan studies most likely will require consultation with NMFS and/or USFWS. Also, the State agency, the California Department of Fish and Wildlife (CDFW) should be engaged to ensure the Management Plan studies meet both Federal and State needs to the greatest extent practicable. These resource agencies need to be brought in at the beginning of the studies to ensure that we have scientific consensus.

Long Term Management Strategy Agencies

Our partner agencies in the Long Term Management Strategy (LTMS) for the placement of dredged material in the San Francisco Bay agencies (U.S. Environmental Protection Agency, Bay Conservation and Development Commission, and San Francisco Bay Regional Water Quality Control Board) will have a keen interest in the Management Plan studies, as the results from these studies may affect future management practices within LTMS.

There is a desire for sediment to improve shoreline resiliency in the face of sea level rise and dredged sediment is an important resource that can help improve shoreline resilience. At the same time, there is also a desire to evaluate ways to reduce the cost of dredging in the Bay, as the costs associated with dredging have been continuing to increase.

An in-depth evaluation of current placement limitations should be completed within the RDMMP in order to address these issues. Early and frequent engagement with LTMS agencies and other interested stakeholders will be conducted on future studies.

Non-Federal Partners

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Our Non-Federal partners listed in Table 1 have expressed interested in the Management Plan studies, as the results produced by these studies may impact positively or negatively the amount and frequency of dredging of their particular project.

Other Federal and State Agencies

Changes from current dredging practices based on the Management Plan studies results may also affect other Federal and State agencies such as the Federal Emergency Management Agency, the California Department of Water Resources, and the State Lands Commission. Additionally, Federal agencies such as the U.S. Geological Survey and the National Oceanic and Atmospheric Administration may be conducting complementary studies and/or have scientific expertise of value to the Management Plan studies, and therefore should be kept informed.

Stakeholders

There are numerous groups representing a wide variety of interests related to dredging in in the Bay that will expect to be kept informed and have input into the Management Plan studies. Groups interested in the Bay's environment, commercial dredgers, ports and marinas, the maritime industry, oil refineries, business development and economic councils, academia, water borne transportation, and possibly others should be engaged early in the process to ensure the results from the Management Plan studies will be accepted as technically sound no matter whether the results support or refute their own groups' view.

Public

The Bay area communities have been active participants on numerous studies at the District and a similar level of interest is expected for the Management Plan studies. Technical jargon should be eliminated when discussing technical results from the Management Plan studies with the public.

The Press

All requests from the press in any media format (newspaper, television, social media, etc.) shall be coordinated through the Public Affairs Office (PAO). PDT members should not engage the press without first checking with the PAO.

Elected Officials

Due to the importance of Federal dredging to the Bay regional economy and how results from the Management Plan studies may impact Federal dredging practices, the PAO will periodically inform the staff for Senators Feinstein and Padilla, staff for Bay area Congressional Representatives, staff for State official, and local officials. All communications with elected officials shall be coordinated through the PAO and Project Manager, and SPN upper management.

9.3 Communication Matrix and Communication Plan Checklist

A detailed communication plan will be developed as part of the scoping effort for this effort. A

Project Management Plan
 San Francisco Bay Regional Dredge Material Management Plan (RDMMP)

communication risk matrix, similar to Table 8 below, will be developed and implemented as part of the detailed communication plan.

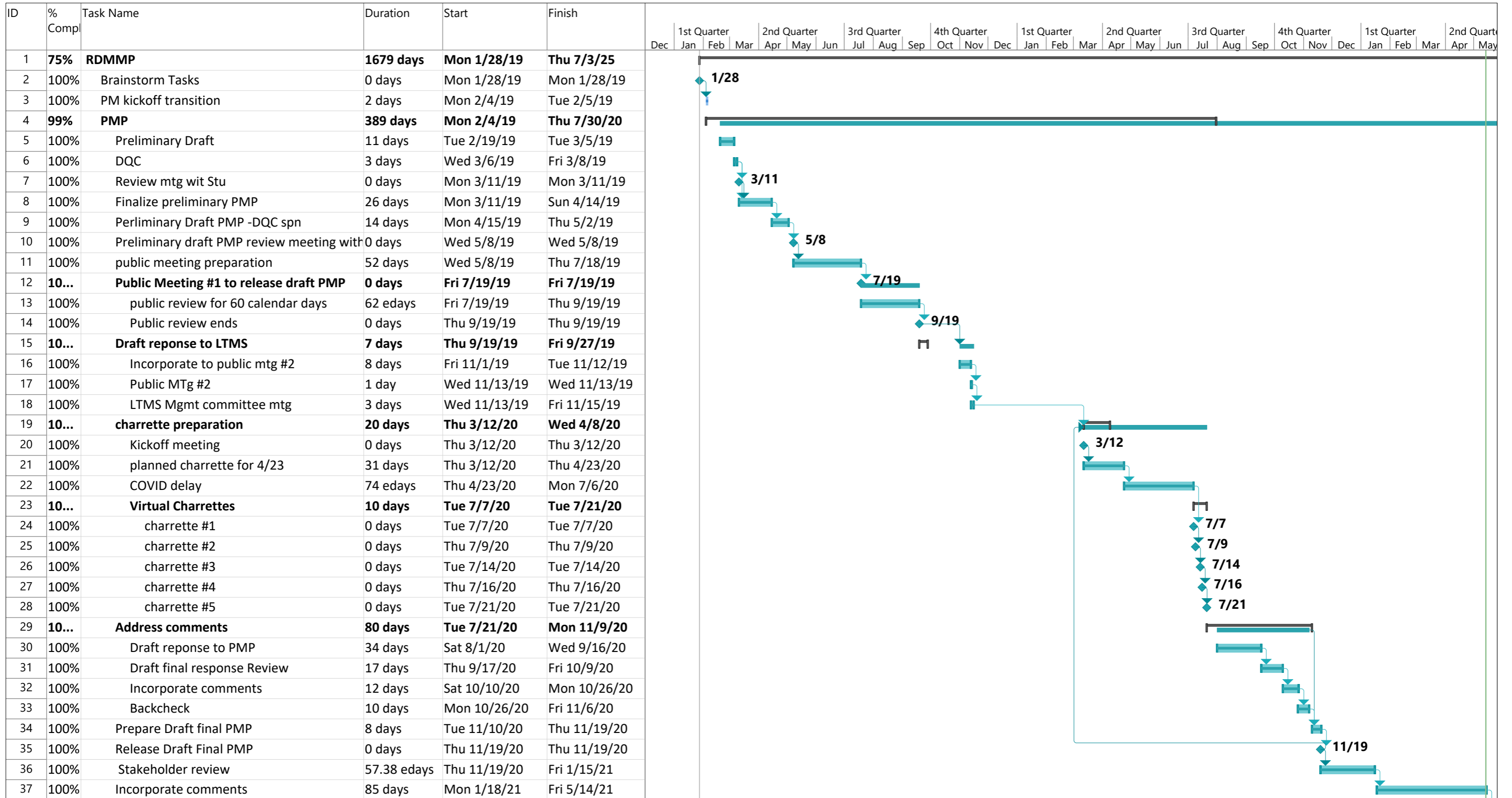
Table 8: Communication Risk Matrix

Target Audience	Messenger	When (Frequency)	How
Resource Agencies	Lead Planner/PM/Environmental Lead	Quarterly	Email and in person/virtual meetings
LTMS	Lead Planner/PM/LTMS Program Manager	Quarterly	Email and in person/virtual meetings
Partners	Lead Planner/PM	Quarterly	Email and in person/virtual meetings
Other Federal & State	Lead Planner/PM	As needed for milestones	Email and in person/virtual meetings
Stakeholders	Lead Planner/PM	Frequent	Email and in person/virtual meetings
Public	Lead Planner/PM	As needed for milestones	Email and in person/virtual meetings
The Press	PAO	As needed for milestones	Email and in person/virtual meetings
Elected Officials	Lead Planner/PM/PAO	As needed for milestones	Email and in person/virtual meetings



**PROJECT MANAGEMENT PLAN (PMP)
FOR THE SAN FRANCISCO BAY REGIONAL
DREDGED MATERIAL MANAGEMENT PLAN
(RDMMP)**

Appendix A- Schedule



Project: C:\Users\l3pmp\Doc
Date: Fri 5/14/21

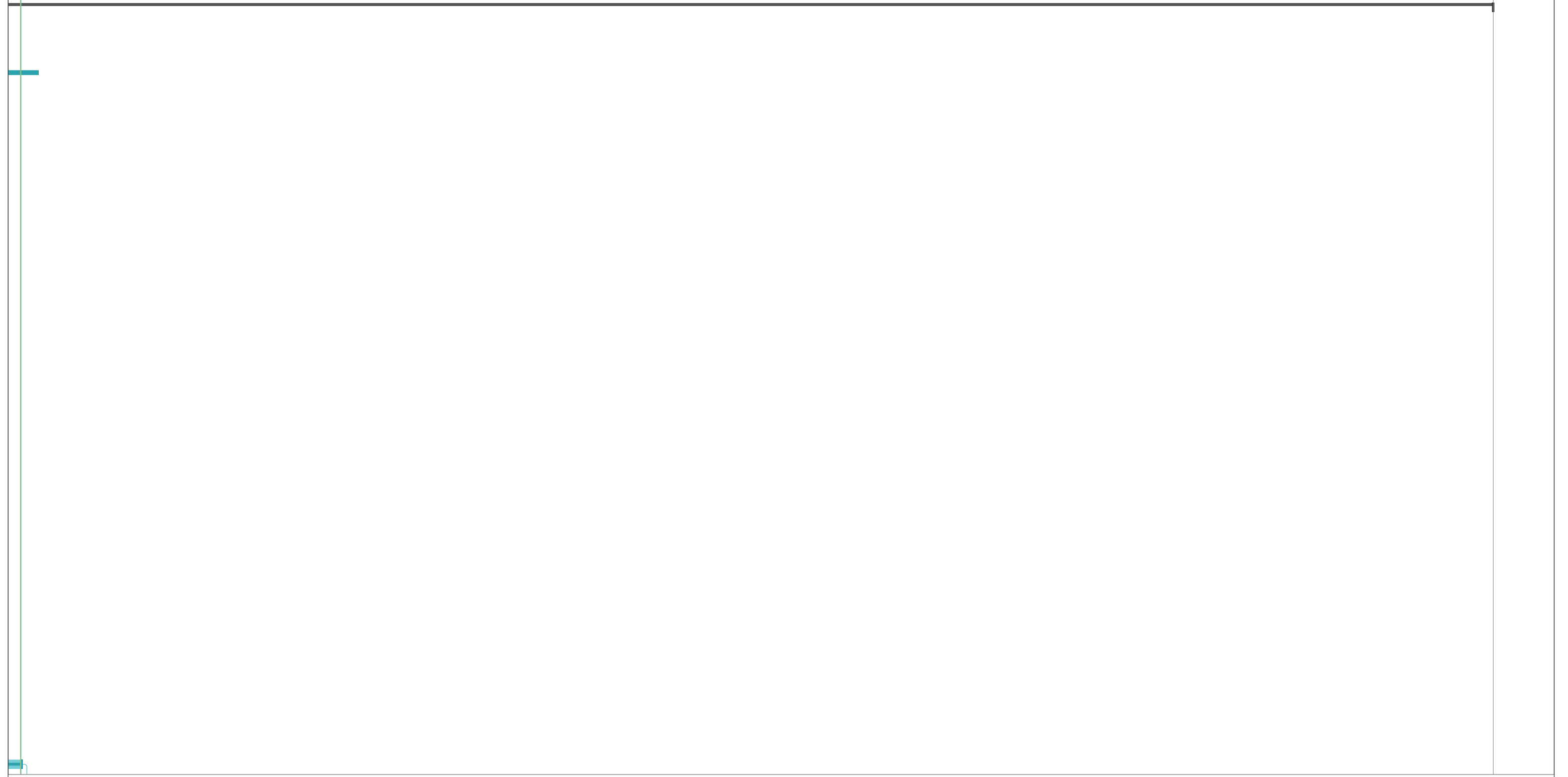
Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone	

ID	% Compl	Task Name	Duration	Start	Finish	Timeline (2020-2025)																													
						Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
38	0%	Finalize PMP	11 days	Mon 5/17/21	Mon 5/31/21																														
39	0%	Release final PMP	0 days	Mon 5/31/21	Mon 5/31/21																														
40	30%	Phase 1 (Initial Scope Development)	261 days	Thu 10/1/20	Thu 9/30/21																														
41	100%	Gap Analysis-Annotated Bibliography	14 days	Wed 10/7/20	Mon 10/26/20																														
42	100%	Initial (Internal) Draft Scope Development	20 days	Tue 10/27/20	Mon 11/23/20																														
43	100%	Circulation of Draft Scope with ERDC	10 days	Tue 11/24/20	Mon 12/14/20																														
44	100%	ERDC contract to SFEI	96 days	Tue 12/15/20	Wed 2/9/22																														
45	0%	Draft Gap Analysis report	60 days	Wed 4/14/21	Tue 7/6/21																														
46	0%	Review of Draft Gap analysis report	30 days	Wed 7/7/21	Tue 8/17/21																														
47	0%	Draft-Final gap analysis report to include IV	60 days	Wed 8/18/21	Tue 11/9/21																														
48	0%	Review of Draft-final report	30 days	Wed 11/10/21	Tue 12/21/21																														
49	0%	Final gap analysis Report-scope of work	60 days	Wed 12/22/21	Tue 3/15/22																														
50	0%	Backcheck	30 days	Wed 3/16/22	Tue 4/26/22																														
51	0%	Release Final scopes of work	60 days	Wed 4/27/22	Tue 7/19/22																														
52	0%	Phase 2A (Final) Execution of RDMMP	720 days	Sat 10/1/22	Thu 7/3/25																														

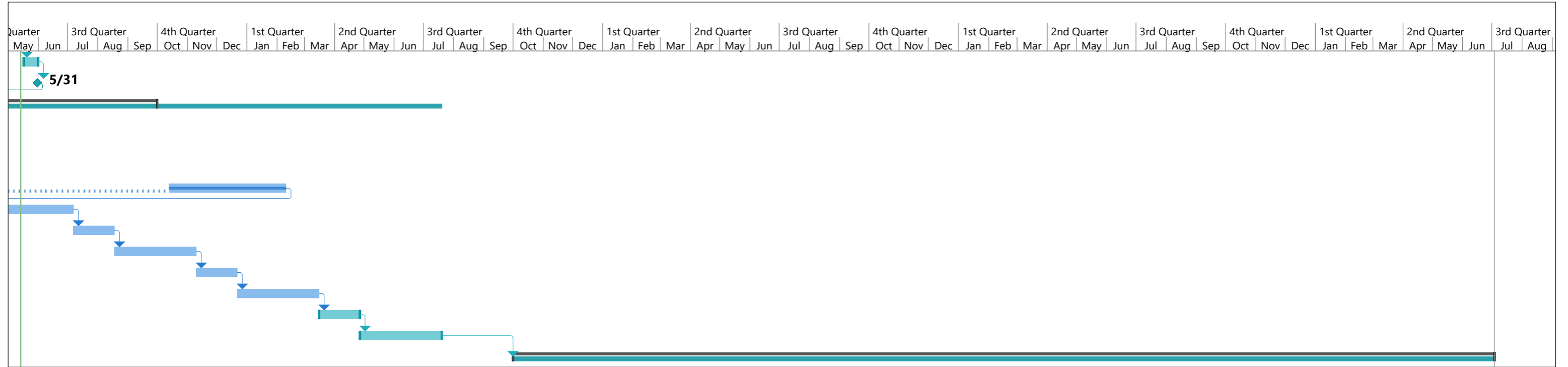
Project: C:\Users\l3pmp\Doc
Date: Fri 5/14/21

Task		Project Summary		Manual Task		Start-only		Deadline	
Split		Inactive Task		Duration-only		Finish-only		Progress	
Milestone		Inactive Milestone		Manual Summary Rollup		External Tasks		Manual Progress	
Summary		Inactive Summary		Manual Summary		External Milestone			

Quarter	3rd Quarter			4th Quarter			1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			1st Quarter			2nd Quarter			3rd Quarter		
May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug



Project: C:\Users\l3pmp\Doc Date: Fri 5/14/21	Task		Project Summary		Manual Task		Start-only		Deadline	
	Split		Inactive Task		Duration-only		Finish-only		Progress	
	Milestone		Inactive Milestone		Manual Summary Rollup		External Tasks		Manual Progress	
	Summary		Inactive Summary		Manual Summary		External Milestone			



Project: C:\Users\l3pmp\Doc Date: Fri 5/14/21	Task		Project Summary		Manual Task		Start-only		Deadline	
	Split		Inactive Task		Duration-only		Finish-only		Progress	
	Milestone		Inactive Milestone		Manual Summary Rollup		External Tasks		Manual Progress	
	Summary		Inactive Summary		Manual Summary		External Milestone			

APPENDIX C –Team Members

Table 1. Project Delivery Team Members

PDT Member Name	Role	Phone	Email
Tawny Tran	Project Manager	415-503-6741	Thanh.T.Tran@usace.army.mil
Brian Gerrity	Lead Planner	415-503-6910	Brian.F.Gerrity@usace.army.mil
TBD	Coastal Engineer	TBD	TBD
TBD	Environmental Planner	TBD	TBD
TBD	Economist	TBD	TBD
TBD	Cost Engineer	TBD	TBD
TBD	Navigation Engineer	TBD	TBD
TBD	Public Involvement Specialist	TBD	TBD

Table 2. Review Team Members

Review Team Member Name	Role	Phone	Email
TBD	Plan Formulation / DQC Review Lead	TBD	TBD
TBD	Coastal Engineering	TBD	TBD
TBD	Ecology/Environmental	TBD	TBD
TBD	Economics	TBD	TBD
TBD	Cost Engineering	TBD	TBD
TBD	Navigation Engineering	TBD	TBD

Appendix D- Communications Plan

I. Project Issues

- Cost
- Timeline (perception that the RDMMP is too slow, given sea level rise concerns)
- Perceived environmental risks
- Community expressed desire to preserve natural areas
- Need to maintain navigation and economic viability of harbor and waterway system
- Public understanding of need for and function of new facility
- Perceived conflict with LTMS
- Compare proposed project with existing conditions of the site, other possible future uses, past uses
- Long-term solution
- Beneficial use, improving sediment over time
- Ongoing assessment of sediment quality

Regional Dredge Material Management Plan

(RDMMP) Communications Plan

II. Vision, Values, Goals

1. Supports USACE navigation mission
2. Long-term planning for channel maintenance (navigation infrastructure)
3. Federal standard framework
4. Public safety – confining contaminated material, beneficial use, extensive testing and risk assessments
5. National economic benefits – transportation cost savings
6. Regional economic benefits –
7. Beneficial use – promoting sustainability through updated evaluations
8. Sediment source evaluation is part of overall strategy.

Regional Dredge Material Management Plan

(RDMMP) Communications Plan

III. Stakeholders/Partners and their interests

USACE HQ/Division

Interests (expectations and concerns):

- Minimize federal liability
- Minimize costs
- Meet all federal obligations/in compliance with statutes, etc.
- Maintain navigation operations
- Public understanding of sediment confinement benefits
- Economic justification
- Long-term sustainability of O&M practices

Stakeholders (Who is affected/involved) List reflects charette attendance and is subject to updates throughout the process.

State Govt	Bay Conservation Development Commission (BCDC)	Coastal Commission	State Historic Preservation Officer (SHPO)	California Natural Resources Agency	California State Lands Commission
State/Regional Orgs	San Francisco Bay Estuary Institute	California Natural Resources Agency	Bay Planning Coalition		
Local Govt	Port of Oakland	Port of San Francisco	San Francisco Regional Water Quality Board	City of Vallejo	
Local Population	Neighboring community	Landowners	Neighboring industries		
Interest Groups	SF Baykeeper	Ducks Unlimited	East Bay Leadership Council	SF Bay Joint Venture	Sierra Club
	Save the Bay	California Delta Chamber of Commerce	Montezuma Wetlands LLC	California Marine Affairs and Navigation Conference (CMANC)	Bay Planning Coalition
Industry	Western States Petroleum Association	Chevron	Shell	Dutra Group	Levin-Richmond Terminal Corporation
Federal Partners	US Environmental	US Fish and Wildlife	National Oceanic and		

Regional Dredge Material Management Plan

(RDMMP) Communications Plan

	Protection Agency (USEPA)	Service (USFWS)	Atmospheric Administration (NOAA)		
Other Govt	Coastal Conservancy				

Interests (expectations and concerns):

State Government: adherence to local laws and regulations, maintaining navigation (maintaining revenue and businesses/jobs)

Local Government: Maintaining navigation (revenue and businesses/jobs), job creation during construction, tax revenue (do we impact revenues?), construction noise and traffic, existing CDF becomes available for use by others, smells/odors and noise (animal control) during construction

Local Population: contaminant pathways, condition of site when closed (also see local govt interests), increased traffic, aesthetics, public input to analysis of CDF site options

Interest Groups: maintaining navigation, economics, environmental quality and climate adaptation.

Communication Partners (Contacts who will participate in communication planning and message delivery)

Organization	Contact	Phone
USACE San Francisco District	Tawny Tran Thanh.T.Tran@usace.arm.mil Brian Gerrity Brian.F.Gerrity@usace.army.mil	Tawny Tran: 415-503-6741 Brian Gerrity: 415-503-6910
USACE Collaboration & Public Participation Center of Expertise (CPCX) Institute for Water Resources	Seth Cohen Seth.B.Cohen@usace.army.mil	Work 303-963-4564 Cell 703-853-9635

Regional Dredge Material Management Plan (RDMMP)

Communications Plan

IV. Situation Analysis

(Look at the problem/opportunities from an internal perspective. What are the internal strengths and weaknesses? Look at the problem/opportunity from an external perspective. What are the external opportunities and threats?)

Internal Strengths	Internal Weaknesses
<ul style="list-style-type: none"> • Increased placement capacity to maintain navigation • Long-term solution (at least 20 years) • Beneficial use • Moving goods on water is more environmentally friendly (reduced emissions, reduced road/rail traffic) 	<ul style="list-style-type: none"> • Concerns from LTMS partners • Concerns regarding contentious projects associate with the RDMMP (SF to Stockton Deepening)
External Opportunities	External Threats
<ul style="list-style-type: none"> • Building relationships between navigation community and local interests/organization • Possibilities for future site use 	<ul style="list-style-type: none"> • Non-federal funding • Federal funding • Exposing underlying sediment by dredging • Loss of community members’ and/or other stakeholder groups’ trust if not done collaboratively • Community’s understanding of how they will be involved is not met

Summary/Key points:

1. Long-term solution
2. Importance of navigation projects (environmental & economic benefits of waterborne commerce)
3. Continued use of navigation channels
4. Environmental benefits – increased habitat by beneficially reusing dredged materials
5. Placement capacity- ensure adequate placement space

Regional Dredge Material Management Plan

(RDMMP) Communications Plan

- How many people would be involved from USACE (San Francisco District)?
 - What are their titles? What roles do they perform on the project?
 - CPCX
 - Seth Cohen – Facilitator – Run meeting, facilitate conversation/ feedback
 - Project Management
 - John D. Cunningham, PE- District Commander
 - Stu Townsley- DPM
 - Tawny Tran– PM – coordination with stakeholders, organizing
 - Planning –
 - Tom Kendall- Chief – Oversight, policy compliance, etc.
 - Brian Gerrity – Lead Planner – developing materials, presenting workshop program
 - Environmental
 - Tessa Beach
- Public Affairs Office
 - Involved in communications, monitoring media coverage, signing in guests at workshops and tracking public comments/concerns.

Regional Dredge Material Management Plan

(RDMMP) Communications Plan

V. Communication Goals and Objectives

1. Design and implement an engagement process that achieves an accepted, implementable solution

Objective: Assess community and stakeholders' needs and concerns

Objective: Provide information about the project

Objective: Improve communication surrounding the project benefits

2. Approval of DMMP report by SPN and SPD

Objective: Involve vertical team early and often to provide project information updates and learn about Vertical Team ideas and concerns

Regional Dredge Material Management Plan

(RDMMP) Communications Plan

VI. Themes, Key Messages, and Talking Points

Message: Importance of navigation projects.

1. 1) The project provides regional economic benefits. If the waterways are not maintained, shippers, the area and the Bay Area region are at risk of economic loss.
- 2) Waterborne transportation of goods is more fuel efficient than truck or rail transportation, resulting in lower emissions, and avoids wear and tear to the road and rail network.

Message: The proposed plan is a long-term (at least 20 year) solution that takes into account the life-cycle impacts of the project.

- 1) Concurrent modeling efforts are underway for a better understanding of the SF Bay system, sediment transport and sediment needs throughout the region.

Message: The project will have environmental and social benefits.

- 1) Increased beneficial reuse to benefit important habitat for wildlife, sea level rise mitigation and flood control.
- 2) Areas that benefit from beneficial reuse can have a great public benefit for recreation such as hiking, bird-watching, and hunting.

Message: There is an ongoing need for dredging.

- 1) Dredging operations allow shippers to use the full authorized depth of the channel, allowing for safe and efficient transportation of commodities on the waterways.

Regional Dredge Material Management Plan

(RDMMP) Communications Plan

VII. Action Plan (Tactics, Products, Activities)

Tactics:

1. Facilitated stakeholder roundtable working-group meetings
 - a. July 2020
2. Media engagement?
3. Online input
 - a. Crowdsourcing Reporter
 - b. Facebook
 - c. Other?
4. Site visits with key stakeholders
5. Attend others' meetings/events to provide info/present, develop relationships
6. Webinars?

Products:

1. Website
(<https://www.spn.usace.army.mil/Missions/Projects-and-Programs/Regional-Dredge-Material-Management-Plan/>)
2. Posters, brochures, etc.
3. Fact sheets
4. District newsletter

Regional Dredge Material Management Plan

(RDMMP) Communications Plan

Determining Stakeholder Engagement Level Worksheet

Factors to Consider in Determining Appropriate Level of Stakeholder Engagement	A	B	C
1. To what extent are stakeholders (sponsors, agencies, NGOs, public, etc.) aware of the project and/or Corps processes (i.e., has the Corps done previous outreach on the project or processes such as dam/levee safety, flood risk management, ecosystem restoration, environmental remediation, regulatory procedures, etc. to build a foundation of awareness)?	All well informed	Some/ partial	Low
2. Is there broad local approval of the process and potential outcomes? (To assess/predict project approval, ask district staff, search online for news coverage of previous Corps work in the community or similar work in other communities, and ask the sponsor and stakeholders. Consider any risks of controversy and litigation.)	Yes	Moderate	No/ Low
3. If there is a study/project sponsor, what is the cost-share arrangement for the feasibility study, construction and/or O&M? <i>NOTE: The more the sponsor has at stake, the higher level of involvement needed.</i>	N/A (no sponsor)	Sponsor responsible for O&M	Sponsor responsible for portion of feasibility, construction and/or O&M
4. Rate the relationships between the District, sponsor, and local community.	Good	Fair	Poor
What challenges exist in that relationship?			
5. Is the sponsor a partner in communication and willing/able to assist in conducting public outreach? (Do they have capacity such as technology, media/stakeholder access, and other communication resources? Are they performing public involvement as part of their in-kind work? Does their messaging align with the Corps'?)	Reliable Communication Partner	Can assist to a limited extent	No resources and/or different message
6. Are there special considerations that would require multiple public involvement meetings to ensure the inclusion of all stakeholders (i.e., large geographic area, minority communities, etc.)?	No	To some extent	Yes
Total of Each Column <i>Tally the responses in each column</i>	A =	B =	C =

Regional Dredge Material Management Plan

(RDMMP) Communications Plan

Recommended Level of Stakeholder Engagement:	Low (minimum as required by NEPA okay)	Medium	High
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