

Dredged Material Management Office (DMMO) Dredging and Placement of Dredged Material in San Francisco Bay January-December 2020 Report



Photo Credit: USACE Petaluma River dredging, Paul Amato 2020



Photo Credits: Montezuma Wetland Restoration Project, Phase 1 Breach, Jim Levine 2020 (Left photo). Restored tidal marsh, Brenda Goeden 2020 (Right photo).

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**Dredged Material Management Office
Dredging and Placement of Dredged Material in San Francisco Bay
January-December 2020 Report**

I. INTRODUCTION

Dredged Material Management Office

Since 1996, as part of the Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region (LTMS), the Dredged Material Management Office (DMMO) has been promoting economically and environmentally sound dredging and the placement of dredged sediment in the San Francisco Bay (Bay) region. The DMMO is a joint program comprised of the following member agencies: U.S. Army Corps of Engineers, San Francisco District (USACE); the U.S. Environmental Protection Agency, Region IX (EPA); the San Francisco Bay Regional Water Quality Control Board (Water Board); and the San Francisco Bay Conservation and Development Commission (BCDC). The California State Lands Commission (SLC), the California Department of Fish and Wildlife (CDFW), U.S. Fish and Wildlife Service (USFWS), and the National Marine Fisheries Service (NMFS) participate in the DMMO on an as available and needed basis.

The goal of this interagency group is to increase efficiency and consistency in the permitting process and to foster a comprehensive and consolidated approach to dredged sediment management issues. Together, the DMMO agencies facilitate processing of dredging permit applications within each partner agency's existing laws, policies, and regulations. The DMMO meetings provide a mechanism for the permit applicants, interested parties and the public to participate in the application review process. The DMMO reviews dredging projects within San Francisco Bay Estuary to its eastern extent at Sherman Island, the Bay's major tributaries to the point where navigation is no longer feasible, upland areas surrounding the estuary and the San Francisco Deep Ocean Disposal Site (SF-DODS), also known as the LTMS Study Region.

The DMMO generally meets twice a month on Wednesdays and the meetings are open to the public. The USACE posts meeting schedules, agendas, and documents slated for review on the DMMO website www.dmмосfbay.org.

DMMO Responsibilities

- **Review and approve sediment quality sampling and analysis plans.**
- **Analyze the results of sediment quality tests.**
- **Make suitability determinations for placement at in-Bay, ocean and beneficial reuse sites.**
- **Receive, review, and coordinate dredging project permit applications, in the San Francisco Bay Area.**
- **Develop guidance documents as needed.**
- **Coordinate implementation of programmatic requirements such as species consultations, alternative disposal site analyses and record-keeping.**

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The DMMO reviews and analyzes dredging project test results as well as project information such as compliance with environmental work windows and placement site volume targets set forth in the LTMS Management Plan. Dredging data is summarized in the DMMO annual reports each year, and along with guidance documents and other DMMO background information, can be found on the USACE LTMS website

[www.spn.usace.army.mil/Missions/DredgingWorkPermits/DredgedMaterialManagementOffice\(DMMO\).aspx](http://www.spn.usace.army.mil/Missions/DredgingWorkPermits/DredgedMaterialManagementOffice(DMMO).aspx).

Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region (LTMS)

The LTMS was formed in 1990 in response to concerns about potential direct, indirect and cumulative impacts from dredging and dredged sediment disposal on water quality, wildlife and beneficial uses of San Francisco Bay. In 1998 the LTMS agencies published a programmatic EIS/EIR that evaluated a range of alternatives for integrated management of dredging and dredged sediment placement.¹ The selected, environmentally preferred alternative from the programmatic EIS/EIR established the long-term goals of at least 40% of dredged sediment being beneficially reused, no more than 20% being disposed in the Bay, and the remainder being disposed at the San Francisco Deep Ocean Disposal Site. The LTMS Management Plan², published in 2001, contains detailed measures for implementing the selected program.

Of particular importance was the Management Plan's 12-year transition period, designed to gradually reduce the annual in-Bay disposal volume limit to a maximum of 1.25 million cubic yards (cy) of sediment by the end of 2012. The annual target volumes were averaged every three years to allow for inter-annual variability in sediment deposition and dredging project production. The purpose of the transition period was to provide time for dredging project sponsors to plan for the logistic and economic changes of the new dredged sediment management program and for additional beneficial reuse sites to be developed. The 12-year transition period began with an immediate reduction of the allowed in-Bay disposal volume by over 50%, to 2.8 million cy for the first three years. A further reduction of 378,500 cy occurred every three years thereafter, until the long term in-Bay volume limit of 1.25 million cy was reached starting in 2013 (Figure 1).

In 2013, after completion of the transition period, the LTMS agencies conducted a review of the overall program and found that in-Bay disposal remained below the annual transition period limits each year, except 2011 (Figure 2). However, for each three-year period the annual volumes were averaged, and the average volumes remained below the transition period limits. Therefore, individual project allocations (as provided for in the Management Plan) were not triggered. The LTMS Twelve Year Review, as well as the DMMO annual reports, containing detailed year-by-year history of dredging volumes and placement locations are available on the LTMS web site.

¹ Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region EIS, 1998. www.spn.usace.army.mil/Missions/Dredging-Work-Permits/LTMS/Volume-1/

² Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region, Management Plan, 2001. www.spn.usace.army.mil/Missions/Dredging-Work-Permits/LTMS/

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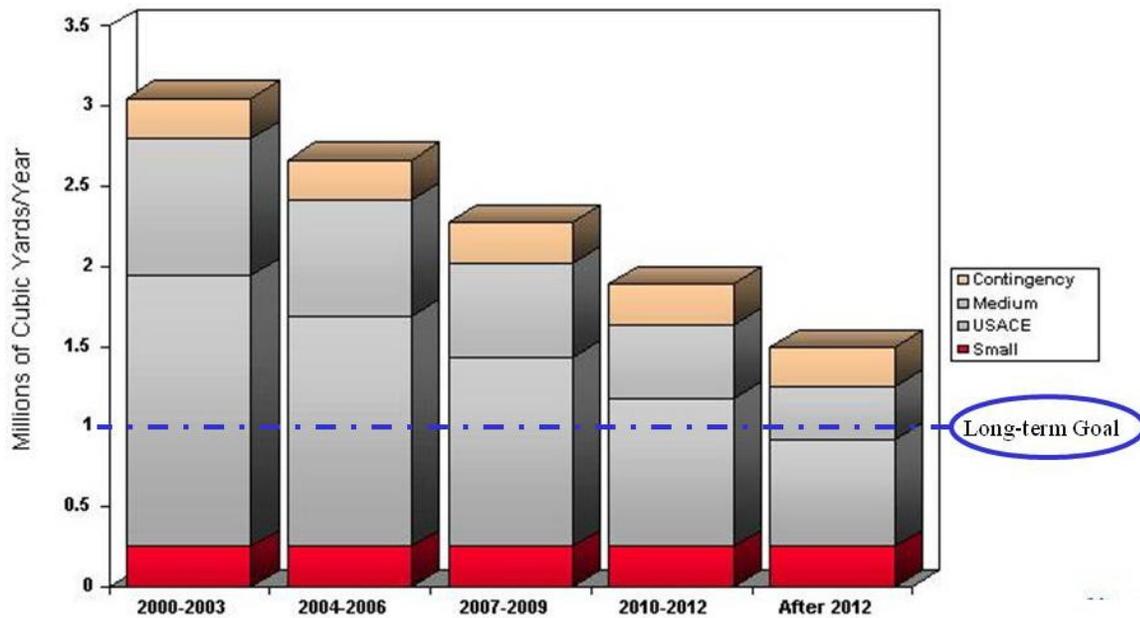


Figure 1. The LTMS Transition Period, showing the in-Bay disposal volume limit decreases that occurred every three years until the end of 2012. The Transition Period is now complete, and the final annual in-Bay limit of 1.25 million cy is in place.

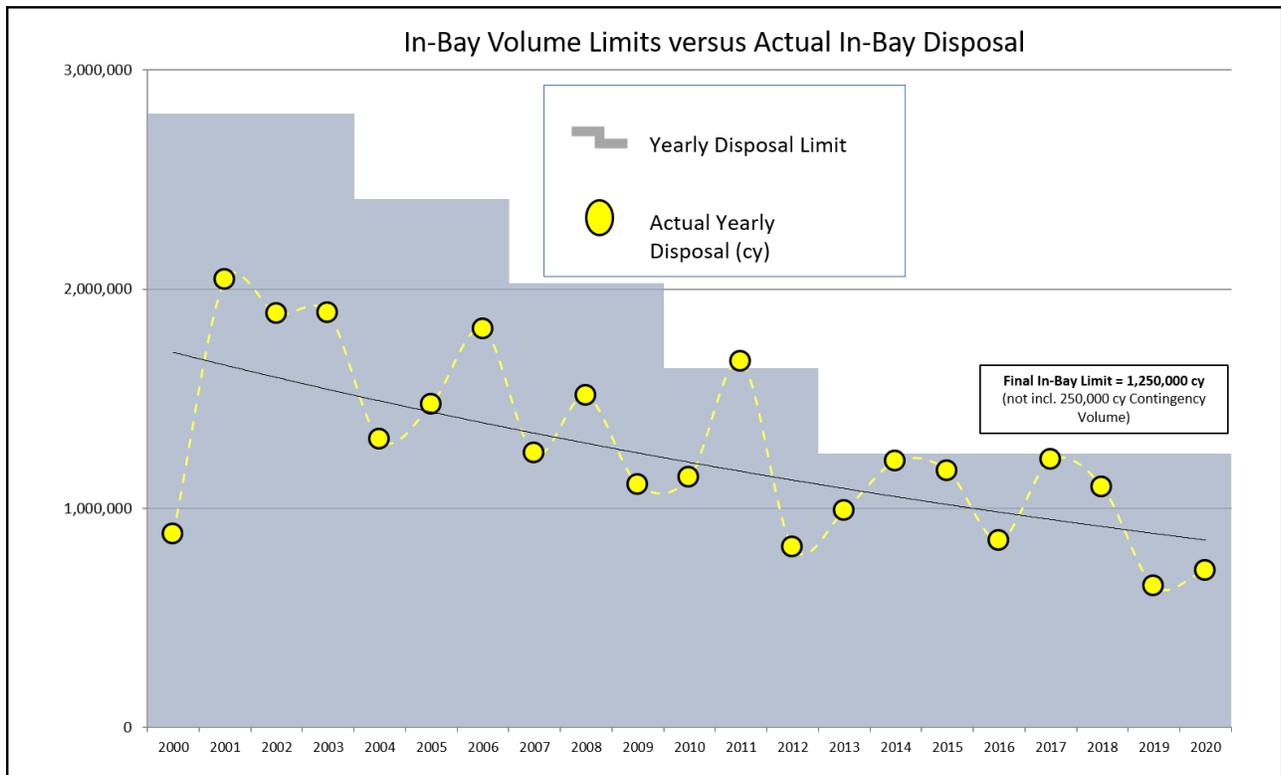


Figure 2. Actual in-Bay disposal volumes (yellow dots), compared to the transition period limits (2000-2012) and the final post-transition period disposal limit (2013-2020) (grey shading).

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II. 2020 DREDGING AND PLACEMENT OVERVIEW

In 2020, 24 projects dredged a total of 2,575,060 cy of sediment from San Francisco Bay (note: the SF Main Ship Channel is not included in this project and volume total). As summarized in Figure 3 and Table 1, a total of 716,535 cy (28% of the total volume dredged) was placed at four designated in-Bay dredged sediment disposal sites, while 848,208 cy (33%) was beneficially reused and 1,010,317 cy (39%) was disposed at SF-DODS. Of the sediment disposed at the four in-Bay disposal sites, 133,840 cy (19%) went to the Alcatraz Disposal Site (SF-11); 504,718 cy (70%) went to the San Pablo Bay Disposal Site (SF-10); 27,172 cy (4%) went to the Carquinez Strait Disposal Site (SF-9); and 50,805 cy (7%) went to the Suisun Bay Disposal Site (SF-16). Detailed volume information for 2020 is provided in Appendix 1 (by placement site) and Appendix 2 (by dredging project, including monthly disposal volumes).

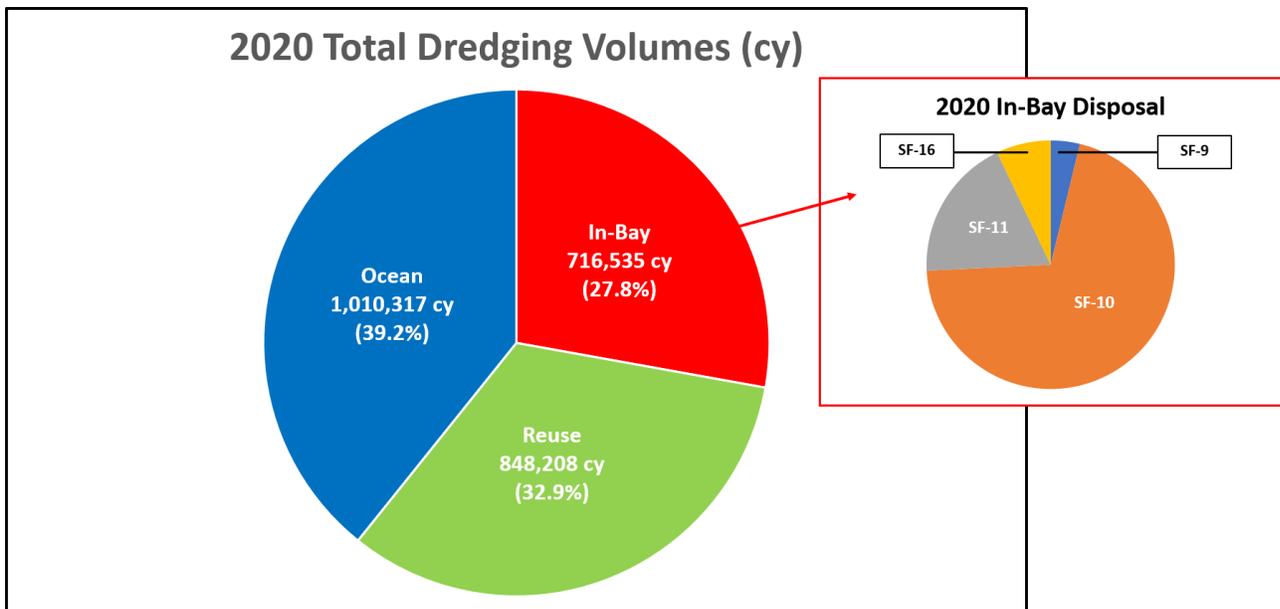


Figure 3. 2020 total dredging and placement summary, showing detail for In-Bay Disposal Sites.

In-Bay Disposal

Although the LTMS Plan’s 20% in-Bay disposal goal was exceeded again in 2020, the actual in-Bay disposal volume of 716,535 cy did not exceed the 1.25 million cy annual limit. In-Bay disposal volumes in 2019 and 2021 will be averaged with the 2020 volumes to determine the 3-year average in-Bay disposal volume (Table 1). If the 3-year average exceeds 1.25 million cy, potential dredger-specific allocations would have to be considered, per the LTMS Management Plan. But given the combined 2019 and 2020 in-Bay disposal volumes were below 1.25 million cy, the full 1.25 million cy (plus a 250,000-cy contingency volume) is available for 2021 without the current risk of triggering allocations.

Dredging Volumes Under LTMS, 2000 through 2020 (cy)*									
Calendar Year	In-Bay Disposal Target**	In-Bay Disposal	In-Bay % of Total	Reuse/ Upland	Reuse % of Total	Ocean Disposal	Ocean % of Total	Total Dredging	3-year in-Bay averages
2000	2,800,000	880,000	22.3%	2,294,676	58.1%	775,000	19.6%	3,949,676	
2001	2,800,000	2,041,936	56.1%	1,028,256	28.3%	566,679	15.6%	3,636,871	1,939,673
2002	2,800,000	1,887,083	55.4%	650,051	19.1%	866,400	25.5%	3,403,534	
2003	2,800,000	1,890,000	51.8%	646,337	17.7%	1,113,814	30.5%	3,650,151	
2004	2,412,500	1,312,829	52.0%	869,452	34.5%	341,000	13.5%	2,523,281	1,534,316
2005	2,412,500	1,473,253	23.3%	4,718,716	74.5%	137,717	2.2%	6,329,686	
2006	2,412,500	1,816,866	42.0%	1,558,487	36.0%	954,456	22.0%	4,329,809	
2007	2,025,000	1,249,338	28.8%	1,527,549	35.3%	1,554,362	35.9%	4,331,249	1,289,765
2008	2,025,000	1,512,098	35.4%	2,587,094	60.5%	175,855	4.1%	4,275,047	
2009	2,025,000	1,107,859	28.6%	2,688,264	69.5%	72,289	1.9%	3,868,412	
2010	1,637,500	1,139,780	56.5%	591,595	29.3%	285,460	14.2%	2,016,835	1,209,659
2011	1,637,500	1,668,043	50.7%	971,368	29.5%	652,970	19.8%	3,292,381	
2012	1,637,500	821,153	31.5%	1,014,561	38.9%	772,760	29.6%	2,608,474	
2013	1,250,000	987,268	31.1%	553,066	17.4%	1,632,515	51.5%	3,172,849	1,124,045
2014	1,250,000	1,213,331	57.4%	770,618	36.5%	130,006	6.1%	2,113,955	
2015	1,250,000	1,171,535	37.3%	1,251,958	39.9%	717,555	22.8%	3,141,048	
2016	1,250,000	852,049	31.2%	1,117,833	41.0%	758,887	27.8%	2,728,769	1,056,052
2017	1,250,000	1,219,727	40.3%	883,475	29.2%	922,594	30.5%	3,025,796	
2018	1,250,000	1,096,379	43.8%	763,391	30.5%	643,308	25.7%	2,503,078	
2019	1,250,000	643,835	52.60%	1,709,984	37.90%	246,188	9.47%	2,600,007	
2020	1,250,000	716,535	27.83%	848,208	32.94%	1,010,317	39.23%	2,575,060	
	Mean	1,271,471		1,383,092		682,387		3,336,951	
	Total	26,700,897	38.1%	29,044,939	41.4%	14,330,132	20.4%	70,075,968	

* Final volumes based on post-dredge surveys. May differ from volumes published in individual DMMO Annual Reports for some years, and any subsequent updates would be posted on the DMMO website.
 ** Not including 250,000 cy Contingency Volume

Table 1. Dredging and placement volumes under the LTMS program, 2000-2020.

Beneficial Reuse and Upland Placement

In 2020, 848,208 cy (33% of the total dredged) was beneficially reused or taken to upland placement sites. This amount is approximately half of the 2019 volume that was beneficially reused. Four beneficial reuse sites were used by dredging project proponents (Table 2). Each site has varying equipment, logistical, and sediment characteristic requirements. More detailed information for each of the beneficial reuse sites that received dredged sediment in 2020 are provided below:

- Montezuma Wetland Restoration Project (MWRP)

In 2020, the MWRP received 265,336 cy of dredged material for reuse (31% of the total reused). The sediment came from 7 maintenance dredging projects: Most of the volume came from one dredging project – 111,595 cy from the Port of San Francisco’s Mission Bay Ferry. The remaining volume came from dredging projects at Valero, Chevron Richmond Long Wharf, Port of San Francisco, AMPORTS, Phillips 66 (Rodeo), and Tesoro Refinery.

- Cullinan Ranch Restoration Project (CRRP)

In 2014, USACE, BCDC, and the Water Board revised their permits for the CRRP in the San Pablo Bay National Wildlife Refuge, increasing the volume of dredged sediment authorized for

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placement from 450,000 cy over 50 acres, to 2.8 million cy over 290 acres of the 1,575-acre site. In 2020, this site received 356,252 cy (42% of the total reused volume). Projects sending material to Cullinan include Mare Island Dry Dock, USACE Richmond Inner Harbor, and USACE Suisun Bay.

- Schollenberger Park
The USACE placed 211,535 cy of sediment dredged from the Petaluma River at the confined disposal ponds at the City of Petaluma’s Schollenberger Park.
- San Rafael Rock Quarry
San Francisco Marina placed 11,888 cy of material from their West Basin maintenance dredge project at the San Rafael Rock Quarry.
- SF-8 Bar Channel Site, Eastern Portion (sand only)
The SF-8 ocean disposal site is mainly used by USACE, for sand dredged from the Main Ship Channel (MSC) offshore of San Francisco Bay. The placement of sand from the MSC at SF-8 is not considered beneficial reuse because that sand is already in the San Francisco Bar and the littoral transport system associated with it. However, clean sand from other dredging projects that is placed within the easternmost portion of SF-8 (inside the 3-mile limit) is considered beneficial reuse, because it adds new sand to the Bar and its littoral transport system. In 2020, the Phillips 66 maintenance dredge project placed a total of 3,197 cy of clean sand in the easternmost portion of the SF-8 disposal site.

Placement Location	Sediment Placed (cy)	% of Total Reuse/Upland
Montezuma Wetlands Restoration Project	265,336	31%
Cullinan Ranch Restoration Project	356,252	42%
Schollenberger Park	211,535	25%
San Rafael Rock Quarry	11,888	1.4%
SF-8 inshore portion (non-Federal)	3,197	0.4%
Total	848,208	

Table 2. Beneficial reuse or upland placement sites that received dredged sediment in 2020

Sediment Suitability for In-Bay Unconfined Aquatic Disposal

Approximately 95% of sediment dredged in 2020 (2,450,433 cy of the 2,575,060-cy total) was suitable for unconfined aquatic disposal in the Bay (SUAD), while 5% (124,627 cy) was not suitable for unconfined disposal in the Bay (NUAD). The NUAD material came from three projects, the Port of San Francisco Mission Bay Ferry Landing, Mare Island Dry Dock, and USACE

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Richmond Inner Harbor maintenance dredging. The NUAD material was placed at MWRP as Foundation sediment and SF-DODS, respectively.

Project	NUAD Volume (cy)	Reason NUAD	Placement Site
Port of San Francisco Mission Bay Ferry Landing	111,595	PAHs, chlordane	MWRP Foundation
Mare Island Dry Dock	10,000	PAHs, arsenic	MWRP Foundation
USACE Richmond Inner Harbor	3,032	PCBs, DDTs	SF-DODS
Total	124,627		

Table 3. Projects dredged in 2020 that included sediment not suitable for unconfined in-Bay disposal (NUAD).

Dredging Equipment used in the Bay

Almost all the dredging projects inside the Bay in 2020 used mechanical dredges (e.g., clamshells or excavator buckets). One non-USACE project (Suisun City Marina) dredged 107,901 cy using a hydraulic dredge. Three USACE projects (Main Ship Channel, Pinole Shoal Channel, and Richmond Outer Harbor) dredged 456,663 cy, 36,522 cy, and 381,743 cy, respectively, using a hydraulic hopper (Appendix 4). The USACE hydraulic dredging represented approximately 44% of total USACE dredging (874,928 cy of the 1,997,770-cy total) in 2020.

Environmental Work Windows

Environmental work windows, developed via programmatic consultations on the LTMS Program, encourage projects to work when sensitive species are not present in the San Francisco Bay and its tributaries. These windows vary depending on project location and for many projects begin either on June 1 or August 1 and generally last through November 30 of each year. On July 9, 2015, NMFS issued an amended LTMS Programmatic Biological Opinion for salmon, steelhead, and green sturgeon³. This update addresses green sturgeon and modifies some environmental work windows (Coho salmon). The amended biological opinion allows some projects to plan to work outside the established windows provided that the sediment dredged outside the window is placed at a beneficial reuse site benefitting fish habitat. It further provides the LTMS agencies the ability to authorize limited dredging (up to a cumulative total of 50,000 cy) outside the window, without further consultation with NMFS, when unforeseeable circumstances delay project completion.

Of the total 25 projects, only 22 of those dredged in 2020 are subject to the LTMS programmatic work window restrictions⁴. Most of these 22 projects began work in or after the month of June, and 20 of them were completed entirely within their work windows while 2 were partially dredged outside work windows (Figure 4). Of the 22 projects subject to the environmental work windows,

³ http://www.spn.usace.army.mil/Portals/68/docs/Dredging/LMTS/LTMS%20NMFS%20BiOp%207_9_2015.pdf

⁴ Valero Refinery and the Mare Island Dry Docks have separate consultations with the state and federal resource agencies and are not managed under the programmatic LTMS work windows. The dredging of the Main Ship Channel also does not follow the LTMS work window and is not included in the annual volume totals.

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one non-USACE project (Richardson Bay Marina) requested and received an extension from DMMO to perform minor amounts of dredging that could not be completed by the close of the salmonid and herring work windows. This project, which is identified in the ‘small dredger’ class, placed a total of 6,400 cy at SF-11 (Appendix 2). Per the terms of the NMFS LTMS Programmatic Biological Opinion, an equivalent volume of sediment dredged from this project after November 30, 2020 must be beneficially reused within a year at tidal wetland restoration site(s) that benefits fish habitat. However, since it is unlikely that dredging at the Richardson Bay Marina would need to be completed within the following year, it has been stipulated that the material from any subsequent dredge event at the marina shall be placed at a beneficial reuse site until the equivalent volume is met.

The USACE Redwood City Harbor project dredged 57,544 cy in January 2020 after the work windows closed in 2019 to complete the FY2019 dredging of that project. The dredged material was placed at SF-DODS. The USACE Suisun Bay Channel project dredged from July to October 2020, of which 75,228 cy of sediment was disposed of at Cullinan Ranch, to make up for the USACE Redwood City Harbor out-of-window dredging in January 2020, per the terms of the NMFS LTMS Programmatic Biological Opinion.

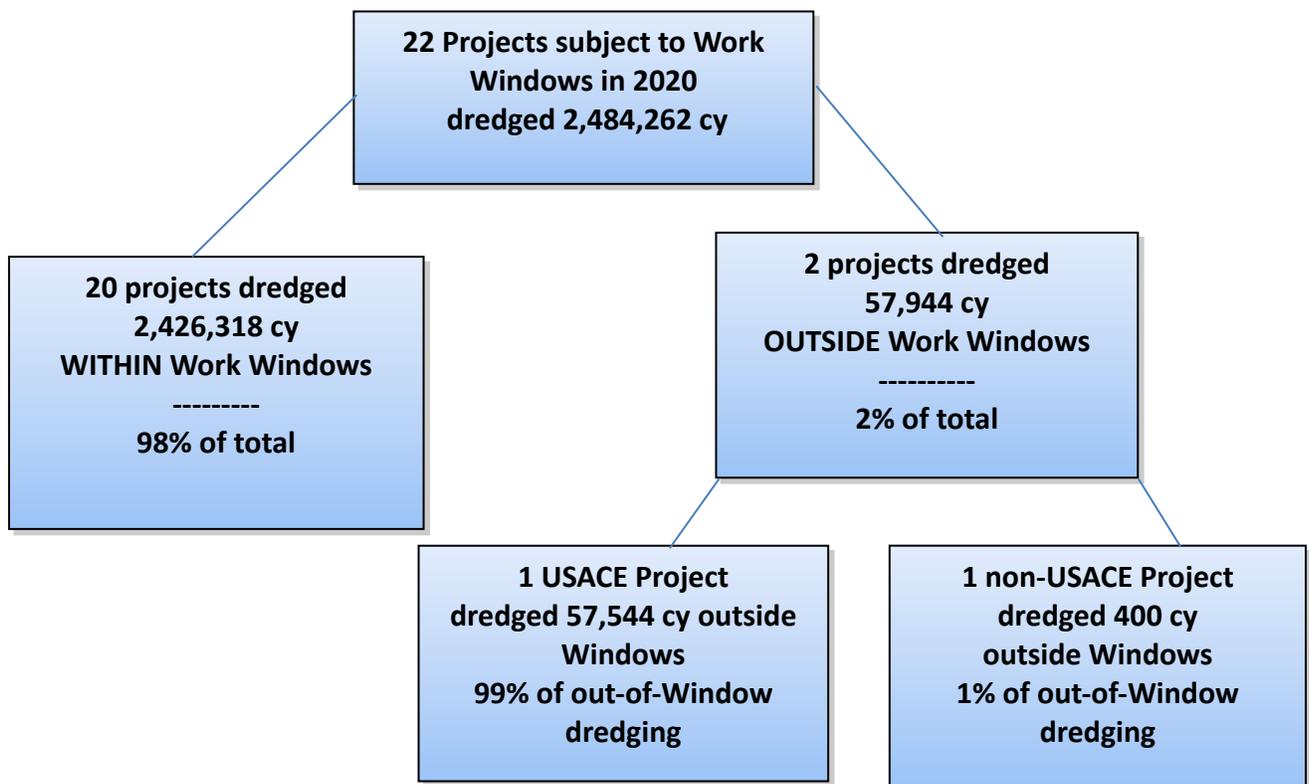


Figure 4. 2020 projects and dredge volumes relative to environmental work windows.

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Essential Fish Habitat (EFH) Compliance

In June of 2011, the USACE and EPA signed an agreement with NMFS entitled, “*Agreement on Programmatic EFH Conservation Measures for Maintenance Dredging Conducted under the LTMS Program (Tracking Number 2009/06769)*.” Under this EFH agreement, the LTMS agencies report annually on projects that trigger provisions related to elevated levels of contaminants in the residual (post-dredge) sediment surface, and that used minimization measures to reduce potential adverse effects to eelgrass and other submerged aquatic vegetation.

One project, the Port of San Francisco’s Mission Bay Ferry Landing, dredged in 2020 and had elevated levels of PAHs and chlordanes in the sediment potentially exposed after dredging (the residual sediment, represented by “z-layer” samples). The Port of San Francisco dredged deeper to remove upper portions of the elevated sediment (disposed of at an upland facility) and then capped with sand and concrete blankets.

The EFH agreement also includes minimization measures to protect eelgrass. Three non-USACE dredging projects in 2020 conducted pre-dredge eelgrass surveys. All three of the projects were within 250 meters of eelgrass, and therefore were required to use silt curtains to minimize impacts of dredging-related suspended sediment plumes on eelgrass (Appendix 3).

Portions of three USACE projects, Richmond Inner Harbor and Oakland Inner and Outer Harbor, were also within 250 meters of eelgrass beds (Appendix 4). The USACE dredging projects did not deploy silt curtains, but used an option in the EFH consultation and instead performed light monitoring and completed pre-dredge and post-dredge surveys of eelgrass areal extent in the vicinity of the dredging projects to determine if there were deleterious effects. The combination of light monitoring and survey data showed no observable adverse effects to eelgrass from the two USACE projects.

III. RELATED ISSUES

DMMO Projects and Sediment Quality Database

DMMO has developed a web-based data management system to store, retrieve, query and update sediment quality data and information in support of the DMMO. The DMMO’s San Francisco Bay dredging and disposal database is available online (www.dmмосfbay.org). The database contains sediment testing data from years 2000 to 2021, and the database has been designed to allow dredging project sponsors, labs, and consultants to upload their project data directly into the system on an ongoing basis. Historic Sampling and Analysis Plans (SAP) and Sampling and Analysis Results (SAR) reports are available to download for individual projects, and historical sediment testing data (including chemical and bioassay testing results) can be queried both for individual projects and regionally.

In 2018, DMMO began the process of handing over hosting duties for the database to the San Francisco Estuary Institute (SFEI). Once the database was transferred to SFEI’s servers, DMMO and SFEI began work to clear the back-log of laboratory data needing to be incorporated into the

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database and to work on the remaining list of changes and upgrades to the database website. Several modifications have been proposed and planned, including developing an improved method for assessing fees for the Regional Monitoring Program (RMP) and enhancing how data can be queried and viewed for multiple processes. Several SFEI scientists and staff have already utilized the data from the website to produce reports such as Don Yee and Adam Wong’s PCB synthesis report, “Evaluation of PCB Concentrations, Masses, and Movement from Dredged Areas in San Francisco Bay.”

SediMatch

The San Francisco Bay Joint Venture (SFBJV), with DMMO and LTMS agency support, developed SediMatch, a sediment placement site database and web tool to improve and increase the matching of dredging projects with appropriate beneficial reuse sites. In addition to SFBJV and BCDC, the Bay Area Flood Protection Agencies Association, the Bay Planning Coalition and others wanted to bring the dredging/sediment supply and the wetland restoration communities together for the shared goals of creating healthy wetland habitats and maximizing beneficial reuse of sediment. SediMatch launched in November 2016 and efforts to update and improve it continued in 2018. The DMMO database may soon be linked to the SediMatch web tool. The funds to support this effort were made available through a USEPA Water Quality Improvement Grant. The SediMatch web tool is also hosted by San Francisco Estuary Institute (SFEI) and can be found at <http://sedimatch.sfei.org>. With SediMatch now online the DMMO agencies encourage dredgers and restoration site operators to begin populating the site with information and use it.

IV. LOOKING AHEAD

As mentioned, the LTMS Transition Period ended after 2012, and the final 1.25 million cy annual in-Bay disposal volume limit has been in place since that time. However, in response to concerns about the limited availability/affordability of reuse sites for many projects, the LTMS Management Committee in 2015 authorized DMMO to use the 250,000 cy/year “contingency volume” if needed, without requesting project-specific approvals from the Management Committee. This flexibility reduces the potential for triggering dredger-specific “allocations” as a result of an occasional anomalous dredging year (under the Management Plan, the contingency volume does not count against the three-year average volume limit of 1.25 million cy/year). A recent 3-year average in-Bay disposal volume (2016-2018) was 1,056,052 cy (Table 1) which did not exceed the 1.25 million cy proposed in the LTMS Management Plan. Based on 2019 and 2020 numbers, it is unlikely that the next 3-yr average cycle (2019-2021) will trigger allocations. In-Bay disposal does continue to account for 25-40% of the annual disposal volume. While the disposal limits have been consistently met for several years more work needs to be done to increase opportunities for a larger percentage of the annual dredge volume to be placed at sites outside San Francisco Bay, and in particular, to increase opportunities to beneficially reuse dredged sediment for restoration and resiliency projects around the Bay.

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V. CONTACTS AND LINKS**DMMO MEMBER AGENCIES' PRIMARY STAFF CONTACTS:**

USACE	Jessica Vargas	(415) 503-2936	jessica.m.vargas@usace.army.mil
BCDC	Brenda Goeden	(415) 352-3623	brenda.goeden@bcdc.ca.gov
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RWQCB	Selina Louie	(510) 622-2383	Selina.Louie@waterboards.ca.gov
EPA	Jennifer Siu	(415) 972-3983	siu.jennifer@epa.gov
SLC	Chris Huitt	(916) 574-2080	christopher.huitt@slc.ca.gov

RESOURCE AGENCY CONTACTS:

CDFW	Arn Aarreberg (Bay Region) Craig Weightman (Tributaries)	(707) 576-2889 (707) 944-5500	arn.aarreberg@wildlife.ca.gov craig.weightman@wildlife.ca.gov
USFWS	Ryan Olah (Bay region) Kim Squires (Bay-Delta region)	(916) 414-6625 (916) 930-5634	Ryan_Olah@fws.gov Kim_Squires@fws.gov
NMFS	Sara Azat	(707) 575-6067	Sara.Azat@noaa.gov

USEFUL LINKS**DMMO WEBSITE** (guidance documents, etc.):[www.spn.usace.army.mil/Missions/DredgingWorkPermits/DredgedMaterialManagementOffice\(DMMO\).aspx](http://www.spn.usace.army.mil/Missions/DredgingWorkPermits/DredgedMaterialManagementOffice(DMMO).aspx)**DMMO DATABASE WEBSITE:** www.dmмосfbay.org**LTMS WEBSITE:** www.spn.usace.army.mil/Missions/DredgingWorkPermits/LTMS.aspx**SFEI "DREDGED MATERIAL TESTING THRESHOLDS" WEBSITE:**<https://www.sfei.org/content/dmmo-ambient-sediment-conditions>**LTMS 12-YEAR REVIEW:**www.spn.usace.army.mil/Missions/DredgingWorkPermits/LTMS/LTMSProgram12YearReviewProcess.aspx**PROGRAMMATIC EFH CONSULTATION AGREEMENT:**<https://www.spn.usace.army.mil/Portals/68/docs/Dredging/LMTS/LTMS%20EFH%20full%20signed%20agreement%20FINAL%206-9-2011.pdf>**PROGRAMMATIC ESA CONSULTATION:**https://pcts.nmfs.noaa.gov/pcts-web/dispatcher/trackable/WCR-2014-1599?overrideUserGroup=PUBLIC&referer=%2fpcts-web%2fpublicAdvancedQuery.pcts%3fsearchAction%3dSESSION_SEARCH**USFWS, NMFS and CDFW B.O.s available at:**<https://www.spn.usace.army.mil/Missions/Dredging-Work-Permits/LTMS/>

APPENDIX 1

2020 Dredging Volumes by Placement Site

June 2021

Disposal Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2020 Total Volume
SF-8 (Federal only)	0	0	0	0	0	0	0	0	0	0	0	0	0
SF-9, Carquinez Straits	0	0	0	0	0	0	0	0	0	6,514	20,658	0	27,172
SF-10, San Pablo Bay	0	0	0	0	0	358,625	0	0	13,745	22,797	109,551	0	504,718
SF-11, Alcatraz	0	0	0	0	0	35,811	15,668	21,791	12,236	42,334	5,600	400	133,840
SF-16, Suisun Bay	0	0	0	0	0	0	12,500	13,000	13,000	12,305	0	0	50,805
TOTAL in-Bay	0	0	0	0	0	394,436	28,168	34,791	38,981	83,950	135,809	400	716,535
Reuse/Upland; Cullinan Ranch Restoration Project (CRRP)	0	0	2,220	13,579	0	0	48,441	138,796	127,879	25,337	0	0	356,252
Reuse/Upland; Montezuma Wetlands Restoration Project	0	0	0	0	0	0	0	46,431	119,254	629	99,022	0	265,336
Reuse/Upland; Schollenberger	0	0	0	0	0	0	0	0	100,000	111,535	0	0	211,535
Reuse/Upland; San Rafael Rock Quarry	0	0	0	0	0	0	0	0	0	0	11,888	0	11,888
Reuse/Upland; SF-8 NON-FEDERAL	0	0	0	0	0	0	0	0	0	0	3,197	0	3,197
TOTAL REUSE/UPLAND (non-fed)	0	0	2,220	13,579	0	0	48,441	185,227	347,133	137,501	114,107	0	848,208
Reuse, SF-17 Ocean Beach (Federal)	0	0	0	0	(113,443)	(343,220)	0	0	0	0	0	0	(456,663)
SF-DODS, Deep Ocean Disposal Site	57,544	0	9,475	0	0	130,000	163,032	160,000	160,000	220,780	109,486	0	1,010,317
GRAND TOTAL	57,544	0	13,915	27,158	0	524,436	288,082	565,245	893,247	579,732	473,509	400	2,575,060

APPENDIX 2

2020 Dredging Volumes by Project

June 2021

Project	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2020 TOTAL VOLUME
AMPORTS, Benicia; SF-9	0	0	0	0	0	0	0	0	0	0	3,440	0	3,440
AMPORTS, Benicia; Montezuma/Reuse	0	0	0	0	0	0	0	0	0	0	13,868	0	13,868
BENICIA MARINA, City of; SF-9	0	0	0	0	0	0	0	0	0	6,514	14,177	0	20,691
CHEVRON RICHMOND LONG WHARF; SF-10	0	0	0	0	0	0	0	0	0	12,183	4,478	0	16,661
CHEVRON RICHMOND LONG WHARF; Montezuma/Reuse	0	0	0	0	0	0	0	0	0	0	79,432	0	79,432
GLEN COVE MARINA; SF-9	0	0	0	0	0	0	0	0	0	0	3,041	0	3,041
MARE ISLAND DRYDOCK; CRRP/Reuse	0	0	2,220	13,579	0	0	0	17,859	0	8,109	0	0	41,767
MARINA DREDGE NEIGHBORS; SF-11	0	0	0	0	0	0	0	0	0	300	0	0	300
PARADISE CAY HOMEOWNERS, SF-10	0	0	0	0	0	0	0	0	13,745	10,614	0	0	24,359
PHILLIPS 66 (Conoco/Rodeo); SF-8 - Reuse	0	0	0	0	0	0	0	0	0	0	3,197	0	3,197 *
PHILLIPS 66 (Conoco/Rodeo); Reuse - Montezuma Wetlands (MWRP)	0	0	0	0	0	0	0	0	0	0	1,200	0	1,200 *
PORT OF OAKLAND, Berth Maintenance; SF-11	0	0	0	0	0	0	0	0	0	40,448	0	0	40,448
PORT OF OAKLAND, Berth Maintenance; SF-DODS	0	0	0	0	0	0	0	0	0	60,780	5,933	0	66,713
PORT OF SAN FRANCISCO, Berth 27; Montezuma/Reuse	0	0	0	0	0	0	0	0	15,163	0	0	0	15,163
PORT OF SAN FRANCISCO, Mission Bay Ferry; Montezuma/Reuse	0	0	0	0	0	0	0	6,875	104,091	629	0	0	111,595
RICHARDSON BAY MARINA; SF-11	0	0	0	0	0	0	0	0	0	400	5,600	400	6,400 *
SAN FRANCISCO MARINA, WEST BASIN; San Rafael Rock Quarry/Reuse	0	0	0	0	0	0	0	0	0	0	11,888	0	11,888
SAINT FRANCIS YACHT CLUB; SF-11	0	0	0	0	0	0	0	0	1,167	0	0	0	1,167
SAUSALITO YACHT HARBOR; SF-11	0	0	0	0	0	0	0	7,511	11,069	1,186	0	0	19,766
TESORO REFINERY, Marathon Marine Terminal; Montezuma/Reuse	0	0	0	0	0	0	0	0	0	0	4,522	0	4,522
VALERO; SF-DODS	0	0	9,475	0	0	0	0	0	0	0	0	0	9,475
VALERO; Montezuma/Reuse	0	0	0	0	0	0	0	39,556	0	0	0	0	39,556
WESTPOINT HARBOR MARINA; SF-11	0	0	0	0	0	12,693	15,668	14,280	0	0	0	0	42,641
USACE, MAIN SHIP CHANNEL; SF-17, Ocean Beach	0	0	0	0	(113,443)	(343,220)	0	0	0	0	0	0	(456,663) #
USACE, OAKLAND INNER AND OUTER HARBOR; SF-DODS	0	0	0	0	0	130,000	160,000	160,000	160,000	160,000	103,553	0	873,553 #
USACE, PINOLE SHOAL CHANNEL	0	0	0	0	0	0	0	0	0	0	36,522	0	36,522
USACE, PETALUMA RIVER, Schollenberger/Reuse	0	0	0	0	0	0	0	0	100,000	111,535	0	0	211,535 #
USACE, PETALUMA RIVER ACROSS THE FLATS, SF-10	0	0	0	0	0	0	0	0	0	0	68,551	0	68,551
USACE, REDWOOD CITY HARBOR; SF-DODS	57,544	0	0	0	0	0	0	0	0	0	0	0	57,544
USACE, RICHMOND INNER HARBOR; SF-DODS	0	0	0	0	0	0	3,032	0	0	0	0	0	3,032
USACE, RICHMOND INNER HARBOR; CRRP/Reuse	0	0	0	0	0	0	30,441	100,937	107,879	0	0	0	239,257
USACE, RICHMOND OUTER HARBOR; SF-10	0	0	0	0	0	358,625	0	0	0	0	0	0	358,625
USACE, RICHMOND OUTER HARBOR; SF-11	0	0	0	0	0	23,118	0	0	0	0	0	0	23,118
USACE, SUISUN BAY CHANNEL; SF-16	0	0	0	0	0	0	12,500	13,000	13,000	12,305	0	0	50,805 #
USACE, SUISUN BAY CHANNEL; CRRP/Reuse	0	0	0	0	0	0	18,000	20,000	20,000	17,228	0	0	75,228 #
GRAND TOTAL	57,544	0	11,695	13,579	0	524,436	239,641	380,018	546,114	442,231	359,402	400	2,575,060

* NO post dredged volume (only BIN)

From post dredge survey reports

Red = SF-8
 Brown = SF-10 (San Pablo)
 Gray = SF-16 (Suisun Bay)
 Pink = SFDODS (Deep Ocean Site)
 Orange = SF-9 (Carquinez)
 Blue = SF-11 (Alcatraz)
 Turquoise = SF-17 (Ocean Beach)
 Green = Upland/Reuse

APPENDIX 3

2020 Non-USACE Projects EFH Compliance Summary

2020 Non-USACE Maintenance Dredging Projects LTMS Programmatic EFH Compliance							
Project Name	Placement Site	USACE File Number	Dredge Date	Permitted Area (Acres)	Dredge Area (Acres)	Dredge Volume (Cubic Yards)	EFH Compliance Issues
Projects with Eelgrass Present							
Glen Cove Marina	SF-9	2009-00120	November	7.5	1.9	3,041	Eelgrass within 250 meters, silt curtain deployed during dredging activities.
Richardson Bay Marina	SF-11	2012-00134	October to December	3.4	1.96	6,400	Eelgrass within 45 meters, silt curtain deployed during dredging activities. Pre-dredge survey completed. Post-dredge survey to be completed in 2021.
Sausalito Yacht Harbor	SF-11	2009-00207	November	22	9.7	19,766	Eelgrass within 250 meters, silt curtain deployed during dredging activities.
Projects without Eelgrass Present							
Amparts, Episode #6	SF-9 and MWRP	2014-00033	October	8.75	2.3	17,308	No eelgrass within 250 meters. No EFH issues associated with episode.
Benicia Marina, Episode #7	SF-9	2014-00061	November	16.96	4.3	20,691	No eelgrass within 250 meters. No EFH issues associated with episode.
Chevron Long Wharf, Episode 13	MWRP and SF-10	2009-00052	November	44.1	44.1	96,093	No eelgrass within 250 meters. No EFH issues associated with episode.
Marathon Tesoro Avon Terminal	MWRP	2012-00106	November	2.62	0.15	4,522	No eelgrass within 250 meters. No EFH issues associated with episode.
Mare Island Dry Docks	Cullinan Ranch	2008-00311	March to April, August and October	18.31	6.82	41,747	No eelgrass within 250 meters. No EFH issues associated with episode.
Marina Dredge Neighbors (Alameda)	SF-11	2011-00164	October	0.5	0.5	300	No eelgrass within 250 meters. No EFH issues associated with episode.
Phillips 66, Episode #6	SF-8 and Montezuma	2014-00431	November	50.5	1.7	4,397	No eelgrass within 250 meters. No EFH issues associated with episode.
Valero, Episode 20	SF-9 and SF DODS	2012-00248	March and August	5.48	3.82	49,031	No eelgrass within 250 meters. No EFH issues associated with episode.
Westpoint Marina #2	SF-11	1996-22454	June to August	22.6	8.04	42,642	No eelgrass within 250 meters. No EFH issues associated with episode.
Port of SF - MBFL	MWRP	2017-00264	June to November	8.6	8.6	111,595	No eelgrass within 250 meters. Sediment testing indicated elevated levels of PAHs and Chlordane. Areas within the dredge footprint were dredged deeper and capped with clean sand and concrete blanket.
Port of SF - Pier 27	SF-DODS	2013-00333	September	361	9.67	15,163	No eelgrass within 250 meters. No EFH issues associated with episode.
Paradise Cay CSA 29	SF-10	290200	September to October	10.8	16	24,359	No eelgrass within 250 meters. No EFH issues associated with episode. The CSA dredged a portion of the adjacent Yacht Club
St. Francisc Yacht Club	SF-11	2008-00074	September	28	0.456	1,167	No eelgrass within 250 meters. No EFH issues associated with episode. Project is within the SF Marina West Basin.
Port of Oakland Berth Maintenance	SF-11 SF-DODS	2014-00090	October to November	182	31.06	107,160	No eelgrass within 250 meters. No EFH issues associated with episode.
SF Marina West Basin	SRRQ	2008-00074	November	28	2.4	11,888	No eelgrass within 250 meters. No EFH issues associated with episode.

SF-9 = Carquinez Disposal Site
 SF-10 = San Pablo Bay Disposal Site
 SF-11 = Alcatraz Disposal Site
 SF-DODS = San Francisco Deep Ocean Disposal Site

CRRP = Cullinan Ranch Restoration Project
 SRRQ = San Rafael Rock Quarry

APPENDIX 4

2020 USACE Projects EFH Compliance Summary

Appendix 4. 2020 USACE Federal Maintenance Dredging Projects LTMS Programmatic EFH Agreement Compliance Summary						
Project Name	Placement Site	Dredge Type	Dredge Date	Dredge Volume (Cubic Yards)	Total Project Area (Acres)	EFH Compliance Issues
Projects with Eelgrass Present						
Oakland Inner Harbor	San Francisco Deep Ocean Disposal Site (SF-DODS)	Clamshell	June to November	515,231	525	Eelgrass present within 250 meters, light monitoring conducted
Oakland Outer Harbor	San Francisco Deep Ocean Disposal Site (SF-DODS)	Clamshell	June to November	358,321	251	Eelgrass present within 250 meters, light monitoring conducted
Richmond Inner Channel	San Francisco Deep Ocean Disposal Site (SF-DODS) and Cullinan Ranch Restoration Project	Clamshell	July to August	245,321	82	Eelgrass present within 250 meters, light monitoring conducted
Projects without Eelgrass Present						
Main Ship Channel	Ocean Beach Demonstration Site (SF-17)	Hopper	May to June	456,663	1,204	No EFH compliance issues
Richmond Outer Channel	San Pablo Bay Disposal Site (SF-10); Alcatraz Island Disposal Site (SF-11)	Hopper	June	381,743	51	No EFH compliance issues
Pinole Shoal Channel	San Pablo Bay Disposal Site (SF-10)	Hopper	November	36,522	88	No EFH compliance issues
Petaluma River	Shollenberger; San Pablo Bay Disposal Site (SF-10)	Pipeline/Clamshell	September to November	280,086	424	No EFH compliance issues
Redwood City Harbor	San Francisco Deep Ocean Disposal Site (SF-DODS)	Clamshell	January	42,692	70	No EFH compliance issues
Suisun Bay Channel	Cullinan Ranch Restoration Project; SF-16	Clamshell	July to October	126,033	461	No EFH compliance issues