



LONG TERM MANAGEMENT STRATEGY

Dredged Material Management Office (DMMO) Dredging and Placement of Dredged Material in San Francisco Bay January-December 2015 Report



Photo: Allan Ota, US EPA Region 9

December 2016

Table of Contents

I. INTRODUCTION	3
Dredged Material Management Office	3
Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region (LTMS)	4
II. 2015 DREDGING AND PLACEMENT OVERVIEW	6
In-Bay Disposal	6
Beneficial Reuse and Upland Placement	7
Sediment Suitability for In-Bay Unconfined Aquatic Disposal	9
Dredging Equipment Used	9
Environmental Work Windows	9
Essential Fish Habitat (EFH) Compliance	11
III. RELATED ISSUES	12
DMMO Projects and Sediment Quality Database	12
SediMatch	12
IV. LOOKING AHEAD	13
V. CONTACTS AND LINKS	14
APPENDIX 1. 2015 Dredging Volumes by Placement Type	15
APPENDIX 2. 2015 Dredging Volumes by Project	16
APPENDIX 3. 2015 EFH Compliance, Non-USACE Projects	19
APPENDIX 4. 2015 EFH Compliance, USACE Projects	21

Figures

1. The LTMS Transition Period	5
2. Actual in-Bay disposal volumes	5
3. 2015 total dredging and placement summary	6
4. 2015 projects and dredge volumes relative to environmental work windows	11

Tables

1. Dredging and placement volumes under the LTMS Program, 2000-2015	7
2. Beneficial reuse or upland placement sites	8
3. Projects dredged in 2015 with NUAD sediments	9
4. 2015 projects and dredge volumes relative to environmental work windows	11

**Dredged Material Management Office
Dredging and Placement of Dredged Material in San Francisco Bay
January-December 2015 Report**

I. INTRODUCTION

Dredged Material Management Office

Since 1996 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 region. Founded through the Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region (LTMS) program, 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); the San Francisco Bay Conservation and Development Commission (BCDC) and the California State Lands Commission (SLC). The California Department of Fish and Wildlife (CDFW) (formerly California Department of Fish and Game (CDFG), U.S. Fish and Wildlife Service (USFWS), and the National Marine Fisheries Service (NMFS) participate in the DMMO and the Project Coordination Meetings (see Section III) as commenting resources agencies.

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 handling dredged sediment management issues. Together, the DMMO agencies facilitate processing of dredging permit applications within existing laws, regulations and policies and provide the mechanism to allow the involvement and participation of permit applicants and interested parties during the application process. The DMMO reviews projects within the geographic area that includes all of 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) designated by the EPA.

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 and coordinate permit application review for dredging projects proposed in the San Francisco Bay area.**
- **Develop guidance documents as needed.**
- **Coordinate programmatic requirements such as species consultations, alternative disposal site analyses and record-keeping.**

DMMO generally meets twice a month on Wednesdays, beginning at 11 am and the meetings are open to the public. The USACE posts the meeting schedules and agendas on the USACE DMMO website ([www.spn.usace.army.mil/Missions/DredgingWorkPermits/DredgedMaterialManagementOffice\(DMMO\).aspx](http://www.spn.usace.army.mil/Missions/DredgingWorkPermits/DredgedMaterialManagementOffice(DMMO).aspx)) and sends electronic copies of the agendas to interested parties and pertinent resources agencies. The dredging project data are compiled and analyzed by the DMMO, including environmental work windows adherence and placement volume targets set forth in the LTMS Management Plan, and are provided in the DMMO annual reports which can be found, along with guidance documents and other DMMO background information, on the USACE DMMO website.

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

The LTMS was formed in 1990 by the BCDC, USACE, EPA, the Water Board, and SLC, in response to concerns regarding potential direct and cumulative impacts from dredging and dredged sediment disposal to water quality, wildlife and uses of the San Francisco Bay. The agencies developed and certified a programmatic EIS/EIR that evaluated a range of alternatives for integrated management of dredging and dredged sediment placement (LTMS, 1998). The selected, environmentally preferred alternative from the programmatic EIS/EIS called for the long term goals of at least 40% of dredged sediment going to beneficial reuse, no more than 20% being disposed in the Bay, and the remainder being disposed at the San Francisco Deep Ocean Disposal Site (SF-DODS). This alternative was further developed and implemented via the LTMS Management Plan (LTMS, 2001). As part of the LTMS Management Plan, the DMMO coordinates dredging and dredged sediment disposal and placement.

Of particular importance was the Management Plan's 12-year transition period, designed to gradually reduce the in-Bay disposal volume limit to the long term target of a maximum of 1.25 million cubic yards (cy) per year by the end of 2012. The purpose of the transition period was to provide time for dredging project sponsors to plan ahead for the logistic and economic changes of the new methods of dredged sediment management and for additional beneficial reuse sites to be developed. The 12-year 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).

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

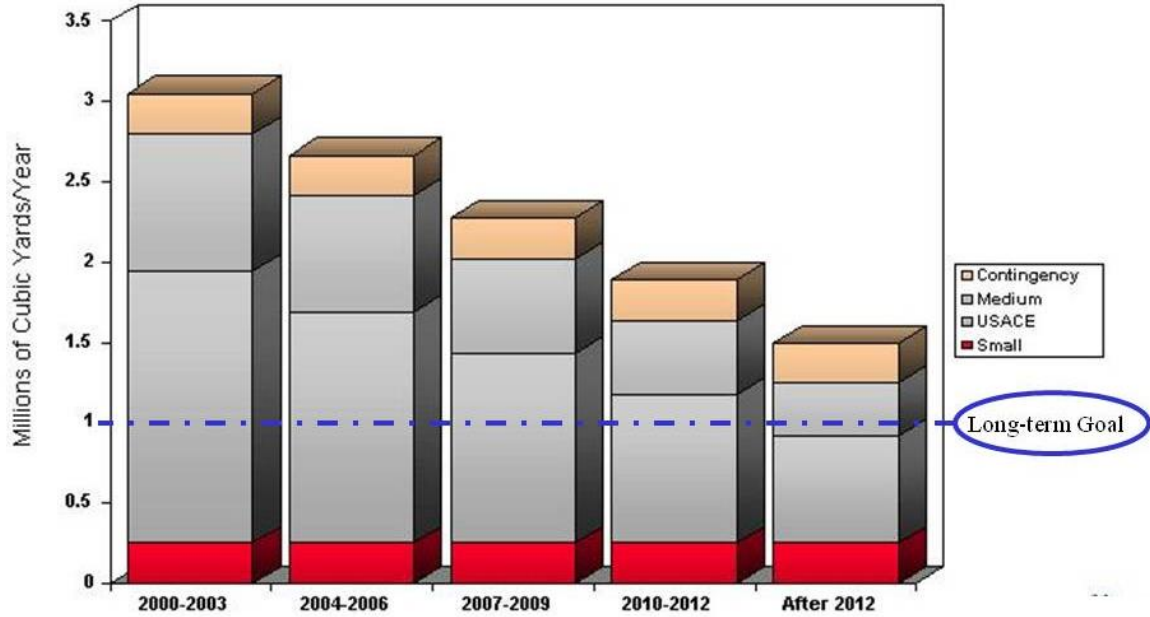


Figure 1. The LTMS Transition Period, showing the in-Bay disposal volume limit decreases that occurred every three years until 2013. The Transition Period is now complete, and the final annual in-Bay limit of 1.25 million cy is in place.

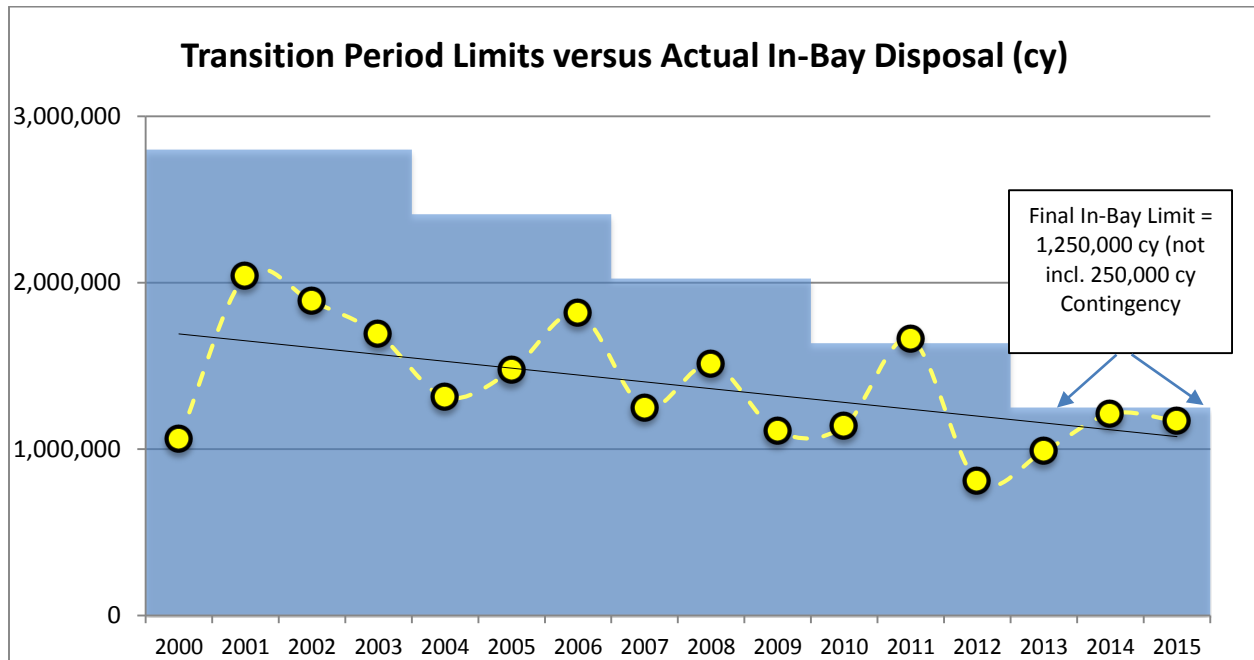


Figure 2. Actual in-Bay disposal volumes (yellow dots), compared to the transition period limits (2000-2012) and the final post-transition period disposal limit (2013-2015) (blue shading).

II. 2015 DREDGING AND PLACEMENT OVERVIEW

In 2015, 40 projects dredged a total of 3,141,084 cy of sediment from San Francisco Bay. As summarized in Figure 3 and Table 1, approximately 1.17 million cy (37% of the total volume dredged) was disposed at the four designated in-Bay dredged sediment disposal sites, while 1.25 million cy (40%) was beneficially reused and 0.72 million cy (23%) was disposed at SF-DODS. Of the sediment disposed at in-Bay dredged sediment disposal sites, 40% went to the Alcatraz Disposal Site (SF-11), 52% went to the San Pablo Bay Disposal Site (SF-10), 7% went to the Suisun Bay Disposal Site (SF-16), and 1% went to the Carquinez Strait Disposal Site (SF-9). Detailed volume information for 2015 is provided in Appendix 1 (summary by placement site) and Appendix 2 (summary by dredging project, including monthly disposal volumes).

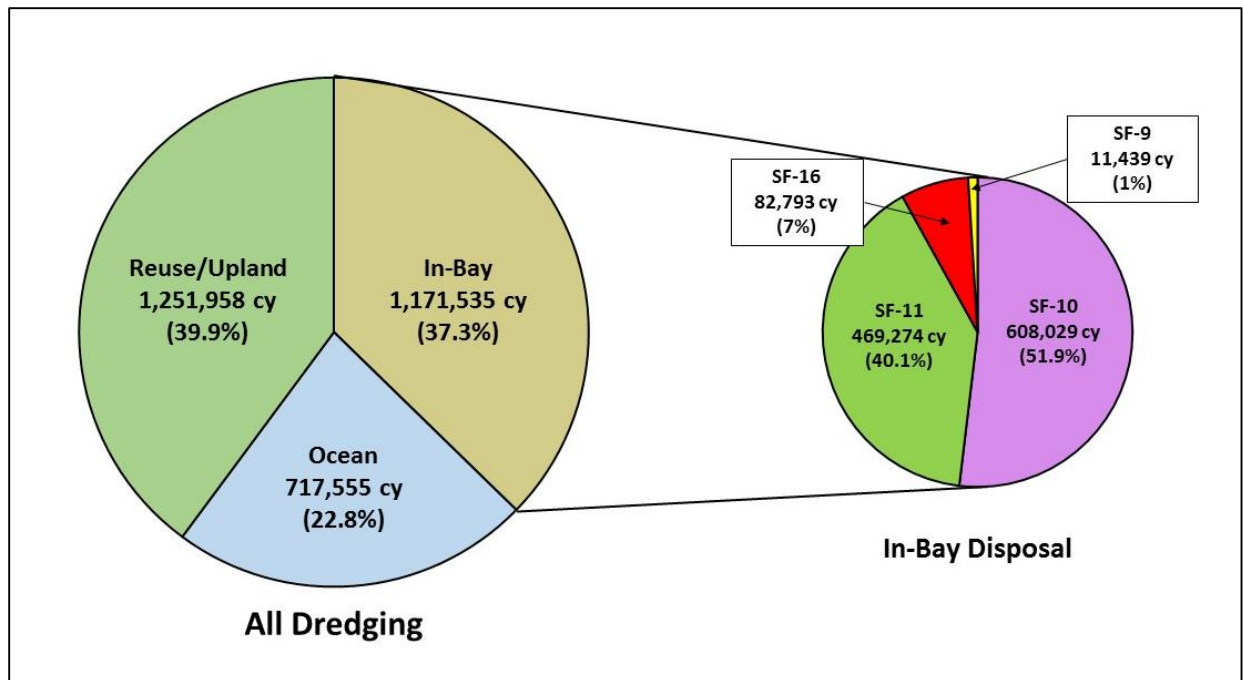


Figure 3. 2015 total dredging and placement summary, showing detail for In-Bay Disposal Sites

In-Bay Disposal

Although the LTMS Plan's in-Bay disposal percentage target (20%) was exceeded in 2015, the actual in-Bay disposal volume of 1.17 million cy did not exceed the 1.25 million cy annual limit. The annual in-Bay was not exceeded in 2013 or 2014 either (Table 1). Since the 3-year average in-Bay disposal volume (1.12 million cy per year) did not exceed the 1.25 million cy limit, mandatory allocations under the LTMS Management Plan are not triggered for 2017-2019, the next 3-year averaging period.

Total Dredging Volumes from 2000 through 2015									
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-yr in-Bay averages
2000	2,800,000	880,000	22.3%	2,294,676	58%	775,000	20%	3,949,676	
2001	2,800,000	2,041,936	56.1%	1,028,256	28%	566,679	16%	3,636,871	
2002	2,800,000	1,887,083	55.4%	650,051	19%	866,400	25%	3,403,534	
2003	2,800,000	1,890,000	51.8%	646,337	18%	1,113,814	31%	3,650,151	1,939,673
2004	2,412,500	1,312,829	52.0%	869,452	34%	341,000	14%	2,523,281	
2005	2,412,500	1,473,253	23.3%	4,718,716	75%	137,717	2%	6,329,686	
2006	2,412,500	1,816,866	42.0%	1,558,487	36%	954,456	22%	4,329,809	1,534,316
2007	2,025,000	1,249,338	28.8%	1,527,549	35%	1,554,362	36%	4,331,249	
2008	2,025,000	1,512,098	35.4%	2,587,094	61%	175,855	4%	4,275,047	
2009	2,025,000	1,107,859	28.6%	2,688,264	69%	72,289	2%	3,868,412	1,289,765
2010	1,637,500	1,139,780	56.5%	591,595	29%	285,460	14%	2,016,835	
2011	1,637,500	1,668,043	50.7%	971,368	30%	652,970	20%	3,292,381	
2012	1,637,500	821,153	31.5%	1,014,561	39%	772,760	30%	2,608,474	1,209,659
2013	1,250,000	987,268	31.1%	553,066	17%	1,632,515	51%	3,172,849	
2014	1,250,000	1,213,331	57.4%	770,618	36%	130,006	6%	2,113,955	
2015	1,250,000	1,171,535	37.3%	1,251,958	40%	717,555	23%	3,141,048	1,124,045
	Mean	1,385,773	39%	1,482,628	42%	671,802	19%	3,540,204	
	Total	22,172,372	39%	23,722,048	42%	10,748,838	19%	56,643,258	
	* Not including 250,000 cy Contingency Volume								

Table 1. Dredging and placement volumes under the LTMS program, 2000-2015. (Volumes shown are final volumes based on post-dredge surveys, which are sometimes not available for all projects by the time DMMO Annual Reports are published. Therefore, the volumes in this table may differ from those shown in individual Annual Reports.)

Beneficial Reuse and Upland Placement

In 2015, approximately 1.25 million cy of dredged sediment (40% of the total dredged) was beneficially reused or taken to upland placement sites. In all, six beneficial reuse sites were used by dredging project sponsors (Table 2). These sites range from large engineered sites to small upland placement sites. It is important to note that these sites have varying equipment, logistical, and sediment characteristic requirements. More detailed information each of the beneficial reuse sites that received dredged sediment in 2015 is provided below:

- Montezuma Wetland Restoration Project (MWRP)

As shown in Table 1, the majority (95.1%) of the sediment was taken to the MWRP. Approximately 1,190,130 cy of dredged sediment was placed at the MWRP in 2015 from ten maintenance dredging projects, of which 821,591 cy came from three USACE federal channel dredging projects: 333,337 cy from Richmond Inner Harbor, 290,763 cy from Redwood City Harbor, and 197,491 cy from Oakland Harbor. The remaining volume came from dredging projects at the Port of Oakland (142,277 cy), Chevron Richmond Long Wharf (89,786), Larkspur Ferry Terminal (73,076), Valero Refinery Terminal (36,061 cy), Amports Benicia Port Terminal (11,891 cy), Kiewit Infrastructure West (11,686), and Schnitzer Steel (3,792 cy).

Placement Location	Sediment Placed (cy)	% of Total Reuse/Upland
Montezuma Wetlands Restoration Project	1,190,130	95.1%
Cullinan Ranch Restoration Project	34,575	2.8%
Winter Island	4,227	0.3%
San Rafael Rock Quarry	10,346	0.8%
Napa Valley Marina Upland Site	10,700	0.8%
SF-8 Bar Channel Site Eastern Portion	1,927	0.2%
Total	1,251,958	100%

Table 2. Beneficial reuse or upland placement sites that received dredged sediment in 2015

- Cullinan Ranch Restoration Project

The Mare Island Dry Dock and Vallejo Ferry Terminal maintenance dredging projects placed 27,336 cy and 7,239 cy of dredged sediment, respectively, at the Cullinan Ranch Restoration Project site in the San Pablo Bay National Wildlife Refuge. In 2014, USACE, BCDC, and the Water Board revised their permits for tidal marsh habitat restoration to increase the volume of dredged sediment authorized for placement from 450,000 cy over 50 acres to 2.8 million cy over 290 acres of the 1,575-acre site.

- Winter Island Levee Placement

Mare Island Dry Dock also placed 4,227 cy at Winter Island to raise and reinforce the perimeter levee protecting managed waterfowl habitat. This island, located at the confluence of the Sacramento and San Joaquin Rivers, was sold to the California Department of Water Resources in 2016 and is no longer available for dredged material beneficial reuse.

- SF-8 Bar Channel Site, Eastern Portion (sand only)

Phillips 66 Rodeo Refinery Terminal maintenance dredging project placed 1,927 cy of dredged sediment within the eastern portion of SF-8. This site is considered beneficial reuse because the sand placed there nourishes the littoral cell.

- Upland Placement or Landfill Disposal

Napa Valley Marina placed 10,700 cy of fine-grain sediment at an adjacent upland site for agricultural use and 10,346 cy of sand dredged from the San Francisco Marina West Harbor's sand trap was placed at the San Rafael Rock Quarry.

Sediment Suitability for In-Bay Unconfined Aquatic Disposal

Just over 97% of all the sediments dredged in 2015 were suitable for unconfined aquatic disposal in the Bay (SUAD) (3,052,520 cy of the 3,141,048 cy total). In accordance with the LTMS Program, much of this material was beneficially reused. Only four projects dredged in 2015 included some sediment that was not suitable for unconfined aquatic disposal in the Bay (NUAD). The NUAD sediments were from Chevron Richmond Long Wharf, Port of Redwood City Berths 1-2, Port of Richmond Terminal 2, and Port of San Francisco Berth 35 East. In total, these projects generated 88,528 cy of NUAD sediment, or approximately 2.8% of the total volume dredged (Table 3). In each case, the sediments were not directly toxic in bioassays but were determined to be NUAD for the Bay based on sediment chemistry (for example because they exceeded a Total Maximum Daily Load (TMDL) concentration limit for PCBs or acceptable levels of PAHs) and restoration site acceptance criteria. However, in 2015 these sediments were all found to be suitable for disposal at SF-DODS.

Project	NUAD Volume (cy)	Reason NUAD	Placement Site
Chevron Richmond Long Wharf	2,896	PAHs	SF-DODS
Port of Redwood City Berths 1-2	29,741	PCBs	SF-DODS
Port of Richmond Terminal 2	14,500	PCBs	SF-DODS
Port of San Francisco Berths 35 E&W	41,391	PAHs	SF-DODS
Total	88,528		

Table 3. Projects dredged in 2015 with NUAD sediments

Dredging Equipment Used

Almost all of the dredging inside San Francisco Bay in 2015 was performed with clamshell dredges. USACE typically uses a government-owned hydraulic hopper dredge to maintain three federal channels: Richmond Outer Harbor, Pinole Shoal Channel, and Suisun Bay Channel. However, USACE's west coast hopper dredges were unavailable for deployment in San Francisco Bay in 2015, so all federal navigation channels within the Bay were dredged by contractors using clamshell dredge equipment. Only Napa Valley Marina used a hydraulic dredge to place material at its own upland placement site in 2015.

Environmental Work Windows

Environmental work windows encourage projects to work when sensitive species are not present (which varies depending on location but for many projects is either June 1 or August 1 through November 30). The work windows are established in the LTMS Programmatic Biological Opinions (BOs) issued by the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) and concurrence from the California Department of Fish and Wildlife (CDFW).

On July 9, 2015, NMFS issued an updated LTMS Programmatic Biological Opinion for salmon, steelhead, and green sturgeon¹. This update addresses new NMFS listed species (green sturgeon), modifies some environmental work windows (Coho salmon), and for the first time allows some projects to plan to work outside the established windows provided that the dredged sediment 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.

Environmental work windows applied to 38 of the 40 dredging projects conducted in 2015² (not including the Main Ship Channel). Most of these projects began work in or after the month of August, and 28 of them were completed entirely within their work windows. Eight of these projects (3 USACE and 5 other projects) were dredged partially outside the windows (Figure 4).

Of the 38 projects subject to the LTMS work windows, two projects at Mare Island Drydocks received approval to dredge a total of 13,556 cy outside their windows (in January after the closure of the Chinook salmon window, and in April before the August 1 opening of the delta smelt window in the Napa River). This material was beneficially reused at Winter Island and at Cullinan Ranch. Five other non-USACE projects (Aeolian Yacht Club, Larkspur Marina, Loch Lomond Marina, Lowrie Yacht Harbor, and Phillips 66 Rodeo Refinery Terminal) requested and received extensions from DMMO to perform minor amounts of dredging that could not be completed by the close of the salmonid and herring work windows. These non-USACE projects combined dredged just over 25,000 cy after the window closed on December 1. As detailed in Appendix 2, Aeolian's material dredged in December (15,472 cy) was placed at SF-11, and the material from Phillips 66 (743 cy) was placed at SF-8. The other 3 projects placed their material dredged in December (8,962 cy total) at SF-10.

In early 2015, USACE completed dredging carried over from 2014 for the Richmond and Oakland projects, before the window opened in 2015. These continuing dredging projects totaled 434,697 cy. In addition, 3 of USACE's 2015 projects planned ahead for likely dredging after the work windows closed in late 2015. These were the Oakland Inner and Outer Harbor, Redwood City Harbor, and Richmond Inner Harbor channels. Together, these 3 projects dredged 424,514 cy between December 1 and December 31 (see Appendix 2).³ Per the terms of the updated 2015 Programmatic Biological Opinion, all sediment dredged from these projects after November 30, 2015 was beneficially reused for tidal wetland restoration that benefits fish habitat.

¹ http://www.spn.usace.army.mil/Portals/68/docs/Dredging/LMTS/LTMS%20NMFS%20BiOp%207_9_2015.pdf

² Two projects, Valero Refinery and the NASA/AMES boat ramp in Sunnyvale, have separate consultations with the state and federal resource agencies and are not managed under the programmatic LTMS work windows. (The sediment from both of these projects went to beneficial reuse.)

³ USACE's Oakland project continued to dredge for several more months into 2016, as well. For a few weeks in early 2016, the Montezuma placement site was unable to accept material deliveries, and USACE diverted approximately 225,000 cy to SF-DODS during that period. Under the terms of the NMFS Biological Opinion, that volume was still "owed" to reuse within a year, and USACE ultimately sent sediment from the 2016 maintenance dredging of Richmond Inner Harbor channel to reuse. This situation will be discussed in more detail in the 2016 DMMO Annual Report.

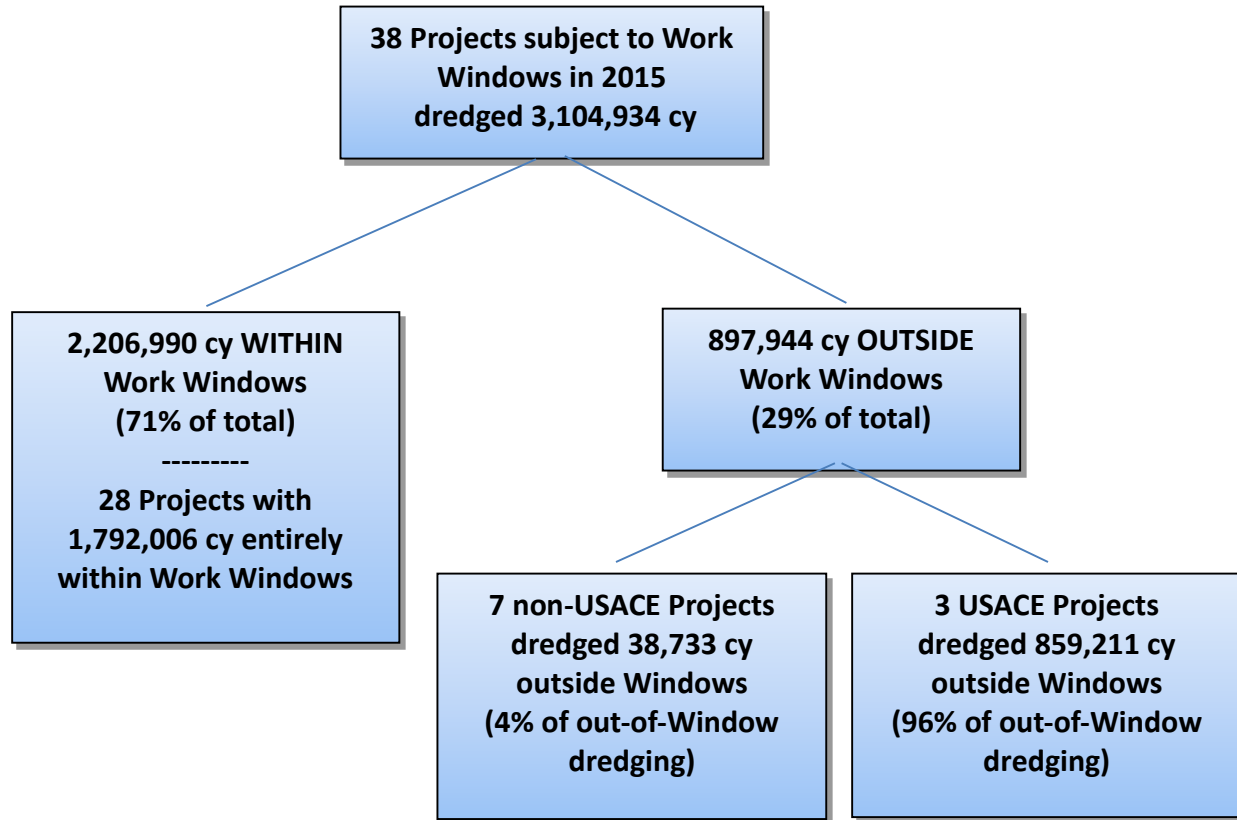


Figure 4. 2015 projects and dredge volumes relative to environmental work windows

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.

Two of the projects that were dredged in 2015, the Port of Redwood City Berths 3 & 4 and the berth at the Port of Richmond Terminal 2, had elevated contaminant levels in the sediment potentially exposed after dredging (the residual, represented by “z-layer” samples). In both cases, DMMO required an evaluation of the bioaccumulation potential of the sediment to determine whether additional contaminant-related management action was warranted. For the Port of Redwood City, evaluation of the potential bioaccumulation of PAH compounds in invertebrate test organisms indicated that relevant toxicity thresholds would not be exceeded. A similar analysis was performed for total DDT and total PCBs for the Port of Richmond project, and again showed that relevant toxicity thresholds would not be exceeded. Based on these additional assessments, both projects were approved to proceed without further management action.

The EFH agreement also includes minimization measures to protect eelgrass. Four non-USACE dredging projects in 2015 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: Clipper Yacht Harbor, Corinthian Yacht Club, Paradise Cay Homeowners marina and Paradise Cay Yacht Harbor. Portions of two USACE projects, Richmond Inner Harbor and Oakland Harbor, were also within 250 meters of eelgrass beds. 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.

Appendix 3 summarizes the non-USACE projects that triggered any provisions of the EFH agreement in 2015. Similarly, Appendix 4 summarizes the USACE dredging projects that triggered provisions of the EFH agreement.

III. RELATED ISSUES

DMMO Projects and Sediment Quality Database

LTMS funds were used to develop 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 now available online (www.dmmosfbay.org). The database currently contains sediment testing data from years 1990 to 2015, 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.

SediMatch

The San Francisco Bay Joint Venture, with DMMO and LTMS agency support, is developing a sediment placement site database and web tool to improve and increase the matching of dredging projects with appropriate beneficial reuse sites. The web tool is slated to launch in 2017, and the DMMO database will likely be linked to the SediMatch web tool once it is publicly available. The funds to support this effort were made available through a USEPA Water Quality Improvement Grant.

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 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).

V. CONTACTS AND LINKS

DMMO MEMBER AGENCIES' PRIMARY STAFF CONTACTS:

USACE	James Mazza	(415) 503-6775	james.c.mazza@usace.army.mil
BCDC	Brenda Goeden	(415) 352-3623	brenda.goeden@bcdca.gov
RWQCB	Beth Christian	(510) 622-2335	echristian@waterboards.ca.gov
EPA	Brian Ross	(415) 972-3475	ross.brian@epa.gov
SLC	Al Franzoia	(916) 574-0992	al.franzoia@slc.ca.gov

RESOURCE AGENCY CONTACTS:

CDFW	Arn Aarreberg (Bay Region)	(707) 576-2889	arn.aarreberg@wildlife.ca.gov
	Craig Weightman (Tributaries)	(707) 944-5500	craig.weightman@wildlife.ca.gov
	Jim Starr (Delta region)	(707) 944-5500	jim.starr@wildlife.ca.gov
USFWS	Ryan Olah (Bay region)	(916) 414-6625	Ryan_Olah@fws.gov
	Kim Squires (Delta region)	(916) 930-5634	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.dmmsfbay.org

LTMS WEBSITE: www.spn.usace.army.mil/Missions/DredgingWorkPermits/LTMS.aspx

LTMS 12-YEAR REVIEW:

www.spn.usace.army.mil/Missions/DredgingWorkPermits/LTMS/LTMSProgram12YearReviewProcess.aspx

PROGRAMMATIC EFH CONSULTATION AGREEMENT and MERCURY UPDATE:

www.spn.usace.army.mil/Portals/68/docs/Dredging/LMTS/LTMS%20EFH%20full%20signed%20agreement%20FINAL%206-9-2011.pdf

www.spn.usace.army.mil/Portals/68/docs/Dredging/LMTS/EFH_Modification_Mercury_Bioaccumulation_Testing.pdf

PROGRAMMATIC ESA CONSULTATION:

https://pcts.nmfs.noaa.gov/pcts-web/dispatcher/trackable/WCR-2014-1599?overrideUserGroup=PUBLIC&referrer=%2fpcts-web%2fpublicAdvancedQuery.pcts%3fsearchAction%3dSESSION_SEARCH

APPENDIX 1

2015 Dredging Volumes by Placement Type (excluding the Main Ship Channel)

Placement Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total (cy)
SF-9, Carquinez Strait	0	0	0	0	0	0	0	8,829	0	2,610	0	0	11,439
SF-10, San Pablo Bay	0	0	0	0	0	7,196	44,980	41,100	117,952	357,990	29,847	8,962	608,027
SF-11, Alcatraz	0	0	0	0	0	256,075	111,439	23,589	19,405	19,149	24,147	15,472	469,276
SF-16, Suisun Bay	0	0	0	0	0	0	0	0	0	13,212	69,581	0	82,793
TOTAL in-Bay	0	0	0	0	0	263,271	156,419	73,518	137,357	392,961	123,575	24,434	1,171,535
Reuse, Upland, etc.	295,123	0	0	9,329	0	0	0	80,170	138,636	147,377	143,991	437,332	1,251,958
SF-DODS, Deep Ocean Disposal Site	37,221	85,901	44,665	0	0	0	0	124,513	32,620	77,332	315,303	0	717,555
GRAND TOTAL	332,344	85,901	44,665	9,329	0	263,271	156,419	278,201	308,613	617,670	582,869	461,766	3,141,048

APPENDIX 2
2015 Dredging Volumes by Project

Project	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2015 'in-situ' VOL. (cu yd)
AEOLIAN YACHT CLUB; SF-11	0	0	0	0	0	0	0	0	0	0	2,642	15,472	18,114
AQUA VISTA DRIVE #16, 20, 24; SAN RAFAEL CREEK; SF-10	0	0	0	0	0	0	0	0	0	0	1,241	0	1,241
BENICIA MARINA; SF-9	0	0	0	0	0	0	0	8,829	0	0	0	0	8,829
BENICIA PORT TERMINAL COMPANY, AMPORT; SF-9	0	0	0	0	0	0	0	0	0	2,610	0	0	2,610
BENICIA PORT TERMINAL COMPANY, AMPORT; Montezuma	0	0	0	0	0	0	0	0	0	11,891	0	0	11,891
BRISBANE MARINA	0	0	0	0	0	53,528	17,378	12,004	5,145	0	0	0	88,055
CHEVRON RICHMOND LONG WHARF; SF-10	0	0	0	0	0	0	0	0	13,053	0	0	0	13,053
CHEVRON RICHMOND LONG WHARF; Ocean	0	0	0	0	0	0	0	0	0	2,896	0	0	2,896
CHEVRON RICHMOND LONG WHARF; Montezuma	0	0	0	0	0	0	0	0	70,706	18,573	507	0	89,786
CLIPPER YACHT HARBOR; SF-11	0	0	0	0	0	0	0	0	0	11,237	11,236	0	22,473
CORINTHIAN YACHT CLUB; SF-11	0	0	0	0	0	0	8,092	6,908	3,800	0	0	0	18,800
KIEWIT INFRASTRUCTURE WEST COMPANY; Montezuma	0	0	0	0	0	0	0	11,686	0	0	0	0	11,686
LARKSPUR FERRY TERMINAL; SF-10	0	0	0	0	0	0	32,817	31,171	68,157	16,280	0	0	148,425
LARKSPUR FERRY TERMINAL; Ocean	0	0	0	0	0	0	0	124,513	32,620	0	0	0	157,133
LARKSPUR FERRY TERMINAL; Montezuma	0	0	0	0	0	0	0	0	62,580	10,496	0	0	73,076
LARKSPUR MARINA; SF-10	0	0	0	0	0	0	0	0	0	1,374	10,532	458	12,364
LARKSPUR MARINA; SF-11	0	0	0	0	0	0	0	0	0	0	458	0	458
LOCH LOMOND MARINA; SF-10	0	0	0	0	0	7,198	12,163	9,929	11,377	8,398	9,805	7,198	66,068
LOWRIE YACHT HARBOR; SF-10	0	0	0	0	0	0	0	0	0	0	0	1,306	1,306
MARE ISLAND DRYDOCK; Winter Island	4,227	0	0	0	0	0	0	0	0	0	0	0	4,227
MARE ISLAND DRYDOCK; Cullinan Ranch/Reuse	0	0	0	9,329	0	0	0	18,007	0	0	0	0	27,336
MARIN ROWING ASSOCIATION; SF-10	0	0	0	0	0	0	0	0	0	0	2,007	0	2,007
MARIN YACHT CLUB; SF-10	0	0	0	0	0	0	0	0	0	20,352	4,468	0	24,820
MARINA VISTA HOMEOWNERS ASSOCIATION; SF-10	0	0	0	0	0	0	0	0	4,567	2,503	0	0	7,070
Red = SF-8	Orange = SF-9 (Carquiniz)			Brown = SF-10 (San Pablo)				Blue = SF-11 (Alcatraz)					
Pink = SFDODS (Deep Ocean Site)	Green = Upland/Reuse			Gray = SF-16 (Suisun Bay)				Aqua = SF-17 (Ocean Beach)					

APPENDIX 2, continued
2015 Dredging Volumes by Project

Project	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2015 'in-situ' VOL. (cu yd)
NAPA VALLEY MARINA; Upland/Reuse	0	0	0	0	0	0	0	5,350	5,350	0	0	0	10,700
NASA AMES SUNNYVALE, Boat Ramp; Upland/Reuse	0	0	0	0	0	0	0	53	0	0	0	0	53
PARADISE CAY HOMEOWNERS; SF-11	0	0	0	0	0	0	3,256	1,727	0	0	0	0	4,983
PARADISE CAY YACHT HARBOR; SF-11	0	0	0	0	0	0	0	2,950	10,460	7,912	313	0	21,635
PHILLIPS 66 (CONOCO), RODEO TERMINAL; SF-8	0	0	0	0	0	0	0	0	0	0	1,184	743	1,927
POINT SAN PEDRO ROAD #100-110; SAN RAFAEL CRK; SF-10	0	0	0	0	0	0	0	0	0	0	1,794	0	1,794
PORT OF OAKLAND, BERTH Maintenance; Montezuma	0	0	0	0	0	0	0	45,074	0	95,416	1,787	0	142,277
PORT OF REDWOOD CITY, Wharves; SF-11	0	0	0	0	0	0	0	0	0	0	9,498	0	9,498
PORT OF REDWOOD CITY, Wharves; Ocean	0	0	0	0	0	0	0	0	0	0	34,705	0	34,705
PORT OF RICHMOND, TERMINAL 2; Ocean	0	0	0	0	0	0	0	0	0	0	14,500	0	14,500
PORT OF SAN FRANCISCO, PIER 35	0	0	0	0	0	0	0	0	0	0	41,391	0	41,391
PORT OF SAN FRANCISCO, PIERS 94/96;	0	0	0	0	0	4,798	0	0	0	0	0	0	4,798
STRAWBERRY CHANNEL; SF-11	0	0	0	0	0	6,065	3,056	0	0	0	0	0	9,121
SAN FRANCISCO MARINA West Basin; San Rafael Rock Quarry/Upland	0	0	0	0	0	0	0	0	0	0	10,346	0	10,346
SCHNITZER STEEL; Montezuma	0	0	0	0	0	0	0	0	0	3,762	0	0	3,762
VALERO REFINERY TERMINAL;	23,986	0	0	0	0	0	0	0	0	0	0	12,075	36,061
VALLEJO FERRY TERMINAL; Cullinan Ranch/Reuse	0	0	0	0	0	0	0	0	0	7,239	0	0	7,239
Red = SF-8	Orange = SF-9 (Carquiniz)				Brown = SF-10 (San Pablo)				Blue = SF-11 (Alcatraz)				
Pink = SFDODS (Deep Ocean Site)	Green = Upland/Reuse				Gray = SF-16 (Suisun Bay)				Aqua = SF-17 (Ocean Beach)				

APPENDIX 2, continued
2015 Dredging Volumes by Project

Project	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2015 'in-situ' VOL. (cu yd)
USACE, MAIN SHIP CHANNEL; SF-8	0	0	0	0	(147,391)	0	0	0	0	0	0	0	(147,391)
USACE, MAIN SHIP CHANNEL; SF-17	0	0	0	0	(202,744)	0	0	0	0	0	0	0	(202,744)
USACE, OAKLAND INNER & OUTER HARBOR; Montezuma	101,474	0	0	0	0	0	0	0	0	0	33,066	62,951	197,491
USACE, OAKLAND INNER & OUTER HARBOR; Ocean	0	0	0	0	0	0	0	0	0	56,736	50,657	0	107,393
USACE, PINOLE SHOAL CHANNEL;	0	0	0	0	0	0	0	0	20,798	76,861	0	0	97,659
USACE, REDWOOD CITY HARBOR; SF-11	0	0	0	0	0	191,682	79,657	0	0	0	0	0	271,339
USACE, REDWOOD CITY HARBOR; Montezuma	0	0	0	0	0	0	0	0	0	0	0	290,763	290,763
USACE, RICHMOND INNER HARBOR; Montezuma	165,436	0	0	0	0	0	0	0	0	0	97,101	70,800	333,337
USACE, RICHMOND INNER HARBOR; Ocean	37,221	85,901	44,665	0	0	0	0	0	0	17,700	174,050	0	359,537
USACE, RICHMOND OUTER HARBOR; SF-10	0	0	0	0	0	0	0	0	0	232,222	0	0	232,222
USACE, SUISUN BAY CHANNEL; SF-16	0	0	0	0	0	0	0	0	0	13,212	69,581	0	82,793
TOTAL	332,344	85,901	44,665	9,329	0	263,271	156,419	278,201	308,613	617,670	582,869	461,766	3,141,048
** Dredging continued into 2016													
Red = SF-8	Orange = SF-9 (Carquiniz)			Brown = SF-10 (San Pablo)				Blue = SF-11 (Alcatraz)					
Pink = SFDODS (Deep Ocean Site)	Green = Upland/Reuse			Gray = SF-16 (Suisun Bay)				Aqua = SF-17 (Ocean Beach)					

Appendix 3. 2015 Non-USACE Maintenance Dredging Projects LTMS Programmatic EFH Agreement Compliance							
Project Name	Placement Site	USACE File Number	Dredge Date	Permitted Area (Acres)	Dredge Area (Acres)	Dredge Volume (cy)	EFH Compliance Issues
Projects With Eelgrass Present, or Residual Sediment Contamination Issues							
Clipper Yacht Harbor	SF-11	2012-00197	Oct. - Nov.	26	12.67	22,473	Eelgrass within 250 meters of dredging footprint. Silt curtain deployed according to eelgrass protection plan.
Corinthian Yacht Club	SF-11	2014-00453N	July-Sep.	3.5	3.5	18,800	Eelgrass within 250 meters of dredging footprint. Silt curtain deployed according to eelgrass protection plan.
Paradise Cay Homeowners (CSA 29)	SF-11	29020N	Jul. - Aug.	10.8	2.23	4,983	Eelgrass within 250 meters of dredging footprint. Silt curtain deployed according to eelgrass protection plan.
Paradise Cay Yacht Harbor, Episode 1	SF-11	2015-00034N	Aug.- Nov.	9.75	9.75	21,635	Eelgrass within 250 meters of dredging footprint. Silt curtain deployed according to eelgrass protection plan.
Port of Redwood City Berths 1 - 4 Maintenance Dredging	SF-DODS, SF-11	2015-00058S	Nov.	5.2	5.17	44,203	Total PAHs in Berths 3 & 4 z-layer exceeded BT. TBP calculation using highest concentration sample predicted invertebrate tissue would not exceed lowest applicable TRV. No eelgrass within 250 meters.
Port of Richmond Terminal 2, Ep. 1	SF-DODS	2015-00092S	Nov.	2.1	1.9	14,500	Total DDT and total PCBs in z-layer exceeded BTs. TBP calculations using highest concentration samples predicted invertebrate tissue would not exceed lowest applicable TRVs. No eelgrass within 250 meters.
SF-8 = San Francisco Bar Channel			CRRP = Cullinan Ranch Restoration Project				
SF-9 = Carquinez Disposal Site			SRRQ = San Rafael Rock Quarry				
SF-10 = San Pablo Bay Disposal Site			BT = Bioaccumulation Testing Trigger				
SF-11 = Alcatraz Disposal Site			TBP = Theoretical Bioaccumulation Potential				
SF-DODS = San Francisco Deep Ocean Disposal Site			TRV = Toxicity Reference Value				
WI = Winter Island							
MWRP = Montezuma Wetlands Restoration Project							

Appendix 3, cont. 2015 Non-USACE Maintenance Dredging Projects						
LTMS Programmatic EFH Agreement Compliance						
Project Name	Placement Site	USACE File Number	Dredge Date	Permitted Area (Acres)	Dredge Area (Acres)	Dredge Volume (cy)
Projects With No Eelgrass Present and No Residual Sediment Contamination Issues						
100 & 110 Pt. San Pedro Road	SF-10	2014-00042N	Nov.	0.3	0.3	1,794
Aeolian Yacht Club Ep. 3	SF-11	290290	Nov. to Dec.	5	0.21	18,144
Amports - Benicia Port Terminal	MWRP, SF-9	2014-00033S	Oct.	8.79	2.89	14,501
Aqua Vista Homeowners, Ep. 2	SF-10	2012-00209N	Nov.	0.38	0.38	1,241
Benicia Marina	SF-9	2014-00061	Aug.	5.72	5.72	8,829
Brisbane Marina	SF-11	2014-00396	Jun.- Sep.	37.65	37.65	88,055
Chevron Long Wharf, Ep. 6	SF-DODS, SF-10, MWRP	2009-00052	Sept.- Nov.	44.1	13.97	105,735
Kiewit Infrastructure West Company Dredging, Ep. 1	MWRP	2014-00429S	Aug.	2	0.8	11,686
Larkspur Ferry Terminal Berths, Turning Basin, and Approach Channel, Ep. 2	SF-10, SF-DODS, and MWRP	2009-00308N	Jul. - Oct.	72	68	378,634
Larkspur Marina Maintenance Dredging, Ep. 1	SF-10, SF-11	2015-00036N	Oct. - Nov.	11.36	7.23	12,822
Loch Lomond	SF-10	2013-00422N	Jun. - Dec.	22.9	15.2	66,068
Lowrie Yacht Harbor	SF-10	2009-00245N	Dec.	3.7	0.094	1,306
Mare Island Dry Dock	Winter Island, CRRP	2008-00311	Jan., Apr., Aug.	18.31	4.49	31,563
Marin Rowing Assoc	SF-10	2005-298260	Nov.	0.21	0.21	2,007
Marin Yacht Club	SF-10	2015-00066N	Oct.- Nov.	8.54	3.4	24,820
Marina Vista Canal	SF-10	2010-00160N	Jun - Aug.	3.2	2.1	7,070
Napa Valley Marina	Upland	2012-00308N	Aug. - Sep.	8.8	1.6	10,700
NASA/Ames (Sunnyvale) Boat Ramp	Upland	2015-00020S	Aug.	0.02	0.02	53
Phillips 66 (Rodeo)	SF-8	2014-00431	Nov. - Dec.	50.5	6.72	1,927
Port of Oakland Berths 22, 23, 24, 25/26, 33, 57, 58, 59, 67, 68, Ep. 3	MWRP	2014-00090S	Oct. - Nov.	30.3	18	98,013
Port of Oakland Berths 30, 32, 35, 37, 55, and 56, Ep. 2	MWRP	2014-00090N	Aug.	20.33	12.63	44,264
Port of San Francisco, Berth 35	SF-DODS	2013-00333S	Nov.	20	12	41,391
Port of San Francisco, Berth 94/96	SF-11	2013-00333S	June	5.5	1.4	4,798
San Francisco Marina West Basin Sediment Trap Dredging	SRRQ	2008-00074S	Nov.	1.88	0.91	10,346
Schinitzer Steel	MWRP	2010-00246	Oct.	2.2	0.63	3,762
Strawberry Channel	SF-11	2011-00237	Jun. - Jul.	17.5	2.08	9,121
Valero Refining Company	MWRP, Knock Down	2012-00248	Jan.: Dec.	5.48	3	37,511
Vallejo Ferry Terminal Ep. 1	CRRP	2013-00423S	Oct.	2.97	2.97	7,239

SF-8 = San Francisco Bar Channel
 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
 WI = Winter Island
 MWRP = Montezuma Wetlands Restoration Project

CRRP = Cullinan Ranch Restoration Project
 SRRQ = San Rafael Rock Quarry
 BT = Bioaccumulation Testing Trigger
 TBP = Theoretical Bioaccumulation Potential
 TRV = Toxicity Reference Value

APPENDIX 4

2015 Federal Projects EFH Compliance Summary

Project Name	Placement Site	Dredge Type	Dredge Month(s)	Total Project Area (Acres)	Area Dredged (Acres)	Volume Dredged (CY)	EFH Compliance Issues
Eelgrass or other Aquatic Vegetation Present							
Richmond Inner Harbor	MWRP and SF-DODS	Clamshell	Jan. - Mar. and Oct. - Nov.	280.8	137.69	692,874	Eelgrass within 250 meters of dredging footprint. Eelgrass surveys and impact analysis completed. Determination: no adverse effects to eelgrass.
Oakland Inner and Outer Harbor	MWRP and SF-DODS	Clamshell	Oct. - Dec.	776.10	231.38	283,684	Eelgrass within 250 meters of dredging footprint. Eelgrass surveys and impact analysis completed. Determination: no adverse effects to eelgrass.
No Eelgrass Present							
S.F. Main Ship Channel	SF-8 and SF-17	Hopper	May	1203.59	51.07	350,135	No eelgrass within 250 meters. No EFH issues associated with episode.
Richmond Outer Harbor	SF-10	Hopper, Clamshell	Oct.	372.91	54.65	232,222	No eelgrass within 250 meters. No EFH issues associated with episode.
Pinole Shoal Channel	SF-10	Hopper	Sep. - Oct.	879.07	21.43	97,659	No eelgrass within 250 meters. No EFH issues associated with the episode.
Suisun Bay Channel - New York Slough Bulls Head Reach (BHR)	SF-16	Hopper	Oct. - Nov.	831.64	7.20	82,793	No eelgrass within 250 meters. No EFH issues associated with the episode.
Redwood City Harbor	MWRP and SF-11	Clamshell	Jun. - Jul. and Dec.	209.04	102.93	562,102	No eelgrass within 250 meters. No EFH issues associated with the episode.