

Dredged Material Management Office (DMMO)
Dredging and Placement of Dredged Material
in San Francisco Bay
January-December 2016 Report



Photo: Port of Redwood City 2015, BCDC

December 2017

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**Dredged Material Management Office
Dredging and Placement of Dredged Material in San Francisco Bay
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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. 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 resources agencies, 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.

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.**

The DMMO generally meets twice a month on Wednesdays, beginning at 11 am and the meetings are open to the public. The USACE, as the DMMO host, posts the meeting schedules and agendas on the DMMO website and sends electronic copies of the agendas to interested parties and pertinent resources agencies. The DMMO reviews and analyzes dredging project test results as well and project information such as compliance with environmental work windows and placement site volume targets set forth in the LTMS Management Plan. The dredging data is provided in the DMMO annual reports the year following the work, and can be found, along with guidance documents and other DMMO background information, 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 by the BCDC, USACE, EPA, the Water Board, and SLC, in response to concerns regarding potential direct, indirect and cumulative impacts from dredging and dredged sediment disposal to water quality, wildlife and beneficial uses of San Francisco Bay. As part of the program development, the agencies evaluated a range of alternatives for integrated management of dredging and dredged sediment placement¹, and once complete, advanced and certified a programmatic EIS/EIR that provide the environmental analysis for the LTMS Program. The selected, environmentally preferred alternative from the programmatic EIS/EIS identified 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. This alternative was further developed and adopted by the partner agencies via the LTMS Management Plan². As part of the LTMS Management Plan, the DMMO coordinates dredging and dredged sediment disposal and placement throughout the Bay Region.

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 of sediment (cy) 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, 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 were averaged, and the average volumes remained below the transition period limits.

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/

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.

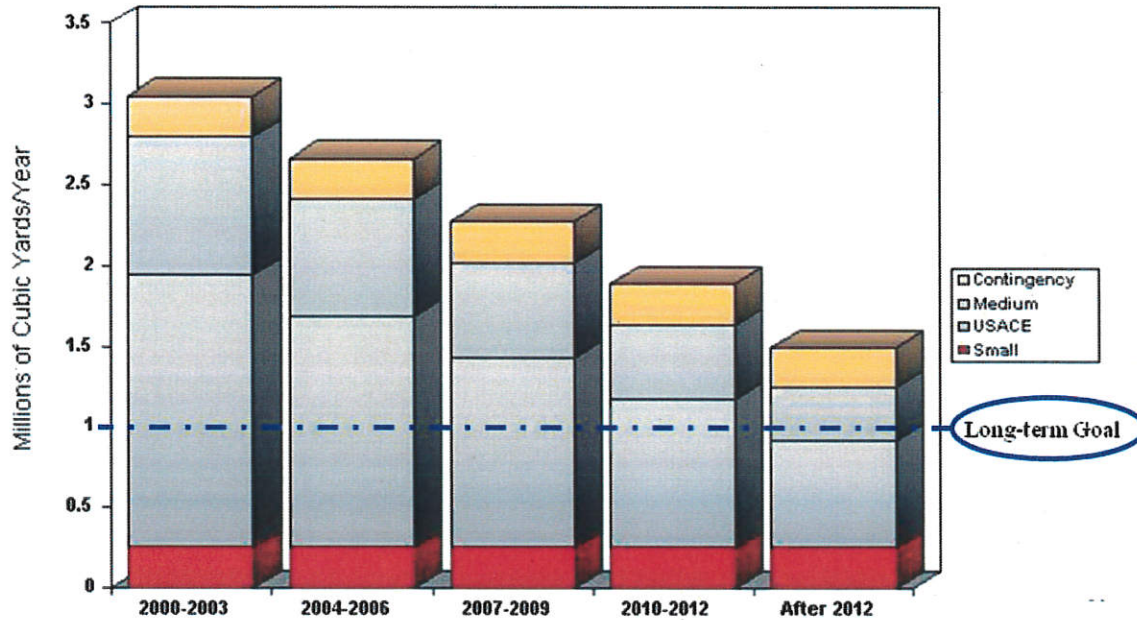


Figure 1. The LTMS Transition Period, showing the in-Bay disposal volume limit decreases that occurred every three years until the end of 2012. The Transition Period is now complete, and the final annual in-Bay limit of 1.25 million cy is in place.

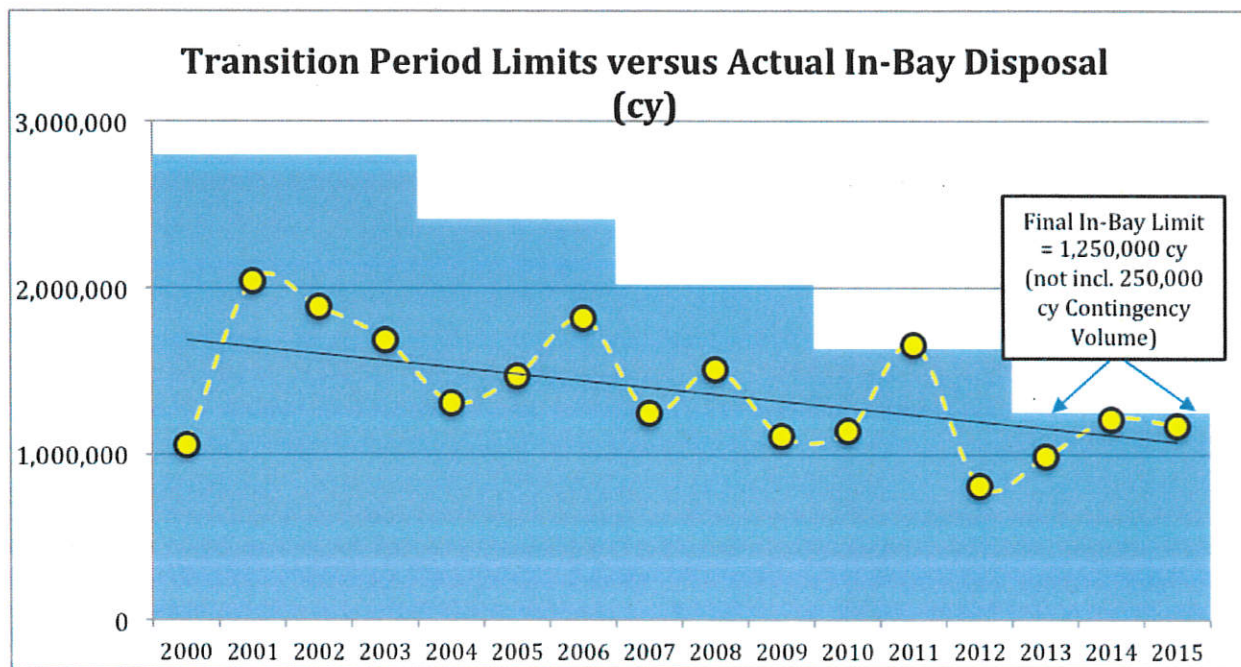


Figure 2. Actual in-Bay disposal volumes (yellow dots), compared to the transition period limits (2000-2012) and the final post-transition period disposal limit (2013-2015) (blue shading).

II. 2016 DREDGING AND PLACEMENT OVERVIEW

In 2016, 28 projects dredged a total of 2,728,769 cy of sediment from San Francisco Bay. As summarized in Figure 3 and Table 1, a total of 852,049 cy (31% of the total volume dredged) was disposed at three designated in-Bay dredged sediment disposal sites, while 1.1 million cy (41%) was beneficially reused and 758,887 cy (28%) was disposed at SF-DODS. Of the sediment disposed at the four in-Bay disposal sites, 628,594 cy (74%) went to the Alcatraz Disposal Site (SF-11); 164,259 cy (19%) went to the San Pablo Bay Disposal Site (SF-10); and 59,196 cy (7%) went to the Carquinez Strait Disposal Site (SF-9). The Suisun Bay Disposal Site (SF-16) was not used in 2016. Detailed volume information for 2016 is provided in Appendix 1 (summary by placement site) and Appendix 2 (summary by dredging project, including monthly disposal volumes).

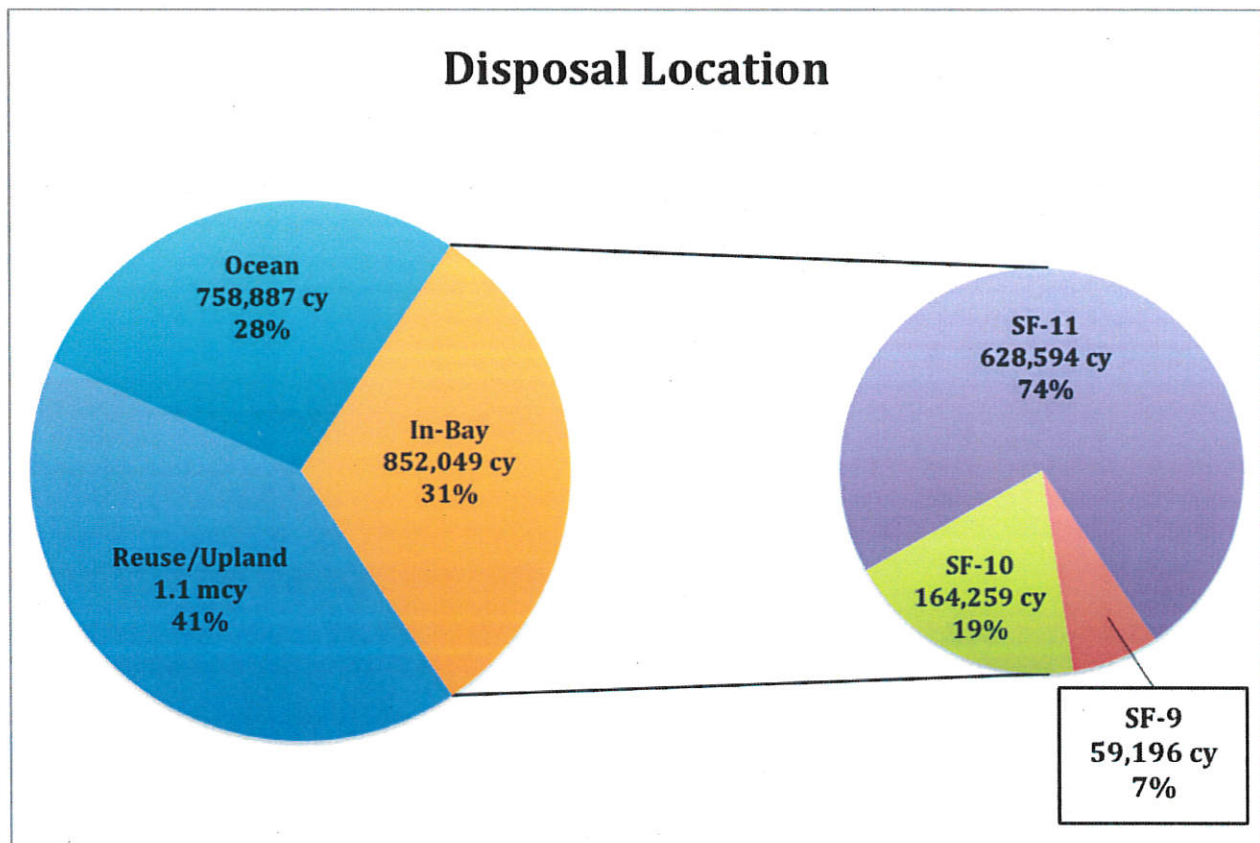


Figure 3. 2016 total dredging and placement summary, showing detail for In-Bay Disposal Sites.

In-Bay Disposal

Although the LTMS Plan's 20% in-Bay disposal target was exceeded in 2016, the actual in-Bay disposal volume of 852,049 cy did not exceed the 1.25 million cy annual limit. In-Bay disposal volumes in 2017 and 2018 will be averaged with the 2016 volumes to create the next average period (Table 1).

Dredging Volumes Under LTMS, 2000 through 2017 (cy)*									v11/8/2017 corrected
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	58.1%	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	
2017	1,250,000								
2018	1,250,000								
	Mean	1,354,378		1,461,169		676,925		3,492,472	
	Total	23,024,421	38.8%	24,839,881	41.8%	11,507,725	19.4%	59,372,027	

* Final volumes based on post-dredge surveys. May differ from volumes published in individual DMMO Annual Reports.

** Not including 250,000 cy Contingency Volume

Table 1. Dredging and placement volumes under the LTMS program, 2000-2016.

Beneficial Reuse and Upland Placement

In 2016, approximately 1.1 million cy of dredged sediment (41% of the total dredged) was beneficially reused or taken to upland placement sites. Eight 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 for each of the beneficial reuse sites that received dredged sediment in 2016 is provided below:

Placement Location	Sediment Placed (cy)	% of Total Reuse/Upland
Montezuma Wetlands Restoration Project	691,087	62%
Cullinan Ranch Restoration Project	259,992	23%
Winter Island	66,146	5.6%
San Rafael Rock Quarry	17,002	1.5%
Napa Valley Marina Upland Site	6,950	0.6%
Imola Avenue Upland Site	30,971	3%
Napa Partners Development Property	31,739	3%
SF-8 Bar Channel Site, Eastern Portion	13,947	1.3%
Total	1,117,834	100%

Table 2. Beneficial reuse or upland placement sites that received dredged sediment in 2016

- Montezuma Wetland Restoration Project (MWRP)

In 2016, the majority (62%) of the beneficially reused dredged sediment, approximately 691,000 cy, was taken to the MWRP. The sediment came from eight maintenance dredging projects: Most of the volume (559,569 cy) came from two USACE federal channel dredging projects - 503,823 cy from Oakland Harbor and 55,746 cy from Redwood City Harbor. The remaining volume came from dredging projects at the Port of San Francisco Berth 35 East, 54,065 cy; Chevron Richmond Long Wharf, 30,852 cy; WETA Central Bay Facility, 29,344 cy; Phillips 66 Rodeo Terminal, 3,322 cy; Amports Benicia Port Terminal, 13,125 cy; and the last disposal from the Port of Redwood City's 2015 dredge project, 810 cy.

- Cullinan Ranch Restoration Project

In 2014, USACE, BCDC, and the Water Board revised their permits for this tidal marsh habitat restoration, increasing 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. The USACE federal channel dredging project at Richmond Inner Harbor provided the most dredged material, 219,946 cy, to the Cullinan Ranch Restoration Project site in the San Pablo Bay National Wildlife Refuge. The Mare Island Dry Dock and Paradise Cay Yacht

Harbor maintenance dredging projects placed 36,170 cy and 3,876 cy of dredged sediment, respectively.

- Winter Island Levee Placement

Winter Island, located at the confluence of the Sacramento and San Joaquin rivers, was sold to the Department of Water Resources in 2016 and is no longer available as a beneficial reuse site for dredged material. Valero and the USACE Oakland Inner and Outer Harbor projects were the last to dispose dredged material at Winter Island before it was sold. In March and April 2016, USACE disposed 62,159 cy of sediment at Winter Island and in May, Valero placed 3,987 cy of sediment there to raise and reinforce the perimeter levee protecting managed waterfowl habitat.

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

In 2016, Phillips 66 Rodeo Refinery Terminal and San Francisco Marina West Basin maintenance dredging projects respectively placed 1,914 cy and 12,033 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. The western section of SF-8 is used solely by USACE. In 2016 the USACE hopper dredge the *Essayons* dredged the Bay's Main Ship Channel and disposed 5,396 cy of sediment at SF-8.

- Napa River Upland Sites

Two upland beneficial reuse disposal sites were used by USACE during their dredging of the Napa River navigation channel in 2016. The Imola Avenue upland disposal site and the former Napa Pipe property, now known as the Napa Partners Development Property, are both adjacent the river and in the vicinity of the dredge footprint. Over the course of four months the USACE contractor, Ahtna Engineering, hydraulically and mechanically dredged and placed 30,971 cy of sediment at Imola Avenue and 31,739 cy at the Napa Partners Development Property disposal area.

- Upland Placement

Napa Valley Marina placed 6,950 cy of fine-grain sediment at an adjacent upland site for agricultural use; and 17,002 cy of sediment dredged from the San Francisco Marina West Basin sand trap was placed at the San Rafael Rock Quarry.

Sediment Suitability for In-Bay Unconfined Aquatic Disposal

Approximately 97% of all sediment dredged in 2016 was suitable for unconfined aquatic disposal in the Bay (SUAD) (2,634,413 cy of the 2,728,769 cy total). In accordance with the LTMS Program, much of this material was beneficially reused. Five projects dredged in 2016 included some sediment that was not suitable for unconfined aquatic disposal in the Bay (NUAD). The NUAD sediments originated from Blue Water Yacht Harbor, Clipper Yacht Harbor, WETA Central Bay Operations and Maintenance Facility, the Port of Oakland, and Redwood City Harbor. In total, these projects generated 94,356 cy of NUAD sediment, or approximately 3% of the total volume dredged (Table 3). In each case, the sediment was not directly toxic in bioassays but were determined to be NUAD for the Bay based on sediment chemistry (e.g. they exceeded a Total Maximum Daily Load (TMDL) concentration limit) and restoration site acceptance criteria.

Project	NUAD Volume (cy)	Reason NUAD	Placement Site
Blue Water Yacht Harbor	7,051	Mercury, PCB	SFDODS
Clipper Yacht Harbor	8,450	PCB	SFDODS
WETA Central Bay Operations and Maintenance Facility	8,661	Mercury, PCB	MWRP
Port of Oakland Berths 60, 61, 62, 63	10,094	PCB	SF-DODS
Redwood City Harbor (USACE)	60,100	PCB	SFDODS/MWRP
Total	94,356		

Table 3. Projects dredged in 2016 with NUAD sediments

Dredging Equipment Used

Almost all of the dredging inside the Bay in 2016 was performed with clamshell dredges. The USACE historically used a government-owned hydraulic hopper dredge to maintain three federal channels in addition to the main ship channel: Richmond Outer Harbor, Pinole Shoal Channel, and Suisun Bay Channel. However, due to the decline of Delta smelt, the USACE has not been able to secure an incidental take permit from the USFWS for use of a hydraulic dredge in Suisun Channel in recent years. As a result, USACE has contracted for mechanical dredging of this channel. (However, the Suisun Bay Channel was not dredged at all in 2016 due to contracting issues). The USACE's west coast hopper dredge, the *Essayons*, was deployed in San Francisco Bay in 2016 to dredge the main ship channel, Pinole Shoal and Richmond Outer Harbor only. The four remaining federal navigation channels, Richmond Inner Harbor, Oakland Inner/Outer Harbors, and Redwood City Harbor, were dredged with a clamshell dredge. Projects on the Napa River project were the exception in 2016; the USACE Napa River navigation channel dredging was conducted by Ahtna Engineering using hydraulic and mechanical dredges; and the privately-owned Napa Valley Marina used a hydraulic dredge to place sediment at its own upland placement site.

In addition to the maintenance of the navigation channels, in 2016 the *Essayons* performed test dredging in Pinole Shoal after it underwent routine repairs/maintenance at the Mare Island Dry Dock. During these sea trials the *Essayons* dredged 2,855 cy in two trails and disposed of the sediment at SF-10. Because this activity took place outside of the environmental work windows, it is considered "owed" to beneficial reuse per the NMFS amended 2015 LTMS Programmatic Biological Opinion³, and the equivalent volume will be placed by USACE at a beneficial reuse site in 2017.

³ Available in the Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region. www.spn.usace.army.mil/Missions/Dredging-Work-Permits/LTMS/

Environmental Work Windows

As the result of programmatic consultations on the LTMS Program, environmental work windows 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 lasts through November 30 of each year. On July 9, 2015, NMFS issued an amended LTMS Programmatic Biological Opinion for salmon, steelhead, and green sturgeon⁴. This update addresses green sturgeon and modifies some environmental work windows (Coho salmon). For the first time, the amended biological opinion 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 27 of the 28 dredging projects conducted in 2016⁵. Most of these projects began work in or after the month of July, and 18 of them were completed entirely within their work windows. Ten of the projects (4 USACE and 6 other projects) were dredged partially outside the windows (Figure 4).

Of the 27 projects subject to the environmental work windows, five non-USACE projects (Benicia Marina, Larkspur Marina, Mare Island Dry Dock, San Francisco Marina West Basin, and Port of Redwood City) had unforeseen delays and 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 18,839 cy after the window closed on December 1. As detailed in Appendix 2, Benicia Marina's material dredged in December (1,637 cy) was placed at SF-9, and the sediment from Larkspur Marina (339 cy) was placed at SF-10. The Mare Island Dry Dock finished up its 2016 project in December and placed its last 4,020 cy at Cullinan Ranch Restoration Project. San Francisco Marina West Basin took 12,033 cy of sand to the San Francisco Bar disposal site (SF-8) in December; and the Port of Redwood City project finished its 2015 dredging in January of 2016 with a disposal of 810 cy at Montezuma Wetlands Restoration Project. In addition, one federal project, the USACE's Napa River project continued into December with 22,928 cy dredged and placed at as nearby upland site, not benefiting fish habitat.

Oakland Inner and Outer Harbor, Redwood City Harbor, and Richmond Inner Harbor channels projects planned ahead for likely dredging after the work windows closed in late 2016. Together, these 3 projects dredged 110,384 cy between December 1 and December 31 (see Appendix 2). The USACE continued dredging the Oakland Inner and Outer harbor project in the early months of 2016. This continuing dredging project totaled 687,276 cy. For a few weeks in early 2016, the Montezuma placement site was unable to accept material deliveries, causing a diversion of approximately 167,000 cy to SF-DODS. Paradise Cay Yacht Harbor project received approval for planned dredging outside their windows (in May after the closure/before the opening of the

⁴ http://www.spn.usace.army.mil/Portals/68/docs/Dredging/LMTS/LTMS%20NMFS%20BiOp%207_9_2015.pdf

⁵ Valero Refinery has a separate consultation with the state and federal resource agencies and is 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.

Chinook salmon and steelhead window in June) and placed 3,876 cy at Cullinan Ranch Restoration Project. Per the terms of the updated 2015 NMFS LTMS Programmatic Biological Opinion, all sediment dredged from these projects after November 30, 2016 was beneficially reused for tidal wetland restoration projects that benefits fish habitat.

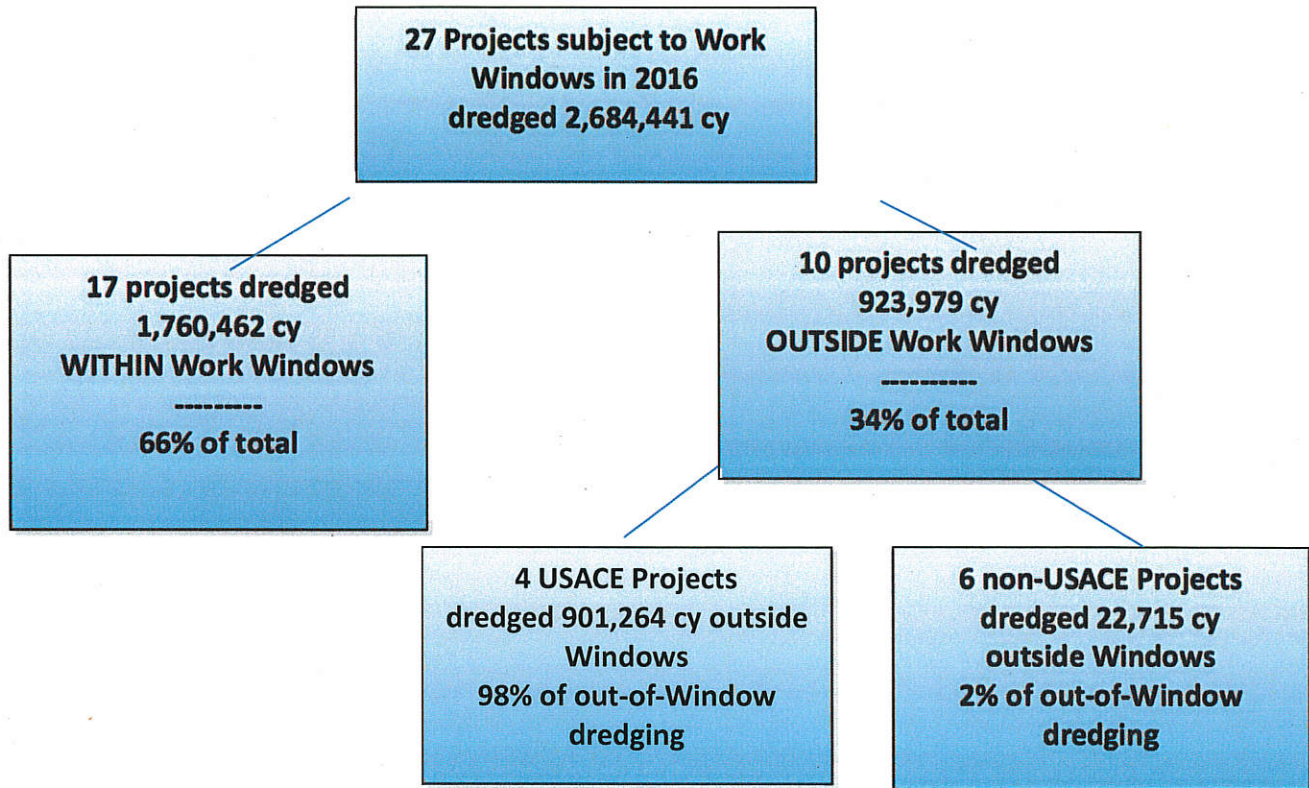


Figure 4. 2016 projects and dredge volumes relative to environmental work windows

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.

One project dredged in 2016, the Larkspur Marina, had elevated contaminant levels in the sediment potentially exposed after dredging (the residual, represented by “z-layer” samples). Per the EFH agreement, the DMMO required an evaluation of the bioaccumulation potential of the sediments to determine whether additional contaminant-related management action was warranted. Larkspur Marina’s evaluation of the potential bioaccumulation of PCB compounds in invertebrate test

organisms indicated that relevant toxicity thresholds would not be exceeded, thus, environmental harm would not likely occur, and the project was approved to proceed without further management action.

The EFH agreement also includes minimization measures to protect eelgrass. Four non-USACE dredging projects in 2016 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: Blue Water Yacht Harbor, Clipper Yacht Harbor, Paradise Cay Yacht Harbor and the Strawberry Channel. 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 2016. 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 contains sediment testing data from years 2000 to 2016, 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 (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 the DMMO database will soon be linked to the SediMatch web tool. The funds to support this effort were made available through a USEPA Water Quality Improvement Grant. SediMatch is hosted by San Francisco Estuary Institute (SFEI) and can be found at <http://sedimatch.sfei.org>

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). Actual in-Bay disposal in 2015 and 2016 remained below 1.25 million cy, so the use of the contingency volume has not yet been needed. However, 2017 is projected to be a relatively heavy dredging year, so it is possible that some, or all, of the contingency volume may be used for the first time.

SFEI has begun working with dredger-collected sediment testing data to develop and assist with management questions regarding sediment characterization. In 2016 the Regional Monitoring Program Steering Committee approved SFEI’s work on evaluating parameters to help make future bioaccumulation assessments more consistent and predictable by identifying regionally-appropriate toxicity reference values (TRVs). Also approved was SFEI’s support for USACE’s management of the DMMO Database.

With SediMatch now online the DMMO agencies encourage dredgers and restoration site operators to begin populating the site with information and using it actively in 2017. As an interim effort, the DMMO agencies have also begun to update and catalog map-based information about existing and planned beneficial reuse sites.

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

USACE	James Mazza	(415) 503-6775	james.c.mazza@usace.army.mil
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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.dmmosfbay.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&referer=%2fpcts-web%2fpublicAdvancedQuery.pcts%3fsearchAction%3dSESSION_SEARCH

APPENDIX 1

2016 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	19,407	13,960	6,504	17,688	1,637	59,196
SF-10, San Pablo Bay	0	0	0	0	0	2770	8,797	10,737	71,612	60,783	9,221	339	164,259
SF-11, Alcatraz	0	0	0	0	0	189,249	27,217	25,548	83,659	96,490	206,431		628,594
TOTAL in-Bay	0	0	0	0	0	192,019	36,014	55,692	169,068	163,777	233,340	1,976	852,049
Reuse, Upland, etc.	225,317	23,937	145,965	133,359	7,863	0	8,787	0	16,731	65,511	340,998	149,365	1,117,833
SF-DODS, Deep Ocean Disposal Site	0	46,181	19,624	7,212	107,425	80,676	88,242	88,451	59,200	127,810	134,066	0	758,887
GRAND TOTAL	225,317	70,118	165,589	140,571	115,261	272,695	133,043	144,143	245,162	357,098	708,404	151,341	2,728,769

APPENDIX 2
2016 Dredging Volumes by Project

Project	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2016 VOL (cu yd)
BENICIA PORT TERMINAL COMPANY, AMPORT; Montezuma/Upland	0	0	0	0	0	0	0	0	0	0	13,125	0	13,125
BENICIA PORT TERMINAL COMPANY, AMPORT; SF-9	0	0	0	0	0	0	0	0	0	0	2,688	0	2,688
BENICIA MARINA; SF-9	0	0	0	0	0	0	0	0	0	0	15,000	1,637	16,637
BLUE WATER YACHT HARBOR; SF-DODS	0	0	0	0	0	0	0	7,051	0	0	0	0	7,051
BRISBANE MARINA - Event 2; SF-11	0	0	0	0	0	26,000	26,000	25,548	0	0	0	0	77,548
CHEVRON RICHMOND LONG WHARF; SF-10	0	0	0	0	0	0	0	0	6,622	0	1,091	0	7,713
CHEVRON RICHMOND LONG WHARF; Montezuma/Reuse	0	0	0	0	0	0	0	0	7,914	12,833	30,852	0	30,852
CLIPPER YACHT HARBOR; SF-11	0	0	0	0	0	0	0	0	0	8,450	642	0	21,389
CLIPPER YACHT HARBOR; SF-DODS	0	0	0	0	0	0	0	0	0	0	0	0	8,450
CITY OF NAPA, JFK Boat Ramp; SF-9	0	0	0	0	0	0	0	0	2,936	4,403	0	0	7,339
LARKSPUR MARINA - Event 2; SF-11	0	0	0	0	0	4,004	0	0	0	0	0	0	4,004
LARKSPUR MARINA - Event 2; SF-10	0	0	0	0	0	2,770	6,097	7,113	2,371	3,048	8,130	339	29,868
MARE ISLAND DRYDOCK; Cullinan - Upland/Reuse	0	0	0	0	0	0	0	0	0	0	32,150	4,020	36,170
MARIN YACHT CLUB; SF-10	0	0	0	0	0	0	2,700	3,624	782	0	0	0	7,106
NAPA VALLEY MARINA; Reuse/Upland	0	0	0	0	0	0	0	0	6,950	0	0	0	6,950
PARADISE CAY YACHT HARBOR - Event 2; Cullinan - Upland/Reuse	0	0	0	0	0	0	0	0	0	0	0	0	3,876
PARADISE CAY YACHT HARBOR - Event 2; SF-11	0	0	0	0	3,876	2,920	1,217	0	0	0	0	0	4,137
PHILLIPS 66, RODEO TERMINAL; Montezuma/Reuse	0	0	0	0	0	0	0	0	0	0	1,914	0	1,914
PORT OF OAKLAND, BERTH Maintenance; SF-11	0	0	0	0	0	0	0	0	0	0	3,322	0	3,322
PORT OF OAKLAND, BERTH Maintenance; SF-DODS	0	0	0	0	0	0	0	0	75,745	0	12,301	0	88,046
PORT OF REDWOOD CITY, Wharves; Montezuma (the rest of Episode 1)	810	0	0	0	0	0	0	0	0	0	10,094	0	10,094
PORT OF REDWOOD CITY, Berth 27; SF-DODS	0	0	0	0	0	0	0	0	0	0	0	0	810
PORT OF SAN FRANCISCO, Berth 35 West; SF-DODS	0	0	0	0	0	40,770	40,770	0	0	0	0	0	40,770
PORT OF SAN FRANCISCO, Berth 35 East; Montezuma/Reuse	0	0	0	0	0	47,472	47,472	0	0	0	0	0	47,472
SAN FRANCISCO MARINA, WEST BASIN; Rock Quarry/Reuse	0	0	0	0	0	0	8,787	0	0	0	54,065	0	54,065
SAN FRANCISCO MARINA, WEST BASIN; SF-8/Reuse	0	0	0	0	0	0	0	0	0	0	8,215	0	17,002
STRAWBERRY CHANNEL; SF-11	0	0	0	0	0	0	0	0	0	2,246	3,665	12,033	12,033
VALERO; Winter Island/Reuse	0	0	0	0	3,987	0	0	0	0	0	0	0	3,987
VALERO; SF-9	0	0	0	0	0	0	0	19,407	0	0	0	0	19,407
VALERO; SF-DODS	0	0	0	0	0	0	0	0	0	0	0	0	0
VALLEJO MARINA, City of, SF-9	0	0	0	0	20,934	0	0	0	0	0	0	0	20,934
WETA, Central Bay Operations & Maintenance Facility; Montezuma	0	0	0	0	0	0	0	0	11,024	2,101	0	0	13,125
USACE, MAIN SHIP CHANNEL; SF-8	0	0	0	0	0	0	0	0	0	0	29,344	0	29,344
USACE, NAPA RIVER; Upland/Reuse	0	0	0	0	0	0	0	0	0	0	0	0	0
USACE, OAKLAND INNER & OUTER HARBOR; Montezuma	224,507	22,240	85,503	133,359	0	0	0	0	9,781	15,000	15,000	22,928	286,880
USACE, OAKLAND INNER & OUTER HARBOR; Ocean	46,181	19,624	7,212	86,491	80,676	0	0	81,400	59,200	94,160	121,646	38,214	627,009
USACE, OAKLAND INNER & OUTER HARBOR; Winter Island	1,697	60,462	0	0	0	0	0	0	61,837	45,444	0	0	503,823
USACE, PINOLE SHOAL CHANNEL; SF-10	0	0	0	0	0	0	0	0	0	15,533	189,823	0	596,590
USACE, REDWOOD CITY HARBOR; SF-11	0	0	0	0	0	0	0	0	0	25,200	2,326	0	107,281
USACE, REDWOOD CITY HARBOR; Ocean	0	0	0	0	0	0	0	0	0	0	0	0	205,356
USACE, REDWOOD CITY HARBOR; Montezuma, Upland/Reuse	0	0	0	0	0	0	0	0	0	0	55,746	0	27,526
USACE, RICHMOND INNER HARBOR; Cullinan, Upland/Reuse	0	0	0	0	0	0	0	0	0	50,511	153,011	16,424	55,746
USACE, RICHMOND OUTER HARBOR; SF-11	0	0	0	0	0	156,325	0	0	0	65,878	0	0	219,946
USACE, RICHMOND OUTER HARBOR; SF-10	0	0	0	0	0	0	0	0	0	12,291	0	0	222,203
GRAND TOTAL	225,317	70,118	165,589	140,571	115,288	272,695	133,043	144,143	245,162	357,098	708,404	151,341	2,728,769

* BIN volume / no post dredge survey or incomplete data
 * No weekly disposal logs
 () Volume not included in totals

Red = SF-8
 Orange = SF-9 (Carquiniz)
 Green = Upland/Reuse
 Blue = SF-11 (Alcatraz)
 Brown = SF-10 (San Pablo)
 Gray = SF-16 (Suisun Bay)

APPENDIX 3
2016 Non-Federal Projects EFH Compliance Summary

Appendix 3. 2016 Non-USACE Maintenance Dredging Projects							
Project Name	Placement Site	USACE File Number	Dredge Date	Permitted Area (Acres)	Dredge Area (Acres)	Dredge Volume (cy)	EFH Compliance Issues
Amports - Benicia Terminal	SF-9 / MWRP	2014-00033	November	8.75	2.89	15,813	No eelgrass within 250 meters. No EFH issues associated with episode.
Benicia Marina	SF-9	2014-00061	November-December	16.96	2.9	16,637	No eelgrass within 250 meters. No EFH issues associated with episode.
Brisbane Marina	SF-11	2014-00396	June-August	37.65	16.5	77,548	No eelgrass within 250 meters. No EFH issues associated with episode.
Chevron Long - Wharf	SF-10, Upland, Beneficial Reuse	2009-00052	September & November	44.1	11.28	38,565	No eelgrass within 250 meters. No EFH issues associated with episode.
City of Napa- JFK Park Boat Ramp	SF-9	2012-00294	September - October	1.3	0.83	7,339	No eelgrass within 250 meters. No EFH issues associated with episode.
Mare Island Dry Dock	Upland, Beneficial Reuse	2008-00311	November	18.31	5.32	36,170	No eelgrass within 250 meters. No EFH issues associated with episode.
Marin Yacht Club	SF-10	2015-00066N	June - July	8.5	3.4	7,106	No eelgrass within 250 meters. No EFH issues associated with episode.
Napa Valley Marina	Onsite dredge disposal basins	2012-000308N	July - October	8.8	1.2	6,950	No eelgrass within 250 meters. No EFH issues associated with episode.
Phillips 66- Rodeo	SF-8/ Upland Beneficial Reuse	2014-00431	November	50.5	10.16	5,236	No eelgrass within 250 meters. No EFH issues associated with episode.
Port of Oakland Berths	SF-11, SF-DODS	2014-00090S	August - September	36.61	17.33	98,140	No eelgrass within 250 meters. No EFH issues associated with episode.
Port of San Francisco Berths 27, 35	SF-DODS/ Upland Beneficial Reuse	2013-00333S	June - July & November	29.44	19.29	142,307	No eelgrass within 250 meters. No EFH issues associated with episode.
San Francisco Marina, West Basin	Upland Beneficial Reuse	2008-00074S	July & November - December	1.88	0.5	29,035	No eelgrass within 250 meters. No EFH issues associated with episode.

APPENDIX 3 (Continued)
2016 Non-Federal Projects EFH Compliance Summary

Valero	SF-DODS, SF-9	2012-00248	August & May	5.48	3.86	44,328	No eelgrass within 250 meters. No EFH issues associated with episode.
Vallejo Municipal Marina	SF-9	2012-00057	September-October	29	6.2	13,125	No eelgrass within 250 meters. No EFH issues associated with episode.
Vallejo Yacht Club Marina	SF-9	2013-00139S		5.3	NA	approved but not dredged	No eelgrass within 250 meters. No EFH issues associated with episode.
WETA Central Bay Operations Facility	Upland Beneficial Reuse	2011-00335S	October-November	4	13.4	29,344	No eelgrass within 250 meters. No EFH issues associated with episode.
Projects With Eelgrass Present, or Residual Sediment Contamination Issues							
Blue Water Yacht Club	SF-DODS	2014-00198	August	2	1.25	7,051	Eel grass within 250 meters. Silt curtain deployed according to eelgrass protection plan to protect eelgrass beds.
Clipper Yacht Harbor	SF-11, SF-DODS	2012-00197	September-November	24	14.99	29,839	Eel grass within 250 meters. Silt curtain deployed according to eelgrass protection plan to protect eelgrass beds.
Larkspur Marina Maintenance	SF-10	2015-00036N	June - December	11.36	7.1	33,872	No eelgrass within 250 meters. No EFH issues associated with episode. NMFS concurred that PCBs in z-layer are not a bioaccumulation risk.
Paradise Cay Yacht Harbor	SF-11, SF-10/Upland Beneficial Reuse	2015-00034N	March - July	9.75	9.75	8,013	Eel grass within 250 meters. Silt curtain deployed according to eelgrass protection plan to protect eelgrass beds.
Strawberry Channel	SF-11	2011-00237	October - November	17.5	0.6	5,911	Eel grass within 250 meters. Silt curtain deployed according to eelgrass protection plan to protect eelgrass beds.

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
 EFH = Essential Fish Habitat

APPENDIX 4
2016 Federal Projects EFH Compliance Summary

Appendix 4. 2016 USACE Maintenance Dredging Projects								
Project Name	Placement Site	Dredge Type	Dredge Months	Total Project Area (Acres)	Dredge Area (Acres)	Dredge Volume (cy)	EFH Compliance Issues	
Main Ship Channel	SF-8, SF-17	hydraulic	May	1203	23	292,276	No EFH issues associated with episode.	
Napa River	Upland		Sep-Dec	33	7	62,709	No EFH issues associated with episode.	
Pinole Shoal	SF-10		Sep-Oct	879	10	107,281	No EFH issues associated with episode.	
Redwood City Harbor	MWRP, SFDODS, SF-11	clamshell	Sep-Dec	209	78	288,628	No EFH issues associated with episode.	
Richmond Outer Harbor	SF-10, SF-11		Jun-Oct	211	41	234,494	No EFH issues associated with episode.	
Oakland Inner and Outer Harbor	MWRP, SFDODS, Winter Island		Jan-Dec	776	96	1,162,572	Eel grass within 250 meters. Performed pre-and post-dredge eelgrass surveys and light monitoring to protect eelgrass beds.	
Richmond Inner Harbor	Cullinan, Upland		Oct-Dec	258	64	219,946	Eel grass within 250 meters. Performed pre-and post-dredge eelgrass surveys and light monitoring to protect eelgrass beds.	

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

MWRP = Montezuma Wetland Restoration Project Add

EFH - Essential Fish Habitat