L O N G T E R M M A N A G E M E N T S T R A T E G Y

Dredged Material Management Office (DMMO)
Dredging and Placement of Dredged Material in San Francisco Bay
January-December 2012 Report

July 2013

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Table of Contents

*Cover Image: Montezuma Wetlands Restoration Project Off-Loader "Liberty" courtesy of Jenny Jacox, 2012

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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 material 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), 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 material management issues. Together, the DMMO partners 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 up to Sherman Island, its major tributaries to the point where navigation is no longer feasible, upland areas surrounding the estuary and the San Francisco Deep Ocean disposal site (SFDODS) designated by the EPA.

DMMO Responsibilities

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

DMMO generally meets twice a month and the meetings are open to the public. The USACE posts the meeting schedules and agendas on the USACE DMMO website (see Contacts) and sends electronic copies to interested parties and pertinent resources agencies. The dredging project data compiled and analyzed by the DMMO, including environmental work

windows adherence and placement volume targets set forth in the LTMS Management Plan are provided in the DMMO annual reports which can also 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 material disposal to water quality, wildlife and uses of the San Francisco Bay. The resulting integrated planning process for dredged material management addressed dredging-related issues and developed a comprehensive dredged material management plan. The LTMS objectives resulted in the formal establishment of the DMMO. Specifically, the LTMS Management Plan (2001) informs the DMMO's ongoing coordination of dredging and dredged material placement.

Of particular importance is the Management Plan's 12-year transition period designed to reduce the in-Bay disposal volume to a maximum of 1.25 million cubic yards (cy) per year (Figure 1) by the end of 2012. This transition period was intended to provide time for dredging project sponsors to plan ahead for the logistic and economic changes of the new methods of dredged material 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 year. Subsequently a reduction of in-Bay disposal of 378,500 cy would occur every three years leading to the 2013, 1.25 million cy limit, through four volume limit "step-downs." Throughout this transition SFDODS has remained available to accommodate disposal from larger projects when beneficial reuse sites were not available or feasible. Various upland and beneficial reuse sites have also opened as alternatives to in-Bay disposal of dredged material (see Section II).

Additional information on history and accomplishments of LTMS as well as the Management Plan and the 12-year Transition Period can be found on the LTMS website (see Contacts).

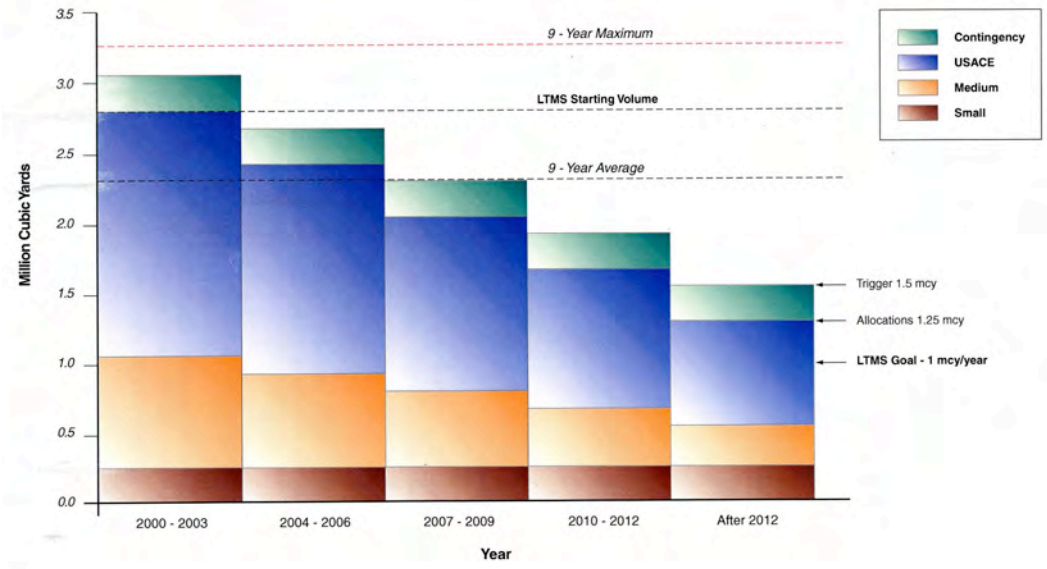

Figure 1. The LTMS Transition Period, showing the annual in-Bay disposal volume limit decrease every three years by 387,500 cy.

LTMS 12-Year Review

In 2012, the DMMO and LTMS reached an importance milestone: the final year of the 12-year transition and the achievement of the final in-Bay disposal limit of 1.25 million cy per year. During the transition period 46.5 million cy of sediment were dredged from the Bay and 19.5 million cy were disposed in-Bay, averaging 1.5 million cy in-Bay per year. As shown in Figure 2, in-Bay disposal was below the annual transition period limit each year except 2011. To accommodate for the fluctuations in dredging and disposal, the annual volumes were averaged, and the average volume over three years became the bar by which the program is measured. These three-year averages were below the transition period limits during every three-year period, therefor the individual project allocations were never triggered.

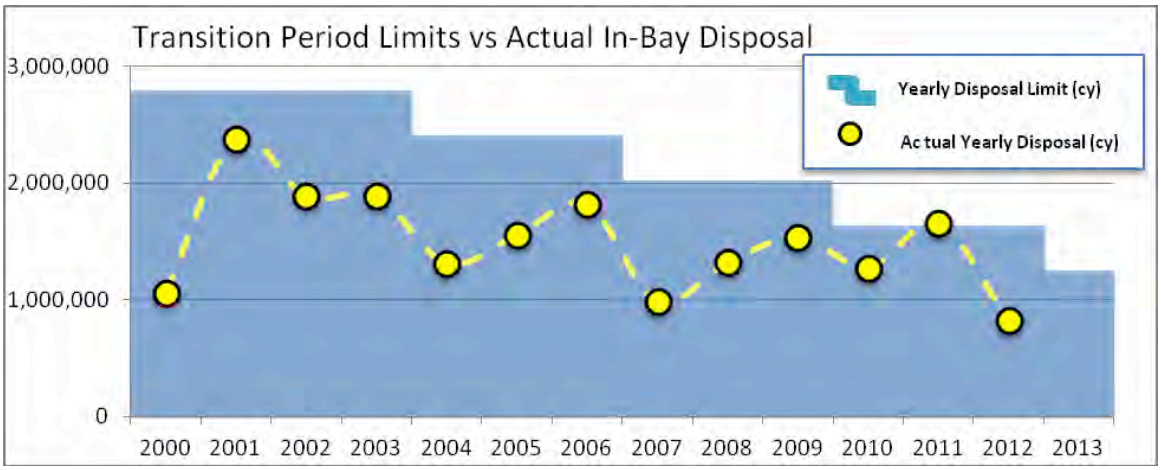

Figure 2. Actual in-Bay disposal volumes for 2000-2012, compared to the Transition Period limits (not including the allowable 250,000 cy contingency).

To mark the end of the transition period, LTMS and DMMO partners engaged in a 12-Year Review with a series of public meetings held to present information and obtain feedback from stakeholders. The four meetings addressed program status, beneficial reuse, costs and contracting, and policy and strategy. The meetings were well attended and valuable information was gathered that will help shape the LTMS program as it moves beyond the transition period. The final LTMS 12-Year Review Report, summarizing the results of the process and including all the read-ahead documents provided for each meeting, will be posted on the LTMS web site. Based on the Review Report and stakeholder comments, potential options to modify implementation of the LTMS program are being considered.

II. 2012 DREDGING AND PLACEMENT OVERVIEW (Appendices 1, 2)

During the 2012 dredging season, dredging project sponsors in the San Francisco Bay region placed 808,953 cy of sediment in-Bay, well below the volume limit target of 1.6 million cy. In 2012, there were 33 dredging and disposal projects (not including the Main Ship Channel), that dredged a total of 2.6 million cy. Approximately 31% of this material was disposed in-Bay, 24% was disposed at SFDODS, and 45% of the dredged material went towards beneficial reuse. The volumes of material and disposal locations are shown in Figure 3.

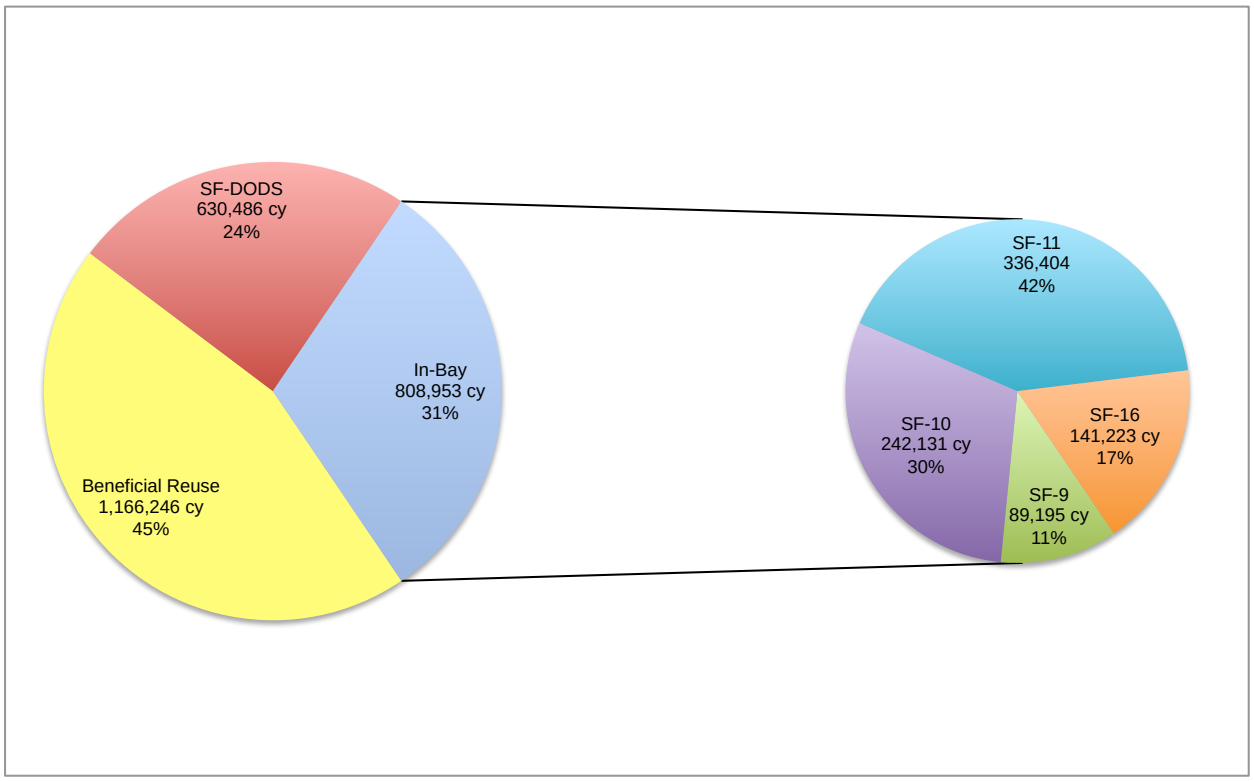

Figure 3. 2012 Dredge Material Disposal Volumes and Location

Beneficial Reuse and Upland Placement Sites/Restoration

In 2012, roughly 1.2 million cy, or 45% of the total 2.6 million cy of sediment dredged was beneficially reused or taken to upland placement sites. As shown in Table 1, the majority (93%) of the dredged material was taken to Montezuma Wetlands Restoration Project (MWRP) of which nearly half came from the Port of Oakland's Inner and Outer Harbor Maintenance Dredging Project. In all, six San Francisco Bay beneficial reuse sites were available to dredging project sponsors, including:

- Montezuma Wetland Restoration Project

  Approximately 1.1 million cy of dredged material was placed at the MWRP in 2012, of which 727,722 cy, came from the Port of Oakland's Inner and Outer Harbor Maintenance Dredging Project. The remaining volume came from dredging projects at petroleum companies; the U.S. Coast Guard Station at Yerba Buena Island; and the City of San Francisco Marina, West Basin.

- Winter Island Levee

  In 2012, 48,595 cy of dredged material, predominately from petroleum refineries, were placed at the upland dredged material disposal site on Winter Island to the west of the confluence of the Sacramento and San Joaquin Rivers.

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

  In 2012, one dredging proponent, the Philips 66 (previously Conoco-Phillips) Rodeo Terminal Project, placed 9,411 cy of sandy material within the eastern portion of SF-8.

- SF-17 Ocean Beach Pilot Project Placement Site (sand only)

  In July 2012, the USACE placed 187,650 cy from its Main Ship Channel maintenance dredging project at the Ocean Beach Pilot Project Placement Site.

- Upland Placement or Landfill Disposal

  In 2012, three dredging projects disposed a total of 14,900 cy of dredge material at various upland sites ranging from landfills to city owned disposal ponds.

- Aramburu Island

  In 2012, 1,000 cy of sand was removed from City of San Francisco Marina during a maintenance dredging and capping project and taken to Aramburu Island for restoration purposes.

These sites range from large engineered sites to small habitat restoration projects. It is important to note that these sites have varying equipment, logistical, and sediment characteristic requirements (Appendix 3).

Placement Location	Material Placed (cy)	% of Total Reuse/Upland
Montezuma Wetland Restoration Project	1,084,451	93%
Winter Island	48,595	4%
Aramburu Island	1,000	0.1%
Backfill	7,889	1%
Misc Upland	14,900	1.3%
SF-8	9,411	1%
Total	1,166,246	100%

Table 1. 2012 Dredge Volume Taken to Beneficial Reuse Sites

Suitable for Unconfined Aquatic Disposal (SUAD) vs. Not Suitable for Unconfined Aquatic Disposal (NUAD)

In 2012, 4% of all dredged material (100,681 cy of 2,605,685 cy) was considered NUAD for in-Bay, as shown in Table 2. This NUAD material originated from three projects, which were reviewed and approved by the DMMO to be suitable for either SFDODS, upland disposal or MWRP as foundation material. The majority of the NUAD material shown in Table 2, 84,625 cy (84%), was taken to SFDODS. Comparatively, the remaining 545,861 cy of dredged material taken to SFDODS (Figure 3) was also considered SUAD for in-Bay as well as wetland restoration/beneficial reuse. However, it was not placed in-Bay in accordance with the LTMS Program goals and the in-Bay disposal step-down target, nor was the material taken to beneficial reuse sites as project sponsors determined this option infeasible. Dredging project sponsors who elected to take their material to SFDODS rather than to beneficial reuse sites generally noted cost as the primary factor in their decision.

Project	NUAD for In-Bay (cy)	Placement Site
SF Marina West Basin	15,675	Montezuma Wetlands Restoration Project Foundation (non-cover) material
Port of SF Pier 39	381	Port of Oakland Berth 10
	8,894	SFDODS
Port of SF Berth 35	75,731	SFDODS
Total	100,681	

Table 2. 2012 Dredge Volume NUAD for In-Bay Placement Sites

Dredging Equipment Type

All of the dredging work performed was maintenance as no new-work projects were active in 2012. The majority of the projects were performed with clamshell dredges, including the largest of the USACE projects in the Oakland Harbor and Richmond Inner Harbor channels. Hydraulic dredges were used on the USACE projects in Richmond Outer Harbor, Suisun Bay Channel/New York Slough/Bulls Head Reach, Redwood City Harbor and Pinole Shoal. Mitigation for impacts to threatened or endangered species was required for projects using hydraulic dredges.

Project Coordination & Environmental Work Windows

In addition to participating in the DMMO meetings, the BCDC held several Dredge Project Coordination meetings throughout the dredging season. Dredging project sponsors, regulatory agencies, resources agencies and stakeholders are invited to participate in the review of dredging project scheduling, progress and general project management. This open discussion helps agencies, contractors and dredging project sponsors plan for the current, proposed projects and to time projects appropriately. Scheduling the projects to be completed within the environmental work windows (generally, June 1-November 30 or August 1-November 30 depending on project location) is a priority and the partner agencies support the dredging project sponsors' efforts to adhere to the dredging season time limits. Five project coordination meetings were held in 2012 and 40 projects were discussed and tracked over the dredging season.

Of these 40 dredging projects, 33 (not including the Main Ship Channel) took place in 2012 and nearly all began in or after August, during the later half of the dredge season. Thirty-one (31) of the 2012 dredging projects were subject to environmental work windows, and 21 were completed entirely within their work windows. The remaining ten projects requested and received work window extensions.

Seven of the ten projects dredging outside the work windows were granted time extensions in order to complete their work at the end of the dredging season and one was permitted to start dredging before the season began to address shoaling. These eight projects were completed within their new authorized time limits. The remaining two projects were USACE dredging projects in Richmond Inner and Outer Harbor and Oakland Inner and Outer Harbor. Both of these USACE projects did not begin until November and October respectively and requested several time and work window extensions from the resource agencies. The USACE contractor continued to work at Richmond Inner Harbor until February 2013 when work was halted and demobilized due to Pacific herring spawn in the harbor. At the time of writing this annual report, the USACE contractor is still dredging at Oakland Inner and Outer Harbors where they are expected to work until end of June 2013.

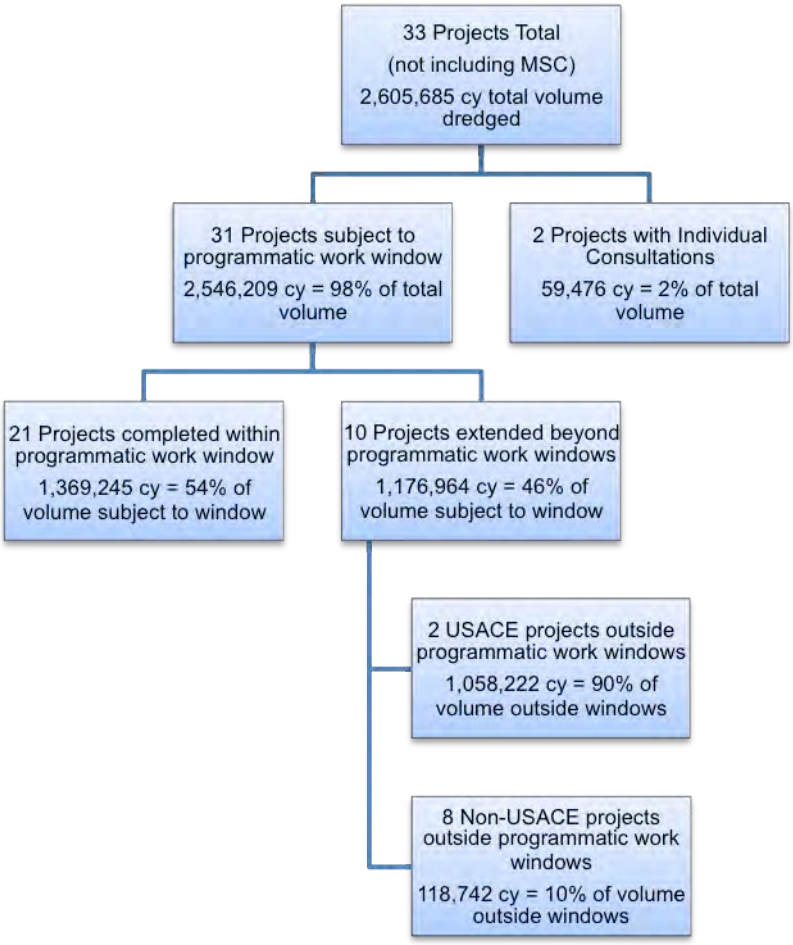

Figure 4. 2012 Dredge Volume Relative to Work Windows

Two projects were excluded from the environmental work windows; the USACE Suisun Bay Channel, Bulls Head Reach emergency dredging project performed in June 2012 was not subject to work windows due to its urgent nature. The Valero Refining Company is authorized to dredge outside of the work windows due to the site characteristics and shoaling that require frequent dredging events. Figure 4 shows the volume and percentage breakdown of the dredging work performed outside the environmental work windows for 2012.

LTMS Programmatic Biological Opinion

In 2012, due to the nature of their operations, multiple dredge events and hydraulic dredging and placement, two projects reviewed by the DMMO required individual consultations: Valero Refining Company and the City of Martinez Marina. The remaining projects adhered to the programmatic biological opinions (BO) from NMFS and USFWS with concurrence from CDFW, which remained in effect for 2012. The LTMS agencies continued to work with NMFS to update their programmatic BO to include the recently listed green sturgeon.

As mentioned in the previous section, in order to minimize disturbance to endangered and special status species, all dredged material disposal activities shall be confined to the work window, between June 1 and November 30 of any year. This work window is established by Tables F-1 and F-2 of Appendix F, "In-Bay Disposal and Dredging", and Figures 3.2 and 3.3 of the LTMS Management Plan (2001) as amended by USFWS on May 28, 2004. No work inconsistent with the time and location limits contained in these figures may be conducted without a consultation between USACE and the USFWS and/or NMFS; as well as BCDC approval.

Essential Fish Habitat (EFH) Compliance (Appendix 4)

In June of 2011, the USACE and EPA issued the final agreement with NMFS entitled, *"Agreement on Programmatic EFH Conservation Measures for Maintenance Dredging Conducted Under the LTMS Program (Tracking Number 2009/06769)"*. The LTMS agencies have programmatically implemented this EFH agreement, including its provisions related to residual contaminants, bioaccumulation testing, as well as minimizing potential adverse effects to eelgrass and other submerged aquatic vegetation. In 2012, as shown in Appendix 4, the majority of maintenance dredging projects did not have significant impact to EFH and only one included bioaccumulation issues due to contaminated sediment. Four project footprints were located within 250 meters of eelgrass beds and silt curtains were deployed to minimize turbidity in each case. One project developed a work plan to minimize impacts on Sago Pondweed located in the dredge footprint.

In March of 2012, EPA provided an analysis of local mercury bioaccumulation test results to NMFS, with a recommendation that mercury bioaccumulation tests did not need to be conducted when sediment concentrations are below the total maximum daily load (TMDL) limit. Based on EPA's analysis, the LTMS programmatic EFH agreement was modified as follows:

> "Dredged material with mercury above the TMDL limit remains prohibited from discharge at the in-Bay disposal sites. However, we will no longer generally require mercury bioaccumulation testing of dredged material proposed for discharge at the in-Bay disposal sites, when mercury levels in the material are below the TMDL limit."

Hydraulic Dredging and Entrainment

Through a monitoring effort aboard the USACE hopper dredge *Essayons*, entrainment of longfin smelt and Delta smelt was identified in 2011. USACE, USFWS and CDFW continue to work together to develop monitoring and mitigation plans to address entrainment by hydraulic dredges in the Bay and tidal portions of tributaries. An entrainment risk assessment is underway by USACE Engineer Research and Development Center in Vicksburg, Mississippi.

III. RELATED ISSUES

DMMO 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 online (see Contacts) and in the process of being beta-tested. The database contains sediment testing data from years 1990 to 2010 accessible for browsing and query of permit history, suitability summaries, historical sediment chemistry testing data, historical bioassay testing data and other specific documents. As such, the database has been designed to allow dredging project sponsors, labs, and consultants to upload their project data into the system as well as the ability to review the projects' sediment quality history. The database will allow DMMO to review projects' sediment quality over longer periods. Beginning in late 2013, dredging documents and test results will be submitted by project sponsors, consultants, and laboratories to DMMO via the database. Training will be provided.

SediMatch

In order to improve sediment placement planning and scheduling, DMMO and LTMS partner, San Francisco Bay Joint Venture, are developing a sediment placement site database to improve and increase the matching of dredging projects with appropriate beneficial reuse sites. A pilot meeting is scheduled for 2013 to bring interested parties together to coordinate sediment supply and demand, discuss placement options and logistics as well as potential cost-sharing opportunities.

IV. LOOKING AHEAD

As the 2013 dredge season gets underway, DMMO prepares to implement the last LTMS step-down to the 1.25 million cy annual volume limit target, maintaining the in-Bay disposal volumes limits and encouraging the development and use of beneficial reuse sites. Dredging project sponsors, labs and consultants will submit dredging documents and test results directly into the on-line database, rendering them immediately accessible to DMMO, the public and increasing efficiency. Additionally, the recent updates to DMMO webpage with new information and links to LTMS and other agencies will provide better access to and increase awareness of the DMMO, documents, its partner organizations, goals and responsibilities.

Stay Tuned!

DMMO MEMBER AGENCY STAFF CONTACTS:

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BCDC	Brenda Goeden	(415) 352-3623	brendag@bcdc.ca.gov
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EPA	Melissa Scianni	(415) 972-3821	Scianni.Melissa@epamail.epa.gov
SLC	Donn Oetzel	(916) 574-1998	OetzelD@scl.ca.gov

RESOURCE AGENCY CONTACTS:

CDFW	Vicky Frey (Bay region)	(707) 445-7830	vfrey@dfw.ca.gov
	Craig Weightman (Tributaries)	(707) 944-5500	cweightman@dfw.ca.gov
	Jim Starr (Delta region)	(707) 944-5500	jstarr@dfw.ca.gov
USFWS	Ryan Olah (Bay region)	(916) 414-6625	Ryan_Olah@fws.gov
	Kim Turner (Delta region)	(916) 930-5604	Kim_ S_Turner@fws.gov
NMFS	Gary Stern (endangered species)	(707) 575-6060	Gary.Stern@noaa.gov
	Korie Schaeffer (EFH)	(707) 575-6087	Korie.Schaeffer@noaa.gov

DMMO WEBSITE:

www.spn.usace.army.mil/Missions/DredgingWorkPermits/DredgedMaterialManagementOffice(DMMO).aspx

DMMO DATABASE WEBSITE (BETA):

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 - MERCURY UPDATE:

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

Appendix 1 - 2012 Dredging Volumes by Project (Cubic Yards)

Project	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2012 'in-situ' VOL (cy)	
ALAMEDA (Harbor Bay) FERRY TERMINAL, Water Emergency Transportation Authority (WETA); Upland - Winter Island	0	0	0	0	0	0	0	0	0	0	6,109	0	6,109	^
AQUA VISTA HOMEOWNERS, San Rafael Canal	0	0	0	0	0	0	0	0	0	0	0	1,538	1,538	
BENICIA MARINA; SF-9	0	0	0	0	0	0	0	0	0	459	5,474	0	5,933	
BENICIA PORT TERMINAL COMPANY, AMPORT, PIER 95; Winter Isl.	0	0	22,580	0	0	0	0	0	0	0	0	0	22,580	
CHEVRON RICHMOND LONG WHARF; Ocean	0	0	0	0	0	0	0	0	0	7,261	0	0	7,261	
CHEVRON RICHMOND LONG WHARF; Upland - Montezuma	0	0	0	0	0	0	0	0	0	14,128	128,743	0	142,871	
(CONOCO) PHILLIPS 66; SF-8/Reuse	0	0	0	0	0	0	0	0	0	0	9,411	0	9,411	
(CONOCO) PHILLIPS 66; SF-9	0	0	0	0	0	0	0	0	0	0	6,092	0	6,092	
EMERYVILLE MARINA, CITY OF; SF-11	0	0	0	0	0	0	0	0	0	0	19,318	29,129	48,447	
LOWRIE YACHT HARBOR; SF-10	0	0	0	0	0	0	0	12,763	8,792	4,821	0	0	26,376	
MARTINEZ MARINA, CITY OF; Upland	0	0	0	0	0	0	0	0	0	0	4,853	9,648	14,501	
NEWPORT BOATING ASSOCIATION; SF-10	0	0	0	0	0	0	0	0	0	0	11,397	5,393	16,790	
PARADISE CAY YACHT HARBOR, MARINA; SF-11	0	0	0	0	0	0	0	0	12,118	0	3,694	0	15,812	
PIER 39, PORT OF SAN FRANCISCO; Berth 10 Port of Oakland	0	0	0	0	0	381	0	0	0	0	0	0	381	
PIER 39, PORT OF SAN FRANCISCO; SF-11	0	0	0	0	0	2,033	6,607	21,295	0	0	0	0	29,935	
PIER 39, PORT OF SAN FRANCISCO; Ocean	0	0	0	0	0	0	4,574	4,320	0	0	0	0	8,894	
PITTSBURGH MARINA, City of; Upland - Winter Island	0	0	0	0	0	0	0	0	262	10,525	0	0	10,787	
PLAINS TERMINAL (SHORE TERMINALS, MARTINEZ); Upl - Winter Isl.	0	0	0	0	0	0	0	0	0	5,292	0	0	5,292	
PORT OF OAKLAND, BERTH Maintenance; Upland - Montezuma	0	0	0	0	0	0	0	52,921	47,471	41,367	0	0	141,759	
PORT OF SAN FRANCISCO, PIER 35; OCEAN	0	0	0	0	0	0	0	0	0	18,175	57,556	0	75,731	^
PORT OF SAN FRANCISCO, PIER 80; SF-11	0	0	0	0	0	0	0	0	79,083	0	0	0	79,083	
PORTO BELLO HOMEOWNERS ASSOC., San Rafael Canal; SF-10	0	0	0	0	0	0	0	0	0	0	0	6,073	6,073	
ROYAL COURT HOMEOWNERS, San Rafael Canal; SF-10	0	0	0	0	0	0	0	0	0	0	0	1,815	1,815	
SAN FRANCISCO MARINA, West Basin; SF-11	0	0	0	0	0	0	0	0	2,799	2,099	0	0	4,898	
SAN FRANCISCO MARINA, West Basin; Upland - Montezuma	0	0	0	0	0	0	0	0	8,706	6,969	0	0	15,675	
SAN FRANCISCO MARINA, West Basin; Reuse of material as backfill cap	0	0	0	0	0	0	0	0	0	7,889	0	0	7,889	1
SAN FRANCISCO MARINA, West Basin; Reuse of material at Aramburu Isl.	0	0	0	0	0	0	0	0	0	1,000	0	0	1,000	1
SAUSALITO YACHT HARBOR; SF-11	0	0	0	0	0	0	0	0	14,651	11,720	0	0	26,371	
SUNNYVALE, CITY OF, Boat Ramp	0	0	0	0	0	0	0	18	0	0	0	0	18	
TESORO, GOLDEN EAGLE, AVON TERMINAL; Upland - Winter Island	0	0	0	0	0	0	0	0	0	3,827	0	0	3,827	
U.S. COAST GUARD, YERBA BUENA ISLAND; SF-11	0	0	0	0	0	0	0	0	0	0	6,868	0	6,868	
U.S. COAST GUARD, YERBA BUENA ISLAND; Upland - Montezuma	0	0	0	0	0	0	0	0	0	0	12,579	0	12,579	
VALERO REFINERY TERMINAL; Upland - Montezuma	0	0	0	0	26,756	0	0	17,089	0	0	0	0	43,845	
VALLEJO MARINA, City of; SF-9	0	0	0	0	0	0	0	0	0	18,973	41,642	924	61,539	
USACE, OAKLAND INNER & OUTER HARBOR; Montezuma - Reuse	252,358	266,857	203,458	5,049	0	0	0	0	0	0	0	0	727,722	*
USACE, OAKLAND INNER & OUTER HARBOR; Ocean (SF-DODS)	0	0	0	0	0	0	0	0	0	18,800	113,700	170,000	302,500	*
USACE, MAIN SHIP CHANNEL; Ocean Beach (SF-17) Reuse	0	0	0	0	0	0	(187,650)	0	0	0	0	0	(187,650)	*
USACE, PINOLE SHOAL CHANNEL; SF-10	0	0	0	0	0	0	0	113,988	0	0	0	0	113,988	*
USACE, PORT OF REDWOOD CITY; SF-11	0	0	0	0	0	0	0	10,040	0	0	0	0	10,040	*
USACE, RICHMOND INNER HARBOR; OCEAN	0	0	0	0	0	0	0	0	0	0	75,600	160,500	236,100	*
USACE, RICHMOND OUTER HARBOR; SF-10	0	0	0	0	0	0	0	75,551	0	0	0	0	75,551	*
USACE, RICHMOND OUTER HARBOR; SF-11	0	0	0	0	0	0	23,683	91,267	0	0	0	0	114,950	*
USACE, SUISUN BAY CHANNEL; SF-16	0	0	0	0	0	0	0	118,700	0	0	0	0	118,700	*
USACE, SUISUN BAY CHANNEL (New York Slough); SF-16	0	0	0	0	0	0	0	22,523	0	0	0	0	22,523	*
USACE, SUISUN BAY CHANNEL (Bulls Head Reach); SF-9	0	0	0	0	0	15,631	0	0	0	0	0	0	15,631	*
TOTAL	**252,358**	**266,857**	**226,038**	**5,049**	**26,756**	**18,045**	**34,864**	**540,475**	**173,882**	**173,305**	**503,036**	**385,020**	**2,605,685**	

*** NO post-dredged survey**
^ NO weekly disposal logs
1 7,889 cys of sand from the sediment trap used as a backfill remediation cap in West Basin Areas & 1,000 cys was taken to Aramburu Island

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

Appendix 2 - 2012 Disposal Sites and Volumes Disposed (Cubic Yards)

Disposal Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**2012 Total Volume***
SF-9, Carquinez Straits	0	0	0	0	0	15,631	0	0	0	19,432	53,208	924	**89,195**
SF-10, San Pablo Bay	0	0	0	0	0	0	0	202,302	8,792	4,821	11,397	14,819	**242,131**
SF-11, Alcatraz	0	0	0	0	0	2,033	30,290	122,602	108,651	13,819	29,880	29,129	**336,404**
SF-16, Suisun Bay	0	0	0	0	0	0	0	141,223	0	0	0	0	**141,223**
TOTAL in-Bay (excluding MSC)	**0**	**0**	**0**	**0**	**0**	**17,664**	**30,290**	**466,127**	**117,443**	**38,072**	**94,485**	**44,872**	**808,953** *
Reuse, Upland, SF-8, etc.	**252,358**	**266,857**	**226,038**	**5,049**	**26,756**	**381**	**0**	**70,028**	**56,439**	**90,997**	**161,695**	**9,648**	**1,166,246**
Reuse, Corps Main Ship Channel, Beach Nournishment - Ocean Beach	0	0	0	0	0	0	(187,650)	0	0	0	0	0	(187,650)
SF-DODS, Deep Ocean Disposal Site	0	0	0	0	0	0	4,574	4,320	0	44,236	246,856	330,500	**630,486**
GRAND TOTAL	**252,358**	**266,857**	**226,038**	**5,049**	**26,756**	**18,045**	**34,864**	**540,475**	**173,882**	**173,305**	**503,036**	**385,020**	**2,605,685** *

*Excluding MSC

Appendix 3
Description of Beneficial Reuse and Upland Placement Sites

In 2012, roughly 1.2 million cy, or 45% of the total 2.6 million cy of sediment dredged was beneficially reused or taken to upland placement sites. The majority (93%) of the dredged material was taken to Montezuma Wetlands Restoration Project of which nearly half came from the Port of Oakland's Inner and Outer Harbor Maintenance Dredging Project. The following are the beneficial reuse/upland placement sites available to dredgers in 2012:

Montezuma Wetland Restoration Project (MWRP).

Approximately 1.1 million cy of dredged material was placed at the MWRP in 2012, of which nearly half, 727,722 cy, came from the Port of Oakland's Inner and Outer Harbor Maintenance Dredging Project. The remaining volume came from dredging projects at petroleum companies, the U.S. Coast Guard Station at Yerba Buena Island and the City of San Francisco Marina, West Basin. MWRP is a privately owned and operated project located at the eastern edge of the Suisun Marsh that will restore nearly 2,000 acres of tidal and seasonal wetlands. MWRP now has an off-loading facility in place and can accept dredged sediment for both cover and foundation material. MWRP has a total capacity of 14,000,000 cy of dredged material.

Winter Island Levee

In 2012, 48,595 cy of dredged material, predominately from petroleum refineries, were placed at the upland dredged material disposal site on Winter Island to the west of the confluence of the Sacramento and San Joaquin Rivers. Severe subsidence and only partial completion of repairs to a 2004 breach have caused sections of the levee to be in direct contact with aquatic habitat. As long as this situation persists, only material that meets wetland surface/cover quality chemical screening thresholds set by the San Francisco Bay Regional Water Quality Control Board will be approved for levee maintenance (i.e. beneficial reuse).

SF-8 Bar Channel Site, Eastern Portion

In 2012, one dredging proponent, the Philips 66 (previously Conoco-Phillips) Rodeo Terminal Project, placed 9,411 cy of sandy material within the eastern portion of SF-8. Placement of clean sand within the easternmost portion of SF-8 from projects other than USACE San Francisco Main Ship Channel dredging is considered beneficial reuse because this location is part of the littoral transport system that nourishes Ocean Beach and its environs. These projects must have 80% or greater sandy sediment at their project site to be eligible for this site. In 2012 the USACE's Main Ship Channel dredging project did not use SF-8 for disposal, as all of the Main Ship Channel material was taken to SF-17.

SF-17 Ocean Beach Pilot Project Placement Site

In July 2012, the USACE placed 187,650 cy from its Main Ship Channel maintenance dredging project at the Ocean Beach Pilot Project Placement Site. The Ocean Beach pilot project involves beneficial reuse of dredged material along southern Ocean Beach in front of the Sloat Street parking area. In an effort to reduce erosion at the southern end of Ocean Beach at the City of San Francisco's Sloat Street outfall, the USACE, in cooperation with the City of San Francisco and the US Geological Survey, has been placing sandy sediment dredged from the Main Ship Channel to the south of SF-8, directly offshore of Ocean Beach. While the LTMS agencies support this project, it is not currently part of the LTMS program because it is outside the LTMS Program boundary

Upland Placement or Landfill Disposal

In 2012 three maintenance dredging projects took their material to upland disposal sites: the City of Martinez disposed of 14,501 cy of sediment from the Martinez Marina maintenance dredging project in city-owned disposal ponds adjacent to the marina; 381 cy of NUAD material was removed from Pier 39 West Basin and taken to Port of Oakland Berth 10 for drying and subsequent landfill disposal; and a small amount, 18cy, of sediment was removed from the Sunnyvale boat ramp and placed upland within the City of Sunnyvale's jurisdiction.

Aramburu Island

In 2012 managers of Aramburu Island, a small restoration site located in Strawberry Cove of Richardson Bay in Marin County put out a request for small amount of sand. 1,000 cy of sand was removed from the City of San Francisco Marina during its maintenance dredging and capping project and taken to Aramburu Island for restoration purposes.

Potential Future Beneficial Reuse and Upland Placement Sites

Cullinan Ranch

No dredged material was placed at Cullinan Ranch in 2012 mainly due lack of offloading equipment. Cullinan Ranch is State-owned and managed by the USFWS and the CDFW. It is located adjacent to San Pablo Bay just west of the Highway 37 Bridge over the Napa River. Approximately 1,500 acres of former hayfield and farm lands are proposed to be restored to tidal marsh. Up to 400,000 cy of dredged material can be reused as part of this project. The restoration project is permitted and the plans include placement of an off-loader to render it a more accessible beneficial reuse site in the future.

Carneros River Ranch

This disposal site is currently not accepting any new material as its owners are in the process of developing an EIR for the project and in 2012 no dredged material was placed at Carneros River Ranch. This disposal facility is a privately owned and operated site located across Highway 37 from the Port Sonoma Marina near the mouth of the Petaluma River. Since 2007, the Port Sonoma Marina has been pilot-testing the feasibility of growing certain crops (i.e. tomatoes, oak trees, olives, and wine grapes) using dredged material from Port Sonoma. The property owner, Berg Holdings, has applied for a permit to construct an off-loader facility at Port Sonoma, which will deliver dredged material to the Carneros River Ranch site. The off-loader will use Port Sonoma Marina's existing dredge material transport pipeline that connects the Port Sonoma Marina to the Carneros River Ranch property. The barge load size will be limited to about 1,500 cy by the design depth of the Port Sonoma Marina entrance channel -6 ft Mean Lower Low Water.

Appendix 4 - 2012 LTMS Non-USACE Maintenance Dredging Project
Programmatic EFH Agreement Compliance

Project Name	Placement Site	USACE File No.	Dredge Month(s) 2012	Volume: Cubic Yards (CY)	EFH Compliance Issues
Eelgrass or other Aquatic Vegetation Present					
Emeryville Entrance Channel	SF-11	2012-00173S	Nov. - Dec.	48,447 CY	Eelgrass within 250 meters. Silt curtains used to contain turbidity. No other EFH issues.
Paradise Cay Yacht Club, Episode 6	SF-11	26655N	Sep. - Nov.	15,812 CY	Eelgrass within 250 meters. Silt curtains used to contain turbidity. No other EFH issues.
Sausalito Yacht Harbor, Episode 2	SF-11	2009-00207N	Sep. - Oct.	26,371 CY	Eelgrass within 250 meters. Silt curtains used to contain turbidity. No other EFH issues.
US Coast Guard Station San Francisco, Episode 1	SF-11 and MWRP	2010-00371S	Nov.	19,447 CY	Eelgrass within 250 meters. Silt curtains used to contain turbidity. No other EFH issues.
Pittsburg Marina Lowy Basin, Episode, Episode 3	Winter Island	26215S	Oct.	10,787 CY	Sago Pondweed *(Stuckenia filiformis)* within dredge footprint and 45 meters. Post-dredge survey for the submerged aquatic vegetation required until 2015.
Contaminants Present - No Eelgrass					
Pier 39, Episode 2	SF-11, SF-DODS, and Berth 10	27549S	Jul. - Aug	39,210 CY	No eelgrass within 250 meters. Dredged material with high PAHs taken to Berth 10. Post-dredge z-layer sampling and testing completed, further action may be needed.
San Francisco Marina West Basin, Episode 4	SF-11, MWRP, & Aramburu Island	2008-00074S	Sep. - Oct.	29,462 CY	No eelgrass within 250 meters. Dredge material with high PAH from dredge units B2-1-2a and 2b, and B2-4-2a and 2b taken upland. Units capped with clean sand.
No Eelgrass Present					
Amports, Episode 4	Winter Island	28097N	Mar.	22,580 CY	No eelgrass within 250 meters. No EFH issues associated with episode.
Alameda Ferry Terminal and Access Channel Water Emergency Transportation Authority (WETA), Episode 2	San Rafael Rock Quarry	2009-00203S	Nov.	6,109 CY	No eelgrass within 45 meters. No EFH issues associated with episode.
Benicia Marina, Episode 12	SF-9	26656N	Oct. - Nov.	5,933 CY	No eelgrass within 250 meters. No EFH issues associated with episode.
Chevron Long Wharf, Episode 3	SF-DODS and MWRP	2009-00052S	Oct. - Nov.	150,132 CY	No eelgrass within 250 meters. No EFH issues associated with episode.
Lowrie Yacht Harbor, Episode 1	SF-10	2009-00245N	Aug. - Oct.	26,376 CY	No eelgrass within 250 meters. No EFH issues associated with episode.
Martinez Marina, Episode 1	Onsite Ponds	2012-00070S	Nov. -Dec.	14,501 CY	No eelgrass within 250 meters. No EFH issues associated with episode.

Project Name	Placement Site	USACE File No.	Dredge Month(s) 2012	Volume: Cubic Yards (CY)	EFH Compliance Issues
No Eelgrass Present					
Phillips 66, Episode 8	SF-8 and SF-9	28482S	Nov.	15,503 CY	No eelgrass within 250 meters. No EFH issues associated with episode.
Plains Martinez Terminal, Episode 2	Winter Island	27625S	Oct.	5,292 CY	No eelgrass within 250 meters. No EFH issues associated with episode.
Port of Oakland Berths 22, 23, 25-26, 30, 32, 35-37, 55-59, and 60-63 Episode 35	MWRP	27629S	Aug. - Nov.	141,759 CY	No eelgrass within 250 meters. No EFH issues associated with episode.
Port of San Francisco Berth 35, Episode 21	SF-DODS	275492S	Oct. - Nov.	75,731 CY	No eelgrass withing 250 meters. No EFH issues associated with episode.
Port of San Francisco Berth 80B, 80C, and 80D, Episode 22	SF-11	27549S	Sep.	79,083 CY	No eelgrass within 250 meters. No EFH issues associated with episode.
San Rafael Canal Homeowners - Aqua Vista Homeowners Association, Episode 1	SF-10	2012-00209N	Nov. - Dec.	1,538 CY	No eelgrass within 250 meters. No EFH issues associated with episode.
San Rafael Canal Homeowners - Newport Boating Assoc., Episode 1	SF-10	2011-00408N	Nov. -Dec.	16,790 CY	No eelgrass within 250 meters. No EFH issues associated with episode.
San Rafael Canal Homeowners - Porto Bello Association, Episode 1	SF-10	2012-00072N	Nov. - Dec.	6,073 CY	No eelgrass within 250 meters. No EFH issues associated with episode.
San Rafael Canal Homeowners - Royal Court Association, Episode 1	SF-10	2012-00091N	Nov. - Dec.	1,815 CY	No eelgrass within 250 meters. No EFH issues associated with episode.
Sunnyvale Boat Ramp, Episode 4	Upland site	29123S	Aug.	18 CY	No eelgrass within 250 meters. No EFH issues associated with episode.
Tesoro Golden Eagle/Avon Terminal	Winter Island	2012-00106S	Oct.	3,827 CY	No eelgrass within 250 meters. No EFH issues associated with episode.
Valero, Episode 12	MWRP	26982N	May & Aug	43,845 cy	No eelgrass within 250 meters. No EFH issues associated with episode.
Vallejo Marina North and South Basins, Episode 1	SF-9	2012-00057S	Oct.	61,539 CY	No eelgrass within 250 meters. No EFH issues associated with episode.

Appendix 5 - 2012 LTMS USACE Maintenance Dredging Projects
Programmatic EFH Agreement Compliance

Project Name	Placement Site	Dredge Used	Dredge Month(s) 2012	Total Area of Project (Acres)	Area Dredged (Acres)	Volume: Cubic Yards (CY)	EFH Compliance Issues
Eelgrass or other Aquatic Vegetation Present							
Richmond Inner Harbor	SF-DODS	Clamshell	Oct 2012 - Feb 2013	463.03	101.39	508,717	Overlap with 45 foot buffer (0.003 acre). Eelgrass within 250 meters of dredging.
Oakland Harbor Inner	SF-DODS	Clamshell	Oct 2012 - May 2013	324.21	134.84	582,779	Eelgrass within 250 meters of dredging.
Oakland Harbor Outer	SF-DODS	Clamshell	Oct 2012 - May 2013	251.01	50.71	476,431	Eelgrass within 250 meters of dredging.
No Eelgrass Present							
S.F. Main Ship Channel	SF-17	Hopper (Essayons)	Jul	1203.59	63.01	66,381	No eelgrass within 250 meters. No EFH issues associated with episode.
Richmond Outer Harbor	SF-10	Hopper (Essayons)	Jul-Aug	149.07	20.71	57,429	No eelgrass within 250 meters. No EFH issues associated with episode.
Richmond Outer Harbor	SF-11	Hopper (Essayons)	Jul-Aug			85,191	No eelgrass within 250 meters. No EFH issues associated with episode.
Pinole Shoal Channel	SF-10	Hopper (Yaquina)	Jul - Aug	879.07	124.95	152,202	No eelgrass within 250 meters. No EFH issues associated with episode.
Suisun Bay Channel - Bulls Head Reach (BHR)	SF-9	Hopper (Yaquina)	Jun	17.90	0.75	36,614	No eelgrass within 250 meters. No EFH issues associated with episode.
Suisun Bay Channel / New York Slough (exclude BHR)	SF-16	Hopper (Yaquina)	Jul - Aug	787.95	32.85	73,829	No eelgrass within 250 meters. No EFH issues associated with episode.
Redwood City Harbor	SF-11	Hopper (Yaquina)	Aug	209.33	72.14	74,465	No eelgrass within 250 meters. No EFH issues associated with episode.
Oakland Harbor Entrance	SF-DODS	Clamshell	Oct 2012 - May 2013	200.92	57.66	167,175	No eelgrass within 250 meters. No EFH issues associated with episode.