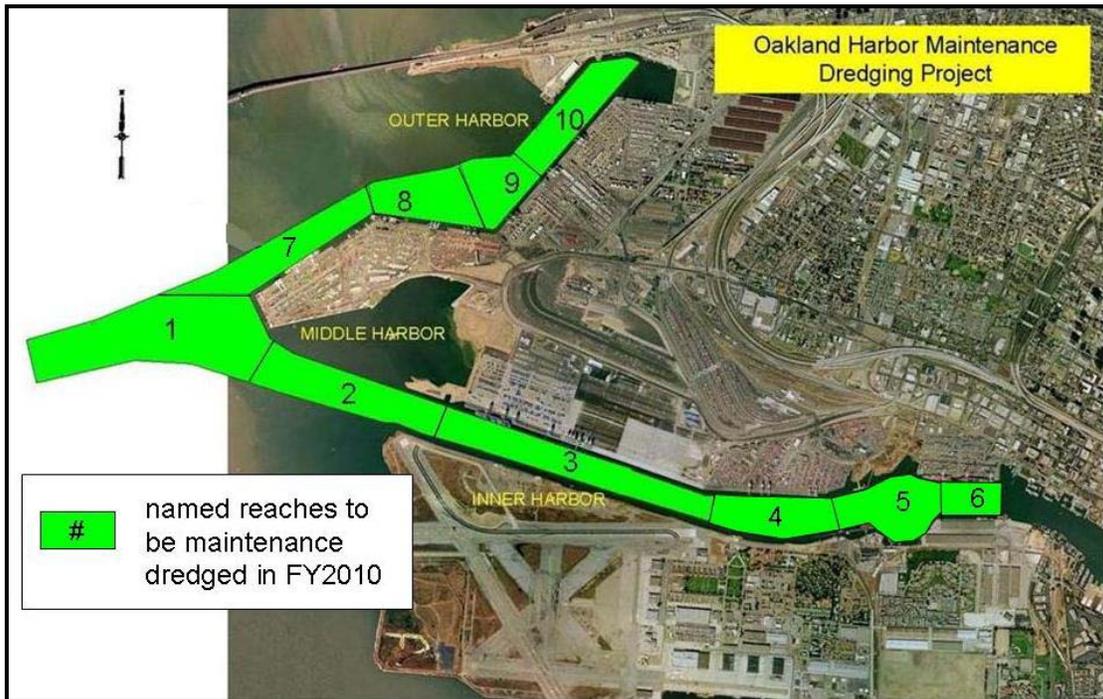


# Environmental Assessment (w/Draft FONSI)

For

Fiscal Year 2010-2012 Maintenance Dredging  
of Oakland Inner and Outer Harbors, Oakland, California



Prepared By

U.S. Army Corps of Engineers, San Francisco District

2010

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**ACRONYMS**

ACHP.....	Advisory Council on Historic Preservation
APE.....	Area of Potential Effects
ASBS.....	Area of Special Biological Significance
BO.....	Biological Opinion
CAA.....	Clean Air Act
CCC.....	California Coastal Commission
CCMP.....	California Coastal Management Program
CDFG.....	California Department of Fish and Game
CEQ.....	Council on Environmental Quality
CESA.....	California Endangered Species Act
CWA.....	Clean Water Act
CY.....	Cubic yards
CZMA.....	Coastal Zone Management Act
EA.....	Environmental Assessment
EFH.....	Essential Fish Habitat
EIR.....	Environmental Impact Report
EIS.....	Environmental Impact Statement
EPA.....	Environmental Protection Agency
ESA.....	Endangered Species Act
FMP.....	Fishery Management Plan
FONSI.....	Finding of No Significant Impact
FWCA.....	Fish and Wildlife Coordination Act
FY.....	Fiscal year
HWRP.....	Hamilton Wetland Restoration Project
IAA.....	Integrated Alternatives Analysis
LTMS.....	(San Francisco Bay) Long Term Management Strategy
MET.....	Modified Elutriate Test
MHEA.....	Middle Harbor Enhancement Area
MLLW.....	Mean Lower Low Water
MMPA.....	Marine Mammal Protection Act
MSA.....	Magnuson-Stevens Fishery Conservation and Management Act
MWRP.....	Montezuma Wetland Restoration Project
NAAQS.....	National Ambient Air Quality Standards
NEPA.....	National Environmental Policy Act
NHPA.....	National Historic Preservation Act
NMFS.....	NOAA's National Marine Fisheries Service
NOAA.....	National Oceanographic and Atmospheric Administration
O&M.....	Operation and Maintenance
OTM.....	Ocean Testing Manual
PL.....	Public law
SFBRWQCB.....	San Francisco Bay Regional Water Quality Control Board
SF-DODS.....	San Francisco Deep Ocean Disposal Site
SHPO.....	State Historic Preservation Officer



## 1.0 PROPOSED PROJECT

### 1.1 Summary of Project Description and Background Information

This Environmental Assessment (EA) addresses the U.S. Army Corps of Engineers, San Francisco District (USACE) annual maintenance dredging, commonly referred to as Operation and Maintenance (O&M) dredging, of the Oakland Harbor for the years 2010, 2011, and 2012. The work is proposed to occur within the Port of Oakland Outer Harbor, Entrance Channel, and Inner Harbor (Figure 1) to an authorized depth of -50 feet Mean Lower Low Water (MLLW) (including an addition foot paid and one foot unpaid overdepth) using a clamshell dredge. The dredged material would be placed in a scow and transported to the Hamilton Wetland Restoration Project (HWRP), an upland beneficial use placement site. In the event placement at the HWRP becomes infeasible due to schedule, logistical or financial reasons, the remainder of the dredged material would be placed at an alternative dredged material placement site, such as the San Francisco Bay Deep Ocean Disposal Site (SF-DODS) or another permitted upland beneficial use placement site. The work may begin on or after July 1 and finish no later than November 30 of each year. Details of the proposed action are described in section 3.1 “Proposed Action” below.

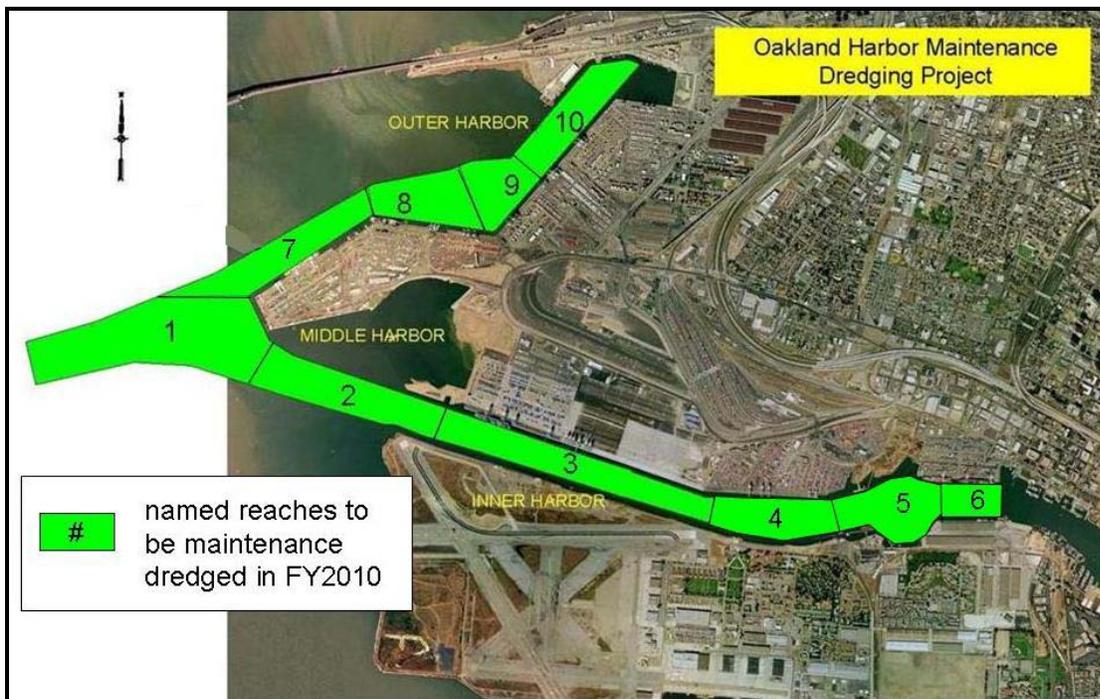


Figure 1. Aerial photograph of Oakland Harbor with labeled O&M reaches.

Environmental work windows for dredging and dredged material placement were established following programmatic section 7 Endangered Species Act (ESA) consultation with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) (USFWS 1999; NMFS 1998, respectively) for all dredging projects under the Long Term Management Strategy (LTMS) for Placement of Dredged Material in San Francisco Bay. See Table 1 below

for a list of protected species and the dredging environmental work windows for each species according to geographic location in the San Francisco Bay.

The dredging is proposed to occur within the work window for all protected species represented in Table 1 with the exception of the California least tern (*Sternula antillarum browni*). The environmental work window as outlined in the USFWS Biological Opinion (BO) (USFWS 1999) and the LTMS Management Plan (USACE et al. 2001) for California least tern, from within one mile of the coastline of the Berkeley Marina south to San Lorenzo Creek, is August 1 through March 15 each year. In the event of an accelerated annual dredging schedule, maintenance dredging the Entrance Channel and the Oakland Outer Harbor is proposed to occur during the period of July 1-31 each year, thus occurring prior to the start of the work window. Dredging work in the Inner Harbor, which is closer in proximity to the least tern nesting colony site, will occur during the work window only.

The USACE proposed the same accelerated work schedule in 2009 and conducted formal consultation with USFWS for impacts on the California least tern. USFWS provided a BO (USFWS 2009) and incidental take statement containing a condition for USACE to provide compensatory mitigation for the California least tern. Due to the possible continuation of the accelerated work schedule, USACE conducted formal consultation for the California least tern for the proposed dredging of Oakland Outer Harbor and the Entrance Channel in the years 2010-2012 (USFWS 2010). An analysis of impacts to the California least tern and a description of the proposed compensation measures can be found in section 4.0 "Impact Assessment" and section 8.0 "Mitigation Measures," respectively.

Table 1. Environmental Work Windows for San Francisco Bay Dredging Projects															
Area	Project	Species	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	
SF Bay Bridge to Sherman Island	See Below	Steelhead													
		Chinook Salmon Juveniles													
Carquinez Bridge to Collinsville	Suisun Slough, New York Slough, Bulls Head	Sacramento Splittail													
		Delta Smelt													
		Longfin Smelt													
		Steelhead													
		Chinook Salmon Juveniles													
Pinole Shoal Suisun Bay Channel	Suisun Bay, Pinole Shore	Chinook Salmon (Adults)													
		Steelhead													
		Chinook Salmon Juveniles													
San Pablo Bay	Napa River, Petaluma River Channel, Petaluma Across the Flats	Longfin Smelt													
		Steelhead													
		Chinook Salmon Juveniles													
North San Pablo Bay, Napa & Petaluma Rivers	Napa River, Petaluma River Channel, Petaluma Across the Flats	Sacramento Splittail (Juveniles)													
		Steelhead													
		Chinook Salmon Juveniles													
Napa & Petaluma Rivers, Sonoma Creek	Napa River, Petaluma River Channel, Petaluma Across the Flats	Steelhead													
		Chinook Salmon Juveniles													
San Pablo Bay & South SF Bay	Napa River, Petaluma River Channel, Petaluma Across the Flats, San Bruno Shoal (Redwood City)	Western Snowy Plover													
		Steelhead													
		Chinook Salmon Juveniles													

Table 1. Environmental Work Windows for San Francisco Bay Dredging Projects														
Area	Project	Species	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
North SF Bay & San Pablo Bay shallow berthing areas	No Projects	Dungeness Crab	Green	Green	Green	Green	Yellow	Yellow	Green	Green	Green	Green	Green	Green
		Steelhead	Yellow	Yellow	Yellow	Yellow	Yellow	Green						
		Chinook Salmon Juveniles	Yellow	Yellow	Yellow	Yellow	Yellow	Green						
Richardson Bay, North & South Bay	San Rafael Creek, San Rafael Across the Flats, Oakland Inner & Outer Harbor, Richmond Inner & Outer Harbor	Pacific Herring	Yellow	Yellow	Green	Green	Yellow	Green						
		Steelhead	Yellow	Yellow	Yellow	Yellow	Yellow	Green						
		Chinook Salmon Juveniles	Yellow	Yellow	Yellow	Yellow	Yellow	Green						
Waters of Marin County from the Golden Gate Bridge to Richmond-San Rafael Bridge	San Rafael Canal, San Rafael Across the Flats	Coho Salmon	Yellow	Yellow	Yellow	Yellow	Yellow	Green						
		Steelhead	Yellow	Yellow	Yellow	Yellow	Yellow	Green						
		Chinook Salmon Juveniles	Yellow	Yellow	Yellow	Yellow	Yellow	Green						
Central SF Bay	Oakland Inner & Outer Harbor, Richmond Inner & Outer Harbor	Steelhead	Yellow	Yellow	Yellow	Yellow	Yellow	Green						
		Pacific Herring	Yellow	Yellow	Green									
Berkeley Marina to San Lorenzo Creek within 1 mile of coastline	Oakland Inner & Outer Harbor, San Leandro	California Least Tern	Green	Green	Green	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Green	Green
South of Highway 92 bridge (San Mateo-Hayward)	San Bruno Shoal, Redwood City	California Least Tern	Green	Green	Green	Green	Green	Yellow	Yellow	Yellow	Green	Green	Green	Green
In Areas with Eelgrass Beds	All Projects	California Least Tern	Yellow											
Baywide in Areas within 250 ft of Salt Marsh Habitat	All Projects	California Clapper Rail	Green	Yellow	Green	Green	Green	Green						
In and Adjacent to Salt Marsh Habitat	All Projects	Salt Marsh Harvest Mouse	Yellow											

## 1.2 Location of the Proposed Project

### 1.2.1 Oakland Outer Harbor

Oakland Harbor is located in the South Bay of the San Francisco Bay Area, and is within the city of Oakland, Alameda County, California (Figure 1 and 2); a portion of the Entrance Channel extends into San Francisco County (USGS Oakland West Quadrangle; T01S, 04W, sec21, 28, 29). Oakland Harbor consists of the Entrance Channel (reach 1), Outer Harbor (reaches 7-10), Inner Harbor (reaches 2-6), and Middle Harbor; Middle Harbor is now a subtidal habitat restoration site (Middle Harbor Enhance Area, or MHEA).



Figure 2. Vicinity map of Oakland Harbor within the San Francisco Bay Area.

### 1.2.2 Hamilton Wetland Restoration Project/Bel Marin Keys Unit V

The HWRP is a 980-acre wetland restoration site located on the northwest side of San Pablo Bay in the city of Novato, Marin County, CA (Figure 3). The restoration project, being constructed by USACE and State Coastal Conservancy, has elevations that average five feet below sea-level and will use about 10.6 million CY of dredged material to raise ground surfaces to approach marsh plain elevations. Due to the silty nature of the shoaled material from Oakland Harbor Channels, the material would be used for the tidal wetlands portion of the restoration site.

The HWRP utilizes a hydraulic offloader to deliver the material from the San Pablo Bay to the site via pipeline (Figure 3).

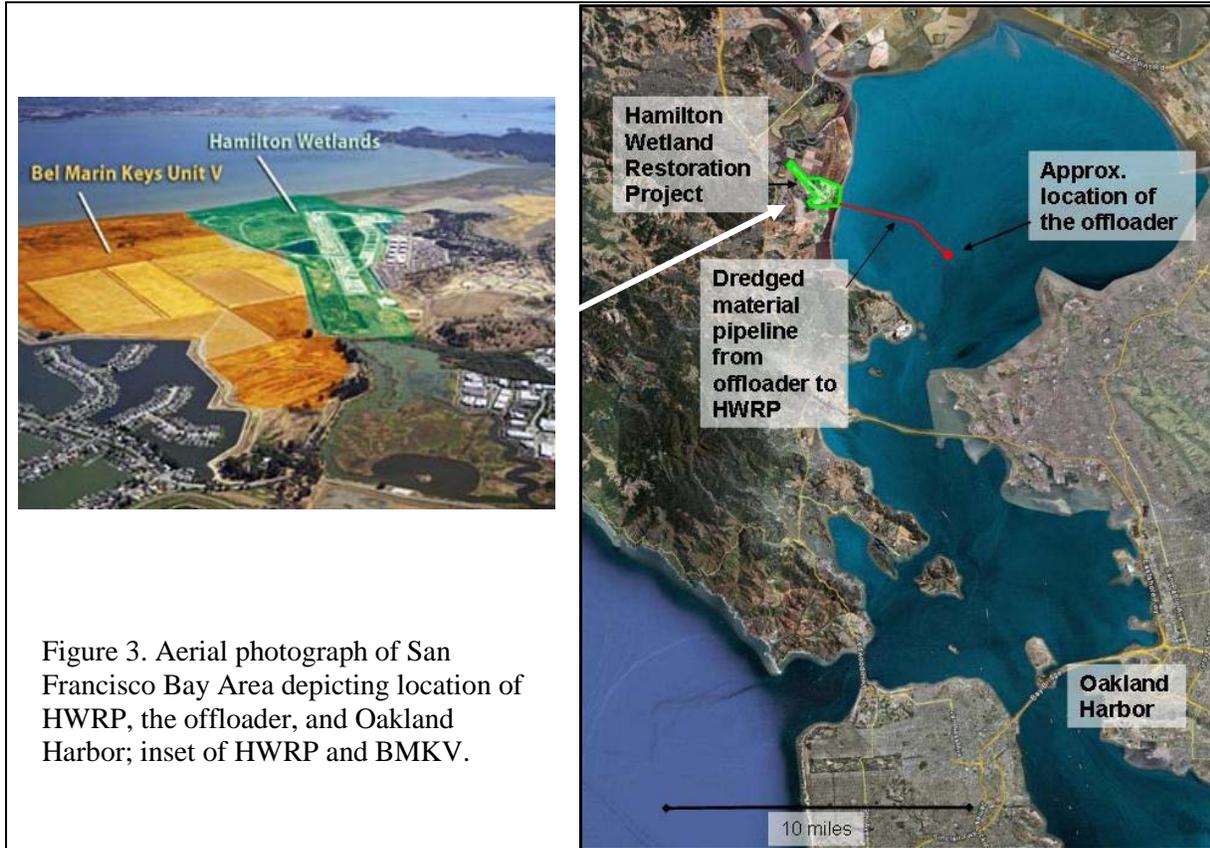


Figure 3. Aerial photograph of San Francisco Bay Area depicting location of HWRP, the offloader, and Oakland Harbor; inset of HWRP and BMKV.

Bel Marin Keys Unit V (BMKV), located north of the HWRP, is a 1,610-acre expansion of the HWRP. The project expansion site, which was historically dominated by salt marsh habitat, was converted over the last 150 years to agricultural use. The site would add an additional 13 million CY of capacity for dredged material into wetlands. BMKV has been authorized for use and is currently in the design phase and will be available after the main HWRP has reached capacity, which may occur by the maintenance dredging episodes in 2012. A hydraulic offloader would also be used for material placement at BMKV.

### 1.2.3 SF-DODS

SF-DODS is a deep ocean disposal site located 50 miles west of the Golden Gate Bridge and has depths that range from 2500 to 3200 meters. SF-DODS is the deepest and farthest offshore of any disposal site in the nation. Unlike many disposal sites in the nation, it is off the continental shelf and several miles beyond the outer boundaries of the national marine sanctuaries that exist along the Central California Coast (Figure 4). The location of SF-DODS was selected to avoid important fishery areas and geographically unique or otherwise sensitive habitats.

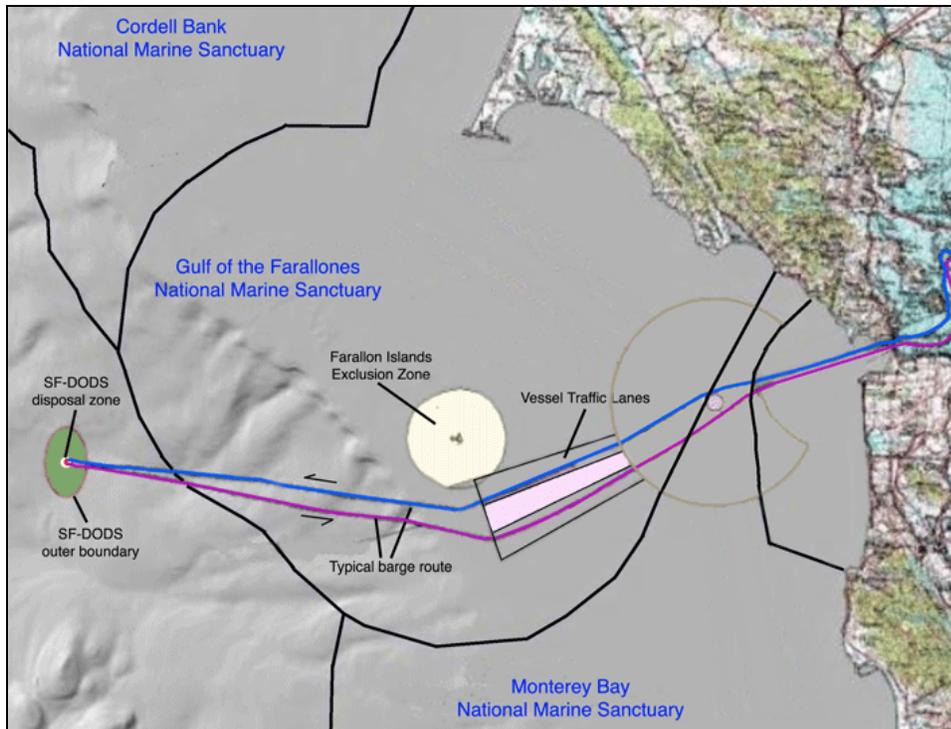


Figure 4. SF Deep Ocean Disposal Site (SF-DODS) location and vessel route. (Source: EPA website: <http://www.epa.gov/region09/water/dredging/sfdods/sfdods-map.html>)

### 1.3 Timing of the Proposed Project

Maintenance dredging of the Oakland Harbor is anticipated to begin on or after July 1 of 2010, 2011, and 2012, and to be completed on or before November 30 of 2010, 2011, and 2012. Work will only begin in July of each year in the event of an accelerated dredging schedule. If work begins in July, then maintenance dredging will begin in the inner-most reach, reach 10, of the Oakland Outer Harbor and work southwest towards the Entrance Channel through the month of July. The dredging will continue to the Inner Harbor reaches 2-6; dredging of reaches 2-6 will not begin earlier than August 1 each year. Dredging operations may be conducted 24 hours a day, seven days a week. The maintenance dredging may take up to 120 days to complete.

### 1.4 Purpose and Need for Proposed Action

The purpose of this proposed action is to ensure continued navigability of the Federal Channel by commercial vessels requiring depths at the authorized level. The project is needed because sediment which naturally settles in the channel impedes or prevents such navigability and must be removed if navigability to authorized depths is to be maintained. Failure to maintain authorized depth will lead to draft restrictions placed on vessel traffic by the bar pilots.

### 1.5 Study Authority

Under the Water Resources Development Act (WRDA) of 1999, Pub. L. No. 106-53, 113 Stat. 269, 273, USACE is authorized to deepen the harbor to -50 feet to accommodate the upcoming generation of deep draft ships. The deepening work has been completed to the depth of -50 feet

MLLW in Oakland Outer and Inner Harbors; any shoaled material will be dredged to maintain the authorized depth of -50 feet MLLW. Improvements to and maintenance dredging of the federal project has been accomplished pursuant to the following authorities: River and Harbor Act of 1910, Pub. L. No. 61-264, 36 Stat. 630, 661; River and Harbor Appropriations Act of 1917, Pub. L. No. 65-37, 40 Stat. 250, 259; Rivers and Harbors Act of 1927, Pub. L. No. 69-560, 44 Stat. 1010, 1014; River and Harbor Act of 1930, Pub. L. No. 71-520, 46 Stat. 918, 931; River and Harbor Act of 1945, Pub. L. No. 75-14, 59 Stat. 10, 21; River and Harbor Act of 1962, Pub. L. No. 87-874, 76 Stat. 1173, 1176; and Water Resources Development Act of 1986, Pub. L. No. 99-662, § 202, 100 Stat. 4082, 4092.

The authority for the USACE and the U.S. Department of Agriculture, Animal and Plant Health Inspection Wildlife Services (USDA-APHIS-WHS) to enter into an agreement for predator management services is the Economy Act, 31 U.S.C. § 1535 (see section 8.0 “Mitigation Measures”).

## 1.6 Reference Material

Considerable background material on all phases of this proposed project is presented in the following documents: *Final Policy Environmental Impact Statement/Programmatic Environmental Impact Report (EIS/EIR), Long Term Management Strategy (LTMS) For The Placement Of Dredged Material in the San Francisco Bay Region* (USACE et al. 1998); *Final Long Term Management Strategy (LTMS) Management Plan for Placement of Dredged Materials in the San Francisco Bay Region* (USACE et al. 2001); *Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS* (Jones and Stokes 1998) (for information on transportation to the HWRP offloader); *Final Environmental Impact Statement for Designation of a Deep Water Ocean Dredged Material Disposal Site Off San Francisco, CA* (USEPA 1993); *Programmatic Formal Endangered Species Consultation on the Proposed Long-Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region, California* (USFWS 1999); *Bel Marin Keys Unit V of the Hamilton Wetland Restoration Project FEIS/R* (CSCC and USACE 2003); and *Formal Consultation on the Proposed Oakland Harbor Operation and Maintenance Dredging Project in 2010, 2011, and 2012; City of Oakland, Alameda and San Francisco Counties, California* (USFWS 2010).

Environmental Assessments (EA) written for previous maintenance dredging episodes at Oakland Harbor also provide relevant background information. See “References” section 10.0 for a listing of previous EAs. All documents are available upon request (contact Allison Bremner at 415-503-6861; allison.m.bremner@usace.army.mil).

## 2.0 SCOPE OF ANALYSIS

The scope of analysis under NEPA will consider direct, indirect, and cumulative environmental factors at the site of dredging, associated surface operations, and transport to the placement site for the years 2010, 2011, and 2012. The areas within the scope of analysis for this proposed activity include the Oakland Inner and Outer Harbor Channels, the Entrance Channel, and transport routes to the HWRP/BMKV offloader, SF-DODS, and/or another permitted upland beneficial use site. Environmental impacts of placement at the HWRP/BMKV offloader site have been addressed in the Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS (Jones

and Stokes 1998) and Bel Marin Keys Unit V of the Hamilton Wetland Restoration Project FEIS/R (CSCC and USACE 2003); environmental impacts of placement at SF-DODS have been addressed in the Final EIS for Designation of a Deep Water Ocean Dredged Material Disposal Site Off San Francisco, CA (USEPA 1993).

As previously mentioned, dredging Oakland Harbor August 1 through November 30 is covered by the LTMS BO (USFWS 1999); therefore, the scope of the assessment of impacts on the California least tern is only for dredging activities occurring July 1 through July 31 within the Outer Harbor reaches and Entrance Channel.

For the proposed compensatory mitigation, the USFWS Predator Management Program is compliant with all environmental protection standards per the San Francisco Bay National Wildlife Refuge Management Plan and Final Environmental Assessment (Foerster & Takekawa 1991). The contractor proposed to supply predator management services, USDA-APHIS-WS, is fully permitted to conduct predator management services. Therefore, the proposed California least tern predator management portion of this project is not within the scope of analysis of this EA.

### **3.0 PROPOSED ACTION AND ALTERNATIVES**

#### **3.1 Description of Proposed Action**

##### **3.1.1 Maintenance Dredging**

The proposed action is the annual maintenance dredging of reach 1 (Entrance Channel), reaches 2-6 (Inner Harbor), and reaches 7-10 (Outer Harbor) of the Oakland Harbor (Figures 1 and 2) for the years 2010, 2011, and 2012. The shipping channels would be maintained by dredging to the depth of -50 feet MLLW using a clamshell dredge (Figure 5).



Figure 5. Clamshell dredge scooping shoaled material from channel and placing in scow. Photo ©2006 Michael Slater Mar 8 2006 Source: <http://www.boatingsf.com/photopage.php?photo=1441>

Historical volumes of maintenance material removed from the Oakland Harbor, as reported in the Integrated Alternatives Analysis for San Francisco District Federal Navigation Channels Years 2010-2012 Operation and Maintenance Dredging (USACE 2010), are 250,000 CY (based

on an estimate to the authorized depth plus one foot paid overdepth) and 500,000 CY (based on an estimate to the authorized depth plus one foot paid and one foot unpaid overdepth). Therefore, an estimated total of 500,000 CY of sediment may be dredged and removed from the Oakland Harbor channels each year. Recent annual volumes of dredged material from Oakland Harbor (from maintenance dredging and the Oakland Harbor Navigation Improvement (-50 foot Project) are listed in Table 2 below.

Dredged Material Placement Site	2001	2002	2003	2004	2005	2006	2007	2008	2009
SF-11			60,000						
SF-DODS	269,600	327,525	460,000	170,000		268,844*	808,500*		
HWRP							105,300*	404,542	335,860
Berth 10-Port of Oakland						44,397*			
MHEA**					3,586,933*	80,000*	1,207,000*		
Montezuma				687,784*	883,528*	1,090,459*			

\*Includes material dredged as part of the Oakland Harbor Navigation Improvement (-50') Project.  
 \*\*Middle Harbor Enhancement Area

Updated estimates will be provided to regulatory agencies as pre-solicitation surveys (typically conducted in April or May each year) and pre-dredge surveys (conducted approximately two weeks prior to dredging) are conducted each year. It is important to note the pre-solicitation surveys are conducted early in the season; therefore, the pre-dredge surveys will reveal a higher volume of shoaled material. For this reason, an estimate of the additional volume of sediment that may accumulate between the time of the pre-solicitation survey and the scheduled dredging episode will be provided with the pre-solicitation surveys.

#### *FY10 Sediment Volume Estimate*

Condition surveys performed on February 24-25, 2010 revealed a very high amount of shoaled sediment. This is most likely because the Inner Harbor was not maintenance dredged in 2009 because the -50 foot Oakland Harbor Deepening Project was nearing completion at the time. The calculated estimate for FY10 Oakland Harbor O&M dredging is 640,215 CY (based on an estimate to the authorized depth plus one foot paid overdepth) and 950,000 CY (based on an estimate to the authorized depth plus one foot paid and one foot unpaid overdepth); these volumes include an estimate of material that may shoal between the time of the survey and the dredging episode. The additional material to be dredged will be from the named reaches and entrance channel, and does not constitute any additional dredging footprint.

### **3.1.2 Transportation of Dredged Material**

The proposed action includes transportation of the dredged material in 3,000-5,000 CY scows to an offloader for HWRP (Figure 3). The HWRP currently utilizes a hydraulic offloader to facilitate the transfer of dredged material from the dredge scows to the pipeline. In the event placement at the HWRP becomes infeasible due to schedule, logistical or financial reasons, the

remainder of the dredged material would be placed at SF-DODS (Figure 4) or another permitted upland beneficial use dredged material placement site. In the event that disposal at SF-DODS is necessary, dredged material will be towed by ocean-going tugs to the open-ocean disposal site. All loading, transportation and disposal operations at SF-DODS would be conducted in accordance with 40 CFR 228.15(l)(3). This statute describes the EPA Standard Ocean Disposal Conditions for SF-DODS, dated October 10, 2006, and can be found in Appendix C, section 1.0. Transportation of dredged material will be conducted 24 hours a day.

### **3.2 No Action Alternative**

The no action (or no dredging) alternative would result in the continued shoaling of the channel, potentially causing ship prop disturbance to the substratum and grounding, which would result in significant damage to the benthic habitat as well as the potential for oil leakage from ship damage.

Parts of the entire harbor would eventually become inaccessible to such vessels. Such inaccessibility might contribute to moderate to significant short-term economic losses to some localized sectors of the economy. Thus, this alternative does not meet the project need. The no action alternative would prevent temporary, minor impacts to the marine substratum, water quality, and air quality resulting from dredging, transportation, and placement activities.

### **3.3 Alternatives for Placement of Dredged Material**

The alternative analysis for placement of dredged material discussed below reflects the analysis contained in the 2012-2012 IAA (USACE 2010). The IAA is based on the goals of the LTMS 40/40/20 plan (USACE et al. 2001). This plan emphasizes placement of dredged material at upland and ocean environments (approximately 40 percent of material at each) with limited in-Bay disposal (no more than 20 percent of material). This plan provides the best balance of the overall goals and objectives of the LTMS, and combines the maximum environmental benefit with the minimum environmental risks.

**Alternative A (preferred):** HWRP. The HWRP placement site is the preferred dredged material placement site identified in the IAA for the Oakland O&M Program in 2010-2012. The USACE intends to deliver all the dredged material to the HWRP. If, in the event placement at the HWRP becomes infeasible due to schedule, logistical or financial reasons, all or the remainder of the dredged material would be placed at another permitted (contractor-provided) upland beneficial use project, or at the San Francisco Deep Ocean Disposal Site (SF-DODS).

**Alternative B:** SF-DODS. SF-DODS is a deep ocean disposal site located 50 miles west of the Golden Gate Bridge over the bottom edge of the continental slope. SF-DODS has depths that range from 2500 to 3200 meters. To fulfill the goals of the LTMS, USACE proposes beneficial use of dredged material at upland sites, such as HWRP. SF-DODS is to be available as an alternative placement site in the event the HWRP becomes unavailable.

**Alternative C:** Alcatraz Disposal Site (SF-11). The Alcatraz Island disposal site is a 2,000-foot circle located approximately 1,200-1,500 feet south of the Alcatraz Island in San Francisco Bay.

A high-energy site with swift currents, it was originally theorized that dredged material placed at SF-11 would be carried out to sea with the tide. Beginning in 1975, monitoring of the conditions at SF-11 showed decreasing water depths (from -160 to -95 feet), suggesting that dredged material was not being dispersed from the site as anticipated, likely due to the volume of material disposed of. USACE issued Public Notice 93-3 *Proposed Change in Corps Policy on Alcatraz Dredged Material Disposal Site Management*, which sets limits on the volume and timing of placement activities at Alcatraz in an effort to minimize mounding by maximizing dispersion from the site. According to the USACE *Alcatraz Trend Study* (July 1999), more recent monitoring of SF-11 has shown that mounding of dredged material still occurs. Placement is highly regulated and limited to 400,000 CY per month from October to April and 300,000 CY per month from May to September. Dredged material that is disposed of at SF-11 is from maintenance dredging and is mainly silty, which disperses relatively well. While maintenance-dredged material from Oakland Harbor has been previously disposed of at SF-11 and is mainly silt, use of this site is deemphasized to comply with target limits outlined in the 2001 LTMS Management Plan. The USACE is committed to the LTMS goal of reducing in-bay disposal and therefore elects to place material at upland beneficial use sites or off-shore at SF-DODS.

**Alternative D:** Carquinez Strait Disposal Site (SF-09). The Carquinez disposal site measures 1,000 feet by 2,000 feet and is located 0.9 miles west of the entrance to Mare Island Straits in eastern San Pablo Bay in Solano County. Placement is highly regulated and limited to 1.0 million CY per month and 3.0 million CY per year in wet years and 2.0 million CY in other years. The USACE is committed to the LTMS goal of reducing in-bay disposal and therefore elects to place material at upland beneficial use sites, off-shore at SF-DODS.

**Alternative E:** San Pablo Bay Disposal Site (SF-10). This site is located 3.0 miles northeast of Point San Pedro in southern San Pablo Bay in Marin County, and measures 1,500 feet by 3,000 feet. Placement is highly regulated and limited to 500,000 CY per month and per year. The USACE is committed to the LTMS goal of reducing in-bay disposal and therefore elects to place material at upland beneficial use sites or off-shore at SF-DODS.

**Alternative F:** Winter Island. Winter Island is a privately-owned and operated site located at the confluence of the Sacramento and San Joaquin Rivers and Suisun Bay in Contra Costa County. Dredged material is imported onto the site to re-nourish the island and maintain five miles of perimeter levees. When operational, the site has the capacity to take up to 200,000 CY of material a year. The majority of material is off-loaded from barges via clamshell directly on to the levees. The site can accept some pumped material into a contained area. Barges of less than 1,000 CY capacity are desirable since they can go around the island and directly access the levees. The maximum depth of barges that can access the site is 14 feet. Silt and clay material is the most desirable for levee maintenance, but the site also has the ability to accept, as a lower priority, a limited amount of sandy material. The site is permitted by the Regional Water Quality Control Board (RWQCB), and has specific material acceptance criteria established in its WDR which allows material having some levels of contaminants not normally suitable for unconfined aquatic disposal to be managed there. Clean dredged material is also accepted at this site. The site charges a standard tipping fee of \$1 per CY. The importer is responsible for all unloading costs. The RWQCB permit expired in June 2006, and this site will not be considered as a placement site.

**Alternative G:** Montezuma Wetlands Restoration Project (MWRP). This site is located at the eastern edge of Suisun Marsh, adjacent to Montezuma Slough, and is completely isolated from Suisun Bay and its tributaries. Dredged material placed at this site would meet beneficial use requirements and contribute to the restoration of approximately 1,820 acres of wetlands. This disposal site complies with LTMS Management Plan guidelines. MWRP is considered to be the next best site for upland disposal after HWRP because, although it's a beneficial use site the substantial increase in cost associated with placement at the site due to additional transportation costs and increased air emissions makes it less desirable.

**Alternative H:** Suisun (SF-16). This is a Single-User In-Bay Placement Site [Unconfined Aquatic Disposal] for Corps use only. SF-16 is a 500 by 11,200 feet rectangle located adjacent to the north side of Suisun Bay Channel approximately 1 mile upstream of the I-680 Bridge. The LTMS plan is authorized to accept 200,000 CY of dredge material annually at this site. Since the placement site is alongside the channel, transport costs are low because there are no tipping or unloading fees. Suisun Bay (SF-16) has been the historic placement site for the Suisun Bay Channel and New York Slough dredge material. Due to the low capacity, Suisun Bay is not an option for placement of the large volume of material from Oakland Harbor.

**Alternative I:** Bair Island. Bair Island is located in South San Francisco Bay, across Redwood Creek from the Port of Redwood City in San Mateo County. The U.S. Fish and Wildlife Service is proceeding with a plan to restore inactive salt evaporator ponds to tidal wetlands using excess dirt from Bay Area construction contractors and dredged material, and then breaching levees at Smith Slough which currently keep tidal action out of the confines of the Island. The present placement site on Inner Bair Island is at capacity.

### 3.4 Alternatives for Dredging Methods

**Alternative A:** Hopper Dredge. A hopper dredge is a self-propelled, seagoing vessel designed for maneuverability, with unique capabilities for efficient dredging and the expeditious transporting of dredged material to open-water relocation. Additional advantages include high production rates, job flexibility, the ability to work in rough sea conditions, and easy avoidance of ship traffic. An analogy for a hopper dredge is similar to that of a giant vacuum cleaner. The disadvantage of a hopper dredge is the high operating costs whether dredging or transiting to the placement site. Use of an upland beneficial use site by a hopper dredge requires pump ashore capability and effectively reduces dredging efficiency by half. For these reasons, the use of a hopper dredge is not the preferred method for dredging.

**Alternative B (preferred):** Clamshell Dredge. A clamshell dredge employs a bucket to excavate and raise material from the channel bottom and unload the contents into dump scows or barges for transport to a designated placement site. Clamshells have the capability to utilize several diverse bucket sizes and configurations that optimize removal of different sediment categories (silt, mud, clay, sand, gravel, rock, boulders). In addition, equipment adaptations for specialized environmental dredging applications can be implemented that are reasonably practicable. A crucial component of this operation is the dump scow and tug. Advantages of a clamshell dredge are the availability of equipment, continuous dredging capability, minimization of sediment water content, longer haul distance from the dredging area, can work in confined areas, and can be off-loaded for upland placement. Disadvantages include inefficiency in

removing scattered, small shoals, leaving an uneven bottom surface, inefficiency in very soft material, and instability in heavy swell conditions. Though the shoaled material in the Oakland Harbor is typically silty, a clamshell dredge is the preferred method for dredging Oakland Harbor due to its low potential impacts on protected fish species and for its ability to perform continuously given several scows are available for use at the time of dredging.

**Alternative C: Hydraulic Pipeline.** Hydraulic pipeline dredges, also called cutterhead dredges, are classified by the size of the discharge pipeline, which have internal diameters of 8 to 42 inches. The typical production rate for a 30" pipeline dredge is approximately 2000 CY per hour. The disadvantages include less precision in the dredging process, adding significant water to the sediment transported to the placement site, and upland site preparation and management. Hydraulic pipeline dredges are a very advantageous and economical method of placing material for beneficial use. Hydraulic dredging with direct pipeline discharge to an upland site is possible in cases where the dredging and placement sites are in reasonable proximity to each other. Direct hydraulic placement is generally not possible for dredging projects that are more than three miles from currently available placement sites. The HWRP offloader is greater than 3 miles from the Oakland Harbor; therefore, the use of a hydraulic pipeline is not the preferred method for dredging Oakland Harbor.

#### 4.0 IMPACT ASSESSMENT

**Potential Impacts.** Consideration of possible impacts for the proposed actions is presented below from the perspective of a comparison with the no-project alternative and includes, as appropriate, considerations for dredging and transportation to the placement site (HWRP and/or SF-DODS). The impacts associated with the HWRP efforts at the offloader site (i.e. offloading, sediment conveyance) are not factored into the comparison of impacts with the other reuse/disposal sites presented in this assessment. The HWRP offloader is addressed in the Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS (Jones and Stokes 1998).

The cumulative effects of disposal at SF-DODS involve the consideration that other dredging projects also dispose of dredged material at this site. SF-DODS is an EPA designated off-shore disposal site. The cumulative effects of disposal at SF-DODS are considered and addressed in the EIS (USEPA 1993) for the site designation.

The USFWS Predator Management Program is compliant with all environmental protection standards per the San Francisco Bay National Wildlife Refuge Management Plan and Final Environmental Assessment (Foerster & Takekawa 1991). The USDA-APHIS-WS is fully permitted to conduct predator management services. Therefore, the proposed California least tern predator management portion of this project is not within the scope of analysis of this EA.

#### Water

( X ) **Quality - temperature, salinity patterns, pH, and other parameters:** There are only minor and temporary changes to any of the water quality parameters including temperature, salinity and pH. A USACE study (USACE 1998; USACE 1976a) on the effects of hydraulic cutterhead and clamshell dredge operations on the water column revealed that the operations did

not typically cause significant fluctuations in salinity, temperature or pH over the short and long term. It was noted from the USACE study (USACE 1976a) that changes in these parameters were localized and short in duration; ambient concentrations of these parameters were regained usually within 10 minutes following the release of the material (USACE 1998). Surface water quality objectives for these parameters are expected to be satisfied based on this San Francisco Bay study (USACE 1998; SFRWQCB 1995). Special conditions specified in agency permits would be in place to minimize the risk of any material being released during the transportation portion of dredging operations; please see Appendix C for a detailed account of the special conditions.

Generally, the reduction of dissolved oxygen in the water column is minimal (1 to 2 parts per million) and temporary during active dredging, persisting until the suspended sediments settle (USACE 1989). Most estuarine organisms are capable of tolerating low dissolved oxygen conditions for short periods of time. As such, reduced dissolved oxygen concentrations would be expected to be localized and short term, with minimal substantial impacts (USACE 2007; U.S. Navy 1990).

Impacts to water quality are not determined to be significant.

**( X ) Turbidity, suspended particulates:** Sediments may become suspended due to the clamshell bucket's impact to the bottom, material washing from the top and side of the bucket as it passes through the water column, sediment spillage as it breaks the water surface, spillage of material during barge loading, and intentional overflow in an attempt to increase the barge's effective load (Nightingale & Simenstead 2001). A study characterizing the spatial extent of turbidity plumes during dredging operations in Oakland Harbor found the closed bucket dredge generated elevated concentration of suspended sediments. Ambient Total Suspended Sediment (TSS) concentrations were typically less than 50 mg/l. While exact plume trajectories were dynamic, turbidity levels above ambient were detected up to 400 meters both up- and down-current from the source. But in general, significantly elevated TSS concentrations greater than 225 mg/l were detected up to 250 meters from the source (MEC Analytical Instruments, Inc. 2004). See "Organisms" below for an analysis of the impacts of turbidity and suspended sediment on various life history stages of fishes and shellfishes. A clamshell dredge if properly maintained and operated may be effective in dredging sediments without resulting in excessive turbidity plumes. However, when not properly maintained or operated, clamshell dredges may generate significant concentrations of suspended sediment throughout the water column.

Impacts to turbidity and suspended particulate levels are not determined to be significant.

**( X ) Substrate:** Dredging would remove material from the substratum thus altering the surface characteristics. Additionally, slumping of material adjacent to the immediate area of dredging would also be expected to take place.

Potential impacts of dredging and dredged material placement on substrate include habitat alteration and the physical removal of soft-bottom substrates. See "Aquatic Habitat" and "Organisms" below for an analysis of the impacts of dredging on habitat and organisms occurring on the bay floor substrate.

Impacts to the bay floor substrate are not determined to be significant.

**( X ) Currents, circulation or drainage patterns:** Dredging may modify current patterns and water circulation of the localized habitat by changing the direction or velocity of water flow, water circulation, or dimensions of the water body traditionally used by fish for food, shelter or reproductive purposes. Given the frequent modifications to current and circulation from large vessel traffic, the proposed project would not significantly impact existing currents or circulation patterns.

**( X ) Mixing zone (in light of the depth of water at the disposal site; current velocity, direction and variability at the disposal site; degree of turbulence; water column stratification; discharge vessel speed and direction; rate of discharge; dredged material characteristics; number of discharges per unit of time; and any other relevant factors affecting rates and patterns of mixing):** The mixing zone boundaries at open-water disposal sites (such as SF-DODS) are negotiated with the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). The mixing zone refers to the diameter and depth of the dredged material plume that forms when material is released from a scow or barge. The concentration of particulates within the mixing zone is considered near-field; the high concentration within the zone is short-term due to the mixing with ambient concentrations and consequently becomes diluted. The concentration outside of the mixing zone must be less than 10% of the concentration within the mixing zone, and is considered far-field with effects that are long-term. The potential effects of dredged material placement within the mixing zone are discussed in the *Water Quality - temperature, salinity patterns, pH, and other parameters* and *Turbidity, suspended particulates* sections above. If all the material is placed at the HWRP offloader, the effects discussed in these sections will not be considered for the mixing zone.

**( ) Flood control functions:** The proposed project would not impact flood control functions.

**( ) Storm, wave and erosion buffers:** The proposed project would not impact storm, wave and erosion buffers.

**( ) Erosion and accretion patterns:** The proposed project would remove accreted material from the annually-dredged channels and may cause erosion of the channel sides from sloughing after the channels are dredged. The existing patterns of erosion and accretion will not be affected.

**( ) Aquifer recharge:** The proposed project would not affect aquifer recharge.

**( ) Base flow:** The proposed project would not affect base flow.

**( ) Water supplies, conservation:** The proposed project would not affect water supplies and water conservation.

( X ) **Aquatic Geomorphology:** There would be minimal changes to the existing channel geomorphology as a result of removal of accreted sediment.

( X ) **Aquatic Habitat:** In San Francisco Bay, eelgrass (*Zostera marina*) beds are considered to be a valuable shallow-water habitat, providing shelter, feeding, or breeding habitat for many species of invertebrates, fishes, and some waterfowl. Eelgrass beds supply organic material to nearshore environments, and their root systems stabilize area sediments. Intermittent eelgrass surveys suggest eelgrass abundance has varied greatly in San Francisco Bay in the last several decades. The extent of the area affected by dredging and the resulting concentration of suspended sediment depends on tidal range, current strength, wind speed, water depth, seasonal runoff, and sediment composition (Goals Project 2000). All of these factors, compounded with dredging activities, will limit the development of eelgrass growth.

Turbidity plumes of suspended particulates reduce light penetration through the water column. Limited light availability has been identified as the primary factor controlling depth distribution, density, and productivity of eelgrass (Dennison & Alberte 1982; Dennison & Alberte 1985; Dennison & Alberte 1986; Zimmerman *et al.* 1991; NMFS 2010). Reductions in light available at the eelgrass canopy due to dredging-related turbidity may result in eelgrass loss, especially where eelgrass is growing at or near its lower depth limit. Even slight reductions in light availability result in lower rates of photosynthesis for subaquatic vegetation (Dennison 1987; NMFS 2010) and the primary productivity of an aquatic area may be reduced for extended periods of times (Cloern 1987; NMFS 2010). However, there may be no connection between temporary point source light reduction and eelgrass health.

Eelgrass has been identified as Essential Fish Habitat (EFH) for various life stages of fish species managed by Fisheries Management Plans (FMPs) under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) as established by NMFS. Pursuant to the provisions of the MSA, USACE consulted with NMFS on the proposed annual project's potential impacts to eelgrass for the years 2009 through 2013. NMFS recommended that USACE conduct eelgrass pre- and post-dredging density and distribution surveys within 200 feet of the dredging footprint to determine the dredging-induced turbidity impacts on eelgrass. Eelgrass surveys conducted in 2009 revealed several patches of eelgrass along the channel of the Inner Harbor (see Appendix E for 2009 eelgrass survey maps [Merkel 2009]) within the 200-foot zone. USACE did not end up dredging the Inner Harbor in 2009 and therefore did not conduct post-dredge surveys. Surveys will be conducted in 2010 and 2011 to quantify changes in the density and distribution of eelgrass before and after the dredging activities. A net loss of eelgrass may implicate the need for mitigation. USACE will avoid conducting dredging activities in all areas where eelgrass beds exist. Direct removal and burial of eelgrass would not occur.

The proposed dredging of Oakland Harbor will also result in temporary degradation and/or loss of EFH through removal/burial of benthic infauna and epifauna (prey species) in the substrate within the action area and during dredged material placement at SF-DODS.

( X ) **Aquatic Organisms:** The dominant benthic species in Central San Francisco Bay is the clam *Macoma balthica*, particularly in the intertidal areas. Common subtidal species include the mollusks *Mya arenaria*, *Gemma*, *Musculista senhousia*, and *Venerupis phillipinarum*; the

amphipods *Ampelisca abdita*, *Grandierella japonica*, and *Corophium sp.*; and the polychaetes *Streblospio benedicti*, *Glycinde sp.*, and *Polydora sp.* The Pacific herring *Clupea harengus pallasii*, while not a listed species, is a species of concern in San Francisco Bay. See Table 3 below for a sample list of common resident and seasonal San Francisco Bay fishes.

<b>Table 3. Some of the common San Francisco Bay-dependent fish species</b>		
<b>Type</b>	<b>Common Name</b>	<b>Scientific Name</b>
<b>Resident</b> (Species with resident populations in the Bay and/or Bay-obligate species that use the Bay as nursery habitat.)	Arrow goby	<i>Clevelandia ios</i>
	Bat ray	<i>Myliobatis californica</i>
	Bay goby	<i>Lepidogobius lepidus</i>
	Bay pipefish	<i>Syngnathus leptorhynchus</i>
	Brown rockfish	<i>Sebastes auriculatus</i>
	Brown smoothhound	<i>Mustelus henlei</i>
	Cheekspot goby	<i>Ilypnus gilberti</i>
	Delta smelt	<i>Hypomesus transpacificus</i>
	Dwarf surfperch	<i>Micrometrus minimus</i>
	Jack smelt	<i>Atherinopsis californiensis</i>
	Leopard shark	<i>Triakis semifasciata</i>
	Longfin smelt	<i>Spirinchus thaleichthys</i>
	Northern Anchovy	<i>Engraulis mordax</i>
	Pacific herring	<i>Clupea pallasii</i>
	Pacific staghorn sculpin	<i>Leptocottus armatus</i>
	Pile perch	<i>Rhacochilus vacca</i>
	Shiner perch	<i>Cymatogaster aggregate</i>
Threespine stickleback	<i>Gasterosteus aculeatus</i>	
Topsmelt	<i>Atherinops affinis</i>	
Tule perch	<i>Hysterothorax traskii</i>	
White croaker	<i>Genyonemus lineatus</i>	
<b>Seasonal</b> (Species regularly use the Bay for part of their life cycle but also have substantial connected populations outside the Bay.)	Barred surfperch	<i>Amphistichus argenteus</i>
	California tonguefish	<i>Symphurus atricauda</i>
	Diamond turbot	<i>Hypsopsetta guttulata</i>
	English sole	<i>Parophrys vetulus</i>
	Pacific tomcod	<i>Microgadus proximus</i>
	Plainfin midshipman	<i>Porichthys notatus</i>
	Sand sole	<i>Psettichthys melanostictus</i>
	Speckled sanddab	<i>Citharichthys stigmaeus</i>
	Spiny dogfish	<i>Squalus acanthias</i>
	Splittail	<i>Pogonichthys microlepidotus</i>
	Starry flounder	<i>Platichthys stellatus</i>
	Surfsmelt	<i>Hypomesus pretiosus</i>
Walleye surfperch	<i>Hyperprosopona argenteum</i>	

Source: <http://www.bay.org/assets/Fish.pdf>

Flora and fauna found at SF-DODS are typical pelagic and benthic species of central offshore California. Impacts to ESA-listed species are addressed in the “Endangered and Threatened Species” section below.

Concerns for motile fish and shellfish life-history stages focus upon direct effects of suspended sediments on respiration, feeding, and movement patterns; impacts of increased suspended particulates include impaired oxygen exchange due to clogging or laceration of gills, reduced food availability due to burial of benthic organisms, reduced visibility for foraging activities, and burial of slower-moving bottom fish (O'Conner 1991; USACE 1998). Avoidance of the plume is expected to be the dominant reaction by fish that are highly mobile, so the effects of turbidity are expected to be minimal.

Fish and shellfish organisms are most sensitive to impacts during early life-history stages, such as the egg and larval stages. Organisms during these stages have limited avoidance capabilities and a dependence on local hydrodynamic conditions for transport into and out of dredging activity areas. Demersal eggs and sessile or nonmotile life history stages are perceived as particularly susceptible because of their longer exposure to elevated suspended sediments or due to smothering by increased sedimentation. Demersal fish eggs attached to structures within the vicinity of the plume could be affected by the particles settling on the eggs. Of particular concern would be Pacific herring eggs; the herring fishery is considered commercially important. A study conducted by the Bodega Marine Laboratory for the LTMS and USACE showed that during the first two hours after herring eggs contacted water with suspended sediment the percent of egg fertilization and percent of larval hatch did not significantly reduce, but did lead to a significant increase in precocious or early hatch, abnormal larvae, and larval mortality. After the initial two hours, sediments that contacted embryos did not bind permanently and did not have an impact (Griffin et al. 2008). This phenomenon will not significantly impact herring eggs due to the timing of the project, since it will not overlap with the timing of the herring spawn, which typically occurs December through February every year. In the event dredging activities extend into December, USACE will coordinate with CDFG to receive approval for dredging outside the Pacific herring environmental work window and will cease dredging at times when herring are observed to be spawning in the vicinity of the dredging footprint.

Although the Oakland Harbor channels are highly disturbed habitats due to regular maintenance dredging and ship traffic, organisms in an assemblage similar in species composition and abundance would recolonize relatively rapidly after disturbance. It is possible that when clamshell dredging is used, some material would be redeposited on nearby non-dredged areas and adversely affect resident organisms by burial and smothering. However, these organisms would similarly recolonize. Entrainment of motile organisms is not an impact typically associated with mechanical dredges. Indirect effects for dredging sites would include decreased availability of any impacted organisms which may be used as prey for foraging fishes; a comparable pattern of direct and indirect effects is predicted at SF-DODS.

Mechanical dredges produce a complex combination of several different types of repetitive sounds which may be intense enough to cause injury to fish, though the intensity, periodicity, and spectra of emitted sounds differ among the dredge types (Clarke *et al.* 2002, Dickerson *et al.* 2001). Clamshell dredges have a repetitive sequence of sounds generated by the winches, bucket impact with the substrate, closing and opening the bucket, and sounds associated with dumping the dredged material into the barge. The most intense sound impacts are produced during the bucket's impact with the substrate, with peak sound pressure levels (SPL) of 124 dB measured 150 meters from the bucket strike location (Clarke *et al.* 2002). Injuries directly associated with

dredging are poorly studied, but can include rupture of the swimbladder and internal hemorrhaging (Caltrans 2001; Abbott & Bing-Sawyer 2002).

Dredging can disturb aquatic habitats by resuspending bottom sediments and, thereby, recirculating toxic metals, hydrocarbons, hydrophobic organics, pesticides, pathogens, and nutrients into the water column (EPA 2000). Any toxic metals and organics, pathogens, and viruses, absorbed or adsorbed to fine-grained particulates in the sediment, may become biologically available to organisms either in the water column or through food chain processes.

For a detailed account of the precautions that would be taken to minimize the risk of any material being released during the transportation portion of dredging operations, please refer to the Special Conditions as specified by the EPA, BCDC, and SFBRWQCB in Appendix C.

**( X ) Special aquatic sites (wetlands, mudflats, coral reefs, pool and riffle areas, shallows, sanctuaries and refuges, other):** The proposed dredging activities may have minor and temporary effects on eelgrass habitat. Please see the “Aquatic Habitat” section above for an analysis of the impacts on eelgrass.

Placement of dredged materials would not impact the Gulf of Farallones National Marine Sanctuary if placement takes place at SF-DODS; the barge route is south of the Sanctuary boundary to preclude scow spillage within the special aquatic site.

### **Terrestrial Habitat**

**( ) Geomorphology: NA**

**( ) Vegetation: NA**

**( ) Organisms: NA**

**( X ) Endangered or Threatened Species:** A list of Federal threatened and endangered species that occur and may be impacted by the proposed project can be found in Appendix D. The list represents species under the jurisdiction of the USFWS and NMFS. The following analysis is a consideration of the applicable endangered, threatened, and species of concern as specified in the list. More detailed species accounts and biological impact assessments are presented in the 1998 Final Environmental Impact Report / Environmental Impact Statement Oakland Harbor Navigation Improvement (-50 Foot) Project (USACE 1998) and the NMFS and USFWS LTMS BOs (1998 and 1999, respectively).

### **Fishes**

**Green sturgeon.** The Southern Distinct Population Segment of green sturgeon was listed as a threatened species in April 2006. Direct effects related to dredging may include direct collisions with the dredging vessel and burial of prey species. Entrainment of green sturgeon is not considered an impact for this project because a clamshell dredge will be used; entrainment may only occur with a hydraulic dredge. Burial of prey species may also be eliminated as an impact

since the material would either be placed at the HWRP offloader or another upland offloader, or at SF-DODS, which is unlikely habitat due to the depth. USACE is currently consulting with NMFS on a programmatic Biological Opinion that will address impacts to the green sturgeon.

**Salmonids.** Operations and maintenance dredging is governed by the existing LTMS biological opinions (NMFS 1998; USFWS 1999), which allow maintenance dredging to occur in Oakland Harbor without further consultation for salmon and steelhead from June 1<sup>st</sup> to November 30<sup>th</sup> (see Table 1). All activities would be conducted in compliance with the biological opinion. The dredging would not extend into the outside the dredging work window protecting salmonids. Therefore, we determine that the activities are not likely to adversely affect listed species and their critical habitat.

In the past the dredging schedule has slipped due to logistical or financial reasons, and dredging occurred past the November 30<sup>th</sup> window. In the event this should occur any year covered by this EA, USACE will consult with NMFS on impacts to juvenile salmonids. The descriptions below summarize the potential presence of salmonids and the associated potential impacts that may occur in the event dredging occurs outside the environmental work window.

The endangered Sacramento River winter-run Chinook salmon may occur occasionally in Oakland Harbor during migration season (November to May), as well as at the placement sites. The threatened coastal steelhead (both Central Valley and Central California Coast ESUs) may pass through the project areas during outmigration as well as on their way to their natal streams in the South Bay. Central Valley spring-run chinook may also occasionally stray into the Oakland Harbor area while migrating in and out of the Sacramento Delta. Coho salmon migrate through the San Francisco Bay during fall months. All of these species occur at SF-DODS. Species migrating to and from the Central Valley may swim within the vicinity of the HWRP offloader. Impacts of dredging to juvenile salmonids are similar to those described for motile fish in the “Aquatic Organisms” section of this Impacts Assessment. The benthic community is expected to recover quickly enough following dredging that there should be no long-term effect on potential food sources for the salmon in the harbor. Dredging impacts of prey burial to adult salmonids are reduced because migrating adult chinook salmon have largely ceased to feed by the time they enter the Bay for their upstream migration. In addition, the EIS (USEPA 1993) addressing the designation of SF-DODS found that potential effects such as impaired visibility for foraging and reduced food availability within the area of disposal, which would alter normal feeding or passage activities, would be temporary and localized at the disposal site. Because there are no chinook, coho, or steelhead spawning areas near or upstream of Oakland Harbor, fry are not expected to occur in the Harbor.

The LTMS and Bay Planning Coalition funded juvenile salmonid outmigration surveys (2006-present) in which late-fall run Chinook salmon and steelhead were tagged with hydroacoustic tags and monitored passively with receivers throughout the San Francisco Bay. Data analysis thus far shown that the majority of the tagged fish either swim under the Bay Bridge towards the Port of San Francisco or go straight out of the watershed through the Golden Gate, avoiding the South Bay (unpublished report, UC Davis 2009) and the proposed dredging footprint.

USFWS and NMFS have also indicated that the project could affect critical habitat, either designated or proposed, for Central Coast steelhead, winter-run Chinook salmon and Central Valley fall-run Chinook salmon. The dredging portion of this project would not impact the critical habitat for either chinook or coho, as Oakland Harbor lies south of the San Francisco/Oakland Bay Bridge, which is the southern boundary in San Francisco Bay for these species' entire critical habitat. However, barges transporting dredged material from Oakland Harbor to SF-DODS and the HWRP offloading site would pass through critical habitat for both of these species as they transit the area between the Bay Bridge and the Golden Gate Bridge. One of the conditions for use of the disposal sites is that no material shall be allowed to spill or leak from barges at any time en route to or from the site. Therefore, there would be no water quality impacts within designated or proposed critical habitat as a result of dredged material transportation. The increase in vessel traffic (between 1 and 3 barges per day) would be insignificant compared to normal levels of vessel traffic in the San Francisco Bay.

Oakland Harbor lies within the boundaries of designated Central Coast steelhead critical habitat. Temporary turbidity impacts would occur as mentioned above. The harbor would not be altered in any appreciable way from its current disturbed condition. For further habitat impacts analysis see the "Aquatic Habitat" section of this Impacts Assessment.

**Longfin Smelt.** On June 25, 2009, the longfin smelt was declared a threatened species under the California Endangered Species Act (CESA). In April and May of each year, juveniles are believed to migrate downstream to San Pablo Bay from the delta; juvenile longfin smelt are collected throughout the San Francisco Bay during the late spring, summer and fall. Juveniles tend to inhabit the middle and lower portions of the water column. During most years, longfin smelt adults concentrate in San Pablo Bay during April-June and become more dispersed in late summer (many moving into central San Francisco Bay) (Moyle 2002). The concentration of longfin smelt in deepwater habitats, combined with their migration into marine water during the summer suggests that longfin smelt may be relatively intolerant of the warmer waters in the estuary. The population gradually moves upstream during fall and winter to spawn (CDFG 2009). Therefore, there is a potential for juveniles and adults to occur in the dredging footprint during the proposed time of dredging. Potential impacts on longfin smelt include entrainment and exposure to suspended sediments and contaminants during disposal of dredged material. Since clamshell dredging does not typically entrain fish, and the material is proposed to be placed at HWRP or at SF-DODS, impacts of the proposed project to the longfin smelt are considered insignificant.

## **Birds**

**California least tern.** The California least tern (*Sternula antillarum browni*) is listed by both the state of California and the federal government as an endangered species. The least tern breeds in California from mid-May to August. Nesting sites for least terns exist at a sandy upland site at the Oakland International Airport and along the runway apron at the former Naval Air Station Alameda (NAS Alameda) in the city and county of Alameda, CA. Least terns have been observed to forage primarily along the breakwaters and shallows of the southern shoreline of NAS Alameda and in Ballena Bay during May through August. The least tern generally migrates from the San Francisco Bay Area in August and winters south of the United States. The

environmental work window as outlined in the LTMS Management Plan (USACE et al. 2001; see Table 1) for California least tern from within one mile of the coastline from the Berkeley Marina south to San Lorenzo Creek is August 1 through March 15 each year. Maintenance dredging reach 1 (Entrance Channel) and reaches 7 through 10 of the Oakland Outer Harbor may be planned during the period of July 1-31 in any of the years within the scope of this EA (2010-2012) thus occurring prior to the start of the work window. Due to the overlap of the Oakland Harbor dredging schedule and the least tern breeding and nesting period within South San Francisco Bay, the USACE conducted formal consultation under Section 7 of the Endangered Species Act for the California least tern with the USFWS. Due to the lack of California least tern foraging data specific to the project footprint, we cannot identify or disprove impacts on California least terns; therefore, we made a conservative determination that the proposed action may affect and is likely to adversely affect the quality of California least tern foraging habitat.

Dredging Oakland Outer Harbor in July could result in increased turbidity and dispersal of contaminated sediments in potential least tern foraging areas. Also, USFWS suggests in their BO (1999) that decreased water clarity associated with dredging could reduce the productivity and/or availability of northern anchovies, a fish prey item for least terns. Anchovy spawn during every month of the year, but the peak spawning season (later winter and early spring) does not temporally overlap with the proposed dredging activity. Topsmelt (*Atherinops affinis affinis*) and jacksmelt (*Atherinops californiensis*), both least tern prey species, spawn in San Francisco Bay in the spring and summertime using submerged vegetation, such as eelgrass, as spawning substrate. These adverse effects could be most pronounced during June and July each year when least tern adults are feeding unfledged young. Unfledged young have high energetic needs for growth and development, thus requiring large amounts of food relative to their body size (USFWS 1999).

There is insufficient monitoring data of California least tern use in Oakland Outer Harbor. It is known, however, that terns utilize the MHEA for foraging and roosting. Interviews with Alameda tern colony site biologist and researchers (pers. comm. USFWS biologist, PRBO researcher & private researcher) revealed that, based on observations, least tern adults and fledglings utilize MHEA in July annually for foraging and roosting. Dredging reaches 1 and 7-10 (Entrance Channel and Outer Harbor shipping channels, see Figure 1) will not impact tern activity in MHEA, but may deter terns from foraging in the Outer Harbor and Entrance Channel. Dredging plumes would be confined to the channel and surrounding area, and are temporary in nature. The noise associated with the dredging will have no effect on least terns due to the ambient noise levels associated with the activity at the Port of Oakland. Although there is a lack of data to support or discount least tern use of Oakland Outer Harbor for foraging habitat, USACE has determined that dredging the channel in July may affect and is likely to adversely affect least terns. For a description of the proposed compensation, see "Off-site Compensation: Predator Management Program for California least terns" section 8.3. Similar to 2010-2012 O&M scheduling, USACE proposed to dredge Oakland Outer Harbor in July of 2009 and conducted a formal consultation with USFWS. The additional predator management was observed to benefit the least tern colony by providing additional predator management observation hours and predator flushing.

The remainder of the listed birds requires salt, tidal, or freshwater marsh and upland habitat such as scrub or open range. These habitats do not occur in the project area and the candidate species would not be affected.

**Mammals, Reptiles, Amphibians, Invertebrates, and Plants:** The remainder of the listed species provided by NMFS and USFWS are terrestrial or freshwater organisms and are not found in a marine subtidal habitat like the project area. However, the provided list did not contain a number of listed species that occur at the SF-DODS disposal site. These include humpback, blue, fin, and sperm whales, leatherback turtle, and Steller's sea lion. As mentioned above, the dredged material plume during disposal would reduce visibility at the disposal site temporarily having a potential effect on foraging ability and food availability at the site. These listed species forage throughout the region off the central California coast, so that any temporary reduction in food supply in an area as small as the disposal site would be insignificant.

**( X ) Air Quality:** In accordance with 40 CFR § 51.853(c)(2)(ix), the USACE has determined that the proposed agency action is exempt from the requirement to prepare a conformity determination with the State Implementation Plan under the Clean Air Act because the project consists of maintenance dredging, no new depths are required, and disposal would be at approved disposal sites.

**( X ) Contaminants in dredge or fill material:** An issue of concern may be the release and resuspension of certain chemical constituents from the sediment into the water column. Contaminants of particular concern in various parts of the Bay include silver, copper, selenium, mercury, cadmium, polychlorinated biphenyls (PCBs), DDT and its metabolites, pesticides, polynuclear aromatic hydrocarbons (PAHs), and tributyltin. Release of dioxins, PAHs, and other contaminants could be lethal to some organisms or bioaccumulate up the food chain. However, most contaminants are tightly bound in the sediments and are not easily released during short-term resuspension (USACE 2007). Generally, disposal plumes that are generated during disposal activities are short-lived; potential release of contaminants is expected to be short-term. Disposal plume studies performed by the USACE have shown that levels of chlorinated hydrocarbons increase immediately after disposal, then return to background levels within a short period of time (less than 1.5 hours) (USACE 1976b).

In consultation with the EPA, USACE is conducting Ocean Testing Manual (OTM) Tier III testing in the Inner Harbor. OTM Tier III testing includes physical and chemical analysis (including constituents required by USFWS Biological Opinion for HWRP), benthic and water column toxicity tests, and bioaccumulation tests of material to be dredged for placement at HWRP, SF-DODS, or other permitted upland placement sites if necessary. The OTM Tier III testing is in accordance with the 5-Year Sampling and Testing Schedule that was proposed to and adopted by the DMMO agencies. The test results will be submitted to the DMMO for review and suitability determination prior to commencement of dredging activities.

Tier III testing of both the Outer and Inner Harbor Channels is scheduled to occur every three years, and the last testing episode occurred in 2009. Thus, in accordance with this schedule, it is anticipated that the Outer Channel will be given a Tier I exemption from testing in 2010 (and will not be Tier III tested again until 2012). However, because this will be the first episode of

maintenance dredging following the recent completion of the -50 foot deepening project, there exists an element of uncertainty as to whether the recent channel deepening might have an effect on shoaling patterns. For this reason, the Inner Harbor Channel will not be exempted from testing this year, and will instead undergo the full suite of Tier III testing. See Table 4 below for the anticipated testing schedule for samples taken within Oakland Inner and Outer Harbor through 2014.

Channel	2010	2011	2012	2013	2014
Outer Harbor	Tier 1 (no testing)	Tier 1 (no testing)	Tier III, MET (three year cycle)	Tier 1 (no testing)	Tier 1 (no testing)
Inner Harbor	Tier III, MET (three year cycle)	Tier 1 (no testing)	Tier III, MET (three year cycle)	Tier 1 (no testing)	Tier 1 (no testing)

Although abnormal sediment test results are not expected, any dredged material deemed not suitable for placement at HWRP will be placed at an alternative site after obtaining a suitability determination from the DMMO. Please see Appendix A section 8.0 further discussion of the sediment testing report.

( ) **Mineral Resources:** The proposed project will not impact mineral resources.

(X) **Noise:** While noise is expected to be generated during dredging and transportation, the noise levels would be less than existing ambient noise levels; intervening buildings and the I-880 freeway (and its associated noise barrier) would effectively serve to attenuate the noise levels between residences and dredging equipment. In addition, the large distances between the noise sources and receptors would further reduce dredging-related noise levels at these receptors. Further analysis on dredging-related noise levels can be found in the Oakland Harbor Navigation Improvement (-50 Foot) Project FEIS/EIR, which is available upon request (USACE 1998). Noise impacts associated with the transport of material to the HWRP or other upland beneficial use project offloader and SF-DODS are attributable to the Oakland Harbor and O&M dredging project.

(X) **Recreation (boating, fisheries, other):** During the period of dredging operations, there would be minor disruptions of access and possibly right-of-way to other vessels because of the presence of project-related watercraft. There are no anticipated significant direct effects.

( ) **Land use classification:** NA

( ) **Transportation and traffic:** NA

(X) **Navigation:** During the period of dredging operations, and possibly transportation, there could be minor disruptions of access and possibly right-of-way to other vessels because of the presence of project-related watercraft. There are no anticipated significant direct or cumulative

effects. This project would have long-term beneficial impacts to some navigation by commercial deep draft vessels.

( ) **Agricultural Resources, Prime and unique farmland:** NA

( X ) **Aesthetics/visual impact:** Temporary minor impacts may result from the presence of equipment used in dredging, transportation of dredged material, and placement of dredged material and also from possible discoloration of the water due to sediment plume. The site of dredging is used mainly for industrial shipping activities; any additional visual adverse effects would be minimal.

( ) **Public facilities, utilities and services:** NA

( X ) **Public health and safety:** All federal, state, and local statutes would be followed. There are no significant impacts to health or safety in any aspect of this project.

( X ) **Hazardous and toxic materials:** All federal, state, and local statutes would be followed. All requirements provided by the SFBRWQCB will be implemented to ensure any hazardous and toxic materials associated with the dredging equipment will be managed in a way to ensure public safety and environmental quality. See Appendix C for a list of those recommendations.

( ) **Energy consumption or generation:** All aspects of dredging operations would consume non-renewable energy. The energy consumed during all activities of this project does not create significant impacts to the environment.

( ) **Cultural and historical resources, historic monuments, parks, national seashores, wild and scenic rivers, wilderness area, research sites, etc:** There are no cultural or historical resources eligible or potentially eligible for listing that the proposed project would affect.

( ) **Archaeological site:** NA

( X ) **Socio-economic:** The no-action alternative would result in further shoaling and restrictions of deep draft commercial vessel movement through the Port of Oakland. The no-action alternative ultimately would have a significant socio-economic effect to some sectors of the region, affecting thousands of jobs and the trading industry of Northern California. Therefore, the proposed action would have a positive impact on socio-economic status of the region.

( ) **Environmental Justice:** The proposed project is in a largely industrial area thus not directly or indirectly affecting any group (e.g. people who rely on subsistence fishing), more than another. There is no known environmental justice issues associated with this proposed project.

( ) **Growth inducing impacts - community growth, regional growth:** The proposed maintenance dredging would not further induce growth.

( ) **Conflict with land use plans, policies or controls:** The project is consistent with land use plans. The project area has been in continuous use as is for a number of decades.

( ) **Irreversible changes, irretrievable commitment of resources:** There are no irreversible changes or commitments. If in the future it is decided that the authorized channel depths are no longer required, they would naturally shoal in or could be filled and restored or rehabilitated to their pre-disturbance habitat type. The proposed project is independent and does not result in irretrievable commitment of resources.

(X) **Other Cumulative effects not related to the proposed action:** Minor cumulative impacts are covered in the LTMS for the Placement of Dredged Material in the San Francisco Bay Region Final Policy EIS/Programmatic EIR (USACE et al. 1998) and the Final Environmental Impact Statement for Designation of a Deep Water Ocean Dredged Material Disposal Site off San Francisco, California (USEPA 1993).

1. **Occurred on-site historically:** The site has been subject to major disturbance in historical times, including removal of original saltmarsh and or mudflats, building and operation of port facilities, and navigation. These produced similar effects to the proposed action, including negative impacts on air quality and water quality, but to a far greater extent and degree.
2. **Likely to occur within the foreseeable future:** The California Department of Transportation (Caltrans) is replacing of the east span of the San Francisco-Oakland Bay Bridge as part of seismic upgrades to improve bridge safety. This project has the potential to impact existing eelgrass communities both during and following construction, which may also have an effect on the quality of least tern foraging habitat (Merkel 2004). The USACE has been requested by the U.S. Coast Guard to maintain the Oakland Inner Harbor channel to Coast Guard Island in support of the new fleet of National Security Cutters. Preliminary planning, environmental and engineering work has begun. It is expected that dredging this reach of the channel will be undertaken in 2011-2012. There is a possibility that the Oakland Harbor will seek further deepening in the future in order to remain competitive in the shipping industry. Impacts of channel deepening will be similar to those identified for the Oakland Harbor Navigation Improvement (-50 foot) Project (USACE 1998).
3. **Contextual relationship between the proposed action and (1) and (2) above:** The previous activities described for (1) have already diminished the original habitat functions such that future deepening and maintenance activities would temporarily effect the environment during said activities but would not add a significant incremental cumulative impact to this project site.

## 5.0 SUMMARY OF INDIRECT AND CUMULATIVE EFFECTS FROM THE PROPOSED ACTION

### 5.1 Indirect Effects

Indirect impacts to adjacent undredged areas may occur as a result of increased turbidity and possibly siltation associated with dredging activities (Sabol *et al.* 2005). Turbidity plumes of suspended particulates reduce light penetration through the water column. Limited light availability has been identified as the primary factor controlling depth distribution, density, and productivity of eelgrass (Dennison & Alberte 1982, Dennison & Alberte 1985, Dennison & Alberte 1986, Zimmerman *et al.* 1991). Reductions in light available at the eelgrass canopy due to dredging-related turbidity can result in eelgrass loss, especially where eelgrass is growing at or near its lower depth limit. Even slight reductions in light availability result in lower rates of photosynthesis for subaquatic vegetation (Dennison 1987) and the primary productivity of an aquatic area may be reduced for extended periods of times (Cloern 1987).

Due to the valuable function of eelgrass habitat as refugia, foraging and nursery habitat, this is considered a high level effect. To decrease the level of effect to insignificant, USACE will avoid conducting dredging activities in all areas where eelgrass beds exist. Direct removal and burial of eelgrass would not occur. Changes in density and distribution of eelgrass will be measured; USACE will implement mitigation measures if there is a net loss of eelgrass.

Indirect effects for dredging sites would include decreased availability of any impacted organisms which may be used as prey for foraging fishes; a comparable pattern of direct and indirect effects is predicted at SF-DODS. Potential indirect effects on these parameters are minimal in light of magnitude and duration of this proposed activity.

## 5.2 Cumulative Effects

A consideration of cumulative effects on water quality, turbidity and suspended sediments for the site to be dredged suggests that any effects caused by dredging would be additional to those caused by natural resuspension due to currents and anthropogenic disturbance from navigation by deep draft vessels stirring up bottom sediments.

Cumulative effects on substrate at the site of dredging include the consideration that dredging and continuous movement of ships takes place regularly which maintains the community at a disturbed state. In neither case are cumulative effects thought to significantly adversely affect resident biota.

The recent deepening of the Port of Oakland (Oakland Harbor Navigation Improvement (-50 foot) Project) was a USACE project that was cost-shared by the Port of Oakland. The Port's navigation channels were dredged year-round, potentially further impacting species protected by the environmental work windows. This work was completed in 2009.

The California Department of Transportation (Caltrans) is currently replacing the east span of the San Francisco-Oakland Bay Bridge in an effort to improve bridge safety as part of the agency's seismic retrofitting program. This project may impact existing eelgrass communities both during and following construction, which may also have an effect on the quality of least tern foraging habitat (Merkel 2004a).

The USACE has been requested by the US Coast Guard to maintain the Oakland Inner Harbor channel to Coast Guard Island in support of the new fleet of National Security Cutters. Preliminary planning, environmental and engineering work has begun. It is expected that dredging this reach of the channel will be undertaken in 2011-2012.

Despite the potential effects of dredging Oakland Outer Harbor in July and effects from other work as described above, we believe that California least terns will benefit from the increased predator management at the NAS Alameda colony site, which will continue to support and improve predator conditions for the most important breeding population of California least terns in the state. A number of sites are currently being managed or planned to support the increasing number of California least terns in the San Francisco Bay; some of these sites include Montezuma Wetlands Restoration Project, the future managed pond SF 2 in Don Edwards San Francisco Bay NWR, and the Napa River Salt Marsh.

The effect of maintenance dredging the Oakland Inner and Outer Harbor channels in 2010, 2011, and 2012 will not cause the environment to be significantly impacted from the current state because the action area is one of industry and commerce rather than a natural undisturbed habitat.

## **6.0 ENVIRONMENTAL COMPLIANCE**

A summary of environmental compliance is presented in Table 5 starting on the next page. Detailed compliance information, supporting reports, and environmental compliance history for this project can be found in Appendix A - Environmental Compliance.

**Table 5: Summary of Environmental Compliance**

Statute	Status of Compliance
<p>National Environmental Policy Act (NEPA) of 1969 (42 USC 4341 <i>et seq</i>)</p> <p>Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA (40 CFR 1500-1508) dated July 1986</p>	<p>This EA has been prepared for continuing compliance with NEPA. All agency and public comments will be considered and evaluated. If appropriate, a FONSI will be signed with a conclusion of no significant impacts which would complete compliance with NEPA for the proposed activities in 2010, 2011, and 2012.</p>
<p>Clean Air Act (42 USC 7401 <i>et seq</i>)</p>	<p>In accordance with 40 CFR § 51.853(c)(2)(ix), the USACE has determined that the proposed agency action is exempt from the requirement to prepare a conformity determination with the State Implementation Plan under the Clean Air Act because the project consists of maintenance dredging, no new depths are required, and disposal would be at approved disposal sites.</p>
<p>Clean Water Act of 1972 (33 USC 1251 <i>et seq</i>)</p> <p>Rivers and Harbors Act of 1899 (33 USC 403)</p> <p>Executive Order 11990, Protection of Wetlands, (42 FR 26961, 1977)</p>	<p>The San Francisco Bay Regional Office of the California Water Quality Control Board (SFBRWQCB) granted water quality certification for this project as Order No.R2-2007-0020, <i>Updated Waste Discharge Requirements. This order will be updated for the proposed activities in 2001 and 2012.</i> This project is in compliance with the waste discharge requirements cited in this document for 2010. The updated order (2011, 2012) will be available upon receipt.</p> <p>This document serves as compliance with the 404(b)(1) Guidelines.</p> <p>Compliance with RHA is accomplished by this EA.</p> <p>No wetlands are expected to be affected by this project.</p>
<p>National Oceanic and Atmospheric Administration Federal Consistency Regulation (15 CFR 930)</p> <p>Coastal Zone Management Act of 1972, 16 USC 1451 <i>et seq</i></p> <p>California Coastal Act of 1976</p>	<p>USACE submitted a concurrence on a programmatic consistency determination (CD) for all in-bay maintenance dredging and disposal operations of federal navigation channels in the San Francisco Bay to the San Francisco Bay Conservation and Development Commission (BCDC) for the years 2012-2012. This letter and the associated recommendations will be amended to the dredging specifications upon receipt, expected by June 1, 2010 and will be available upon request. Thus, the following is complied with: Coastal Zone Management Act of 1972 (Public Law 92-583, 86 Stat. 1280) and the National Oceanic and Atmospheric Administration (NOAA) regulation 15 CFR 930, <i>Federal Consistency With Approved Coastal Management Programs, As Amended.</i></p>
<p>Endangered Species Act of 1973 (16 USC 1531, as amended)</p>	<p>An inventory of listed and proposed endangered and threatened species and candidate species that may occur in the project area was requested from the USFWS; this list contains all listed species, including those under the jurisdiction of NMFS. This inventory is provided in Appendix D. More detailed species accounts are presented in the LTMS BOs (NMFS 1998; USFWS 1999). All aspects of the proposed project are compliant with the terms and conditions established in the NMFS and USFWS LTMS BOs (NMFS 1998; USFWS 1999), except for the one-month acceleration of the dredging schedule which may affect the California least tern. USACE consulted with the USFWS for the impacts to the California least tern. Proposed compensation measures are outlined in this EA. The NMFS BO is currently being updated to include</p>

<p>Fish and Wildlife Coordination Act (16 USC 661-666c)</p> <p>Magnuson-Stevens Fishery Conservation and Management Act Fishery Conservation Amendments of 1996, (16 USC 1801 <i>et seq</i>) – Essential Fish Habitat (EFH)</p> <p>Migratory Bird Treaty Act (16 USC 703-711)</p> <p>Marine Mammal Protection Act (16 USC 1361 <i>et seq</i>)</p> <p>National Marine Sanctuaries Act (16 USC 1431 <i>et seq</i>)</p> <p>Marine Protection Research and Sanctuaries Act of 1972 (33 USC 1401 <i>et seq</i>) Or Ocean Dumping Ban Act of 1988 (Public Law 100-688; § 2030)</p>	<p>the green sturgeon and will include new terms and conditions. Once the BO is issued, the new terms and conditions will be implemented and available upon request.</p> <p>The concluded ESA and EFH consultations (NMFS 1998;USFWS 1999; and NMFS 2009) meet the requirements of the Fish and Wildlife Coordination Act.</p> <p>USACE completed EFH consultation with NMFS for the Oakland Harbor O&amp;M Dredging projects for the years 2009-2013. Conservation recommendations are described in the “Aquatic Vegetation” section of the Impacts Assessment in this EA. A LTMS-wide programmatic EFH consultation is currently in draft form. Once issued, the recommendations in the programmatic consultation may be implemented if different from those in the 2009 consultation.</p> <p>In the event predator management for the CA least tern is implemented, the USDA-APHIS-Wildlife Services will be funded to provide the services; this agency has the Migratory Bird Treaty Act permit needed to implement predator management.</p> <p>No impacts to marine mammals are expected.</p> <p>Neither the dredging nor disposal would take place in or near a Marine Sanctuary;, transportation of dredged material would occur around the boundary of the Gulf of the Farallones and Monterey Bay Marine Sanctuaries.</p> <p>The proposed project will incorporate and adhere to restrictions relating to critical areas on the use of EPA designated SF-DODS pursuant to section 102(c) of ODA as specified in Appendix C.</p>
<p>National Historic Preservation Act (16 USC 470 and 36 CFR 800): Protection of Historic Properties</p> <p>Executive Order 11593: Protection and Enhancement of the Cultural Environment</p> <p>Archaeological and Historic Preservation Act of 1974, (16 USC 469 <i>et seq</i>)</p> <p>Abandoned Shipwreck Act of 1987, (43 USC 2101 <i>et seq</i>)</p> <p>Submerged Lands Act, (Public Law 82-3167; 43 USC 1301 <i>et seq</i>)</p>	<p>Per 36CFR 800.3(1), the proposed project has no potential to cause effects, and therefore the agency official has no further obligation under section 106 of the NHPA.</p> <p>NA</p> <p>NA. None occur on site.</p> <p>None occur on site.</p> <p>None occur on site.</p>

## **7.0 AGENCIES CONSULTED AND PUBLIC NOTIFICATION**

The notification process includes mailing a project notice to agencies and other stakeholders regarding the availability of this EA. The following agencies are being notified; a summary of the comments will be entered in Appendix B after the comment period has ended.

### **A. Federal agencies:**

- 1) U.S. Environmental Protection Agency (EPA Region 9)
- 2) U.S. Coast Guard
- 3) Advisory Council – Historic Preservation
- 4) National Oceanic and Atmospheric Administration- National Marine Fisheries Service
- 5) U.S. Fish and Wildlife Service

### **B. State and local agencies:**

- 1) San Francisco Bay Conservation and Development Commission (BCDC)
- 2) California Coastal Commission
- 3) California State Lands Commission
- 4) State Historic Preservation Officer
- 5) San Francisco Bay Regional Water Quality Control Board Region
- 6) County of Alameda
- 7) Bay Area Air Quality Management District
- 8) Caltrans
- 9) City of Oakland
- 10) East Bay Municipal Utility District
- 11) California Department of Fish and Game
- 12) East Bay Regional Park District
- 13) California Department of Water Resources

## **8.0 CONSERVATION AND MITIGATION MEASURES**

### **8.1 Environmental Work Windows**

The Environmental Work Windows, as developed through the San Francisco Bay LTMS, are designed to spatially and temporally avoid potentially impacting listed species that are known to occur within the project area during other times of the year. Although maintenance dredging of Oakland Outer Harbor, the northernmost extent of the Harbor, may commence one month prior to the beginning of the California least tern work window in 2010, 2011, or 2012, the work would only occur in the Outer Harbor which is farthest away from the California least tern colony. Maintenance dredging will commence in reach 10 and work southwest towards the Entrance Channel in an effort to maximize the distance of the dredging activity from the California least tern colony during July, when the peak of foraging activity occurs. Dredging of the Oakland Inner Harbor, which is located closer to the least tern colony, will not commence before August 1 each year.

Dredging would occur within all other work windows. The appropriate agencies will be contacted and impacts consulted on in the event project conditions change and dredging is scheduled outside the work windows.

## **8.2 Eelgrass Surveys**

USACE is proposing to conduct pre- and post-dredge eelgrass density and distribution eelgrass surveys in 2010 and 2011 within Oakland Harbor. The resulting surveys will allow NMFS to measure if there is a net loss of eelgrass from impacts of dredging-induced turbidity. USACE will propose mitigation for any net loss of eelgrass habitat. USACE is currently in consultation with NMFS for all LTMS recurring dredging projects; a programmatic EFH consultation document is currently in draft form. Once issued, the recommendations in the programmatic consultation may be implemented if different from those in the 2009 consultation (NMFS 2009).

## **8.3 Off-site Compensation: Predator Management Program for California Least Terns**

Predator management for the federally-endangered California least tern is a compensation measure USACE is proposing to conduct if maintenance dredging activities at Oakland Outer Harbor are planned to occur during the month of July in 2010, 2011, and/or 2012. USACE would transfer funding to the USDA-APHIS-WS to supplement the current USFWS contract for predator management at the NAS Alameda colony site. The objective of the current program as contracted between USFWS and USDA-APHIS-WS is to conduct predator damage management to reduce predation of California least terns from various predators at the colony site. USDA-APHIS-WS will monitor and remove, when necessary, predators that are affecting endangered and threatened species using techniques and tools described in the San Francisco Bay National Wildlife Refuge Complex Predator Management Plan. USDA-APHIS-WS will make recommendations to the USFWS that might reduce predation and enhance threatened and endangered species at NAS Alameda.

The compensation funding would increase USDWS-APHIS-WS manpower hours spent monitoring predators. Currently, USFWS' predator management contract funds 2 to 4 hours of predator monitoring a day at the NAS Alameda colony during the time California least terns are expected to be present, approximately April through August. Increased monitoring man-power may preclude future problem predators from predating on eggs and chicks for extended periods of time before they are identified by the USDA-APHIS-WS monitors, as seen in previous breeding seasons. During a recent breeding season, a large number of chicks (approx. 85) were predated on by a pair of hawks; increased effort in identifying the predators took close to a week long, which used up many of the funded hours and thus limited the amount of hours available for regular monitoring the rest of the season (pers. commun. USFWS biologist). USACE proposes to provide funding for half the salary of a USDA-APHIS-WS technician position, which would almost double the current monitoring effort.

In the event of proposed dredging during July, USACE proposes to complete USDA-APHIS-WS contracts no later than early May so that predator management activities can be implemented from approximately mid-May to the end of September each year for the next three years (2010-2012), while California least terns are breeding at the NAS Alameda colony site. In the event it

is determined by USFWS that predator management of the California least tern colony on Alameda Point is not needed and another form of California least tern colony support would be more beneficial (e.g. habitat maintenance), USACE would work with USFWS to plan this support for the colony with a comparable level of funding.

Similar to 2010-2012 O&M scheduling, USACE proposed to dredge Oakland Outer Harbor in July of 2009 and conducted a formal consultation with USFWS. The additional predator management was observed to benefit the least tern colony by providing additional predator management observation hours and predator flushing.

USACE currently does not expect to dredge the Oakland Outer Harbor during the month of July in 2010, and therefore has not contracted USDA-APHIS-WS to conduct predator management services during the California least tern breeding season this year.

#### **8.4 Other Policy-level Mitigation Measures and Standard Conditions**

Mitigation Measures and Special Conditions for this project are provided in the 2007-2009 Waste Discharge Requirements (WDR) (issued by the SFBRWQCB and amended to include 2010 dredging activities); Letter of Consistency Determination (CD) (issued by BCDC; currently being processed and expected to be completed by early June 2010); 2009 EFH consultation; and the 2010 USFWS BO on the project's impacts on California least terns. See Appendix C for the 2007-2009 WDR and CD (will be replaced with the updated permits upon receipt), the 2009 EFH and 2010 USFWS BO.

Upon receipt of the 2009 EFH consultation, USACE responded to NMFS to agree to all of the recommended conditions with the exception to cease dredging during daylight hours if the irradiance-saturated photosynthesis ( $H_{sat}$ ) drops below 5 hours. USACE O&M dredging is typically on a very tight schedule bounded by environmental work windows, so it is usually not feasible to cease dredging; this action may cause the work to extend into a time of year when listed species are present. Therefore, USACE will only be conducted the pre- and post-dredging eelgrass density and distribution surveys.

In the case dredged material is placed at SF-DODS, the EPA Standard Ocean Disposal Conditions for SF-DODS, issued October 10, 2006, will be adhered to; these mitigation measures can also be found in Appendix C. Updated mitigation measures will be available once received upon request.

#### **8.5 California Least Tern Research**

There is lack of research available on California least tern foraging behavior in the San Francisco Bay; this makes it challenging for action agencies to make confident impact determinations when conducting consultations with the USFWS. The 2009 USACE consultation on impacts of the Oakland O&M Dredging Project on California least terns was the impetus for the SF Bay LTMS Science and Data Gaps Group (Science Group) to fund a literature search on the California least tern and its foraging behavior in San Francisco Bay. The scope of the research contract, initiated in 2009, includes a wide literature search of existing data and research, a data gap

analysis, and suggestions for future research that would fill those gaps. Though the research report is still in draft form and has not been released to the public, the Science Group is already planning to support further research on California least terns with FY10 and/or FY11 funding.

## **9.0 DETERMINATIONS AND STATEMENT OF FINDINGS**

A Finding of No Significant Impact (FONSI) (33 CFR Part 325) is anticipated. The FONSI will be prepared after agency and stakeholder comments to this Environmental Assessment. A draft FONSI is attached.

**DRAFT Finding Of No Significant Impact (FONSI)**  
**Environmental Assessment**  
**Oakland Inner and Outer Harbor FY10-12 Maintenance Dredging**  
**May 2010**

I. Action. The action is the authorized maintenance dredging by the U.S. Army Corps of Engineers (USACE) of reaches 1, 7 - 10 of the Oakland Outer Harbor and reaches 2 - 6 of the Oakland Inner Harbor to a depth of -50 feet MLLW for Fiscal Years (FY) 2010-2012. All channels would be dredged with two feet of allowable over-depth (one foot paid, one foot non-paid), generating an estimated volume of 500,000 cubic yards of material to be removed. The dredged material would be placed at an offloader for placement at the Hamilton Wetland Restoration Project (HWRP). San Francisco Deep Ocean Disposal Site or another permitted upland beneficial use site may be utilized as an alternative placement site in the event the HWRP site becomes unavailable. If dredging the Outer Harbor is planned to commence in July, USACE would provide predator management support for compensation of the potential effects on the federally-endangered California least tern which may forage within the project footprint. This project is described in the Environmental Assessment for Fiscal Year 2010-2012 Maintenance Dredging of Oakland Inner and Outer Harbors, Oakland, California, which is incorporated herein (Attachment A).

II. Additional References. (1) Long-Term Management Strategy (LTMS) for the Placement of Dredged Material in the San Francisco Bay Region Policy Environmental Impact Statement (EIS)/Programmatic Environmental Impact Report (EIR) (USACE et al. 1998); (2) LTMS for the Placement of Dredged Material in the San Francisco Bay Region, Management Plan (USACE et al. 2001); (3) Final Environmental Impact Statement for Designation of a Deep Water Ocean Dredged Material Disposal Site Off San Francisco, CA (USEPA 1993); (4) Oakland Harbor Improvement (-50 Foot) Project Final Environmental Impact Statement/Environmental Impact Report (USACE 1998); and (5) Formal Consultation on the Proposed Oakland Harbor Operation and Maintenance Dredging Project in 2010, 2011, and 2012; City of Oakland, Alameda and San Francisco Counties, California.

III. Factors Considered. Factors considered for this FONSI are impacts on air and water quality, fish and wildlife, endangered/threatened species and marine mammals, navigation, aesthetics, dredge soil contaminants, and commercial fisheries. In addition, indirect and cumulative impacts were addressed in the attached Environmental Assessment for this action.

IV. Conclusion. Based on the information obtained in the preparation of the Environmental Assessment for this proposal, the mitigation measures identified in the document, and the associated permits, it is concluded the proposed action will not have a significant impact on the quality of the human environment. Therefore, the preparation of an Environmental Impact Statement is not required.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Laurence Farrell  
Lieutenant Colonel, U.S. Army  
Commanding

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#### **PERSONAL COMMUNICATION**

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## **Appendix A - Environmental Compliance**

## Appendix A - Environmental Compliance

### 1.0 Project History of NEPA Compliance and Other Associated Studies

Dredging operations have been conducted in Oakland Harbor since the mid 1800s. In 1859, the Inner Harbor was opened to commerce when a sandbar was dredged from the harbor's mouth. In recent years it has become necessary to deepen the harbor to accommodate new deep draft commercial vessels. Maintenance dredging occurs on an annual basis. In 1984, the *Oakland Inner Harbor California, Deep Draft Navigation Final Feasibility and Environmental Impact Statement* was prepared by USACE. An optimum depth of -42 feet MLLW was indicated. In 1992 an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) were prepared to deepen a portion of the Oakland Inner Harbor channel from -35 feet MLLW to -38 feet MLLW. This portion of the harbor was deepened in September of 1992, removing approximately 517,000 CY of sediment. The ocean disposal site, SF-DODS, designated after the issuance of the *Final Environmental Impact Statement for Designation of a Deep Water Ocean Dredged Material Disposal Site Off San Francisco, CA* (USEPA 2003). In June of 1994, the *Final Supplemental Environmental Impact Report / Environmental Impact Statement Oakland Harbor Deep Draft Navigation Improvements* was prepared by USACE and the Port Of Oakland. In May of 1995 construction began, deepening the channel to -42 feet MLLW in both the Inner and Outer Harbors. The deepening was completed in 1998. Approximately 6.7 million CY were removed with material placed at Sonoma Baylands (a marsh restoration site), SF-DODS, and an upland site. The WRDA of 1999 authorized the USACE to deepen the harbor to -50 feet MLLW to accommodate the upcoming generation of deep draft container ships. In May 1998, the *Oakland Harbor Improvement (-50 Foot) Project Final Environmental Impact Statement/Environmental Impact Report* was released. Dredging began in September 2001. The project was completed in 2010. The proposed maintenance dredging would remove material which has shoaled in the Harbor channels to about -50 feet.

Shoaled material from the Oakland Harbor has historically been disposed of at the Alcatraz Disposal Site (SF-11). However, as a participant in the Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region (LTMS), the USACE has committed to reducing the amount of dredged material disposed of in the Bay and also to the concept of upland reuse. Hamilton Wetland Restoration Project is the upland reuse site that receives the most dredge material at this time. The Hamilton Army Airfield Wetland Restoration, Volume II: Final Environmental Impact Report/Environmental Impact Statement was released in 1998.

### 2.0 Endangered Species Act

ESA compliance for the proposed project is consistent with a programmatic Biological Opinions for the San Francisco Bay Long Term Management Strategy (SF Bay LTMS) with NMFS (NMFS 1998) and US FWS (USFWS 1999) (available upon request) except for the one-month acceleration of the dredging schedule. The dredging-induced turbidity that would occur in Oakland Outer Harbor in July of 2010, 2011, and/or 2012 has been determined that the impact may affect and is likely to adversely affect the California least tern. USACE has completed formal consultation for the California least tern with USFWS (USFWS 2010). Proposed

compensation measures are outlined in this EA. The terms and conditions of the Incidental Take Statement are provided in section 5.0 of Appendix D of this EA. The copy of the BO in its entirety is available upon request. Since maintenance dredging is expected to be complete before November 30 of each year potential impacts to listed salmonids would be avoided. In the event the project extends beyond this date the USACE would reinitiate consultation with NMFS, as appropriate.

### **3.0 EFH Assessment**

Pursuant to the EFH provisions of the MSA, USACE consulted with NMFS on the proposed project's potential impacts to EFH for the following Fisheries Management Plans (FMP) for the years 2009 through 2013: Pacific Groundfish FMP, Coastal Pelagic FMP, and Pacific Salmon FMP. Coastal Pelagic (CP) FMP protects fishes found in all areas of activity relevant to the O&M dredging at Oakland Harbor with the exception of SF-DODS. Pacific Coast Groundfish (GF) FMP protects fishes that are found at all sites of project activity. Pacific Salmon (PS) FMP covers juvenile and adult salmonids that may be migrating within the vicinity of the project action areas. The FMPs cover specific regions related to the project, such as: South-Central SF Bay, where Oakland Harbor lies; San Pablo Bay, the region where the HWRP offloader site is located, and Outer Central SF Bay, which covers the area of where SF-DODS is located. The Central SF Bay region is also considered because scows are barged across the Central Bay during the transfer of the dredged material. Please see Table 1 in Appendix A for a list of species protected under the Coastal Pelagic and Pacific Coast Groundfish FMPs that may occur in the project area.

The Pacific Salmon FMP EFH includes marine, estuarine and freshwater habitat within Washington, Oregon, California and Idaho. Chinook salmon (Central Valley spring-run and Sacramento River Run chinook salmon) are the only Pacific Salmon FMP salmonid that utilize San Francisco Bay as a migratory pathway (coho salmon is believed to be extirpated) (USACE 2007).

Impacts to be considered for the EFH analysis include temporary adverse impacts on FMP species resulting in avoidance of immediate area of dredging. Impacts to EFH species of concern are those of ESA species presented above. We conclude maintenance dredging is likely to have temporary, adverse, localized effects on EFH which are more than minimal but less than substantial. The proposed dredging of Oakland Harbor will result in temporary degradation and/or loss of EFH through removal/burial of benthic prey species and increased turbidity/suspended sediments within the action area.

Eelgrass has been identified as EFH for various life stages of fish species managed by FMPs under the MSFCMA. NMFS recommended that USACE conduct eelgrass pre- and post-dredging density and distribution surveys within 200 feet of the dredging footprint to determine the dredging-induced turbidity impacts on eelgrass. Eelgrass surveys conducted in 2009 revealed several patches of eelgrass along the channel of the Inner Harbor (see Appendix E for 2009 eelgrass survey maps [Merkel 2009]) within the 200-foot zone. USACE did not end up dredging the Inner Harbor in 2009 and therefore did not conduct post-dredge surveys. Surveys will be conducted in 2010 and 2011 to quantify changes in the density and distribution of eelgrass before

and after the dredging activities. A net loss of eelgrass may implicate the need for mitigation. USACE will avoid conducting dredging activities in all areas where eelgrass beds exist. Direct removal and burial of eelgrass would not occur.

A comprehensive programmatic EFH assessment document for the LTMS O&M projects has been completed and is under consultation with NMFS. Once issued, the recommendations in the programmatic consultation may be implemented if different from those in the 2009 consultation.

FMP	Fish Species	Region A= abundant, P= Present, F=Few, R=Rare			
		So. Central SF Bay	Central SF Bay	San Pablo Bay	Outer Central SF Bay
CP	Northern anchovy	A	A	A	
	Pacific sardine	P	R	P	
	Jack mackerel		P		
GF	English sole		A	A	
	Starry flounder	P	A	A	P
	Leopard shark	P	P	P	P
	Spiny dogfish	P	P	P	
	Brown rockfish	P	A	P	
	Cabezon	F	F	R	P
	Big skate	P	P	P	
	Southern shark	P	P		
	Sand sole	R	P	P	
	Lingcod	R	P	P	P
	Pacific sanddab		P		
	Pacific whiting (hake)		P	R	
	Kelp greenling		P		P
	Curlfin sole		P		
	Bocaccio		R		
	GF	Yellowtail rockfish			
Blue rockfish					P
Black-and-yellow rockfish					P
Olive rockfish					P
California scorpionfish					P
	Other Rockfish		R		

Table 1. Fish species protected under the Coastal Pelagic and Ground Fish FMPs that may occur within the vicinity of the Oakland Harbor dredging or disposal activities. (Source: information for this table was gathered from the NOAA Fisheries website.)

#### **4.0 Clean Water Act (CWA)**

##### Section 404(b)(1) Guidelines

As defined in the regulations, the dredging activities do not result in discharge of dredged material. 33 CFR § 323.2 (d). Portions of disposal activities would occur within the territorial seas. There are no waters of the U.S. currently at the HWRP.

##### Sec 401 – Water Quality Certification or Waiver

Water Quality Certification: Section 401 of the CWA requires the District Engineer to obtain State water quality certification or waiver for the discharge of dredged material in Section 404 waters. The SFBRWQCB granted water quality certification for this project as Order NO. R2-2007-0020, *Updated Waste Discharge Requirements For: U.S. Army Corps Of Engineers, San Francisco District Maintenance Dredging Program, 2007 Through 2009*. The SFBRWQCB has amended the 2007-2009 WDR to include 2010 dredging activities. This project is in compliance with the waste discharge requirements cited in this document. Any new conditions issued in the 2011-2012 WDR will be adopted into future project specifications

#### **5.0 Clean Air Act (CAA)**

##### Conformity Analysis/Determination

The project consists of maintenance of dredging; no new depths are required and disposal would be at approved disposal sites. In accordance with 40 CFR § 51.853(c)(2)(ix), the proposed agency action is exempt from the requirement to prepare a conformity determination with the State Implementation Plan under the Clean Air Act because the project consists of maintenance dredging, no new depths are required, and disposal would be at approved disposal sites.

#### **6.0 Coastal Zone Management Act (CZMA)**

##### Determination of Consistency

USACE submitted a blanket consistency determination (CD) for all in-bay maintenance dredging and disposal operations of federal navigation channels in the San Francisco Bay to the San Francisco Bay Conservation and Development Commission (BCDC). This CD is currently being processed. USACE will adopt the terms and conditions provided in the Consistency Notification (CN) once received. The CN will be available upon request.

#### **7.0 Marine Protection Research and Sanctuaries Act of 1972 (Ocean Dumping Act)**

Five general criteria are used in the selection and approval of ocean disposal sites for continuing use (40 CFR § 228.5). First, sites must be selected to minimize interference with other activities, particularly avoiding fishery areas or major navigation areas. Second, sites must be situated such that temporary (during initial mixing) water quality perturbations caused by disposal operations would be reduced to normal ambient levels before reaching any beach, shoreline, sanctuary, or geographically limited fishery area. Third, if site designation studies show that any interim disposal site does not meet the site selection criteria, use of such site shall be terminated as soon

as an alternate site can be designated. Fourth, disposal site size must be limited in order to localize for identification and control any immediate adverse impacts, and to facilitate effective monitoring for long-range effects. Fifth, EPA must, wherever feasible, designate ocean dumping sites beyond the edge of the continental shelf and where historical disposal has occurred. As described in the Final EIS, SF-DODS was specifically selected to comply with these general criteria. The SF-DODS meets these 5 general criteria. First, SF-DODS is not a significant fishery area, is not a major navigation area and otherwise has no geographically limited resource values that are not abundant in other parts of this coastal region. Second, dredged material deposited at the site is not expected to reach any significant area such as a marine sanctuary, beach, or other important natural resource area. Third, SF-DODS is not an interim disposal site. Fourth, the site has an appropriately limited size and has been selected to allow for effective monitoring. Fifth, the site is beyond the continental shelf and is located in an area historically used for dumping. The proposed project is in compliance with environmental impact criteria and restrictions relating to critical areas on the use of EPA designated SF-DODS pursuant to section 102(c) of ODA (See Appendix C).

## 8.0 Sediment Testing Evaluation

The regulations and criteria of the sediment testing program are based on the premise that a certain amount of environmental degradation or change is acceptable within the boundaries of the disposal site. The degree of change is linked to water quality criteria and limiting permissible concentrations of the dredged material or toxic constituents below which impacts are believed to be insignificant. The purpose of the Sampling and Analysis Plan (SAP) is to provide determinative data on the suitability of sediment dredged from the Oakland Inner Harbor Channel to be placed at the Hamilton Wetland Restoration Project (HWRP), or for disposal at the San Francisco Deep Ocean Disposal Site (SFDODS) or Alcatraz (SF-11) in-Bay disposal site.

Tier III testing of both the Outer and Inner Harbor Channels is scheduled to occur every three years (Appendix A), and the last testing episode occurred in 2009. Thus, in accordance with this schedule, it is anticipated that the Outer Harbor Channel will be given a Tier I exemption from testing this year (and will not be Tier III tested again until 2012). However, because this will be the first episode of maintenance dredging following the recent completion of the -50' deepening project, there exists an element of uncertainty as to whether the recent channel deepening might have an effect on shoaling patterns. For this reason, the Inner Harbor will not be exempted from testing this year, and will instead undergo the full suite of Tier III testing.

### *Testing Protocols*

#### *ITM and OTM Requirements*

All of the samples shall have bulk physical/chemical analysis along with water column and benthic toxicity tests. These samples shall also have a Modified Elutriate Test (MET). When conducting bulk physical/chemical analysis of material, the material shall be analyzed for all of the constituents listed in Table 1 of the Master SAP. The benthic toxicity tests will use both an amphipod (*Ampelisca abdita*) and polychaete (*Neanthes arenaceodentata* or *Nephtys caecoides*). The water column toxicity tests will be conducted using mussel larvae (*Mytilus edulis*), estuarine fish (*menidia beryllina*), and mysid shrimp (*Mysidopsis* sp, *Neomysis* sp, or *Holmesimysis* sp).

When conducting the MET analysis of the material, the aqueous extractants will be analyzed for all the metals listed in Table 2 of the Master SAP. The method for MET analysis of mercury will be EPA 1631. The MET extractants will also be tested for effluent toxicity using any one of the water column test species mentioned above, with a preference for larvae.

In addition to these analyses, the samples collected from the channel shall have 28-day bioaccumulation tests. These tests shall use a clam (*Macoma nasuta*) and a polychaete (*Nereis virens* or *Nephtys caecoides*), using the methods described in the Master SAP. For bioaccumulation tests, sediment chemistry results will be received prior to the end of the 28-day exposures, and based on those results, the EPA and the USACE will decide which analytes to analyze the tissues for.

#### *Upland Placement Requirements*

For dredged materials that are being placed at HWRP, the HWRP BO requires analysis that exceeds the Inland and Ocean Testing Manual requirements. As mentioned above, the HWRP specific analyses are being included in this event even though they were analyzed for in 2008 and 2009. This is due to the uncertainty of the shoaling patterns with the new deeper channels and may not be a future requirement.

Section L of the terms and conditions of the HWRP BO lists the inorganics and organics to be measured in the collected dredged sediment. The HWRP BO specific constituents that are not in Table 1 of the Master SAP, or have lower reporting limits than the Master SAP, are identified in Table 2 below.

**Table 2** – Additional HWRP BO Constituents that are not addressed in Table 1 of the Master SAP or have lower Reporting Limits than in the Master SAP.

<i>Constituent</i>	<i>Maximum Reporting Limit</i>	<i>Method</i>
<b>Inorganics</b> PPM (mg/kg)		
Barium	190	EPA 6020
Beryllium	1.03	EPA 6020
Boron	36.9	EPA 6020
Cobalt	27.6	EPA 6020
Manganese	943	EPA 6020
Vanadium	118	EPA 6020
<b>Organics **</b> PPB (ug/kg)		

Pentachlorophenol	17	EPA 8270 or EPA 8041
Phenol	130	EPA 8270
TPH – diesel/motor oil	144,000	EPA 8015d
TPH – gasoline/JP-4	12,000	EPA 8015d
BHCs, total	0.99	EPA 8081
Chlordane	1.1	EPA 8081
Dieldrin	0.72	EPA 8081
Heptachlor	0.3	EPA 8081
Heptachlor epoxide	0.3	EPA 8081
Methoxychlor	90	EPA 8081
Dioxins (total TCDD TEQ)	0.02	EPA 8290

\*\*Dichloroprop, MCPA, and MCPP removed from list per agreement between USFWS and USACE.

## **Appendix B - Agency and Public Participation**

## **Appendix B - Agency and Public Participation**

### **1.0 Mailing Lists**

#### **Bay Area Air Quality Management District**

939 Ellis Street  
San Francisco, CA 94109

#### **California Coastal Commission**

45 Fremont, Suites 1900 & 2000  
San Francisco, CA 94105-2219

#### **California Department of Fish and Game**

20 Lower Ragsdale Drive #100  
Monterey, CA 93953

#### **California Department of Water Resources**

3251 S Street  
Sacramento, CA 95816-7071

#### **California State Coastal Conservancy**

1330 Broadway, 11<sup>th</sup> Floor  
Oakland, CA 94612-2530

#### **California State Lands Commission**

Public Land Management Specialist  
100 Howe Avenue, Suite 100-South  
Sacramento, CA 95825-8202

#### **California Department of Transportation**

245 Burma Road  
Oakland, CA 94623-1133

#### **National Marine Fisheries Service**

501 West Ocean Blvd  
Long Beach, CA 90802-4213

#### **National Marine Fisheries Service**

777 Sonoma Avenue  
Santa Rosa, CA 95404-4731

#### **Port of Oakland**

530 Water Street  
Oakland, CA 94607

#### **San Francisco Bay Conservation and Development Commission**

50 California Street, Suite 2500  
San Francisco, CA 94111

**San Francisco Regional Water Quality Control Board**

Suite 1400  
1515 Clay Street  
Oakland, CA 94612-1499

**State Historic Preservation Officer**

P.O. Box 94296  
Sacramento, CA 94296-0001

**U.S. Coast Guard**

Commander, 11th District  
U.S. Coast Guard  
Building 50-2  
Coast Guard Island  
Alameda, CA 94501-5100

**U.S. Environmental Protection Agency, Region IX**

Dredging & Sediment Management Team  
75 Hawthorne Street  
San Francisco, CA 94105

**U.S. Fish and Wildlife Service**

Ventura Fish and Wildlife Office  
2493 Portola Road, Suite B  
Ventura, CA 93003

**2.0 Agency Comments**

N/A

**3.0 Public Comments/Responses**

N/A

## **Appendix C - Mitigation Measures and Standard Conditions**

## Appendix C – Mitigation Measures and Standard Conditions

### 1.0 EPA Standard Ocean Disposal Conditions for the San Francisco Deep Ocean Disposal Site

October 10, 2006

For enhanced clarity and understanding, the following updated Special Conditions combine and re-number many of the previously-published special conditions for SF-DODS. Note that the substantive provisions of EPA's 1999 rule (64 Fed. Reg. pages 39,927-39,934), and EPA's most recent SMMP Implementation Manual for SF-DODS must be incorporated by reference as part of the project authorization/contract, except as the following specific provisions update them. Also note that the term "permit" as used here applies both to USACE ocean dumping permits issued under Section 103 of the MPRSA, and to contracts or other authorizations for USACE dredging projects.

#### Generic Ocean Disposal Special Conditions for use of the San Francisco Deep Ocean Disposal Site (SF-DODS)

1. Dredged material shall not be leaked or spilled from disposal vessels during transit to the SF-DODS. Transportation of dredged material to the SF-DODS shall only be allowed when weather and sea state conditions will not interfere with safe transportation and will not create risk of spillage, leak or other loss of dredged material in transit to the SF-DODS. No disposal vessel trips shall be initiated when the National Weather Service has issued a gale warning for local waters during the time period necessary to complete dumping operations, or when wave heights are 16 feet or greater. The permittee must consult the most current version of the SMMP Implementation Manual for additional restrictions and/or clarifications regarding other sea state parameters, including but not limited to wave period.
2. Vessels used for dredged material transportation and disposal must not be loaded beyond a level at which dredged material would be expected to be spilled in transit under anticipated sea state conditions, and in no case may disposal vessels be filled to more than 80 percent of the vessel's maximum bin or hopper volume. Before any disposal vessel departs for the SF-DODS, an independent quality control inspector ("*Independent*" means not a direct employee of the permittee or dredging contractor) must certify in writing that the vessel is not over-loaded, and otherwise meets the conditions and requirements of a Scow Certification Checklist that contains all of the substantive elements found in the example contained in the most current SMMP Implementation Manual. EPA and USACE must approve the permittees' proposed Scow Certification Checklist prior to the commencement of ocean disposal operations. No ocean disposal trip may be initiated until both the vessel captain and the independent inspector have signed all relevant entries on the Scow Certification Checklist.
3. Disposal vessels in transit to and from the SF-DODS must remain at least three nautical miles from the Farallon Islands whenever possible. Closer approaches should occur only where the designated vessel traffic lane enters the 3-mile limit. In no case should disposal vessels leave the designated vessel traffic lane within the 3-mile limit, or transit north of a

line extending westward from the termination of the designated vessel traffic lane while within the 3-mile limit.

4. Surface Disposal Zone: When dredged material is discharged within the SF-DODS, no portion of the vessel from which the materials are to be released (e.g. hopper dredge or towed barge) may be further than 1,960 feet (600 meters) from the center of the disposal site at latitude 37°39'N; longitude 123°29'W.
5. No more than one disposal vessel may be present within the SF-DODS Surface Disposal Zone at any time.
6. The primary tracking system for recording ocean disposal operations shall be disposal vessel- (e.g., scow-) based. Disposal vessels shall use an appropriate Global Positioning System (satellite) tracking system capable of indicating and recording the position of the disposal vessel with a minimum accuracy of 10 feet during all transportation and disposal operations. Draft and bin sensors must be positioned near both the forward and aft ends of the disposal vessel, and calibrated to accurately record vessel draft and load level within the bin, respectively. The primary disposal tracking system must indicate and record the position, draft, and load level within the bin of the disposal vessel throughout transit to the disposal site, during dumping and for at least one-half hour after disposal is complete, as well as indicate and record the time and location of the beginning and end of each disposal event. This primary disposal tracking system must indicate and automatically record the position, draft and load level within the bin of the disposal vessel at a maximum 5-minute interval while outside the SF-DODS disposal site boundary, and at a maximum 15-second interval while inside the SF-DODS disposal site boundary.
7. Data recorded from the primary disposal tracking system must be posted by a third party contractor on a near-real time basis to a World Wide Web (Internet) site accessible by EPA Region 9, the San Francisco District USACE, and NOAA's Gulf of the Farallones National Marine Sanctuary. The Web site must be searchable by disposal trip number and date, and at a minimum for each disposal trip it must provide a visual display of: the disposal vessel transit route to SF-DODS; the beginning and ending locations of the disposal event; and the disposal vessel draft and load level in the bin throughout the transit. The requirement for posting this information on the Web is independent from the hard-copy reporting requirements listed in Special Condition 9, below. The third-party system must also generate and distribute "e-mail alerts" regarding any degree of apparent dumping outside the Surface Disposal Zone of SF-DODS, and regarding any apparent substantial leakage/spillage or other loss of material en route to SF-DODS. Substantial leakage/spillage or other loss shall be defined as an apparent loss of draft of one foot or more between the time that the disposal vessel begins the trip to SF-DODS and the time of actual disposal. E-mail alerts for any disposal trip must be sent within 24 hours of the end of that trip to EPA Region 9, the San Francisco District USACE, and the relevant National Marine Sanctuary if the event triggering the alert occurred within a Sanctuary boundary, and to other addressees as may be indicated by EPA or USACE on a project-specific basis.

8. A functioning back-up navigation system, meeting the minimum accuracy requirement listed above, must also be in place on the towing vessel (tug, if any). If the primary (disposal vessel's) navigation tracking system fails during transit, the disposal trip may continue only so long as the back-up (towing vessel's) navigation and tracking system remains operational, by placing the towing vessel in such a location that, given the compass heading and tow cable length to the scow ("lay back"), the estimated scow position would be within the surface disposal zone [i.e., within 1,960 feet (600 meters) of the center of the disposal site]. In such cases the towing vessel's position and the tow cable length and compass heading to the disposal vessel, must be recorded and reported. Further disposal operations using a disposal vessel whose navigation tracking system fails must cease until those primary capabilities are restored.
9. In addition to the requirement in Special Condition 7, above, for posting data on the Web, the permittee shall maintain daily records (using the approved Scow Certification Checklist) of: the amount of material dredged and loaded into barges for disposal; the location from which the material in each barge was dredged; the weather report for and sea-state conditions anticipated during the transit period; the time that each disposal vessel departs for, arrives at and returns from the SF-DODS; the exact location and time of each disposal; and the volume of material disposed at the SF-DODS during each disposal trip. The permittee shall also maintain, for each ocean disposal trip, both electronic data and printouts from the GPS-based primary disposal tracking system (or the backup navigation tracking system when appropriate) showing transit routes, disposal vessel draft readings, disposal coordinates, and the time and position of the disposal vessel when dumping was commenced and completed. These daily records shall be compiled at a minimum for each month during which ocean disposal operations occur, and provided in reports, certified accurate by the independent quality control inspector, to both EPA and USACE. For each ocean disposal trip, these reports shall include the electronic tracking and disposal vessel draft data on CD-ROM (or other media approved by EPA and USACE), as well as hard copy reproductions of the Scow Certification Checklists and printouts listed above. The reports shall include a cover letter describing any problems complying with the Ocean Disposal Special Conditions, the cause(s) of the problems, any steps taken to rectify the problems, and whether the problems occurred on subsequent disposal trips.
10. An independent quality control inspector ("*Independent*" means not a direct employee of the permittee or dredging contractor) shall observe all dredging operations, and inspect each disposal vessel prior to its departure for SF-DODS. The inspector shall certify (along with the disposal vessel captain) whether the specifications on the approved Scow Certification Checklist have been met. The inspector shall promptly inform the permittee whether there are any inaccuracies or discrepancies concerning this information, and shall provide a summary for the calendar month in a report to EPA and USACE by the 15<sup>th</sup> day of the following month.
11. The permittee shall report any anticipated, potential, or actual variances from compliance with the above Ocean Disposal Special Conditions, and any additional project-specific Special Conditions, to the District Engineer and the Regional Administrator within 24 hours of discovering such a situation. If any of these compliance problems occur within the

boundaries of a National Marine Sanctuary, the permittee must also report any such situation to the relevant Sanctuary office within 24 hours. An operational “e-mail alert” system, as described in Special Condition 7 above, will be considered as fulfilling this 24-hour notification requirement. In addition, the permittee shall prepare and submit a report of any such compliance problems, certified accurate by the independent quality control inspector, on a weekly basis by noon Monday, to the District Engineer and the Regional Administrator.

12. Within 60 days following the completion of ocean disposal operations, the permittee shall submit to the District Engineer and Regional Administrator a completion letter summarizing the total number of disposal trips and the overall (bin and in-situ) volume of material disposed at SF-DODS for the project, and whether any of this dredged material was excavated from outside the areas authorized for ocean disposal or was dredged deeper than authorized by the permit.

## **2.0 Water Board Order No. R2-2007-0020, U. S. Army Corps of Engineers Maintenance Dredging 2007-2009**

IT IS HEREBY ORDERED, pursuant to the provisions of Division 7 of the California Water Code and regulations adopted thereunder and to the provisions of the Federal Water Pollution Control Act, as amended, and regulations and guidelines adopted thereunder, that the USACE shall comply with the following:

### **A. RECEIVING WATER LIMITATIONS**

1. The dredging and disposal activities shall not create a nuisance as defined in Section 13050(m) of the California Water Code.
2. The discharge of waste shall not cause the following conditions to exist in waters of the State that cause a nuisance or adversely affect beneficial uses at any place:
  - a. Floating, suspended, or deposited macroscopic particulate matter or foam;
  - b. Aquatic growths;
  - c. Significant alteration of temperature, turbidity, or apparent color beyond present natural background levels;
  - d. Visible, floating, suspended, or deposited oil or other products of petroleum origin;
  - e. Toxic or other deleterious substances in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.
3. The discharge of waste shall not cause the following limits to be exceeded in waters of the State in any place within one foot of the water surface:
  - a. Dissolved Oxygen:  
5.0 mg/l minimum downstream of the Carquinez Bridge, 7.0 mg/l minimum upstream of the Carquinez Bridge. When natural factors cause lesser concentrations, then this discharge shall not cause further reduction in the concentration of dissolved oxygen.
  - b. Dissolved Sulfide:

0.1 mg/l maximum.

c. pH:

A variation of natural ambient pH by more than 0.5 pH units.

d. Un-ionized Ammonia:

0.025 mg/L as N, annual median; and 0.16 mg/L as N, maximum.

e. Salinity:

The project shall not increase total dissolved solids or salinity to adversely affect beneficial uses.

4. The discharge shall not cause a violation of any applicable water quality objectives for receiving waters adopted by the Water Board and the State Water Resources Control Board as required by the Clean Water Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Water Board will revise and modify this Order in accordance with such more stringent standards.

## **B. PROVISIONS**

### *Project and Project Changes*

1. This Order authorizes:

a. At the San Francisco Bar Channel - Dredging of up to 2.8 million cubic yards and disposal of the dredged material at SF-08 or the Ocean Beach nourishment demonstration project.

b. Within San Francisco Bay - Dredging of up to 12 million CY of dredged material and disposal of up to 5.4 million cubic yards at the in-Bay disposal sites (assuming maximum dredging volumes and least-preferred disposal options). Disposal of dredged material may also occur at the Deep Ocean Disposal Site, beyond the jurisdiction of the Water Board. Disposal of dredged material at beneficial reuse locations within the Water Board's jurisdiction is regulated through site-specific Water Board orders for each location.

2. The District Engineer shall inform the Executive Officer in writing of any changes to the project plan in Table 1a of this Order. The Executive Officer shall determine whether such a proposed change requires modification of the Waste Discharge Requirements issued herein, in which case the District Engineer shall submit a request for revised Waste Discharge Requirements for action by the Board. Proposed changes that would require modification to this Order include but are not limited to any changes that may result in an overall increase in the amount of in-Bay disposal or an increased threat to water quality. The Executive Officer may approve minor project changes that do not require modification to this Order and which will not result in an increased threat to water quality.

### *Dredging and Disposal Operations*

3. Dredging at each project location shall be limited to the project depth with no more than two feet of over-dredge allowance.

4. No overflow shall be discharged from any barge, with the exception of spillage incidental to clamshell dredge operations.

5. Return water overflow from hopper-type suction dredges shall be limited to no longer than 15 minutes at the dredge site during any one excavation action (cut).
6. Dredging shall not occur during the Pacific herring spawning season (December 1 through March 1) in spawning areas (Figure 3) unless otherwise authorized in writing by the California Department of Fish and Game.
7. Dredging and disposal activities shall be limited to the work windows set out by the California Department of Fish and Game, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service in their Biological Opinions on the LTMS, unless through a consultation process, the appropriate agencies provide written authorization to work outside these windows.
8. Discharges of dredged material shall comply with annual and seasonal volume target limits for disposal at in-Bay sites listed in Table 2 of this Order.

*Episode approval*

9. Individual dredging and disposal episodes, including knockdown events, shall not commence until authorized by Water Board staff following review by the DMMO. The review process for individual dredging episodes shall occur through the DMMO by the same process as is used for other Bay Area dredging projects. Project descriptions, requests for dredged material suitability determinations, and evaluations of disposal alternatives (see Provision 10, below) shall be reviewed by the DMMO. Submittals to the DMMO shall be made no later than one week prior to the meeting at which the project will be discussed or else the information will not be considered. The USACE shall follow applicable federal and state guidance on a tiered testing framework and on the preparation of reports.

10. For each dredging episode where in-Bay disposal is proposed, the USACE shall, as part of the episode approval process, submit to the DMMO an evaluation of alternative disposal sites pursuant to Section 404(b)(1) of the Clean Water Act. Evaluations shall include analyses of the feasibility of the following disposal options:

- a. Habitat Restoration: The USACE shall evaluate the feasibility of placing dredged material at habitat restoration sites within the San Francisco Bay region and take dredged material to those sites where it is feasible. The USACE shall make good faith efforts to coordinate with habitat restoration projects that are seeking dredged material.
- b. Levee Restoration: The USACE shall evaluate the feasibility of placing the dredged material in question at levee restoration sites within the San Francisco Bay region and take dredged material to those sites where it is feasible. The USACE shall make good faith efforts to coordinate with levee restoration projects that are seeking dredged material.
- c. Beneficial Reuse and Rehandling Sites: The USACE shall evaluate the feasibility of placing the dredged material in question at beneficial reuse sites and dredged material rehandling sites within the San Francisco Bay region and take dredged material to those sites where it is feasible.
- d. Ocean Disposal: The USACE shall evaluate the feasibility of placing the dredged material at SF-DODS.
- e. Coordination with other USACE Projects: The USACE shall evaluate the feasibility of combining disposal of dredged material with that from other USACE projects using ocean

disposal or beneficial reuse when both projects will occur at similar times or locations, or will be performed by the same contractor.

*Beneficial Reuse Coordination*

11. The USACE shall make good faith efforts to coordinate with and, if appropriate, to enter into agreement(s) with the state Department of Water Resources, the State Coastal Conservancy, and other local sponsors, as necessary, in order to facilitate the placement of dredged material at beneficial reuse sites.

*Management and Monitoring of in-Bay Disposal of Dredged Material*

12. The USACE shall maintain administrative controls on disposal volumes at the in-Bay disposal sites so that target volumes in Table 2 of this Order are not exceeded. The USACE shall manage overall disposal volumes and disposal locations within each site to prevent build-up of dredged material at the sites.

13. The USACE shall provide technical reports regarding the impacts of the discharge on waters of the State, pursuant to Section 13267 of the California Water Code (CWC). In previous years, the USACE has participated in the Regional Monitoring Program for Trace Substances (RMP) through support of the U.S. Geological Survey (USGS) for study of suspended sediment processes in the San Francisco Estuary. Implementation or funding of the RMP study program or other Water Board-approved study will constitute fulfillment of this provision.

14. The USACE shall provide to Water Board staff quarterly reports, acceptable to the Executive Officer, summarizing dredging and disposal activities in the San Francisco Bay region. The reports are due on June 1 (covering January 1 -March 31), September 1 (covering April 1 - June 30), December 1 (covering July 1 - September 30), and March 1 (covering October 1 - December 31) of each year.

The quarterly report shall contain the following information for each dredging project: name of project, dates dredged, volume of dredged and disposed ("insitu" volume where available, otherwise "bin" volume), disposal site(s) used, and name of any affiliated dredging permit holders (permittees). In addition to the printed version of the Quarterly Report, the USACE shall provide a digital version of the relevant data to the Water Board staff to facilitate ongoing evaluation of the impacts of dredging and dredged material disposal.

At any time, the USACE may submit a request in writing to the Executive Officer to discontinue submitting quarterly reports if it can demonstrate that the data listed above is immediately accessible to Water Board staff in electronic format via the web-based DMMO data management system (database) discussed in Finding 20. The USACE may discontinue submitting the reports upon receiving the Executive Officer's written approval.

15. The USACE shall continue bathymetric monitoring of the in-Bay disposal sites (monthly surveys at the Alcatraz Disposal site, quarterly surveys elsewhere). The USACE shall keep a record of these surveys on file and shall make them available for inspection by the Water Board, other regulatory agencies, and interested members of the public upon written request to the USACE staff.

16. No later than July 1 of each year, the USACE shall submit to the Water Board an annual report acceptable to the Executive Officer (the Alcatraz Trend Study) analyzing the status of the mound at the Alcatraz Disposal site. This report shall include:
- a. A description of results of previous year's bathymetric surveys and a description of trends in mound shape and size;
  - b. An estimate of the annual net change in volume of the mound overall, and at depths above -60, -50, -40, and -30 feet Mean lower Low Water;
  - c. An estimate of the annual volume of dredged material disposal at the site;
  - d. An analysis of the relationship between disposal volumes, site management practices, and net change in mound volume;
  - e. Assessment of whether management practices are achieving satisfactory results; and
  - f. Recommendations for future site management practices, as informed by the analysis and assessment items d and e, above.

*Standard Provisions*

17. The discharge of dredged material to the waters of the States shall cease immediately whenever violations of the Order are detected by the USACE or by Board staff as determined by the Executive Officer, and the discharge shall not resume until compliance can be assured to the Executive Officer's satisfaction.

18. The USACE shall permit the Water Board or its authorized representative in accordance with California Water Code Section 13267(c) as follows:

- a. Entry upon premises in which any required records are kept.
- b. Access to copy any records required to be kept under terms and conditions of this order.
- c. Inspection of monitoring equipment or records.
- d. Sampling of any discharge.
- e. Provide small craft transport to offshore locations or vessels for the purpose of inspection, provided that it is within normal business hours.

19. This Order supersedes Order No. R2-2003-0311. Order R2-2003-0111 is hereby rescinded.

**3.0 Letter of Agreement for Consistency Determination NO. CN 9-05**

**U. S. Army Corps of Engineers, San Francisco District  
Issued on March 28, 2007**

**II. Special Conditions.**

If the USACE does not agree with the following conditions or fails to incorporate them into the project, the USACE shall notify the Commission immediately of its refusal to agree or to incorporate the conditions into the project and the conditional concurrence shall be converted into an objection. The USACE shall also immediately notify the Commission if the USACE determines to go forward with the project despite the Commission's objection.

- A. **Limits on Dredging.** This consistency determination authorizes maintenance dredging only within areas as shown on Exhibits B through K to the project depths for each channel as listed in the authorization section plus two feet allowable over-dredge depth. No dredging in other areas is authorized.
- B. **Water Quality Approval.** At least thirty days prior to the commencement of any dredging episode authorized herein, the USACE shall submit to the Executive Director water quality certification, waste discharge requirements, or any other required approvals from the California Regional Water Quality Control Board, San Francisco Bay Region. Failure to obtain such certification prior to the commencement of any dredging episode shall terminate the Commission's concurrence for that episode. The Executive Director may, upon review of the Regional Board approval, either: (1) approve the dredging episode consistent with this authorization; or (2) amend this authorization, as necessary, related to water quality issues. Unless the USACE agrees to amend this authorization in a manner specified by or on behalf of the Commission, this consistency determination shall become null and void.
- C. **Barge Overflow.** For clamshell dredging operations, no overflow shall be discharged from any barge, with the exception of incidental spillage. In hopper suction dredging, return water overflow is limited to 15 minutes at the dredge site during any single excavation action.
- D. **Annual Schedule.** No later than November 30<sup>th</sup> of each year, the USACE shall provide the DMMO agencies a schedule of the projects confirmed for execution in the following calendar year. If a project receives funding after November 30<sup>th</sup> of any year, the USACE shall provide a project description and schedule to the DMMO agencies within two weeks of receiving funding.
- E. **Dredging and Disposal Activity.**
1. **In-Bay Disposal Volumes.** In the event that beneficial reuse sites, upland or the deep ocean disposal sites are not available or feasible, in-Bay disposal of dredged sediments shall not exceed the monthly or annual disposal targets set forth in the LTMS Management Plan, or state regulations. The USACE shall also give consideration to other dredging projects using in-Bay disposal sites when planning the disposal of sediment from federal projects.
  2. **Pre- Dredging and Disposal Report and Notice.** At least thirty days before the commencement of any dredging and disposal episode authorized herein, the USACE shall submit to the Commission's Executive Director:
    - a. a bathymetric map showing the location of all areas authorized to be dredged, the authorized depth including over-dredge depth based on MLLW, the volume of material proposed to be dredged, and the approximate date of project commencement. At least two (2) weeks prior to the scheduled date of commencement of any dredging episode, the USACE shall notify the Commission staff by telephone or in writing or, if the date of commencement changes, provide an updated schedule; and
    - b. A written statement to the Executive Director that contains: (1) the proposed beneficial or upland disposal site and quantity of material to be disposed; (2) dates within which the disposal episode is proposed; (3) the results of chemical and biological testing of sediment proposed for reuse or disposal. If the USACE proposes to dispose of the material in-Bay, then an evaluation of alternative disposal sites shall be provided to the Commission. This evaluation should analyze the feasibility of all reuse or disposal options including habitat restoration, levee restoration,

beneficial reuse, rehandling sites, and ocean disposal. The analysis should equitably compare the total cost to the Government of using Montezuma Wetlands and all other available beneficial reuse and upland disposal sites.

3. **Authorization of In-Bay Disposal.** The authorization for the proposed in-Bay disposal shall become effective only if the Executive Director: (1) informs the USACE in writing that the episode is consistent with the authorization provided herein, alternative disposal and beneficial reuse options are infeasible, the volume proposed for disposal is consistent with both in-Bay disposal allocations, if applicable, and the disposal site limits, and the material is suitable for in-Bay disposal; or (2) does not respond to the USACE pre-disposal report within 30 days of its receipt. If the Executive Director determines that: (a) ocean disposal, upland disposal, or beneficial reuse of the material is feasible; (b) the material proposed for disposal is unsuitable for the Bay; or (c) the proposed disposal is inconsistent with in-Bay allocations and disposal site limits, the Commission's concurrence for in-Bay disposal shall be terminated.

4. **Post-Dredging Requirements.** Within sixty days of completion of each dredging episode authorized by this consistency determination, the USACE shall submit to the Commission a bathymetric map showing the actual area(s) and depths dredged including over-dredge depth based on MLLW, any dredging that occurred outside the area or below the depths authorized herein, and a written statement indicating the total volume of material dredged from each channel and disposed, and the disposal location.

F. **Knockdown Dredging.** The knockdown episodes proposed in this consistency determination must meet the following conditions: (1) the shoal must be located within the maintenance dredging footprint for the channel; (2) the depression into which the shoal will be knocked must be located within the maintenance dredging footprint of the channel; (3) each individual shoal to be knocked down must be no greater than 3,000 cy; (4) the USACE must use either a clamshell or towed I-beam to knock down the shoal into the depression; (5) each knockdown episode must be conducted to minimize the re-suspension of sediment; (6) the knockdown material must meet chemical and biological criteria specified by Water Board and/or BCDC before being knocked down; and (7) the USACE must meet the knockdown dredging episode notification requirements in Special Condition G.

G. **Knockdown Dredging Episode Notification.**

1. **Prior Notice of Knockdown Episode.** The USACE shall notify the staff by telephone or in writing at least seven days prior to undertaking any knockdown episode. At this time, the USACE must also confer with BCDC and the Regional Water Board as to whether any testing for this knockdown material is required, and must submit a description of the project and a pre-dredge bathymetric survey of the knockdown area.

2. **Approval of Knockdown Episode.** Approval (by letter or email) by the Commission's staff authorizing each individual knockdown episode will be required before a knockdown episode may commence. Please be advised that consultation and subsequent approval may be required from appropriate resource agencies before a knockdown episode may commence if the knockdown episode falls outside the LTMS environmental work windows.

3. **Knockdown Episode Report.** Within thirty days of completion of each knockdown dredging episode authorized by this consistency determination, the USACE shall submit to the Commission a report which contains: (1) a post-dredge bathymetric survey showing (a) the location of all areas authorized to be knocked-down and the authorized depth based on MLLW,

and (b) the actual areas, and the depth after completion of the knockdown episode based on MLLW, and any knockdown activity that occurred outside the area authorized to be knocked-down or below the authorized depths; and (2) the actual volume of the material relocated in the knockdown episode.

4. **Knockdown Study.** If the knockdown episode is larger than 5,000 cy, a plume study will be required, unless and until sufficient information is provided to the Commission staff regarding the potential impact of knockdown episodes. The USACE shall provide the plume study results and analysis to the Commission staff no later than ninety days after the knockdown episode has concluded.

H. **Seasonal Limitations.** Dredging and disposal operations shall be confined to the amended work windows consistent with Tables F-1 and F-2 of Appendix F, “In-Bay Disposal and Dredging” and Figures 3.2 and 3.3 of the Long-Term Management Strategy (LTMS) Management Plan 2001. No work inconsistent with the time and location limits contained in these tables may be conducted without the approval of the Executive Director. Such approval may only be issued after: (1) consultation with the US. Fish and Wildlife Service and/or NOAA Fisheries have occurred; and (2) the Executive Director has determined that dredging and disposal outside of the work window would be consistent with the Commission’s laws and policies.

To protect the Pacific herring fishery, no dredging shall occur between December 1<sup>st</sup> and February 28<sup>th</sup> of any year without the written approval of the Executive Director, provided that such approval may only be issued: (1) after the USACE representative requests from the California Department of Fish and Game that they be allowed to dredge outside of the work window, discussions between the USACE and the Department of Fish and Game has occurred and the outcome of those discussions has been provided to the Commission staff; and (2) the Executive Director has determined that dredging and disposal outside of the work window would be consistent with the Commission’s laws and policies.

I. **Environmental Assessment.** At least thirty days prior to the commencement of any dredging episode authorized herein, the USACE shall submit to the Executive Director the project description and Environmental Analysis as described in the statement of consistency.

J. **Management and Monitoring of In-Bay Disposal of Dredged Material.** The USACE shall maintain administrative controls on disposal volumes at the in-Bay disposal sites so the LTMS target volumes are not exceeded. The USACE shall manage overall disposal volumes and disposal locations within each site to prevent build-up of dredged materials at each of the sites.

1. **Quarterly Reports.** The USACE shall provide to the Commission staff quarterly reports, acceptable to the Executive Director, summarizing dredging and disposal activities in San Francisco Bay Region. The reports are due on June 1<sup>st</sup> (covering January 1<sup>st</sup> through March 31<sup>st</sup>), September 1<sup>st</sup> (covering April 1<sup>st</sup> through June 30<sup>th</sup>), December 1<sup>st</sup> (covering July 1<sup>st</sup> through September 30<sup>th</sup>), and March 1<sup>st</sup> (covering October 1<sup>st</sup> through December 31<sup>st</sup>) of each year. The USACE shall also provide the quarterly reports not provided from January 1<sup>st</sup> 2004 through December 31<sup>st</sup> 2006 no later than September 30, 2007. The quarterly reports shall include the following information for each dredging project: (1) project name; (2) dates dredged; (3) volume dredged and disposed (“in-situ” volumes when available, if not available “bin” volumes); (4)

disposal sites used; and (5) the name of any affiliated permittees. The USACE shall also provide, upon request, digital information regarding the above describe dredging projects.

At any time, the USACE may submit a written request to the Executive Director to discontinue submitting quarterly reports if it can demonstrate that the data listed above is immediately accessible to the Commission staff in electronic format via the Web-based DMMO data management system (database).

2. The USACE shall continue bathymetric monitoring of the in-Bay disposal sites, monthly at SF-11, quarterly at SF-9, SF-10, and SF-16. The USACE shall provide these condition surveys within 60 days of their completion to the Commission staff.

3. No later than July 1<sup>st</sup> of each year, the USACE shall provide to the Commission an annual report acceptable to the Executive Director, analyzing the status of the mound at the Alcatraz disposal site. This report shall include:

- a. A description of results of the previous year's bathymetric surveys and a description of the trends in mound shape and size;
- b. An estimate of the annual net change in volume of the mound overall, and at depths above -60, -50, -40, and -30 feet MLLW;
  - c. An estimate of the annual volume of dredged material disposal at the site;
  - d. An analysis of the relationship between disposal volumes, site management practices, and net change in mound volume;
  - e. Assessment of whether management practices are achieving satisfactory results; and
  - f. Recommendations for future site management practices, as informed by the analysis and assessment of items d and e, above.

g.

**K. Observation of Dredging and Disposal Operations.** The USACE shall allow the Commission staff or representatives of other state or federal agencies to come aboard the dredge or barge associated with any dredging, knockdown or disposal episode and observe the operation(s) to ensure that these activities are consistent with pre-dredging reports required herein and other terms and conditions of this permit. Further, the Commission reserves the right to have post-dredging reports inspected by a reliable third party familiar with bathymetric mapping in order to verify the contents of these reports.

#### 4.0 EFH Conservation Recommendations (2009/02051)

**EFH Conservation Recommendations**

As described in the above effects analysis, NMFS has determined that the proposed project would adversely affect EFH and HAPC for various federally-managed fish species within the Pacific Groundfish, Pacific Salmon and Coastal Pelagic FMPs. EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity. EFH includes all associated physical, chemical and biological properties of aquatic habitat that are used by fish. Therefore, pursuant to section 305 (b)(4)(A) of the MSA, NMFS offers the following EFH Conservation Recommendations to avoid, minimize, mitigate, or otherwise offset the adverse effects to EFH:

- 1) NMFS recommends that the Corps follow the NMFS drafted Light Monitoring Protocol as it stands for all light monitoring surveys. NMFS would like to emphasize the Protocol minimization measure that if the daily period of irradiance-saturated photosynthesis ( $H_{sat}$ ) drops below 5 hours, then the Corps should cease dredging during daylight hours until turbidity levels reduce and daily  $H_{sat}$  increases above 5 hours.
- 2) The Corps has indicated that due to a lack of time and funding for 2009, a density and distribution survey for eelgrass near the Oakland Outer and Middle Harbor would not be feasible prior to the 2009 dredging episode. To ensure future protection of eelgrass in the identified locations, NMFS recommends that the Corps conduct eelgrass density and distribution surveys prior to dredging in 2010 and 2011, if dredging is proposed to occur near these eelgrass locations. The density and distribution surveys should be conducted during the eelgrass growing season (May-September). The Corps should provide a detailed monitoring plan to NMFS Santa Rosa Office staff for approval 60 days prior to the eelgrass density and distribution monitoring. The Corps should provide NMFS Santa Rosa Office staff a map of eelgrass density and distribution in relation to the proposed dredging area at least 10 days before dredging occurs.
- 3) In years 2010 and 2011, if pre-dredging eelgrass density and distribution surveys document eelgrass presence within approximately 200 feet of the proposed dredging footprint, the Corps should perform a post dredging eelgrass density and distribution survey within 30 days after the corresponding dredging episode has been completed to determine if eelgrass beds were impacted. The Corps should provide NMFS Santa Rosa Office staff results from post dredging surveys within 30 days of each survey completion. NMFS will review results from eelgrass pre and post density and distribution surveys to determine if further density and distribution surveys will be necessary in years 2012 and 2013.
- 4) In order to compare results from eelgrass pre and post distribution and density surveys to light levels, NMFS recommends that a light monitoring study be conducted during dredging activities in 2010. NMFS will review the 2009 and 2010 pre and post dredging eelgrass surveys and light monitoring study results, to determine if subsequent light monitoring studies should be conducted during dredging episodes in years 2011, 2012 and 2013. Further light monitoring surveys may be recommended if  $H_{sat}$  frequently decreased below 5 hours per day and pre and post eelgrass surveys demonstrate a

significant adverse impact to eelgrass beds. The Corps should provide a detailed monitoring plan to NMFS for approval 60 days prior to the light monitoring. The results of the light monitoring studies should be provided to NMFS within 30 days of completion.

- 5) If NMFS determines dredging has adversely impacted eelgrass adjacent to the project area based on pre and post density and distribution surveys and light monitoring study results, the Corps should provide NMFS with an eelgrass mitigation plan within 60 days of completion of the post dredging survey. NMFS Santa Rosa Office staff is available to assist in developing this mitigation plan if necessary. The mitigation plan should include success criteria that are approved by NMFS Santa Rosa Office staff.

## 5.0 USFWS ESA Consultation (81420-201-F-0561) Terms and Conditions

### Terms and Conditions

To be exempt from the prohibitions of section 9 of Act, the Corps shall comply with the following terms and conditions, which implement the reasonable prudent measure described above. These terms and conditions are nondiscretionary.

The following terms and conditions implement the reasonable and prudent measure above:

1. The Corps shall minimize the potential for harm, harassment, or mortality of California least terns resulting from project related activities by implementing the proposed action, including conservation measures, as described in the *Description of the Proposed Action* section of this biological opinion.
2. The Resident Engineer, Project Manager, or their on-site designee shall be responsible for implementing the proposed dredging as described in this biological opinion on a daily basis and shall be the point of contact for the proposed dredging activities. The Resident Engineer, Project Manager, or their on-site designee shall maintain a readily available copy of this biological opinion on-site whenever dredging is taking place. Their name and telephone number shall be provided to the Service prior to the date of initial dredging. Prior to the initiation of dredging, the Resident Engineer or Project Manager shall submit written documentation to the Service and California Department of Fish and Game (CDFG) verifying that they possess a copy of the biological opinion and understand it. The Resident Engineer or Project Manager shall stop dredging and contact a Service-approved biologist if potential take of the California least tern not described in this biological opinion has occurred.
3. A Service-approved biologist(s) shall remain on call and available during any dredging activities in July and August in 2010, 2011, and 2012, while California least terns are present at their breeding colony site at Alameda Point. The qualifications of the biologist(s) shall be presented to the Service and CDFG for review and written

approval prior to the date of initial dredging at Oakland Outer Harbor. Within twenty (20) working days of the date of the approval by the Service and CDFG, the biologist(s) shall submit a letter to the Service verifying that they possess a copy of this biological opinion and understand the proposed conservation measures and terms and conditions. The biologist(s) shall keep a copy of this biological opinion in their possession at all times when they are in the action area.

4. If present onsite during the dredging activities, the Service-approved biologist shall have oversight of the implementation of the proposed conservation measures and terms and conditions in this biological opinion, and shall have the authority to stop any dredging activity, through communication with the Resident Engineer, Project Manager, or their on-site designee, if any of the requirements contained in this biological opinion are not being implemented or fulfilled, or if potential take of the California least tern not described in this biological opinion has occurred.
5. If the Resident Engineer or Service-approved biologist has requested that dredging be stopped due to failure to implement any of the proposed conservation measures and terms and conditions or potential take of any listed species, the Service and CDFG shall be notified within twenty-four (24) hours via electronic mail and telephone.
6. If requested, before, during, or upon completion of dredging activities, the Corps shall allow access by Service and/or CDFG personnel to the work area to inspect the effects of dredging activities to California least terns or their habitat.
7. The Corps shall submit copies of the final contractual agreement between the Corps and U.S.D.A. Wildlife Services that provides additional predator management at the California least tern colony site at Alameda Point to the Service's Sacramento Fish and Wildlife Office and the offices of the San Francisco Bay National Wildlife Refuge Complex. The copies shall be submitted within ten (10) working days after the contractual agreement is finalized.
8. The Corps shall submit a post-dredging compliance report prepared by the Service-approved biologist(s) to the Service's Sacramento Fish and Wildlife Office within sixty (60) calendar days following completion of dredging activities. This report shall detail (i) dates that dredging occurred; (ii) pertinent information concerning the success of the proposed action in meeting the proposed conservation measures and terms and conditions of this biological opinion; (iii) an explanation of any failure to meet such measures; (iv) known project effects on the California least tern, if any; (v) occurrences of incidental take of this listed species; and (vi) other pertinent information. The reports shall be addressed to the Deputy Field Supervisor of the Endangered Species Program in the Service's Sacramento Fish and Wildlife Office.
9. The Corps shall comply with all reporting requirements in this biological opinion.

The Service must be notified within 24 hours of the finding of any injured or dead California least tern or any unanticipated damage to this species' habitat associated with the proposed action. Injured California least terns shall be cared by a licensed veterinarian or other qualified person, such as the Service-approved biologist for the proposed action. Notification must include the date, time, and precise location of the specimen/incident, and any other pertinent information. Dead animals should be sealed in a zip lock or comparable bag containing a piece of paper indicating the location, date and time when it was found, and the name of the person who found it; and the bag should be frozen in a freezer in a secure location. The Service contact persons are Chris Nagano, Division Chief Endangered Species Program, Sacramento Fish and Wildlife Office at (916) 414-6600 and Resident Agent-in-Charge Dan Crum of the Service's Law Enforcement Division at telephone (916) 414-6660.

### **CONSERVATION RECOMMENDATIONS**

Section 7(a)(1) of the Endangered Species Act directs Federal agencies to utilize their authorities to further the purpose of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and databases.

For the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations. We propose the following conservation recommendation:

1. Assist the Service in implementing recovery actions identified within the most current recovery plan for the California least tern.
2. Study foraging use by California least terns in open waters of San Francisco Bay, and determine the ecological significance of this habitat to supporting the California least tern breeding colony site at Alameda Point and other breeding colony sites within San Francisco Bay.
3. Identify potential sources of contamination within San Francisco Bay that could adversely affect successful foraging by California least terns.
4. Identify public use activities within San Francisco Bay that may adversely affect foraging or roosting by California least terns.

## **Appendix D - Species Lists**

## Appendix D - Species List



United States Department of the Interior  
FISH AND WILDLIFE SERVICE  
Sacramento Fish and Wildlife Office  
2800 Cottage Way, Room W-2605  
Sacramento, California 95825



March 17, 2010

Document Number: 100317124314

Allison Bremner  
US Army Corps of Engineers  
1455 Market Street  
Suite 1570G  
San Francisco, CA 94103

Subject: Species List for Oakland Outer Harbor Annual Maintenance Dredging

Dear: Ms. Bremner

We are sending this official species list in response to your March 17, 2010 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be June 15, 2010.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at [www.fws.gov/sacramento/es/branches.htm](http://www.fws.gov/sacramento/es/branches.htm).

Endangered Species Division



U.S. Fish & Wildlife Service  
Sacramento Fish & Wildlife Office  
Federal Endangered and Threatened Species that Occur in  
or may be Affected by Projects in the Counties and/or  
U.S.G.S. 7 1/2 Minute Quads you requested  
Document Number: 100317124314  
Database Last Updated: December 1, 2009

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## Quad Lists

### Listed Species

#### Fish

- *Acipenser medirostris*
  - green sturgeon (T) (NMFS)
- *Eucyclogobius newberryi*
  - tidewater goby (E)
- *Hypomesus transpacificus*
  - delta smelt (T)
- *Oncorhynchus kisutch*
  - coho salmon - central CA coast (E) (NMFS)
- *Oncorhynchus mykiss*
  - Central California Coastal steelhead (T) (NMFS)
  - Central Valley steelhead (T) (NMFS)
  - Critical habitat, Central California Coastal steelhead (X) (NMFS)
- *Oncorhynchus tshawytscha*
  - Central Valley spring-run chinook salmon (T) (NMFS)
  - Critical habitat, winter-run chinook salmon (X) (NMFS)
  - winter-run chinook salmon, Sacramento River (E) (NMFS)

#### Amphibians

- *Rana aurora draytonii*

- California red-legged frog (T)

**Reptiles**

- *Masticophis lateralis euryxanthus*
  - Alameda whipsnake [=striped racer] (T)

**Birds**

- *Charadrius alexandrinus nivosus*
  - western snowy plover (T)
- *Pelecanus occidentalis californicus*
  - California brown pelican (E)
- *Rallus longirostris obsoletus*
  - California clapper rail (E)
- *Sternula antillarum* (=Sterna, =albifrons) browni
  - California least tern (E)

**Mammals**

- *Reithrodontomys raviventris*
  - salt marsh harvest mouse (E)

**Plants**

- *Suaeda californica*
  - California sea blite (E)

**Quads Containing Listed, Proposed or Candidate Species:**

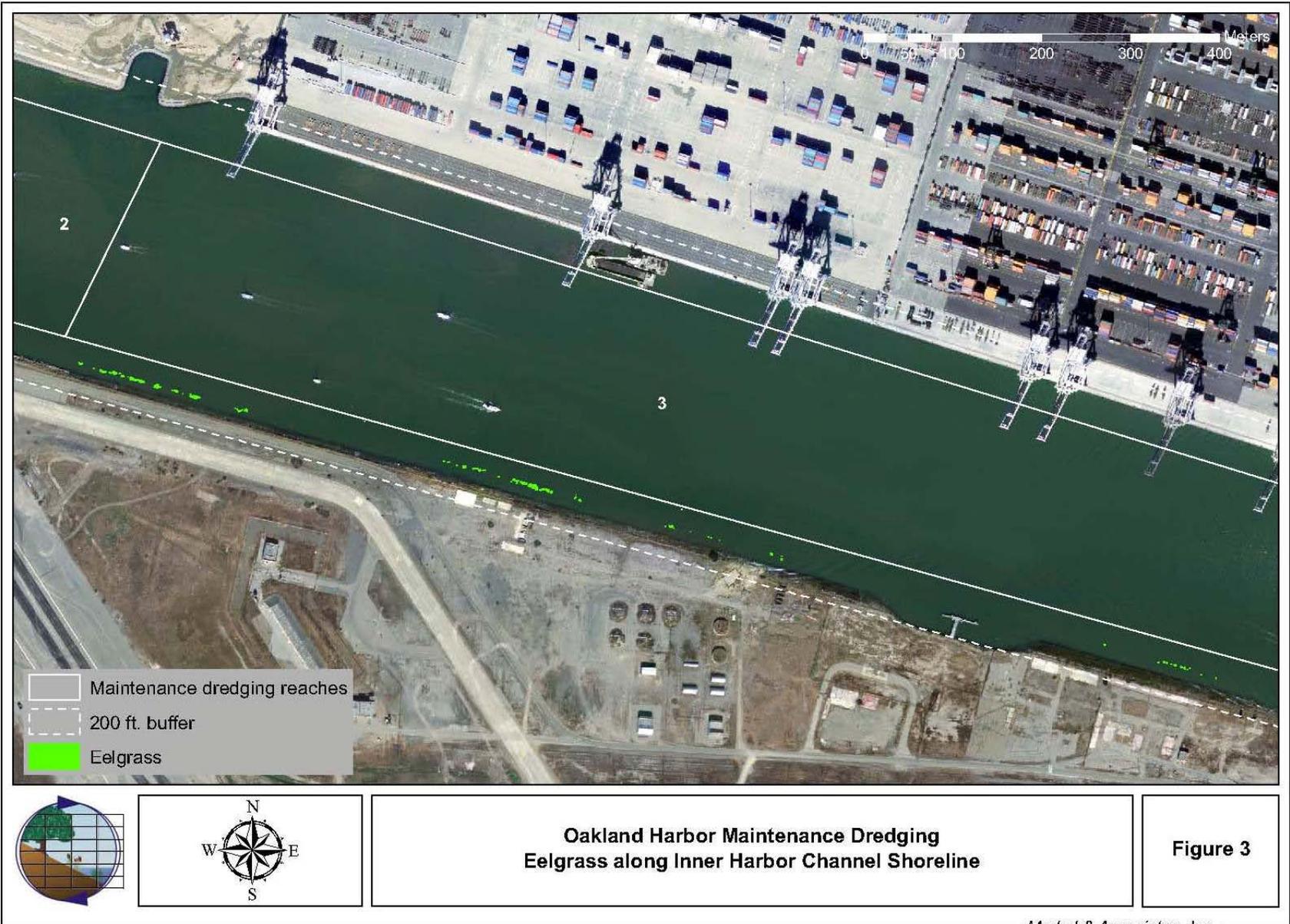
OAKLAND WEST (466D)

## **Appendix E – Eelgrass Surveys**

Appendix E- Eelgrass Surveys



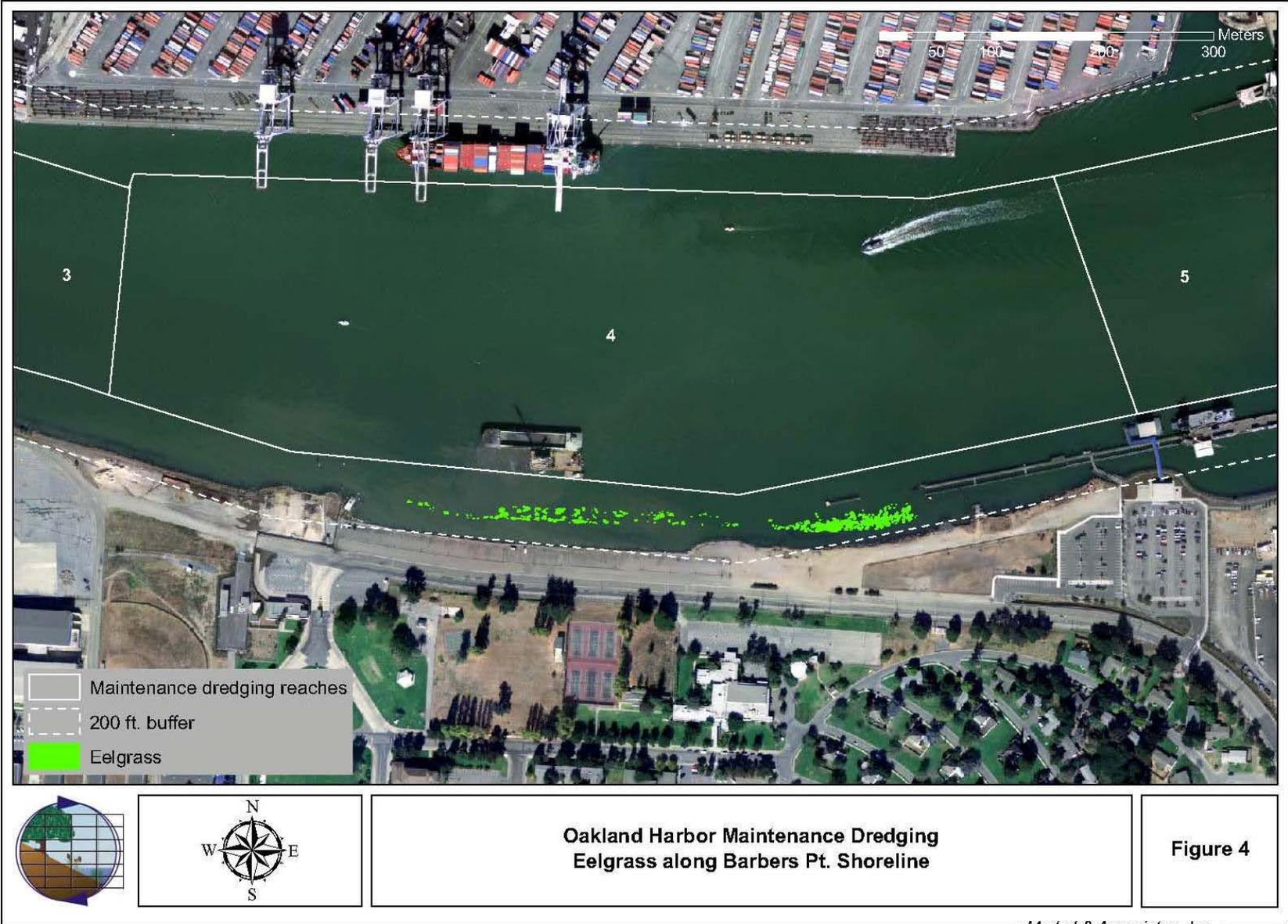




Oakland Harbor Maintenance Dredging  
Eelgrass along Inner Harbor Channel Shoreline

Figure 3

Merkel & Associates, Inc.



Merkel & Associates, Inc.

**For further information regarding this document, contact:**

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