

FINAL
FINDING OF NO SIGNIFICANT IMPACT (FONSI)
ENVIRONMENTAL ASSESSMENT for the
CRESCENT CITY HARBOR FEDERAL CHANNELS
****FY2011 MAINTENANCE DREDGING****

November 2010

1. **Proposed Action:** To maintenance dredge with cutter-head suction equipment up to an estimated 41,000 CY (including overdepth) of predominantly silty sediment from the federal Inner Harbor Basin and Entrance Channels. The post-dredging depth of these channels will be 14' MLLW, which is one foot above their historically-maintained depth of 15' MLLW. It is anticipated that the material dredged from the above channels will be placed at the historical Upland Site, which is adjacent to the Crescent City Harbor District. Beforehand, that site will undergo extensive preparation to restore it to full capacity.
2. **Reference:** Incorporated herein, by reference, is the *Final Environmental Assessment for the Crescent City Harbor Federal Channels, **FY2011 Maintenance Dredging***, dated 10 November 2010.
3. **Factors Considered:** Factors considered for this FONSI were impacts on air quality; water quality; dust and noise conditions; aesthetics; recreation; biological resources including endangered, threatened, and candidate species; fish and wildlife; and cultural resources.
4. **Conclusion:** Based on the information obtained in the preparation of this Environmental Assessment, it is concluded that the proposed action will not have any significant negative impacts to the Crescent City Harbor environment or on the quality of the human environment. Therefore, the preparation of an Environmental Impact Statement (EIS) is not required.

Date

Torrey A. Dicirio
Lieutenant Colonel, U.S. Army
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for the
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11 November 2010



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Acronyms & Abbreviations

APE	=	Area of Potential Effect
CAA	=	Clean Air Act
CCHD	=	Crescent City Harbor District
CDFG	=	California Department of Fish and Game
CFR	=	Code of Federal Regulations
Chetco	=	Chetco River Dredged Material Disposal Site
CWA	=	Clean Water Act
CY	=	cubic yard(s)
CZMA	=	Coastal Zone Management Act
EA	=	Environmental Assessment
EFH	=	Essential Fish Habitat
EIS	=	Environmental Impact Statement
EPA	=	U.S. Environmental Protection Agency
ESA	=	Endangered Species Act
FONSI	=	Finding of No Significant Impact
F&W	=	U.S. Fish & Wildlife
FY	=	Fiscal Year
HOODS	=	Humboldt Open Ocean Disposal Site
MBTA	=	Migratory Bird Treaty Act
MET	=	Modified Elutriate Test
MLLW	=	Mean Lower Low Water
MMPA	=	Marine Mammal Protection Act
MPRSA	=	Marine Protection, Research, and Sanctuaries Act
NAAQS	=	National Ambient Air Quality Standards
NCRWQCB	=	North Coast Regional Water Quality Control Board
NCUAQMD	=	North Coast Unified Air Quality Management District
NEPA	=	National Environmental Policy Act
NHPA	=	National Historic Preservation Act
NMFS	=	National Marine Fisheries Services
NOAA	=	National Oceanic and Atmospheric Administration
NO _x	=	Nitrogen Oxides
O&M	=	Operations and Maintenance

RWQCB	=	Regional Water Quality Control Board
SEF	=	Sediment Evaluation Framework
SHPO	=	State Historic Preservation Officer
SIP	=	State Implementation Plan (<i>Blueprint for achieving and maintaining National and State ambient air quality standards</i>)
SF-[#]	=	EPA Region 9 Disposal Site Designation
SF-DODS	=	San Francisco Deep Ocean Disposal Site
T&E	=	Threatened and Endangered
TOC	=	Total Organic Carbon
USACE	=	U.S. Army Corps of Engineers
U.S.C.	=	U.S. Code
USFWS	=	U.S. Fish & Wildlife Service

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Crescent City Harbor Federal Channels

*** FY2011 Maintenance Dredging ***

1. Proposed Project

Project Overview

The U.S. Army Corps of Engineers, San Francisco District (USACE), is proposing to dredge approximately 41,000 cubic yards of shoaled sediment from Crescent City Harbor as a part of its FY2011 O&M dredging program.

Due to funding or site capacity constraints, the District will dredge the shallow-draft Inner Harbor Basin Channel (38,103 CY) and Entrance Channel (2,284 CY) only to 14' MLLW – which is one foot above the historically-maintained depth of 15' MLLW. In addition, there will be one foot of paid overdepth, and to allow for equipment imprecision, one foot of non-paid overdepth. Because a cutter-head suction dredge will be used, it is anticipated that very little of the ~13,000 CY of material from the non-paid horizon will be removed, meaning that the total amount of material that is actually dredged will be closer to ~25,000 CY.

It is expected that most of the dredged sediment will contain less than 80% sand, so it cannot be used for beach nourishment at Whaler Island. Instead, the sediment that is dredged will be piped to the historical upland disposal site (the “Dredge Ponds”) where site preparation work will restore full capacity, and make it possible to place all of the dredged material there.

Project Location and Description

Crescent City Harbor is located on the Northern California coast about 280 miles north of San Francisco and about 17 miles south of the Oregon border (Figure 1). Bordered on the south and west by the Pacific Ocean, and on the north and east by densely-forested coastal mountains, Crescent City Harbor is a shallow-draft critical harbor of refuge that supports a Coast Guard search and rescue station, commercial and sport fishing, waterfront industry, and recreational boating.

The harbor's naturally crescent-shaped beach is bound by a 4,700-foot long rubble mound outer breakwater to the west, a 2,400-foot long sand barrier to the east, and a 1,600-foot rubble mound inner breakwater to the south. The harbor's opening faces south and is about 2,000 feet across (Figure 2).

Currently, there are three federally-constructed and maintained navigation channels at Crescent City Harbor:

- The Entrance Channel has an authorized project depth of 20 feet mean lower low water (MLLW); it is 200 to 320 feet wide and extends 2,600 feet to the outer breakwater;

- The Inner Harbor Basin Channel has an authorized project depth of 20 feet MLLW, but historically has been maintained at only 15 feet MLLW; it is 200 to 300 feet wide and it extends for 2,200 feet along the inside and around the tip of the inner breakwater, where it connects to the Entrance Channel;
- The Marina Access Channel has an authorized project depth of 20 feet MLLW, but historically has been maintained at only 15 feet MLLW; it is 140 to 210 feet wide and extends 1,200 feet from the Inner Harbor Basin Channel to the small boat basin that is inside the harbor.

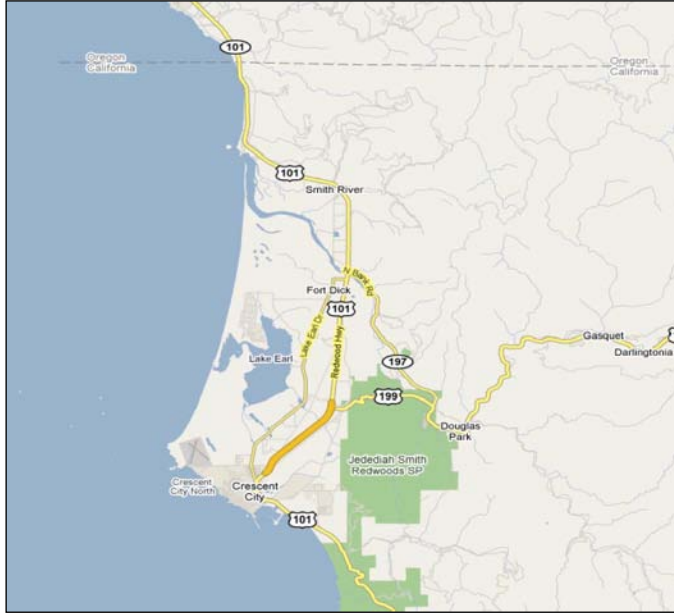


Figure 1 - Crescent City Region

The Crescent City Harbor District (CCHD) owns and operates an upland dredged material disposal site, also known as the “Dredge Ponds.” Located just north of the small-boat basin, a pipeline dredge can be used to transport the dredged material 1600 feet to this site. If the dredged material is sandy (>80%), it can be placed at Whaler Island using a pipeline dredge.

Dredging History

USACE historic records indicate the following amounts of shoaled sediment (in CY) have been dredged from the Crescent City Harbor federal channels in the past:

FY36	48,449	FY82	125,319
FY37	27,756	FY83	40,221
FY38	16,353	FY88	62,192
FY39	58,396	FY93	37,487
FY56-57	120,466	FY99-00	35,000
FY64-65	187,372	FY09	34,947
FY76	61,013		

A total of 820,024 CY of material has been dredged from the harbor since 1936. This equates to an annual average volume of approximately 11,000 CY. The current shoaling estimate for the Inner Harbor Basin and Entrance Channels, including one foot of paid overdepth, is 41,630 CY (February 2010 survey). Including the 34,947 CY that was dredged in FY09 from the Marina Access Channel brings this total to almost 75,000 CY. This represents almost 10 years of sediment accumulation in the Harbor since the last dredging episode. Thus, the annual average for the last decade is about 7,500 CY, which may or may not represent a physically real change in the rate of sediment accumulation in the Harbor when compared to the rate of shoaling over the previous 75 years.

Study Authority

The federal channels, the breakwaters, and other improvements in Crescent City Harbor were authorized by various Rivers and Harbors Acts that were adopted between July 18, 1918 and October 27, 1965. These Acts allowed for initial construction and subsequent maintenance of the Inner Harbor Basin and Entrance Channels; construction (and maintenance) of the Marina Access Channel was authorized by the 1965 Rivers and Harbors Act.

2. Scope of Analysis

The scope of the environmental analysis for the proposed maintenance dredging operations at Crescent City Harbor is limited to the “area of impact” of dredging and any associated surface operations. This area of impact includes the substrate, the water column, and airborne effects within the immediate vicinity of the dredge, transport, disposal, and mob/de-mob operations. However, the scope of this analysis may be wider when considering reasonably foreseeable indirect or cumulative effects.

3. Description of Proposed Action and Alternatives

Proposed Action

San Francisco District dredged the Marina Access Channel portion of the Crescent City Harbor Federal Channels as a part of its 2009 O&M dredging program (before that, Crescent City Harbor had not been dredged at all for approximately 10 years). The Corps is proposing to dredge the remaining federal channels as a part of its FY2011 O&M dredging program. More specifically, this dredging event will be limited to the Inner Harbor Basin Channel and to one spot in the Entrance Channel (shaded areas in Figure 2). The maintenance depth for these channels will be 14' MLLW (which is one foot above their historically maintained depth of 15' MLLW), plus one foot of paid and one foot of non-paid overdepth. As such, up to an estimated 41,000 CY of predominantly silty sediment could be removed, although the precision of the cutter-head dredge will likely minimize the non-paid volume.

The February 2010 condition survey was used for the following detailed volume estimates:

- In the Inner Harbor Basin Channel, there are approximately 18,028 cubic yards (CY) above the planned maintenance depth of 14' MLLW; the estimated volume of material in the first foot of overdepth (paid) is 9,149 CY, and in the second foot of overdepth (non-paid) there is 10,926 CY, for a potential total volume of 38,103 CY. With a cutter-head dredge, however, the contractor typically removes very little of the non-paid material. The material is 54% fine grained and 46% sand, and is therefore not suitable for beach nourishment.
- In the Entrance Channel, there are approximately 10 CY of material above the planned maintenance depth of 14' MLLW; the estimated volume of material in the first foot of overdepth (paid) is 452 CY, and in the second foot of overdepth (non-paid) there is 1,822 CY, for a potential total volume of 2,284 CY. With a cutter-head dredge, however, the contractor typically removes very little of the non-paid material. Because most of this material is sand, it would be suitable to use for beach nourishment at Whaler Island (using a pipeline dredge). However, since the total amount of material to be dredged here is small, economically it will be more advantageous to simply dispose of it in the Upland Site by using the pipeline that will be used to dredge the Inner Harbor Channel.

Need for Proposed Action

For the past half century at Crescent City Harbor, O&M dredging has been performed approximately every five to ten years to maintain safe and efficient navigation channels. If the federally-maintained channels are allowed to silt in, navigation would be limited to only the most shallow-draft vessels, and the economy of the Crescent City area would suffer as a result.

Furthermore, such a situation would limit the Coast Guard's response time for their 82-foot patrol boat in the event of an emergency, and it would also reduce the maneuverability of the Coast Guard's 180-foot buoy tender, which maintains buoys used for demarcation of boundaries in the Entrance Channel. Shallow channel depths would also increase the potential of unsafe navigation conditions for deep-draft commercial fishing vessels, and hazardous shoaling in the Entrance Channel can create breakers that might adversely affect all incoming and outgoing vessels in the Harbor.

'No Action Alternative'

As part of its compliance with the National Environmental Policy Act (NEPA), the USACE considers the effects of taking no federal action as a distinct alternative. The 'No Action Alternative' defines the "without project" condition.

With the 'No Action Alternative,' shoaling well above the historically-maintained project depths of the three federal channels would continue unabated. As a result, potentially unsafe navigation conditions in the Harbor would develop, and when the federal channels eventually shoal in, boat groundings and tidal delays would likely become common, and boats seeking shelter from stormy conditions might be prevented from using the Harbor as a refuge from dangerous sea conditions. Also, the local commercial and recreational maritime related industries would be adversely affected, and the overall economy of the Crescent City area would severely suffer as a result.

Environmental Assessment

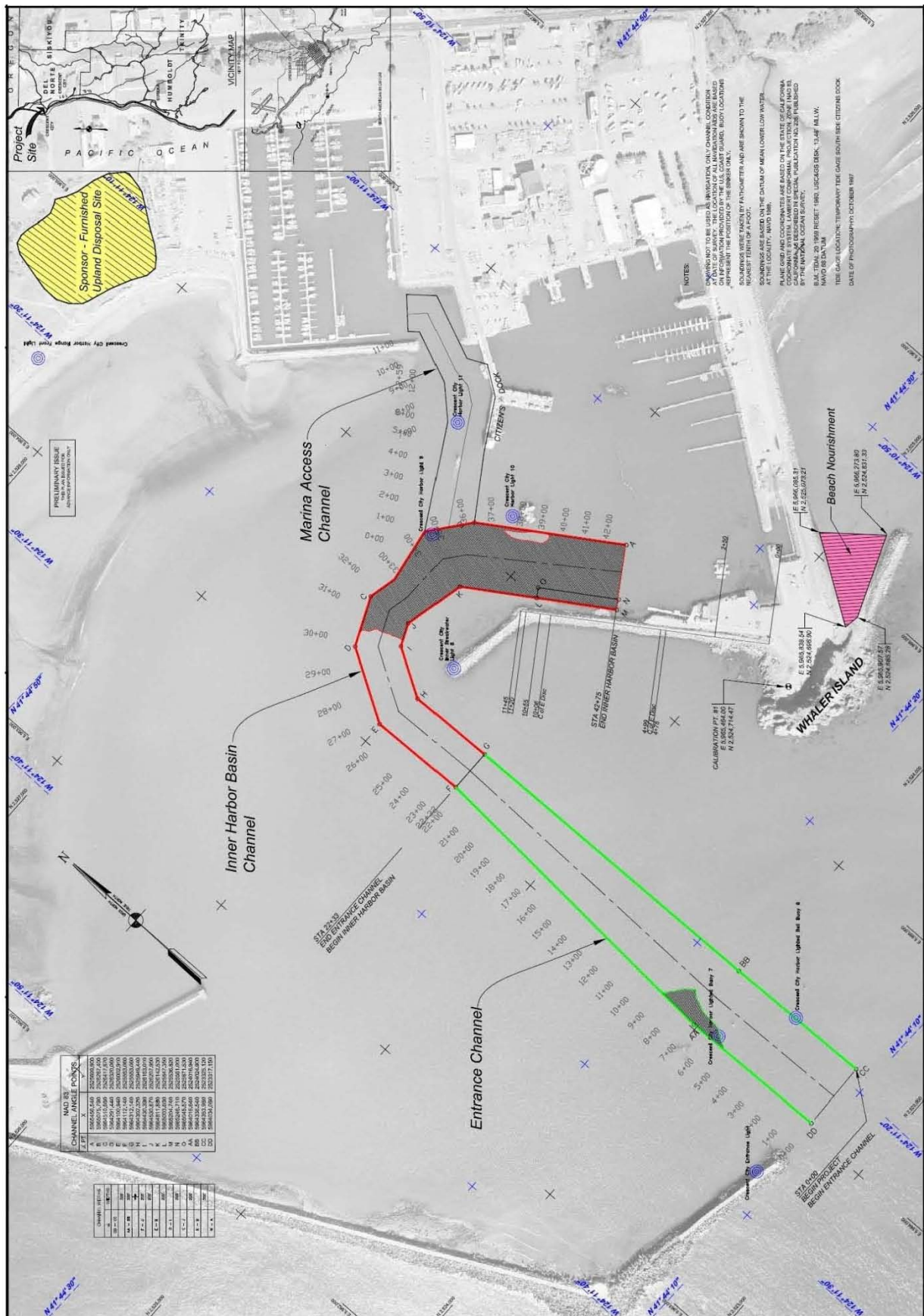


Figure 2 - Crescent City Harbor and Vicinity

Alternatives Considered

- **“Indirect” Beach Nourishment at Whaler Island**

Whaler Island, which lies adjacent to Crescent City Harbor, is a promontory rather than an island. It covers approximately 5.5 acres of land located at the vertex formed by the Inner Breakwater and the sand barrier on the eastern side of Crescent City Harbor (highlighted in pink in plan view in Figure 2, and shown in perspective view in Figure 3).

Whaler Island was first used as a beneficial use site for dredged material during the 1988 maintenance dredging cycle. Although unlimited volumes of dredged material can be placed at Whaler Island, the material must meet certain physical and chemical sediment standards involving grain size and total organic carbon (TOC) content. In general, material used for beach nourishment should contain at least 80% sand; if the percentage of sand is slightly below this threshold, limits on the amount of TOC in the dredged material are then taken into consideration.



Figure 3 – View of Inner Breakwater from Whaler Island

In fact, grain-size testing indicates that the sediment shoaled within the Inner Harbor Basin Channel contains less than 80% sand, so beach nourishment is not a placement possibility for this material. Material from the Entrance Channel, however, is predominantly sand, and therefore placement of this material at Whaler Island is a possibility that is under consideration.

- **Upland Disposal (The Dredge Ponds)**

The Upland Site current capacity is estimated at 32,800 CY and, as such, is a limiting factor for this dredging event. As detailed elsewhere in this report, the volume of material planned for disposal is estimated to be nearly 41,000 CY. To restore full capacity to the site, the plans and specs for the dredging contractors have been written so that site preparation work will raise the height of the interior berms (*aka* spur dikes) to a minimum of 19'; the borrow material for this work will lower the elevation of the floor, thus increasing the site's overall capacity. This work will be performed in such a manner that the slopes of the exterior berms and the surrounding land will not be disturbed in any way (to avoid affecting any endangered or threatened plant species).

The last federal dredging of Crescent City Harbor that used this site took place in FY2000. At that time, shoaled sediments from the Inner Harbor Basin Channel and the Marina Access Channel (the latter had just come under jurisdiction of the federal O&M dredging program), failed the criteria for disposal at Whaler Island due to their low percentage of sand content. Under an agreement with the Crescent City Harbor District (CCHD), which owns and operates the Upland Site (*aka* Crescent City Dredge Ponds), San Francisco District chose to dispose of these sediments there because the site's proximity to the harbor made the use of a pipeline dredge possible and thus the dredging more economical (the Upland Site is adjacent to the harbor, on land just north of the small boat marina; in Figure 2, it is highlighted in yellow).

Alternatives Not Considered Further

- **Humboldt Open Ocean Disposal Site (HOODS)**

For ocean disposal to take place, dredged material must be acceptable for ocean disposal as regulated by the Marine Protection, Research, and Sanctuaries Act of 1972. Section 102 of this Act designated HOODS as a disposal site that is approximately 66 nautical miles south of Crescent City Harbor and approximately 3.5 nautical miles northwest of the mouth of Humboldt Bay (Figure 4). The site is approximately one square nautical mile in area, being a trapezoidal polygon with each side measuring approximately one nautical mile, and is in ocean depths between 160 and 180 feet.

The 1995 Environmental Impact Statement (EIS) for the site states that it is sized for the disposal of 50 million cubic yards (CY) of dredged material over a period of 50 years. This 50 million CY figure was estimated before it was known to what extent the site is dispersive. Between 2000 and 2005, the site has been dispersing slowly, at an average rate of 1.25 million CY of dredged sediment per year without any known problems. In 2003, the site handled 1.8 million CY of sediment without significant mounding, indicating that the site can manage a much higher volume of sediment than originally estimated. Thus, the disposal of several tens of thousands of CY of sediment every five years, or so, from Crescent City Harbor maintenance dredging is well within the environmental capacity of this site.

Given the 66 nautical-mile hauling distance, however, disposal at this site is comparatively expensive, and it is therefore very unlikely that sufficient funding will be available to exercise this disposal option.

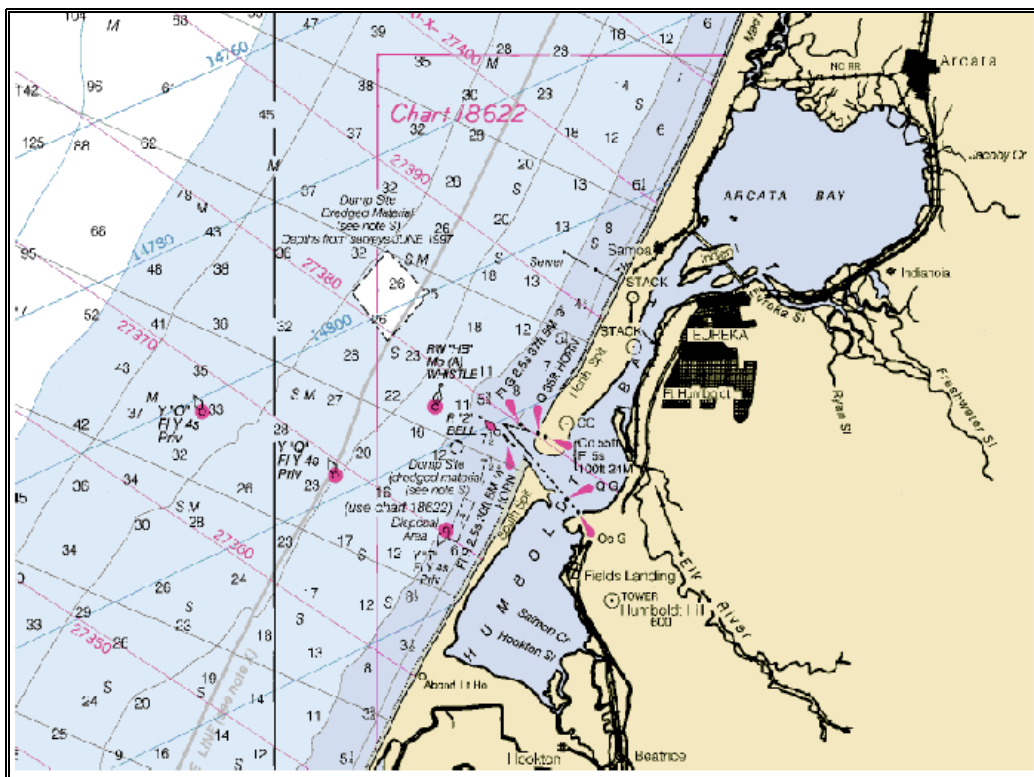


Figure 4 – HOODS Open Ocean Disposal Site

- **“Direct” Beach Nourishment**

During the FY1993 dredging cycle, two beach nourishment options for placing sandy sediment from maintenance dredging were researched and evaluated. The sites considered were South Beach and the “pocket beaches” located just north of the Crescent City Harbor entrance.

Both of these areas have been identified as being environmentally sensitive. South Beach is a tidal flat that is one of the most biologically productive areas on the north coast of California. Additionally, South Beach is stable, as it does not experience a net sand deficit, so this beach does not require “sand nourishment.” Furthermore, if sand were to be deposited here, the littoral drift would probably just carry the sand back into the federal navigation channels. The pocket beaches, on the other hand, experience a high rate of erosion and severe sea cliff retreat. A prior attempt to nourish these beaches in the late 1970s ended in failure, however, because of the aggressive nature of the local littoral drift and thus this area’s low sand-retention rate.

- **New Upland Site**

The process of creating a new upland disposal site would require locating and acquiring the property, performing a myriad of environmental studies, and obtaining resource agency

approvals. It is not possible that a new site could be ready for the FY2011 maintenance dredging cycle, but if work were started on this option soon, and the non-federal sponsor were to acquire the land, this option might well be feasible for the next dredging cycle, in five years, or so, from now.

- **Bar Creation**

The 1998 Environmental Assessment for maintenance dredging of the Crescent City Harbor federal channels examined the possibility of creating a bar, built of dredged material, in approximately 20 to 30 feet of water, located immediately outside of the surf zone. The 1998 EA cited a spokesperson for commercial fishermen who believed that the creation of an offshore bar would enhance fish populations and thus benefit the fishing industry.

This alternative would not be practical for the FY2011 dredging cycle, however, because it would involve filling waters of the U.S., and none of the complex planning and permitting issues that would be required have been tackled, much less resolved. These issues include determining the optimal location of such a bar, conducting a study of the local benthic ecosystem, and determining the extent to which placing dredged material into a bar would result in significant sediment dispersal.

- **Crescent City Harbor Waterfront Development Plan**

Crescent City, the local sponsor, has an existing expansion plan to develop new harbor facilities utilizing dredged material from the federal channels and their marina as beneficial use bay fill. The sponsor plans to use this dredged material to fill a portion of the harbor to create a recreation, hotel, and dining area along the waterfront. Implementation of this plan is anticipated to take at least ten years, and approval by the environmental community and regulatory agencies has not yet been obtained.

- **SF-1**

From 1936 to the 1970s, dredged material from the Crescent City Harbor Entrance and Inner Channel was transported by hopper dredge, and disposed of in nearby ocean waters in locations that were not well recorded. However, it is known that the disposal areas used included the area occupied by the SF-1 ocean disposal site which is about 1.25 nautical miles to the southwest of Crescent City Harbor. SF-1 covers an area of approximately 0.2 square miles with an average depth of 90 feet MLLW.

Due to the disposal requirements of Section 103 of MPRSA, the SF-1 ocean disposal site was created on an interim basis; the interim status of SF-1 expired in 1997, however. Since SF-1's expiration as a disposal site, EPA has stated that their general policy is to reduce the number of designated ocean disposal sites, and that they are specifically opposed to the designation of SF-1 as a permanent disposal site.

- **Chetco River Site**

Chetco is an ocean disposal site (average depth of 70 feet MLLW) located on the southern Oregon coast that is approximately 10 nautical miles north of the California border and one

nautical mile south of the entrance to the Chetco River. Being north of the Oregon border, the site is co-managed by the Portland District Corps and EPA Region 10. The site's EIS assumed a total disposal of 48,000 CY per year based on historical usage, but this is a guideline for use of the site, and does not set a firm volume limit.

Situated just 17 miles north of Crescent City Harbor, it should be economically feasible to transport dredged material to Chetco. However, critical regulatory approvals (water quality certification) from Oregon's Department of Environmental Quality, and other permitting actions, have not been obtained by the San Francisco District. It is estimated that these permitting actions will take at least one year to complete, thus preventing Chetco from being considered as a disposal site for the current dredging cycle. Looking ahead to the next dredging cycle five-years hence, Chetco must be considered a viable disposal option, but work to obtain these approvals should begin now.

- **SF-DODS**

SF-DODS was designated by EPA in 1993 as a deep-ocean dredged material disposal site. Located about 50 nautical miles west of the Golden Gate Bridge, in 8,000 to 9,000 feet of water on the continental slope off of San Francisco, this site is located approximately 313 nautical miles south of Crescent City Harbor, making it economically infeasible to transport dredged material out to this distant site.

- **New Ocean Site**

If identified and designated, a new ocean site would replace the de-authorized SF-1 historical site. An independent, section 102 'Permanent Site Designation Study' would need to be implemented, conducted, and finalized, utilizing Congressional-add funding over several budget cycles. Based on the approval process undergone by the SF-DODS site, it might easily take 20 years or more to designate a new ocean site, and the study process would cost a minimum of \$2-3 million. Furthermore, EPA is currently opposed to designating any new ocean disposal sites.

4. Impact Assessment

Action Area

The "action area" can be defined as the geographic area of an undertaking where changes to the natural or human environment may occur.

The action area for this project includes the three federal channels (Entrance, Inner Harbor Basin, and Access), and the vicinity around them in which dredging equipment may operate, including the mobilization/demobilization of related personnel and equipment. The action area also includes the Whaler Island placement area (for beach nourishment), and the areas covered by pipelines that move the dredged sediment to Whaler Island, and also to the HOODS ocean disposal site (assuming this fallback option is used), as well as the open-water corridor and vicinity in which hopper dredges, tugs, scows, and other transport equipment of the Contractor, USACE, or the U.S. Coast Guard operate.

Fuel Consumption & Air Quality

Inasmuch as the equipment used during the maintenance dredging requires diesel and other internal combustion engines, there will be additional fossil fuel consumed and increased hydrocarbon emissions as compared to the 'No Action Alternative.' While air emissions will be generated during the dredging, the emissions associated with the proposed project are not anticipated to significantly contribute to ambient background levels. Thus, deleterious impacts to air quality will be minor and temporary as compared to the many derived benefits from the construction. The USACE has determined that the proposed construction should be exempt from the preparation of a "conformity determination."

Contractors will be required to comply with all local, state, and federal regulations and standards regarding air quality.

Table 1. – Typical Dredge Equipment Emissions

Parameter	Tug	Derrick
Carbon Monoxide	1.19	1.19
Nitric Oxide	6.42	5.49
Nitrogen Dioxide	6.42	5.49
Ozone	0.34	0.34
Sulfur Dioxide	0	0

1. Units in "grams/hp-hr" 2. BAAQCB Calculator & Dutra/Matson Records

Table 2. – National & California Air Quality Standards

Table 3.1-2 National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards
Ozone (O ₃)	1-hour	0.09 ppm	—
	8-hour	0.070 ppm	0.075 ppm ^b
Respirable particulate matter (PM ₁₀)	24-hour	50 µg/m ³	150 µg/m ³
	Annual mean	20 µg/m ³	—
Fine particulate matter (PM _{2.5})	24-hour	—	35 µg/m ³
	Annual mean	12 µg/m ³	15 µg/m ³
Carbon monoxide (CO)	1-hour	20 ppm	35 ppm
	8-hour	9.0 ppm	9.0 ppm
Nitrogen dioxide (NO ₂)	1-hour	0.18 ppm ^a	—
	Annual mean	0.03 ppm	0.053 ppm
Sulfur dioxide (SO ₂)	1-hour	0.25 ppm	—
	24-hour	0.04 ppm	0.14 ppm
	Annual mean	—	0.03 ppm

Notes: ppm=parts per million; µg/m³= micrograms per cubic meter; "—" = no standard

Source: CARB 2008a

^a CARB has approved a revised 1-hour standard for NO₂ (0.18 ppm or 338 µg/m³) and a new annual standard for NO₂ (0.030 ppm or 56 µg/m³). These standards were recently approved by the Office of Administrative Law and are set to become effective as of March 30, 2008.

^b U.S.EPA has approved a revised 8-hour ozone standard of 0.075ppm. The attainment status, attainment plans and other requirements of this revised standard will not be fully implemented for several years.

Dust & Noise Conditions

The proposed maintenance dredging will result in minor and temporary increases in fugitive dust particles and noise due to the activity of construction-related equipment and vehicles. The slight increase in dust and noise within the action area could become somewhat distracting and annoying to recreational beach users in the vicinity of Whaler Island or South Beach, and to recreational boaters near the dredging equipment in the federal channels. The increased noise might also temporarily scare away birds or other wildlife in the action area, thereby inconveniencing bird watchers and the like.

Contractors will be required to comply with all local, state, and federal regulations and standards regarding air quality and noise control.

Water Quality

This dredging event shall employ the receiving water limitations and monitoring requirements specified by the NCRWQCB, Order R1-2000-59 issued to the Crescent City Harbor District (CCHD).

Water quality parameters that could be briefly affected by dredging operations include:

- Total suspended solids (turbidity);
- Dissolved oxygen;
- Nutrients;
- pH;
- Salinity;
- Temperature.

In 1976, the San Francisco District conducted a study (*Dredge Disposal Study, San Francisco Bay and Estuary, Appendix C, Water Column*) of the effects on the water column by operation of a hopper dredge, hydraulic cutter-head dredge, and clamshell dredge. The study revealed that dredging operations did not typically cause significant fluctuations in salinity, temperature, or pH over either the short or long term.

Dissolved oxygen concentrations tend to decline in the vicinity of dredging operations when the suspension of anoxic sediment creates high biological and chemical oxygen demand. Dissolved oxygen levels in the immediate vicinity of the Crescent City Harbor dredging would decline for short periods of time. Due to the short duration of the effect, impacts of depressed levels of dissolved oxygen in the water column would be insignificant.

Turbidity effects vary with the kind of material being dredged and the type of dredge equipment used. Gravel and sand settle out quickly, whereas silt may remain in suspension for several hours. In addition to the suspended sediments, nutrient enrichment caused by potentially-elevated concentrations of phosphorous and nitrogen in the dredged material may increase water turbidity by increasing primary (phytoplankton) production.

Dredging and disposal operations have the potential to re-suspend bottom sediments containing trace amounts of petroleum, pesticides, and heavy metals, any of which can enter hydrologic systems or bioaccumulate.

The Crescent City Harbor maintenance dredging is most likely to be performed with a hydraulic-pipeline dredge. The volume of sediment suspended by this method is vastly reduced as compared to a clamshell dredge. A pipeline that extends to the upland disposal site would virtually eliminate the mid-water and surface plumes that would be associated with ocean disposal. Suspended materials are restricted to the immediate vicinity of the dredge and outflow of the pipeline. Therefore, effects of dredging activities on turbidity, depressed dissolved oxygen, and released contaminants from suspended sediments should be minimal and confined to the immediate area.

To summarize, no lasting or significant adverse impacts to water quality can be expected from the proposed FY2011 maintenance dredging of the federal channels.

Sediment Placement/Disposal – Suitability & Impacts

The following subsections provide a brief summary of data results followed by assessments of beneficial use and placement options for the sediment materials from the Crescent City Harbor Federal Channels in respect to those specified in the SAP.

- **Data Results Summary**

This Report considers only those results from physical, conventional, and bulk-sediment chemistry analyses and Modified Elutriate Tests (MET) on dissolved metals, TSS, and single-species toxicity. Results from additional biological testing; including benthic toxicity, water column toxicity, and bioaccumulation; will be included in the Final Report. Therefore, the following considerations apply only to those analyses and tests that have been performed to date.

In summary, nearly all bulk-sediment chemistry constituent concentrations were much lower than screening levels provided by the Sediment Evaluation Framework (SEF) for the Pacific Northwest, and within or lower than the historical range of concentrations reported from the San Francisco Deep Ocean Disposal Site (SF-DODS) Reference Area. Total LPAHs detected in the Marina Access Channel (CCH-2009-3) sediments and total HPAHs detected in the Inner Harbor Basin Channel (CCH-2009-2) and Marina Access Channel exceeded the highest concentrations that have been reported at the SF-DODS Reference Area. Concentrations reported for monobutyltin, dibutyltin and tributyltin in sediments from the Marina Harbor Access Channel were slightly higher than the highest historical concentration for total butyltins at the SF-DODS Reference Area.

All MET dissolved metals were reported at concentrations below the water quality objectives of the California Toxics Rule and the USEPA's Section 304(a) criteria for Priority Toxic Pollutants.

MET elutriate bioassay results showed that none of the three channel samples exhibited toxicity to the mysid *Americamysis bahia*, or were significantly different from the offshore reference site.

Sediments from the Entrance Channel (CCH-2009-1) and Marina Access Channel (CCH-2009-3) were primarily comprised of sand (>80 percent). Sediments from the Inner Harbor Basin Channel (CCH-2009-2) were comprised of less than 50 percent sand.

Percent TOC in sediments from the Entrance Channel, Inner Harbor Basin, and Marina Access Channels were reported at 0.79 percent, 10.8 percent, and 6.1 percent, respectively.

Percent total solids in sediments from the Entrance Channel, Inner Harbor Basin and Marina Access Channels were reported at 67.8 percent, 27.2 percent, and 45.1 percent, respectively.

- **Whaler Island Nearshore Beach Nourishment**

According to the Whaler Island Suitability Decision Flowchart (Figure 5), sediment grain-size results alone (greater than 80 percent sand within both dredge areas), that the sediment dredge materials from both the Entrance and Marina Access Channels are suitable for beneficial use or beach nourishment at Whaler Island.

Sediment from the Inner Harbor Basin Channel are composed of less than 50 percent sand, but do not exhibit MET toxicity or contain contaminants above SEF levels of concern. If, according to the Whaler Island Suitability Decision Flowchart, sediment grain size is similar between the Whaler Island site and Inner Harbor Basin Channel, the Channel sediment may be classified as suitable for beneficial use or beach nourishment at Whaler Island. It is unknown at this time if grain size at Whaler Island is similar to the grain size at the Inner Harbor Basin.

- **HOODS and Chetco Ocean Disposal Site**

Nearly all bulk-sediment chemistry concentrations in the harbor channel sediments were equal to or slightly higher than concentrations at the offshore reference site, and were much lower than screening levels provided in the SEF and equal to or lower than the concentrations reported from the SF-DODS Reference Area.

Total LPAHs detected in the Marina Access Channel sediments and total HPAHs detected in the Inner Harbor Basin Channel and Marina Access Channel exceeded the highest concentrations that have been reported at the SF-DODS Reference Area. However, compared to the SEF screening levels, the harbor channel concentrations of total LPAHs and HPAHs are one-to-two orders of magnitude lower.

Mono-, bi-, and tributyltin concentrations at Marina Access Channel were slightly higher than total butyltins at the SF-DODS Reference Area. No SEF criteria are established for butyltins in sediment.

Based on the SEF screening levels, which are intended to “identify chemical concentrations that are at or below levels at which there is no reason to believe exposures to in-place sediments or dredged material disposal sites would result in unacceptable adverse

effects to benthic organisms”, sediment dredge material from the Crescent City Harbor Federal Channels are suitable for open-water disposal at either the HOODS or Chetco disposal sites. The relative similarity of the bulk chemistry concentrations reported for all harbor channel sediments and those reported for the offshore reference site and SF-DODS Reference Area further supports this conclusion.

This conclusion is based on the results of physical, conventional, chemical and MET tests only. Though biological test results for water column toxicity, benthic toxicity, and bioaccumulation tissue analysis are not yet available, it is not anticipated that these results will alter this suitability conclusion for either the HOODS or Chetco disposal sites.

- **Crescent City Harbor District Upland Disposal Site**

Modified Elutriate Test results on sediments from all three channels indicate that elutriate TSS concentrations were relatively low and dissolved metal concentrations were below the water-quality objectives of the California Toxics Rule and the USEPA’s Section 304(a) criteria for Priority Toxic Pollutants. Based on these results, it would not be expected for either decant water returning to the harbor or runoff and leachate from the dredge material flowing back into the harbor to exceed established water quality criteria or adversely affect aquatic life. Thus dredge material from the Crescent City Harbor are suitable for placement at the District’s upland disposal site.

Species of Concern, Wildlife, & Habitat

Threatened and endangered fish species (*see* Appendix A) in the action area are not likely to be adversely affected by dredging and disposal because they are unlikely to be present. Should any of these species happen to be present, they will likely avoid construction activities. None of the other T&E species listed in Appendix A; ranging from plants, to invertebrates, reptiles and mammals; should be affected in any way by the proposed construction activities.

Slightly increased turbidity in the water column, resulting from resuspended sediment, will persist for the duration of the dredging and disposal operations. Sediment in suspension can harm fish by lodging in their gills, which in effect smothers them. Pelagic eggs and larvae of fish and shellfish are susceptible to this effect because they have limited avoidance capabilities. However, these organisms already live in an environment with high background levels of turbidity, and the extent of the sediment plume with hydraulic equipment is minimal and fleeting (lasting only minutes), so any affected pelagic species should be able to recolonize the water column between dredging episodes.

Dredging activities will remove benthic resources from the channel bottom. Plumes of resuspended sediment will also tend to reduce food availability and foraging success for fish and marine mammals in the action area. These species can be expected to avoid turbidity plumes, and any fish that might be affected can forage in the unaffected areas surrounding the action area. Thus, any reduction in food supply or foraging success should be temporary and insignificant.

There is a slight potential for entrainment of small benthic biota by the suction dredge, but the actual dredging activity is limited in duration, and best management practices employed by the Contractor will largely prevent this.

Birds that are found in the action area are highly mobile and, thus, can easily avoid construction activities. It is conceivable that the beach nourishment of Whaler Island could expand and enhance habitat for the Western Snowy Plover, which breeds primarily on coastal beaches along the Pacific coast of North America. However, the area is frequented by runners, vehicles, and dogs, making it unlikely that Snowy Plovers would nest there.

Cultural Resources

Cultural resources, which represent the remains of previous human activity, can be either archaeological (artifacts found on or within the ground) or historical (standing architectural features, structures, or natural landmarks, used over time) including buildings, bridges, shipwrecks, and other maritime features.

In Crescent City Harbor proper, no physical structures, archaeological or historic, have been recorded (based on a search of maps and records at the Northwest Information Center, and a review of the National Register of Historic Places, the California Inventory of Historic Resources, California Historical Landmarks, and the State Lands Commission Data Base for submerged resources).

Inasmuch as no culturally-significant properties have been identified within the area of potential effects (APE), and repeated episodes of maintenance and “new work” dredging over the past 75 years have failed to turn up submerged cultural resources, San Francisco District has determined that an additional cultural resources investigation is unwarranted at this time. Should a buried site be discovered during dredging activities, all work will cease until a qualified archeologist examines the find, consults with the SHPO (State Historic Preservation Office), and a plan is established on how to proceed with the proposed maintenance dredging without causing impacts to any potential future finds.

Aesthetics, Recreation, & Traffic

The presence of construction-related equipment and vehicles may temporarily disrupt the visual and aesthetic characteristics of Crescent City Harbor. Also, due to the presence of construction equipment (*e.g.*, dredge pipe), recreational access to Whaler Island will be restricted by temporary fencing and signs placed around the site to prevent the public from entering. During this period, recreational beach goers can alternatively access the South Beach area or other beaches to the north. Bird watchers might also be temporarily inconvenienced by dredging operations because noise and dust could scare away birds and other wildlife. Because they are relatively few in number, the presence of vehicles related to the construction around the area should be insignificant to local traffic flow.

Thus, while dredging and disposal activities are on-going, there will be some aesthetic, recreational, and traffic impacts to the area, but they should be minimal or insignificant.

Navigational Safety

There will be a significant and continuing safety benefit resulting from the maintenance dredging. Removing shoaled sediment from the navigation channels will alleviate tidal delays and groundings of both commercial and recreational boats that would likely result from shallow channel depths; further, it will allow the harbor to become an emergency refuge from large incoming waves. Additionally, the response time and maneuverability of the Coast Guard's patrol boats in the area will be enhanced, and the Coast Guard's buoy tender will be better able to demarcate the boundaries of the federal channels with its buoys.

Economy of the Region

By removing the shoaled sediment above 14' MLLW, the maintenance dredging will provide enhanced protection for commercial fishing and recreational boats by alleviating groundings and tidal delays. This, in turn, will provide a significant economic benefit for the local area and for the region.

Summary of Effects

The following table summarizes the impacts that the maintenance dredging at Crescent City Harbor is expected to have on the action area:

<u>KEY:</u>	<u>Effect</u>	<u>Magnitude</u>	<u>Period</u>
	Primary = P	Large = L	Continuing = C
	Secondary = S	Moderate = M	Temporary = T
	None = ' - - '	Slight = S	

Table 3. – Summary of Environmental Effects

<i>Effect</i>	<i>Beneficial</i>	<i>Adverse</i>	<i>Magnitude</i>	<i>Period</i>
Fuel Consumption	--	P	S	T
Air Quality	--	P	S	T
Dust	--	P	S	T
Noise	--	P	S	T
Water Quality	--	P	S	T
Sediment Placement ...	--	--	L	C
Species of Concern	--	--	--	--
Wildlife	--	P	S	T
Habitat	--	--	--	--
Cultural Resources	--	--	--	--
Aesthetics	--	P	S	T
Recreation	--	P	S	T
Traffic (Local)	--	--	--	--
Navigational Safety	S	--	M	C
Economy (Local)	S	--	M	C

Cumulative Impacts

No negative cumulative impacts are believed to be associated with the proposed project.

Positive cumulative impacts resulting from the proposed project include general enhancements to navigational safety and an expected boost to the local economy.

5. Environmental Compliance

General

- **National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4341 et seq.)**

NEPA requires that environmental consequences and project alternatives be considered before a decision is made to implement a federal project.

In the case of the Crescent City Harbor federal channel maintenance dredging and the subsequent disposal of that dredged material, the San Francisco District is required to identify any possible direct, indirect, or cumulatively significant impact to the environment that might reasonably result from these actions. If this Draft Environmental Assessment (EA) determines that this dredging will result in a significant impact to the environment, NEPA requires the District to prepare an Environmental Impact Statement (EIS); otherwise, a Finding of No Significant Impact (FONSI) will be prepared and circulated for a 30-day agency review, and a Notice of Availability (NOA) mailed to the public prior to implementation of the proposed federal actions.

- **Coastal Zone Management Act of 1972, as amended, (16 U.S.C.1456 et seq.)**

The Coastal Zone Management Act of 1972 (CZMA) requires that any federal activities in the coastal zone (*i.e.* the territorial sea and inland) must be consistent with the federally-approved requirements established by the coastal management boards of the states in which the activities take place.

Maintenance dredging of the Crescent City Harbor federal channels, and disposal of that material at Whaler Island, the Crescent City Dredge Ponds, or at HOODS, will require a consistency determination with the California Coastal Commission. Disposal of dredged material at the Chetco River disposal site, which is within the Oregon territorial boundary, will require a consistency determination from the Oregon Coastal Management Board.

Air

- **Clean Air Act 1977, as amended (1990), (42 U.S.C. 7401 et seq.)**

The Clean Air Act (CAA) protects and enhances the quality of the air resources within the U.S., and it protects public health from both long- and short-term air-contaminant exposures.

Under the CAA, the administrator of the U.S. Environmental Protection Agency (EPA) has established a set of National Ambient Air Quality Standards (NAAQS), but the primary responsibility for the prevention and control of air pollution is left to the states. The pollutants of chief concern for the NAAQS standards are: ozone (O₃), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO₂), and particulate matter smaller than 10 microns in diameter (PM₁₀). The EPA designates all areas of the United States as having air quality that is better than (attainment) or worse than (non-attainment) that of the NAAQS. For areas where the NAAQS are in non-attainment, the State must include corrective measures in the State Implementation Plan (SIP) which will achieve the standards as expeditiously as possible.

Section 176 of the CAA prohibits Federal agencies from engaging in any activity that does not conform to the most recent EPA-approved SIPs.

The Crescent City Harbor project area lies within the North Coast Unified Air Quality Management District (NCUAQMD), which includes Del Norte, Humboldt, and Trinity counties. Onshore, stationary, air-pollution sources in Del Norte County are regulated by the NCUAQMD. Presently, Del Norte County is in attainment of all NAAQS standards. Although, the project area lies within an attainment area, the *CAA Amendments of 1990* require that any federally-funded project must comply (*i.e.*, complete an analysis) with the air-quality standards and regulations that have been established by Federal, State, and local regulatory agencies, unless an exemption can be applied to that proposed action.

San Francisco District has determined that the proposed maintenance dredging for the federal channels at Crescent City Harbor should be exempt from the preparation of a “project conformity analysis” or “conformity determination” based on the following:

- The project area lies within an attainment area that remains below 85% of the NAAQS;
- The small scale of the proposed maintenance dredging and disposal;
- According to the CAA, § 51.853 (c)(2)(ix), “... [air quality] requirements ... shall not apply to maintenance dredging and debris disposal where no new depths are required, applicable permits are secured, and disposal will be at an approved disposal site” [emphasis added].

California leads the nation in air-quality standards, and meets or exceeds the air-quality standards of all other states. Therefore, dredge disposal operations at the Chetco River site in Oregon, which are conducted to meet California air-quality standards, will comply with Oregon state and all local air-quality standards.

- **California Clean Air Act, (Health and Safety Code 39,000 et seq.)**

The California Clean Air Act (CAA) is designed to safeguard the public interest by an intensive and coordinated state, regional, and local effort to protect and enhance the ambient air quality of the State. To foster a regional approach, the State is divided into several air basins or districts. Each air district shall establish standards for the emission of identifiable, odor-causing substances. Exceptions or variances may be granted from such standards in a manner provided by each district. No person shall discharge from any source any contaminant that violates such standards. Contractors are responsible for compliance, including any reporting requirements.

Water

- **Clean Water Act of 1972, as amended (1977), (33 U.S.C. 1251 et seq.)**

The Clean Water Act (CWA) is intended to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Specific sections of the CWA control the discharge of pollutants and wastes into aquatic and marine environments. Regulatory control of water quality is delegated to local regional water-quality control boards, which issue discharge permits that set limits on specifically-monitored EPA-determined water pollutants.

The proposed maintenance dredging of the federal channels at Crescent City Harbor is covered by Section 401 of the CWA, which applies to all dredging activities. This section requires regional control board certification that the project complies with State Water Quality Standards for actions within State waters. In addition, the proposed Crescent City Harbor maintenance dredging may also be covered by Section 404(b) of the CWA, as amended in 1977, if there is indirect beach nourishment at the Whaler Island disposal site, inasmuch as this would constitute discharge of dredged or fill material into waters of the United States.

The Crescent City Harbor District has an existing Corps of Engineers permit (#17752N13), issued under both Section 10 of the River's & Harbors Act, and Section 404(b) of the CWA.

This dredging event shall employ the receiving water limitations and monitoring requirements specified by the NCRWQCB Order R1-2000-59, *Waste Discharge Requirement for Crescent City Harbor Maintenance Dredging*. Both the Harbor District and the dredging Contractor will be responsible for monitoring any discharge of dredged material back into the waters at the disposal site, in accordance with the NCRWQCB Order.

Biota

- **Endangered Species Act of 1973, as amended, (16 U.S.C. 1531 *et seq.*)**

The Endangered Species Act (ESA) of 1973 provides protection for threatened and endangered species. The U.S. Fish and Wildlife Service and NOAA Fisheries determine which species need protection and maintain a list of threatened, endangered, and candidate species, as well as species of concern. Appendix A describes currently-listed species that might occur in the project area.

One of the most significant protections provided by the ESA is the prohibition on taking. The term “take” is defined broadly to mean harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in such conduct (16 U.S.C. 1532 (19)). The ESA also provides for the indirect protection of endangered species and their habitats by establishing a consultation process designed to insure the prohibition of any Federal actions that would jeopardize the continued existence of such species, or that would result in the destruction or adverse modification of any critical habitat of such species.

Critical habitat areas for protected species are designated by the USFWS and NMFS. Section 7(a) of ESA requires consultation with the Secretary of the Interior (through the U.S. Fish and Wildlife Service) or the National Marine Fisheries Service (NMFS), prior to project implementation, to determine if any endangered or threatened species may be present in the area of a proposed federal action, and to ensure that the action will not jeopardize the continued existence of a species, or destroy or adversely modify the designated critical habitat of such species.

The proposed maintenance dredging of the federal channels at Crescent City Harbor, and the subsequent disposal of that dredged material at the sites under consideration, will not jeopardize any of the listed species, or adversely affect their designated critical habitat.

- **Magnuson Fishery Conservation and Management Act, (16 U.S.C. 1801 *et seq.*)**

The Magnuson Fishery Conservation and Management Act provides for the conservation and management of all fishery resources between 3 and 200 nautical miles offshore.

The 1996 amendments to the Magnuson Act set forth a number of new mandates that protect important marine and anadromous habitat. More specifically, Essential Fish Habitat (EFH) represents a new effort to integrate fisheries management and habitat management by stressing the ecological relationships between fishery resources and the environment upon which they depend. The Magnuson Act defines EFH as those waters, substrates, or structures that are necessary to fish for spawning, breeding, or growth to maturity, and may include areas that were historically used by fish.

The dredging and disposal activities associated with the Crescent City Harbor federal channels will be conducted in a manner that will minimize affects to fishery resources and to EFH's. This dredging is for maintenance only, and will not exceed authorized depths. Dredging will occur at times when fish migrations are minimal. Furthermore, the Chetco and HOODS

disposal sites will be bathymetrically monitored prior to disposal of dredged material to insure that the material has been correctly placed. Inasmuch as all of the proposed dredging and disposal activities are within three nautical miles of the shore, and fish are highly mobile and can avoid the dredging activities, the proposed maintenance dredging is in full compliance with the Magnuson Act.

The Crescent City Harbor and federal channels do not provide essential habitat for fish species during much of their life history due to the lack of eelgrass and the dynamic nature of the sandy areas (*re*: NOAA letter dated April 13, 2001, Appendix C). Large volumes of sandy substrate are moved in and out of the harbor with storm action and may be redistributed with tidal fluxes. Juveniles of many marine species may use eelgrass and estuarine habitat as feeding and rearing areas, however, Crescent City Harbor and surrounding area does not provide this habitat. At certain times of the year, however, the area may provide spawning habitat for some rockfishes and Pacific herring.

- **Marine Protection, Research, and Sanctuaries Act of 1972, as amended,**
(33 U.S.C. 1401 *et seq.*)

The Marine Protection, Research, and Sanctuaries Act (MPRSA) regulates the establishment and management of ocean disposal sites and prohibits the disposal of certain types of waste entirely. Both the EPA and the USACE have a role in managing ocean disposal sites, which are established by EPA.

The HOODS disposal site is managed by EPA Region 9 and the San Francisco District (USACE); the Chetco River disposal site is managed by EPA Region 10 and the Portland District (USACE). The EPA Test Manual for ocean disposal, known as the "Green Book," sets sediment chemistry guidelines for disposal of dredged material at ocean disposal sites. The USACE disposes of dredged material at ocean disposal sites, and it also issues permits to private concerns to dispose of dredged material at ocean disposal sites.

Inasmuch as the proposed disposal for this maintenance dredging activity does not involve disposal at any ocean disposal site, MPRSA is not applicable to this project.

- **Marine Mammal Protection Act of 1972, (16 U.S.C. 1361 *et seq.*)**

The Marine Mammal Protection Act (MMPA) provides protection to marine mammals in both the State waters (within three nautical miles of the coastline), and the ocean waters beyond.

Marine mammals that may occur in the proposed project area are described in Appendix A. Given the temporary nature of the activities involved, the listed marine mammals are not likely to be adversely affected by this project.

- **Migratory Bird Treaty Act, (16 U.S.C. 703 *et seq.*)**

The Migratory Bird Treaty Act (MBTA) implements conventions with Great Britain, Mexico, the USSR (Russia), and Japan to make it unlawful, except as permitted by regulations, "to pursue, hunt, take, capture, kill ... any migratory bird, nest, or egg," or any product of any covered bird.

The Secretary of the Interior is charged with determining when, and to what extent, if at all, and by what means to permit these activities. Each treaty establishes a “closed season” during which hunting is prohibited. A distinction is made between game and non-game birds; the closed season for migratory birds, other than game birds, is year-round.

Some bird species found within or near the footprint of the Crescent City Harbor federal channel maintenance dredging project are discussed in Appendix A of this Environmental Assessment. The project, as proposed, is in compliance with the MBTA, and no significant impacts are expected to affect any bird species.

Cultural Resources

- **National Historic Preservation Act of 1966, as amended, (16 U.S.C. 470 et seq.)**

The National Historic Preservation Act (NHPA) established the National Register of Historic Places, a listing of sites, districts, structures and objects significant in American history, architecture, archaeology, engineering and culture. Archaeological sites, historic building, and other cultural resources may be determined eligible for inclusion in the National Register on the basis of local, regional, state or national significance. Section 106 of the NHPA requires Federal agencies to take into account the effects of a proposed project on such sites and structures that are listed, or that have been determined eligible for listing, on the National Register. The taking into account of effects involves (a) consultation between the USACE and the State Historic Preservation Officer (SHPO) to determine whether identified sites or structures in the APE are National Register quality and to analyze possible project-induced impacts and (b) affording the Advisory Council on Historic Preservation an opportunity to comment on the consultation findings.

As stated previously, a preliminary cultural-resources study was conducted, and the findings are discussed in the cultural resources section of this EA. These findings will be coordinated with the SHPO, as required by NHPA, and this project will thus be in full compliance with this Act.

- **Executive Order 11593, Protection and Enhancement of the Cultural Environment, (36 C.F.R. 8921, May 13, 1971)**

This Executive Order requires Federal agencies to (1) inventory the cultural resources on lands under their jurisdiction, (2) outline measures to actively protect and preserve these cultural resources, (3) nominate to the National Register of Historic Places those inventoried cultural resources considered significant, and (4) initiate measures to ensure that their policies contribute to the protection and preservation of non-federally owned cultural resources.

As stated above, a preliminary cultural resources study was conducted, and it is discussed in the cultural resources section of this EA.

- **Archeological and Historic Preservation Act of 1974, (16 U.S.C. 469 et seq.)**

The Archaeological and Historic Preservation Act (AHPA) amended the Reservoir Salvage Act of 1960. The AHPA provides for the preservation of historic and archaeological data that might otherwise be lost or destroyed as a result of any Federal construction project or federally licensed or assisted undertaking. The AHPA authorizes the lead Federal agency of a project, or the Secretary of the Interior, to undertake recovery or preservation of such data. Federal project funds, up to one percent of the project cost, may be used, or the agency may request the Secretary of the Interior to conduct the desired measures.

As stated above, a preliminary cultural resources study was conducted, and it is discussed in the cultural resources section of this EA.

6. Determination and Statement of Findings

Based upon the findings of this Environmental Assessment (EA), the proposed O&M dredging of the federal channel(s) at Crescent City Harbor will not cause any significant adverse impacts to the human environment within the action area. As such, preparation of an Environmental Impact Statement (EIS) for this federal action is not required.

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Appendix A

Listed/Proposed Threatened and Endangered Species for the CRESCENT CITY and SISTER ROCKS Quads (Candidates Included)

October 27, 2010

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TYPE	SCIENTIFIC NAME	COMMON NAME	CATEGORY	CRITICAL HABITAT
Plants				
	<i>Lilium occidentale</i>	western lily	E	N
Invertebrates				
*	<i>Halotis cracherodii</i>	black abalone	PE	N
	<i>Polites mardon</i>	mardon skipper	C	N
	<i>Speyeria zerene hippolyta</i>	Oregon silverspot butterfly	T	Y
Fish				
	<i>Acipenser medirostris</i>	green sturgeon	T	Y
	<i>Eucyclogobius newberryi</i>	tidewater goby	E	Y
*	<i>Oncorhynchus kisutch</i>	S. OR/N. CA coho salmon	T	Y
Reptiles				
*	<i>Caretta caretta</i>	loggerhead turtle	T	N
*	<i>Chelonia mydas (incl. agassizi)</i>	green turtle	T	N
*	<i>Dermochelys coriacea</i>	leatherback turtle	E	Y
*	<i>Lepidochelys olivacea</i>	olive (=Pacific) ridley sea turtle	T	N
Birds				
	<i>Brachyramphus marmoratus</i>	marbled murrelet	T	Y
	<i>Charadrius alexandrinus nivosus</i>	western snowy plover	T	Y
	<i>Coccyzus americanus</i>	Western yellow-billed cuckoo	C	N
	<i>Phoebastria albatrus</i>	short-tailed albatross	E	N
	<i>Strix occidentalis caurina</i>	northern spotted owl	T	Y
	<i>Synthliboramphus hypoleucus</i>	Xantus's murrelet	C	N
Mammals				
*	<i>Balaenoptera borealis</i>	sei whale	E	N
*	<i>Balaenoptera musculus</i>	blue whale	E	N
*	<i>Balaenoptera physalus</i>	fin whale	E	N

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*	<i>Eumetopias jubatus</i>	Steller (=northern) sea-lion	T	Y
	<i>Martes pennanti</i>	fisher, West Coast DPS	C	N
*	<i>Megaptera novaengliae</i>	humpback whale	E	N
*	<i>Physeter macrocephalus</i>	sperm whale	E	N

KEY:

(PE) Proposed Endangered	Proposed in the Federal Register as being in danger of extinction
(PT) Proposed Threatened	Proposed as likely to become endangered within the foreseeable future
(E) Endangered	Listed in the Federal Register as being in danger of extinction
(T) Threatened	Listed as likely to become endangered within the foreseeable future
(C) Candidate	Candidate which may become a proposed species
Critical Habitat	Y = Designated, P = Proposed, N = None Designated
*	Denotes a species Listed by the National Marine Fisheries Service

Appendix B

ENDANGERED AND THREATENED SPECIES

Plants



The only listed plant in the general project area is the **western lily**, *Lilium occidentale*, which grows at the edges of sphagnum bogs, forests, and thicket openings, along the margins of ephemeral ponds and small channels, and in coastal prairie and scrub near the ocean where fog is found. This species can be distinguished from similar native lilies by the combination of pendant red flowers with yellow to green centers in the shape of a star, highly reflexed petals, non-spreading stamens closely surrounding the pistil, and an unbranched rhizomatous bulb.

Distribution of the western lily is restricted to within two miles of the Pacific Coast, along a strip covering the northern 100 miles of California and the southern third of Oregon. Since 1988, an estimated total of between 1000 and 2000 flowering western lilies have been discovered at four sites near Crescent City, California. However, the western lily has not been found at Crescent City Harbor or at the Crescent City Harbor Upland disposal site.

Since no critical habitat has been designated for the western lily, critical habitat is not an issue. However, since populations of the western lily are known to exist in the area near Crescent City Harbor, precautions are recommended prior to bringing dredging equipment into the area. Prior to dredging operations, any unpaved paths, or areas over which vehicles, equipment, or personnel will move or be placed, should be field inspected by a USACE biologist to determine if any western lilies are present. If western lilies are found they will be fenced off to prevent any injury to the plants. Pictures of the plant can also be circulated to project personnel to make them aware of the plant that they are avoiding.

Invertebrates

The **mardon skipper**, *Polites mardon*, a dull yellowish brown skipper, which is a close relative of the butterfly, is found in the serpentine grasslands of coastal Del Norte California, in which the project takes place. The adult mardon skipper lives on the nectar of dandelions and other nectar-producing plants.



Polites mardon male

Because the mardon skipper is only at the candidate level of protection, no critical habitat has been designated. The most imminent danger to the skipper exists from prescribed burning.

To minimize any danger to the skipper from dredging operations a USACE biologist can look for the presence of the skipper and, if it is found, direct equipment and personnel away from potential skipper habitat, using fencing and education, if necessary.

The **Oregon silverspot butterfly**, *Speyeria zerene hippolyta*, occurs along the coast in northern California, Oregon and Washington. The silverspot is a medium sized butterfly, usually ranging from 1 inch for males and 1.1 inch for females (McCorkle et al. 1980). The silverspot has orange and brown markings with black veins and spots on the upper wing surface and bright metallic silver spots on the underwing surface.

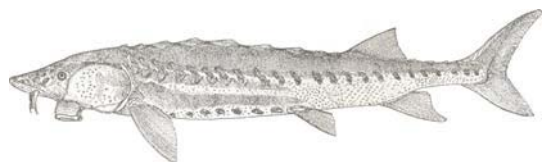


The silverspot requires one of three types of grasslands with nearby meadows—coastal salt spray meadows, stabilized dunes, or montane meadows that are surrounded by forests. The grasslands that the Silverspot inhabits provide larval host plants, adult nectar sources and wind protection. The wind protection is provided by the forest fringes around the meadow. The butterfly may retreat into these forests on especially windy days.

No critical habitat has been designated for the Oregon silverspot butterfly, though it is possible the silverspot could occur in the project area. The same precautions that would be applied for the mardon skipper should be applied for the silverspot.

Fish

Green Sturgeon, *Acipenser medirostris*



This is an anadromous species that undertakes coast-wide migrations into and out of major estuaries and rivers. In smaller rivers and estuaries, they are not known to occur beyond the head of tide. Migrating fish may occur in the harbor, but this is unlikely. There is no designated critical habitat in the Crescent City Harbor, so none will be affected. There will be no take of this species or affect to its critical habitat fish.

The **tidewater goby**, *Eucyclogobius newberryi*, is a small fish, rarely exceeding two inches in length, and is characterized by large pectoral fins and a ventral sucker-like disk formed by the complete fusion of the pelvic fins. The characteristics that separate the tidewater goby from other goby species within its range include the close spacing between the first and second dorsal fins, the clear tip of the first dorsal fin, the short maxillary bone, and the presence of two intraorbital pores.



The tidewater goby is a fish that occurs in estuaries and lagoons throughout coastal California. A member of the family Gobiidae, the tidewater goby species in the genus *Eucyclogobius* and is almost among fishes along the Pacific coast of the United States in its restriction to waters with low salinities in California's coastal wetland habitats. All life stages of tidewater gobies are typically found at the upper end of lagoons in areas of low salinity (commonly less than 10 parts per thousand). Water in the



Dorsal Fin of tidewater goby

is the only unique States in its coastal typically salinity the

Crescent City Harbor dredging area contains full concentration sea water. The tidewater goby, which is found in low salinity water, would not be present in the Crescent City Harbor area.

The



Northern California coho salmon, *Oncorhynchus kisutch*, can grow to three feet in length and can weigh up to 33 pounds. Black spots on its back and upper part of the caudal fin, along with white gums at the base of the teeth, distinguish it from other salmon.

Coho spend approximately the first half of their life cycle rearing in streams and small freshwater tributaries. The remainder of their life cycle is spent foraging in estuarine and marine waters of the Pacific Ocean prior to returning to their stream of origin to spawn and die. Most adults are three-year-old fish, however, some precocious males known as "jacks" return as two-year-old spawners.

In the sea, the coho is metallic blue above and silvery below. At spawning time males are dusky green on the upper back and head, bright red on the sides and often blackish below. Spawning females are bronze to pinkish on the sides with less intensity of color than males.

Northern coho are known to pass through the Crescent City Harbor area at migration time. While Coho have the ability to enter the harbor, their presence there is unlikely as there is no suitable habitat in the harbor area; thus, the species should be unaffected.

Reptiles



Loggerhead turtle, *Caretta caretta*, adults and sub-adults have a reddish-brown carapace. Scales on the top and sides of the head and top of the flippers are also reddish-brown, but have yellow borders. The neck, shoulders, and limb bases are dull brown on top and medium yellow on the sides and bottom. The plastron is also medium yellow. Adult average size is 92 cm straight carapace length; average weight is 115 kg. Hatchlings are dull brown in color. Average size at hatching is 45 mm long; average weight is 20 grams. Maturity is reached at between 16-40 years. Mating takes place in late March-early June, and eggs are laid throughout the summer.

Loggerheads are circumglobal, inhabiting continental shelves, bays, estuaries, and lagoons in temperate, subtropical, and tropical waters. In the eastern Pacific, loggerheads are reported as far north as Alaska and as far south as Chile. Occasional sightings are also reported from the coast of Washington, but most records are of juveniles off the coast of California. Southern Japan is the only known breeding area in the North Pacific.

Adult loggerheads would not be found on land since they do not breed in the area and only an occasional juvenile might be found in Crescent City Harbor.

The **green turtles**, *Chelonia mydas*, may reach a size of 1 m long and 180 kg mass. The carapace is smooth and is colored gray, green, brown, and black. The plastron is yellowish white. Hatchlings weigh about 25 g, and are about 50 mm long. Hatchlings are black on top and white on the bottom. Age at sexual maturity is estimated at 20-50 years.



Green turtles are found throughout the North Pacific, ranging as far north as Eliza Harbor, Admiralty Island, Alaska, and Ucluelet, British Columbia. In the eastern North Pacific, green turtles have been sighted from Baja California to southern Alaska. In the central Pacific, green turtles can be found at most tropical islands. In U.S. Hawaiian waters, green turtles are found around most of the islands in the Hawaiian Archipelago. The primary nesting site is at French Frigate Shoals.

The greatest cause of decline in green turtle populations is commercial harvest for eggs and food. Other turtle parts are used for leather and jewelry, and small turtles are sometimes stuffed for curios. Incidental catch during commercial shrimp trawling is a continuing source of mortality that adversely affects recovery. Since Crescent City Harbor is not a nesting area for the green turtle, it would not be affected by dredging operations.

The **leatherback turtle**, *Dermochelys coriacea*, is the largest living turtle, and is so distinctive as to be placed in a separate taxonomic family, *Dermochelyidae*. The carapace is distinguished by a rubber-like texture, about four-cm thick, and made primarily of tough, oil-saturated connective tissue. No sharp angle is formed between the carapace and the plastron, resulting in the animal being somewhat barrel-shaped. The average curved carapace length for adult turtles is 155 cm and weight ranges from 200-700 kg. Hatchlings are dorsally mostly black and are covered with



tiny scales; the flippers are margined in white, and rows of white scales appear as stripes along the length of the back. Hatchlings average 61.3 mm long and 45.8 g in weight. In the adult, the skin is black and scaleless. The undersurface is mottled pinkish-white and black. The front flippers are proportionally longer than in any other sea turtle and may span 270 cm in an adult. In both adults and hatchlings, the upper jaw bears two tooth-like projections at the premaxillary-maxillary sutures. Age at sexual maturity is unknown.

Because leatherbacks prefer deeper open ocean water beyond the 600 foot depth and breed in southerly tropical waters they would not be expected to be found in Crescent City Harbor.

The **olive (Pacific) ridley**, *Lepidochelys olivacea*, is a small, hard-shelled marine turtle, one of the two species of the genus *Lepidochelys*, and a member of the family *Cheloniidae*. The species may be identified by the uniquely high and variable numbers of vertebral and costal scutes. Although some individuals have only five pairs of costals (the number shown by almost all individuals of the congener *Lepidochelys kempii*), in nearly all cases some division of costal scutes occurs, so that as many as six to nine pairs may be present. Division of the "standard" scutes occurs from the rear of the carapace, so that a specimen with, say, seven pairs of costals shows division of the homologs of costals IV and V. Asymmetry in the number of costal scutes is frequent.



In addition to the division of the costal scutes, the vertebral scutes also show frequent division, as do the scales on the dorsal surface of the head. The prefrontal scales, however, typically number two pairs. The carapace is wide in subadults and adults, although less so than that of *L. kempii*. In anterior profile it is typically elevated and flat-topped, with flat, sloping sides. The plastron is large, with the usual six pairs of large scutes and sometimes a small intergular and interanal also. The inframarginals typically number four on each side, each of which is perforated by a pore located towards its posterior margin. The head is relatively large, as compared with that of *Chelonia* or *Eretmochelys*, but is smaller than that of adult *Caretta*, and slightly smaller than that of *L. kempii*.

The skull of *L. olivacea* differs from that of *L. kempii* in many ways. The orbit is consistently larger, the width across the pterygoids is consistently less, and the alveolar ridges are sharp and are only evident on the rhamphothecae, not on the underlying maxillary-palatine sutural area. There are also numerous differences between the lower jaws of the two species.

Although olive ridleys may occasionally reach as far north as Crescent City Harbor, this is a rare occurrence. Olive ridleys are essentially south tropical inhabitants and are found most of the time in the tropics where they live and breed.

Birds

The **marbled murrelet**, *Brahya marmoratus*, is a relatively small bird, about the size of a robin. Murrelets are very fast flyers with quick wingbeats, a short stubby body, and small wings. Chicks are downy and tan-colored with dark speckling; they are born with webbed-feet.



The North American subspecies ranges from the Aleutian Archipelago in Alaska, eastward to Cook Inlet, Kodiak Island, Kenai Peninsula, and Prince William Sound, southward coastally throughout the Alexander Archipelago of Alaska, and through British Columbia, Washington, Oregon, to central California. Some wintering birds are found in southern California. A separate subspecies is present in Asia.

The majority of Marbled Murrelets are found within or adjacent to the marine environment, although they have been detected on rivers and inland lakes. Marbled Murrelets spend the majority of their lives on the ocean, and come inland to nest. Marbled Murrelets typically nest in old-growth forest compared to mixed-age and young forests. Stand size is also an important factor for Marbled Murrelets. These birds commonly prefer to occupy larger stands (500 acres) rather than smaller stands (100 acres); Marbled Murrelets are commonly absent from stands of less than 60 acres. Since old growth forests do not exist in the area adjacent to Crescent City Harbor, nesting sites would not be expected to be found in the dredging area.

The **western snowy plover**, *Charadrius alexandrinus nivosus*, is a small, pale colored shorebird with distinctive neck and forehead markings. The bird weighs about as much as a tennis ball and is about 5-7 inches long.



The Pacific coast population of the western snowy plover breeds primarily on coastal beaches from southern Washington to southern Baja California, Mexico. On the Pacific coast, larger concentrations of breeding birds occur in the south than in the north, suggesting that the center of the plovers' coastal distribution lies closer to the southern boundary of California (Page and Stenzel 1981). Sand spits, dune-backed beaches, unvegetated beach strands, open areas around estuaries, and

beaches at river mouths are the preferred coastal habitats for nesting (Stenzel et al. 1981, Wilson 1980). Less common nesting habitat includes salt pans, coastal dredged-material placement sites, dry salt ponds, and salt pond levees and islands (Widrig 1980, Wilson 1980, Page and Stenzel 1981).

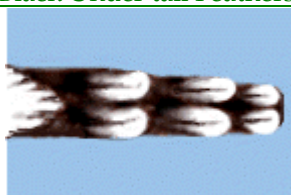
Dredging operations at Crescent City Harbor would take place in the water. Any land operations would take place in areas heavily trafficked by human users of the harbor and not in areas listed as plover critical habitat. Snowy plovers should not be affected by dredging operations.

The **western yellow-billed cuckoo**, *Coccyzus americanus occidentalis* is up to 13 inches in length, with a slim sinuous look, a brown back, and white under parts. It is differentiated from other cuckoos by the rufous color of its wings and primaries, the white spots at the tips of the black under tail feathers, and its slightly curved bill with yellow lower mandible.

Rufous Color of
Wings and Primaries



White Spots at Tips of
Black Under tail Feathers



Yellow Lower Mandible;
Slightly Curved Bill.



Generally, the bird is grayish-brown above and white below. The western yellow-billed cuckoo, *C. a. occidentalis*, is distinguished from the eastern subspecies, *C. a. americanus*, by a longer and thicker bill, longer wings and tails, and by a slightly more gray coloration.

The western yellow-billed cuckoo prefers riparian forests. Dredging would not affect any yellow-billed cuckoo since operations would occur in the ocean water and on open land.

The **bald eagle**, *Haliaeetus leucocephalus*, is a large, powerful, brown bird with a white head and tail, and is national symbol of the United States. Young bald eagles are mostly dark brown until they reach four to six years of age and may be confused with the golden eagle. The female northern bald eagle is larger than the male, averaging 10 to 14 pounds. Males generally weigh 8 to 10½ pounds. The size difference allows the pair to exploit different size prey. The bald eagle stands 2½ to 3 feet tall with an impressive 6½ to 7½-foot wingspan. Their keen

eyesight is eight times more powerful than a human's. The bright yellow feet of adults are strong, unfeathered, and equipped with long, sharp, black talons for penetrating and grasping prey. The powerful, bright yellow, hooked bill is used for tearing and dismembering prey.

Its range extends from central Alaska and Canada to northern Mexico. The bald eagle is a bird of aquatic ecosystems. It frequents estuaries, large lakes, reservoirs, major rivers, and some seacoast habitats. However, such areas must have an adequate food base, perching areas, and nesting sites to support eagles. In winter, bald eagles often congregate at specific wintering-sites that are generally close to open water and that provide good perch trees and night roosts. Bald eagle habitats encompass both public and private lands.



bald
eagle

Nesting sites are usually in large trees along shorelines in relatively remote areas. Safe in their high tree residences, bald eagles would not be affected by dredging operations.

The **California brown pelican**, *Pelecanus occidentalis californicus*, is one of two species of



pelican in North America; the other is the white pelican. The brown pelican weighs up to eight pounds and may have a wingspan of seven feet. It feeds almost entirely on fishes captured by plunge diving in coastal waters. The brown pelican is rarely found away from salt water and does not normally venture more than 20 miles out to sea. The brown pelican nests around late July to December.

The brown pelican uses sand spits and offshore sand bars extensively as daily loafing and nocturnal roost areas. Their preferred nesting sites are small coastal islands which provide protection from mammal predators and sufficient elevation to prevent flooding of nests. Their nesting range includes Baja and Southern California channel islands, although they can be seen further north, including San Francisco Bay and the North Coast. An occasional bird will even venture as far north as British Columbia.

Brown pelicans are not expected to be affected, since dredging and disposal operations will not occur on the coastal Island habitat where brown pelicans nest.

The **short-tailed albatross**, *Phoebastria alastrus*, is a large pelagic bird with long narrow wings



adapted for soaring just above the water surface. The bill, which is disproportionately large compared to the bills of other northern hemisphere albatrosses, is pink and hooked with a bluish tip, with external tubular nostrils, and a thin but conspicuous black line extending around the base. Adult short-tailed albatrosses are the only North Pacific albatross with an entirely white back. The white head develops a yellow-gold crown and nape over several years. Fledged juveniles are dark brown-black, but soon develop the pale bills and legs that distinguish them from black-footed and Laysan albatrosses (Tuck 1978, Roberson, 1980). The diet of short-tailed albatrosses includes squid, fish, eggs of flying fish, shrimp, and other crustaceans (Hattori in Austin 1949, H. Hasegawa pers. comm. 1997).

The short-tailed albatross breeds and nests on isolated windswept islands and would not be attracted to the habitat of Crescent City Harbor, and would not be expected to be found in the dredging area.

The **Northern spotted owl**, *Strix occidentalis caurina*, is a medium sized owl with dark eyes, dark-to-chestnut brown coloring, with whitish sots on the head and neck and white mottling on the abdomen and breast. The adult female is typically larger than the male.



Northern spotted owls generally have large home ranges and use large tracts of land containing significant acreage of older forests to meet their biological needs. Northern spotted owl habitat consists of four components: (1) Nesting, (2) roosting, (3) foraging, and (4) dispersal. The attributes of superior nesting and roosting habitat typically include a moderate to high canopy closure (60 to 80 %); a multi-layered, multi-species canopy with large overstory trees; a high incidence of large trees with various deformities (e.g., large cavities, broken tops, mistletoe infections, and debris

accumulations); large accumulations of fallen trees and other debris; and sufficient open space below the canopy for owls to fly (Thomas, et al. 1990).

Spotted owls use a wider array of forest types for foraging, including more open and fragmented habitat. Habitat that meets the spotted owl's need for nesting and roosting also provides foraging habitat. However, some habitat that supports foraging may be inadequate for nesting and roosting. In much of the species' northern range, large, dense forests are also chosen as foraging habitat, probably because they provide relatively high densities of favored prey, the northern flying squirrel (*Glaucomys sabrinus*), as well as cover from predators. Because much of the flying squirrel's diet is fungal material, old decadent forests provide superior foraging habitat for owls. In southern, lower-elevation portions of the owl's range, the species often forages along the edges of dense forests and in more open forests, preying on the dusky-footed woodrat (*Neotoma fuscipes*). The spotted owl, which is mainly a forest dweller, would not be found on the ocean developed land adjacent to the harbor where dredging operations would take place.

Xantus's murrelet, *Synthliboramphus hypoleucus*, is a small robin-sized bird, which is black above and white below, with a short slender bill and short tail. When seen sitting on the water, they have a profile similar to auklets, puffins, and other murrelets. They can be distinguished from Craveri's Murrelet, which has a similar plumage pattern, by their white underwing compared to the grayish underwing of the Craveri.



Xantus's murrelet breeds and nests on the Channel Islands in southern California. When not breeding, it disperses offshore from British Columbia south to Baja California. Xantus's murrelet would not be expected to be found at the near shore dredging operations of

Crescent City Harbor.

Mammals

The **sei whale** (pronounced "say"), *Balaenoptera borealis*, measures 25-50 feet (8-15 m) in length and weighs 40 tons (36 metric tons), making it the third largest baleen whale, behind the blue and finback whales. It can be identified by its inverted "V" shaped water spout which reaches 6-8 feet into the air. The body is dark gray with variable white undersides, usually limited to the area of the throat grooves which do not reach as far as the navel. In Antarctic and Pacific populations, there are light-colored patches all over the upper body. However, Atlantic populations lack the patches and are more uniformly dark. The sei whale resembles a blue or finback whale, but has a smaller and more curved dorsal fin and is dark on the undersides of the flippers and tail flukes. This whale may be the fastest of the large whales, able to cruise at 16 mph (14 knots) with a maximum recorded speed of 40 mph (35 knots). Sei whales usually travel alone or in small



groups of five or less.

In autumn, these whales migrate several thousand miles to equatorial waters. The mating season occurs from December to April, during which time they eat very little or fast, living off their fat reserves. A single calf measuring 15 feet in length is born after a gestation period of 10-12 months. Calves are weaned on the summer grounds at the age of 6-9 months. Both sexes reach maturity at 5-15 years of age, and the female gives birth to one calf every 2-3 years. Members of this species may live for up to 70 years.

Sei whales are found in the North Atlantic Ocean ranging from Iceland south to the northeastern Venezuelan coast, and northwest to the Gulf of Mexico. There are also records from Cuba and the Virgin Islands. Sei whales are seen infrequently in U. S. waters. This whale breeds and feeds in open oceans, and is generally restricted to more temperate waters. Unlike most rorqual whales, the sei whale feeds mostly by filtering plankton while swimming (skim feeding), but is also known to gulp-feed krill, shrimp, and small fish. The sei whale, which is an inhabitant of the open ocean, would not be found in the shallow channels of Crescent City Harbor. A five-year study at SF-DODS found that whales were not affected by activities associated with disposal of dredged material at an ocean disposal site.

The **blue whale**, *Balaenoptera musculus*, is the largest mammal, possibly the largest animal, to ever inhabit the earth. Its body is long, somewhat tapered, and streamlined, with the head making up less than one-fourth of its total body length. Its rostrum (upper part of the head) is very broad and flat and almost U-shaped,



with a single ridge that extends just forward of the blowholes to the tip of the snout. Its blowholes are contained in a large, raised "splash guard", and the blow is tall and straight and over 20 feet (6 meters) high. Its body is smooth and relatively free of parasites, but a few barnacles attach themselves to the edge of the flukes and occasionally to the tips of the flippers and to the dorsal fin. There are 55-68 ventral grooves or pleats extending from the lower jaw to near the navel.

The blue whale is blue-gray in color, but often with lighter gray mottling on a darker background (or with darker spots on a lighter background). The underside of its flippers may be a lighter color or white, while the ventral (underside) of the fluke is dark. The blue whale acquires microorganisms called diatoms in the cold waters of the Antarctic and North Pacific and North Atlantic which give the underside of its body a yellowish green cast. Because of this yellow color, the early whalers gave it the name "sulfur bottom".

Its dorsal (top) fin is small and triangular or falcate (curved) in shape, and is located three-fourths of the way back on the body. The fin measures only one foot (30 cm) at its highest point though its size and shape are highly variable. Its flippers are tapered and relatively short, about 12% of the total body length. The flukes are broad and triangular. The rear edge is smooth with a slight median notch.

The longest blue whale ever recorded was a 108-foot adult female caught during whaling efforts in Antarctica! In modern times, blue whales in the Southern Hemisphere reach lengths of 90-100 feet, but their Northern Hemisphere counterparts are smaller, on average 75 to 80 feet (23 to 24.5 m). Blue whales can weigh over 100 tons (99,800 kg). Females are larger than males of the same age, the largest perhaps weighing as much as 150 tons (136,000 kg).

Blue whales can be found in all oceans of the world. They migrate to tropical-to-temperate waters during winter months to mate and give birth to calves. They can feed throughout their range, in polar, temperate, or even tropical waters.

The blue whale is thought to feed almost exclusively on small, shrimp-like creatures called euphausiids or krill. During the summer feeding season the blue whale gorges itself, consuming an astounding 4 tons (3.6 metric tons) or more each day. This means it may eat up to 40 million krill a day. As a baleen whale, it has a series of 260-400 fringed overlapping plates hanging from each side of the upper jaw, where teeth might otherwise be located. These plates consist of a fingernail-like material called keratin that frays out into fine hairs on the ends inside the mouth near the tongue. The plates are black and measure about 20 inches (51 cm) in length toward the front of the mouth and about 40 inches (102 cm) at the rear. During feeding, large volumes of water and food can be taken into the mouth because the pleated grooves in the throat expand. As the mouth closes, water is expelled through the baleen plates, which trap the food on the inside near the tongue to be swallowed.

Blue whales, which feed on krill found in deeper waters of the ocean, would not be found in the shallow waters of Crescent City Harbor. Disposal activities at an ocean disposal site would not affect the blue whale.

The **fin whale**, *Balaenoptera physalus*, is long, sleek, and streamlined, with a V-shaped head



which is flat on top. A single ridge extends from the blowhole to the tip of the rostrum (upper jaw). There is a series of 50-100 pleats or grooves on the underside of its body extending from under the lower jaw to the navel. The fin whale is light gray to brownish-black on its back and sides. Two lighter-colored chevrons begin midline behind the blowholes and slant down the sides towards the fluke (tail) before turning and ending right behind the eye. The underside of its body, flippers, and fluke are white. The lower jaw is gray or black on the left side and

creamy white on the right side. This asymmetrical coloration extends to the baleen plates as well, and is reversed on the tongue. The fin whale has a prominent, slightly falcate (curved) dorsal fin located far back on its body. Its flippers are small and tapered, and its fluke is wide, pointed at the tips, and notched in the center. Adult males measure up to 78 feet (24 m) in the northern hemisphere, and 88 feet (26.8 m) in the southern hemisphere. Females are slightly larger than males. Weight for both sexes is between 50-70 tons (45,360-63,500 kg).

Fin whales feed mainly on small shrimp-like creatures called krill or euphausiids and schooling fish. They have been observed circling schools of fish at high speed, rolling the fish into compact balls then turning on their right side to engulf the fish. Their color pattern, including their asymmetrical jaw color, may somehow aid in the capture of such prey. They can consume up to 2 tons (1,814 kg) of food a day. As a baleen whale, it has a series of 262-473 fringed overlapping plates hanging from each side of the upper jaw, where teeth might otherwise be located. These plates consist of a fingernail-like material called keratin that frays out into fine hairs on the ends inside the mouth near the tongue. The baleen on the left side of the mouth has alternating bands of creamy-yellow and blue-gray color. On the right side, the forward 1/3 section of the plates is all creamy-yellow. The plates can measure up to 30 inches (76 cm) in length and 12 inches (30 cm) in width. During feeding, large volumes of water and food can be taken into the mouth because the pleated grooves in the throat expand. As the mouth closes water is expelled through the baleen plates, which trap the food on the inside near the tongue to be swallowed.

Fin whales are found in all oceans of the world. They may migrate to subtropical waters for mating and calving during the winter months and to the colder areas of the Arctic and Antarctic for feeding during the summer months; although recent evidence suggests that during winter fin whales may be dispersed in deep-ocean waters. Fin whales, like their relative the blue whale, are deep-water creatures that would not be found in the shallow Crescent City Harbor channels. Studies have shown that the Fin whale would not be affected by activities associated with dredged material disposal at ocean disposal sites.

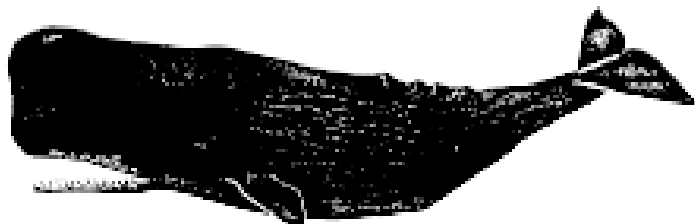


The **humpback whale**, *Megaptera noveangliae*, is a well-known whale with a stout body and very long flippers that have bumps and lumps upon which barnacles may grow. The head is rounded and flat apart from the raised lumps ("tubercles") which are also found on the lower jaw. The dorsal fin is varied in size and shape from individual to individual, and tail flukes are large and almost "wing-shaped". The humpback whale is black to blue-black in color, with pale to white undersides that can show black markings that are varied according to individual. They measure between 12 to 14 meters in length, with

the females generally larger than males. They weigh between 25 to 30 tons. There are 12 to 36 throat grooves and between 540 and 800 80-to-100cm-long baleen plates per animal.

The humpback is found from the tropic to the polar waters and does pass by Crescent City in migration. Although they spend time in much shallower water than other whales, humpback whales would not be expected to be found in Crescent City Harbor. Humpbacks, as shown in studies, would not be affected by activities associated with dredged material disposal at ocean disposal sites.

The **sperm whale**, *Physeter macrocephalus*, which is the largest of the toothed whales, rarely shows much of its body above the water.



The head of the sperm whale is blunt and squared off, and has a small, underslung jaw. The head is also large, and makes up to 1/3 the total body length and more than 1/3 of its mass. A single blowhole is located forward on the left side of the

head, and the blow, which is bushy, is projected forward rather than straight up as it is with other whales. Its body has a wrinkled, shriveled appearance, particularly behind the head. The sperm whale is usually a dark, brownish gray with light streaks, spots, and scratches. The skin around its mouth is white, particularly near the corners. The ventral (underside) of the body is a lighter gray and may have white patches. The sperm whale has a squat dorsal fin, followed by knuckles along the spine. Its flippers are small and slightly tapered, while its flukes are broad, measuring as much as 16 feet (5 m) from tip to tip. Adult males reach lengths of 49-59 feet (15-18 m) and weigh up to 35-45 tons (31,750-40,800 kgs). Adult females are much smaller, growing to about 36 feet (11 m) and a maximum weight of 13-14 tons (12,000-12,700 kg). Males reach sexual maturity at approximately 33-39 feet (10-12 m), and 10 years or more of age but do not seem to take an actual part in breeding until their late 20's.

Unlike rorqual whales which gulp food together with sea water, then filter sea water through baleen, leaving the food, the sperm whale is a predator which chews its prey with teeth. Its main source of food is medium-sized, deep-water squid, but it also feeds on species of fish,

skate, octopus, and smaller squid. A sperm whale consumes about one ton (907 kg) of food each day. The lower jaw contains 18-25 large teeth on each side of the jaw, 3-8 inches in length. The upper jaw may have tiny teeth but they rarely erupt. The upper jaw contains a series of sockets into which the lower teeth fit.

Sperm whales are found in all oceans of the world. The males, alone or in groups, are found in higher latitudes. From time to time they migrate toward lower latitudes, and only the largest mature males appear to enter the breeding grounds close to the equator. Females, calves, and juveniles remain in the warmer tropical and sub-tropical waters of the Pacific, Atlantic, and Indian Oceans year round.

Sperm whales prefer the deeper ocean, where they dive as deep as 2000 feet for food. They also have a highly developed echolocation system that they use to locate food and to navigate. Sperm whales would not be found in the shallow waters of Crescent City Harbor. Studies have shown that sperm whales would not be affected by activities associated with dredged material disposal at ocean disposal sites.

The **Steller's (or northern) sea lion**, *Eumetopias jubatus*, inhabits the north Pacific Ocean and



is the largest member of the family of Otariidae, or "eared seals." Sea lions differ from hair seals (harbor seals, ringed seals, ribbon seals, bearded seals, and spotted seals) in that sea lions have external ears and rear flippers which turn forward, allowing them to "walk" with a gait similar to land mammals.

They are called sea lions because they resemble the terrestrial lion of Africa and Asia. Large adult male Steller's sea lions have disproportionately large necks and shoulders. This, coupled with longer, coarser hair on the neck and shoulders, gives them the appearance of having manes, as do lions.

At birth, the sea lion pup's coat is chocolate brown with a frosty appearance because the tips of the hair are colorless. Color gradually lightens as the animal ages and periodically molts. Most adult females are a yellowish, cream color on the back, although some remain darker. Nearly all males stay darker on the front of the neck and chest; some are even a reddish color.

Males and females have a marked size difference. Weight at birth is 51 pounds (23 kg), and body length is 45 inches (112 cm). Females grow rapidly during the first four years but slow by the fifth year, with little growth after age six. Males continue to grow until the eleventh year. Although there are variations, most females reach maximum size by the seventh year and males reach adult size by the twelfth year. The average weight of an adult male is 1,245 pounds (566 kg), and the body length averages 10 ²/₃ feet (282 cm). Adult females average 579 pounds (263 kg) in weight and 8 ²/₃ feet (228 cm) in length. Although only 20 percent longer, the average adult male weighs over twice as much as the average adult female.

Steller's sea lions are found from the northwestern California coast northward into the Bering Sea to Bering Straits, in the Okhotsk Sea and along the Kamchatka Peninsula in Russia, in the Kurile and Commander Islands, and south as far as Hokkaido and northern Honshu in Japan. Seasonal movements generally occur from exposed areas in summer to protected areas in winter. Steller's sea lions can move over long distances. The longest recorded movement was by an animal marked at Marmot Island near Kodiak and taken near Ketchikan, a distance of approximately 900 miles (1,445 km).

Steller's sea lions gather on well-defined, traditionally-used rookeries to pup and breed. Males defend individual territories from approximately mid-May through mid-July. They mate with females which give birth, then come into estrus in their territory. Females give birth to a single pup anytime from mid-May through July.

Sea lion breeding will not be disturbed by dredging operations because the Crescent City Harbor Area is not a rookery for Steller's sea lions. Any Steller's sea lions passing through the area will not be affected by the dredging operations.

The **Pacific Fisher**, *Martes pennanti*, is a mink-like predator dependent on mature and old-growth forests for habitat. The Pacific fisher is a member of the weasel family. The fishers have long, thin bodies that measure 31-40 inches in length. Their fur is mostly dark brown. Individuals weigh between three and 18 pounds, with the male being larger than the female.



Fishers are mostly nocturnal. They prey upon porcupine and snowshoe hare, although they do eat smaller mammals, fruit, and other plants. The fisher's stomach can soften porcupine quills enough for them to pass through the animal's intestinal tract.

Fishers use large areas of primarily coniferous forests with fairly dense canopies and large trees, snags, and down logs. They den in hollow trees and rocky crevices. They would not be found in the dredging area which is ocean and adjacent open land.

Appendix C



DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, US ARMY CORPS OF ENGINEERS
1455 MARKET STREET,
SAN FRANCISCO CALIFORNIA 94103-2197

November 11, 2010

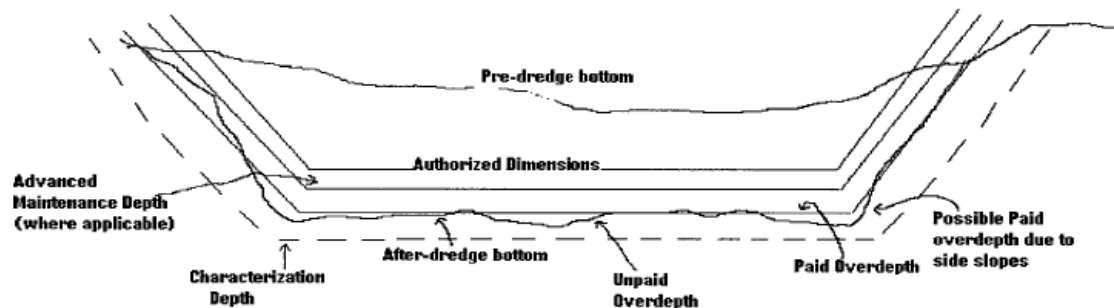
Environmental Section B

Dick Butler
Santa Rosa Area Office Supervisor
National Marine Fisheries Service
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

Dear Mr. Butler:

The San Francisco District will conduct maintenance dredging of approximately 41,000 cubic yards from the Inner Harbor Basin Channel and Entrance Channel at the Crescent City Harbor in Del Norte County, California. The dredging is scheduled to start June 1, 2011 and last 90 days. Dredging will be done by cutter-head suction dredge; disposal will be at the historical, sponsor-provided Upland Disposal Site. The project location and the disposal site are shown on the attached drawing.

Corps guidance allows one-foot of paid overdepth and one-foot of unpaid overdepth. The amount of yardage reflects the material to be removed in order to obtain -14' MLLW, which is one foot above the historically maintained depth for these channels, with one-foot of paid overdepth and one-foot of non-paid overdepth. Overdepth is authorized to ensure that the project depths are achieved.



The project is in the Crescent City and Sister Rocks (California) USGS quadrangles. Pursuant to Essential Fish Habitat (EFH) mandates of the Magnuson-Stevens Act, we request informal EFH consultation.

Environmental Assessment

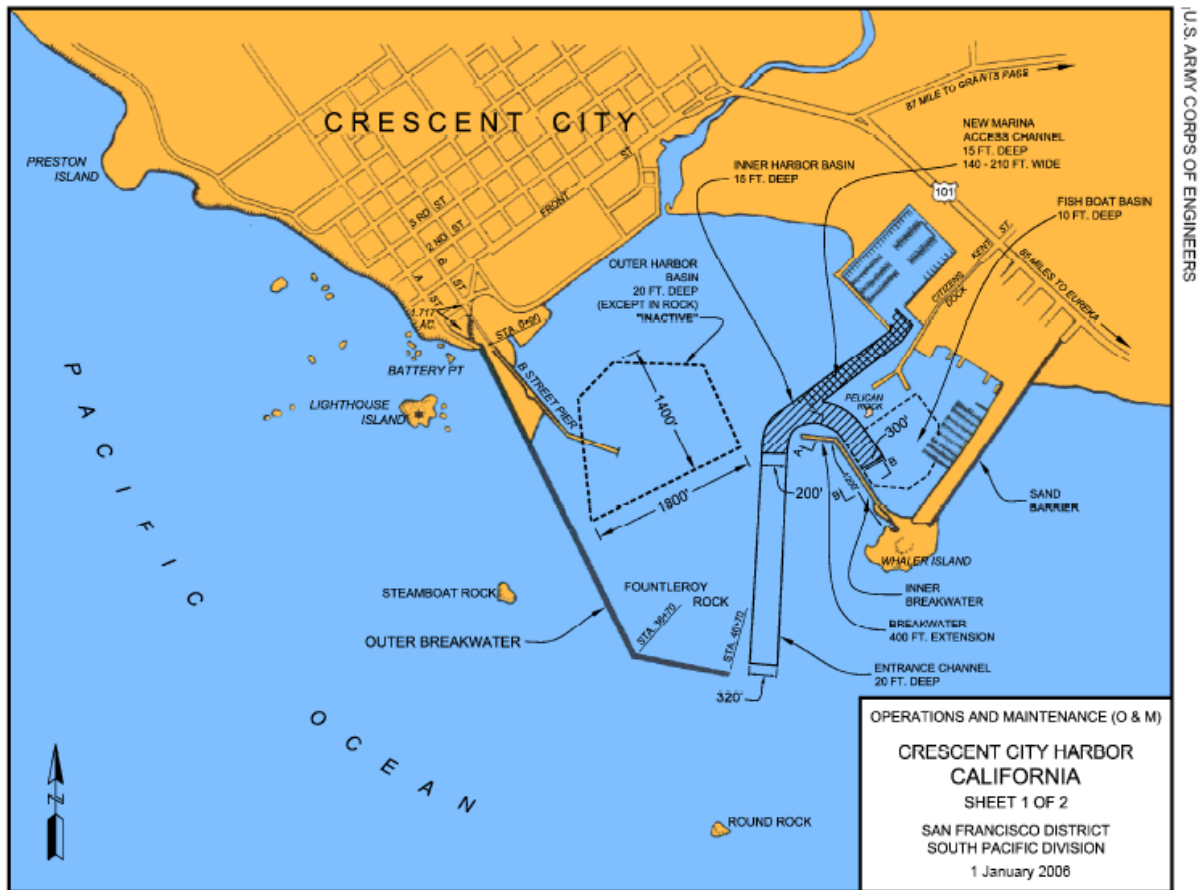
If you have any questions or need more information to process this request, please contact Dr. Mark Wiechmann at 415-503-6846.

Sincerely,

Mr. Laurie H. Suda
Chief, Environmental Section B

Enclosure

Environmental Assessment





DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, US ARMY CORPS OF ENGINEERS
1455 MARKET STREET,
SAN FRANCISCO CALIFORNIA 94103-2197

November 11, 2010

Environmental Section B

Steve Edmonson, Chief
National Marine Fisheries Service
Habitat Conservation Branch
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

Dear Mr. Edmonson:

The US Army Corps of Engineers San Francisco District (Corps) will conduct maintenance dredging of Crescent City Harbor in Del Norte County, California starting on or about June 1, 2011. The maintenance dredging (using cutter-head suction equipment) will remove an estimated 41,000 CY of predominantly silty sediment (including overdepth) from the federal Inner Harbor Basin and Entrance Channels. These channels will be dredged to a depth of -14' MLLW, which is one foot above the historically maintained depth of -15' MLLW, plus two feet of allowable overdepth. Overdepth is authorized to ensure that the project depths are achieved. This sediment will be placed at the historical Upland Disposal Site. The project location and the disposal site are shown on the attached drawing.

The project is in the Crescent City and Sister Rocks (California) USGS quadrangles. Pursuant to Essential Fish Habitat (EFH) mandates of the Magnuson-Stevens Act, we request informal EFH consultation.

Based upon past correspondence from NOAA Fisheries, dated 13 April 2001, there is no suitable habitat in the project area. The Biological Assessment for this project and the letter from NOAA Fisheries are enclosed.

In accordance with the Endangered Species Act (50 CFR § 402.12.13), we request informal consultation for this project. The Corps will perform dredging between June 1 and October 1 to avoid impacts to Steelhead and Coho salmon. We have determined that the project is not likely to adversely affect these species or their habitat and we request your concurrence.

Environmental Assessment

If you have any questions or need more information to process this request, please contact Dr. Mark Wiechmann at 415-503-6846.

Sincerely,

Mr. Laurie H. Suda
Chief, Environmental Section B

Enclosure

Environmental Assessment

JUN. 2. 2003 8:17AM

NO. 104 P. 2/16

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**UNITED STATES DEPARTMENT OF
COMMERCE**

National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

April 13, 2001

I-AR-01-04-FKP

Mr. Calvin Fong
Chief, Regulatory Branch
U.S. Army Corps of Engineers
333 Market Street
San Francisco, California 94105-2197

Dear Mr. Fong:

This letter responds to your March 1, 2001, letter (File number 24221N) initiating informal consultation pursuant to section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.) and its implementing regulations (50 CFR § 402) for a proposed project to remove via dredging approximately 100,000 cubic yards of sediment from Crescent City harbor in Del Norte County, California. You have determined that implementation of this project may affect, but is not likely to adversely affect Southern Oregon/Northern California Coast (SONCC) coho salmon (*Oncorhynchus kisutch*) and their critical habitat. The SONCC coho salmon Evolutionarily Significant Unit (ESU) was listed as threatened under the ESA by the National Marine Fisheries Service (NMFS) on May 6, 1997 (62 FR 24588) and its critical habitat was designated by NMFS on May 5, 1999 (64 FR 24049).

The Crescent City Harbor District proposes to dredge the harbor for a ten year period removing ~100,000 cubic yards of sediment combined from the inner boat dock, recreational moorage, and inner channel. The majority of dredging would be done using a hydraulic dredge, with a cutter head where necessary, with the exception of some confined areas where a clamshell dredge may be employed. Dredge material from three of the four areas will be disposed of at a nearby upland site. Dredge material from Area 3 has been shown to be suitable for aquatic disposal due to grain size (predominantly sand) and the lack of toxic constituents and it is proposed to be deposited at the nearby Whaler Island aquatic disposal site. The Whaler Island disposal site has been used in the past as a disposal site for prior dredging activity. The substrate at this site is similar in composition (i.e., predominantly sand) as the substrate in Area 3. The sandy areas within Crescent City harbor do not provide suitable habitat for coho salmon at any life stage.



The mouth of Elk Creek enters the Pacific Ocean approximately one half mile north of Crescent City harbor. Elk Creek is known to support SONCC coho salmon. Adult coho in the Smith River watershed typically migrate upstream from the ocean between December and mid-February. Coho smolts outmigrate in early spring. Dredging within the inner harbor may be ongoing on a year-round basis but due to circulation patterns, avoidance actions, and dredging operation protocols it is not likely that inner harbor dredging activities will adversely affect SONCC coho salmon. The dredge will operate while in contact with the substrate and to the maximum extent possible, not in the water column. Adult coho may pass the harbor entrance during migration to Elk Creek and smolts may pass through this same area during their migration to sea. Thus, because dredging in the harbor entrance area will occur only during late August through September, any potential adverse impacts to coho salmon migrating to or from Elk Creek should be avoided.

We have reviewed the project description; Public Notice No. 24221N; and the Fish & Wildlife Coordination Act Report for the Crescent City Harbor Channel Improvement Project dated July, 1999; and have coordinated with RWP Dredging Management. Based on the best available information, the NMFS has determined that this project may effect, but is not likely to adversely affect threatened SONCC coho salmon or adversely modify their critical habitat pursuant to 50 C.F.R. section 402.13(b). This conclusion is based on the following: (1) hydraulic dredge operations should avoid operating while the cutter head is more than three feet above the bottom, to the maximum extent possible; (2) sediment to be dumped in the aquatic disposal site must contain <10% fines and must not contain toxicity levels above any EPA standards; (3) impacts to wetlands near the upland disposal site from construction and disposal activities must be avoided; (4) a copy of the annual Regional Water Quality Control Board water quality monitoring report shall be submitted to NMFS; (5) dredging in sea conditions that exceed stipulations in the vessel's U.S. Coast Guard issued stability assessment is prohibited; and (6) the transfer or handling of fuels & lubricants while vessel is at sea is prohibited.

Essential Fish Habitat

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1855(b)) set forth new mandates for the NMFS and federal action agencies to protect important marine and anadromous fish habitat. Federal action agencies which fund, permit, or carry out activities that may adversely impact Essential Fish Habitat (EFH) must consult with NMFS regarding potential adverse effects of their actions on EFH, and respond in writing to our EFH Conservation Recommendations. EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.

The Crescent City harbor and channel does not provide essential habitat for fish species during much of their life history due to the lack of eelgrass and the dynamic nature of the sandy areas. Large volumes of sandy substrate are moved in and out of the harbor area with storm action and may be redistributed with tidal fluxes. Juveniles of many marine species may use eelgrass and estuarine habitat as feeding and rearing areas, however, Crescent City harbor area does not provide this habitat. At certain times of the year, however, the area does provide spawning habitat for some rockfishes and for Pacific herring.

JUN. 2, 2003 8:18AM

NO. 184 P. 4/16

Pacific salmon EFH

The Pacific Fisheries Management Council has identified EFH for the Pacific salmon fishery in Amendment 14 to the Pacific Salmon Fishery Management Plan. This project may affect EFH for Southern Oregon/Northern California Coast (SONNC) chinook salmon (*O. tshawytscha*) ESU and SONNC coho salmon. We are not recommending any additional conservation measures above those identified in the Section 7 consultation because they fulfill EFH requirements for Pacific salmon.

Groundfish EFH

Maintenance dredging of the Federal navigation channels will be scheduled to avoid any potential impact to spawning activity and sensitive life stages of rockfish (*Sebastes spp.*). Rockfish spawn in winter to early spring and dredging activity will occur from late-August to late-September. Implementation of this work window should protect groundfish EFH and no further conservation measures are recommended.

Coastal pelagic EFH

Pacific herring (*Clupea harengus*) spawn in the Crescent City harbor inner basin during winter months, most commonly from January - March (J. Waldvogel, pers.comm.). Herring attach their adhesive eggs to any hard substrate including rocks and pilings. The amount of available spawning substrate in Crescent City harbor area is limited. Once attached to substrate, herring eggs are susceptible to increased sedimentation. Dredging operations, especially use of clam shell dredges, stir up bottom sediment which may smother incubating herring eggs and decrease reproductive success.

For this consultation we have one EFH conservation recommendation for Pacific herring. Dredging operations with the clam shell dredge in the harbor basin should cease during the period when Pacific herring are present and spawning. Pacific herring spawn in late winter - early spring (January - March). The time of peak spawning may vary somewhat each year, however, it is usually apparent when the herring are in by direct visual observation, people fishing, and observation of birds and sea lions feeding (J. Waldvogel, Sea Grant Extension, pers.comm., Apr. 9, 2001). The timing may be verified through coordination with the local Sea Grant Extension agent, Jim Waldvogel at (707)-464-4711.

This letter concludes informal Section 7 consultation on this project. Further consideration or consultation may be required, however, if: (1) new information becomes available indicating that federally listed species or critical habitat may be affected, or (2) project plans change in a manner that affects listed species or critical habitat.


If you have any questions or comments on this consultation please contact Ms. Nan Reck at (707)-825-5167.

Environmental Assessment

JUN. 2.2003 8:18AM

NO. 104 P. 5/16

Sincerely,


Rebecca Lent, Ph.D.
Regional Administrator

cc: ✓ David Ammerman, U.S.A.C.E., Eureka, CA
Jim Waldvogel, Extension Sea Grant Agent, Crescent City, CA
Richard W. Parsons Dredging Management, Ojai, CA

