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A SUMMARY OF THE
COMPOSITE ENVIRONMENTAL STATEMENT
FOR MAINTENANCE DREDGING OF EXISTING
NAVIGATION PROJECTS IN SAN FRANCISCO BAY
REGION, CALIFORNIA

I. INTRODUCTION

The San Francisco District, U.S. Army Corps of Engineers, presently performs maintenance dredging for 20 Federal navigation projects in San Francisco Bay; 12 of which are Congressionally authorized. The 8 other Federal projects are approved under permit from the Corps. It should be noted that all non-Congressionally authorized dredging projects require a permit from the Corps as stipulated in Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. Sec. 403) and Section 404 of the Federal Water Pollution Control Act of 1972 (33 U.S.C. Sec. 1344).

This Composite Environmental Statement assesses the impacts of these 20 Federal projects and the general impacts of dredging and disposal in San Francisco Bay. A second purpose of this environmental statement is to use it as a reference document to evaluate future Corps permit applications for dredging in the Bay, since the environmental impacts of dredging and disposal in the Bay are similar, irrespective of who does the dredging. Specific differences in impacts between specific projects can, of course, occur, and this document will be used to help determine these differences as an applicant applies for a dredging permit for a project in the Bay. This document will aid the Corps in determining whether the applicant will need to prepare an environmental statement for his specific dredging project.

This summary highlights the contents of this Final Environmental Statement and is intended to give the reader a general overview of this report. It is also intended to give the reader, who does not want extensive detail, pertinent information on the nature of the various navigation projects and the environmental impacts involved. Since this is an overview, many references used in the main text of this environmental statement to support certain conclusions are not noted in this summary. For those requiring more detail, the main text should be read.

II. PROJECT DESCRIPTIONS

As mentioned earlier, 20 specific Federal navigation projects are discussed in detail in this Composite Environmental Statement. In addition, non-Federal maintenance dredging permits are briefly

discussed. The first twelve Federal projects are authorized under various Rivers and Harbors acts. The last eight projects require Corps permits and are either done by the Corps at the request of the Navy, Coast Guard, or the Army. Below are listed brief descriptions for all the 20 Federal navigation projects included in the Composite. Other Bay dredging projects are also mentioned. Maps of the Federal dredging projects can be found on Plate I-1 and of disposal sites on Plate I-2, in Section I of the text.

A. San Francisco Harbor

Two active areas of dredging in the San Francisco Harbor are San Francisco Bar Channel (Main Ship Channel) and Islais Creek. The Main Ship Channel is the only deepwater ocean entrance to San Francisco Bay and is used by all ocean-going shippers calling at Bay area ports. The channel has been dredged annually for the past 25 years, and recent lengthening and deepening have increased amounts of material removed. Future maintenance dredging will require approximately 840,000 cubic yards of material to be removed annually. Next dredging is scheduled for the winter 1975-76 with disposal along the bar more than one mile south of and parallel to the channel. To accomplish the greatest dispersion, disposal will take place with the vessel underway.

The second area of dredging under this project is a flared channel 35 feet deep approaching the mouth of Islais Creek. Channel users are commercial firms using piers owned by the Port of San Francisco. Dredging in this area is infrequent. Based on a 16-year frequency and 13,000 cubic yard shoaling rate, it is expected that 91,000 cubic yards will be removed at the next dredging, which is indefinite at this time.

B. San Rafael Creek

The San Rafael Creek Channel primarily serves the aquatic recreational needs of Marin County. The channel is dredged every 6-8 years. The average annual amount of material removed is 34,000 cubic yards. Maintenance dredging is tentatively scheduled for Fiscal Year 1977, with some 240,000 cubic yards to be removed by hydraulic pipeline and deposited at a suitable land location provided by the City of San Rafael. This dredging would be done under contract from the Corps.

C. Petaluma River

Dredging of the river above San Pablo Bay is covered by a separate environmental statement and includes land disposal. This river dredging is required about every four years and currently requires dredging of about 440,000 cubic yards of material.

The Composite Statement covers another section of the channel dredging from approximately the Highway 37 bridge, out across the flats of San Pablo Bay to deep water. This dredging is required about once every 12 years with the next dredging scheduled for Fiscal Year 77. At that time, approximately 668,000 cubic yards of material are expected to be removed and barged to the San Pablo Bay Aquatic Disposal Site.

D. San Pablo Bay and Mare Island Strait

The two parts of this project are Pinole Shoal Channel and Mare Island Strait. Pinole Shoal Channel is used primarily by commercial shipping concerns and requires dredging about every other year. The average annual amount of dredged material is 324,000 cubic yards; dredging scheduled for January 1976 will remove 508,000 cubic yards and disposal of the material at the San Pablo Site. Dredging is not performed during November to minimize impact on the popular fishing area. Mare Island Strait is used primarily by nuclear submarines and other deep-draft Navy vessels. Biannual dredging removes approximately 2.5 million cubic yards of material per year which is deposited at the Carquinez Straits Disposal Site.

E. Richmond Harbor

Richmond Harbor primarily serves Terminal No. 4 at Point San Pablo, the Long Wharf, and some 26 piers, wharves, and docks in the inner harbor. Primary commerce includes petroleum and dry bulk cargo. Not all portions of the harbor are maintained on an annual basis. The Long Wharf Maneuvering Basin schedule is very variable, ranging from one to eight years. The next maintenance scheduled is for Fiscal Year 1977 when about 480,000 cubic yards from the Long Wharf Maneuvering Basin and the Inner Harbor Channel will be dredged by hopper and disposed at the Alcatraz Site.

F. Oakland Harbor

The two projects included in Oakland Harbor, which serves military and deep-draft commercial interests as well as smaller commercial and recreation boats, are the Outer and Inner Harbors. Both are dredged annually. Maintenance for the Outer Harbor is scheduled for December-March 1975-76 when approximately 250,000 cubic yards will be dredged and disposed at Alcatraz. Oakland Inner Harbor was deepened last year and next maintenance dredging is scheduled for the same time as Outer Harbor with about 200,000 cubic yards to be dredged. The Corps maintains projects for the Navy and Coast Guard in this harbor, which will be mentioned later.

The Port of Oakland also has a dredging program averaging 143,000 cubic yards per year. Material is either dumped at the Alcatraz Disposal Site or the 100-Fathom Ocean Disposal Site.

G. San Leandro Marina

During the late 1950's and 1960's, the Corps studied the feasibility of Federal participation in developing harbors for light-draft vessels under the authority of the Rivers and Harbors Act of 1950. In 1964, the City of San Leandro requested Federal maintenance of their locally-built access channel to San Leandro Marina. The request was found to be consistent with the objectives of the Federal study and in 1970, the channels came under Federal maintenance.

Based on the last two maintenance dredgings, the project will most likely be maintained on a 5-6 year cycle. Approximately 225,000 cubic yards will be removed. Next maintenance is tentatively scheduled for Fiscal Year 1978. Disposal sites have not been determined at this time.

H. Redwood City Harbor

Once a prominent port and the channel maintained annually, Redwood City Harbor has not been dredged since 1971. Only a few commercial interests presently use the channel. Dredging scheduled for last summer was postponed due to the absence of a suitable disposal site. No decision has been made for ultimate disposal but land disposal is being considered. There are four land areas that are under consideration and Site No. 1 is the Port of Redwood City's preferred site. An estimated 200,000 cubic yards will be removed during the next maintenance.

I. Sausalito Operations Base Yard

The Corps of Engineers Base Yard houses the hydraulic model of San Francisco Bay and the Delta. It also operates five docks and Corps hopper dredges are based here when they are operating in the Bay. Major channel maintenance occurs every three to four years. The average annual quantity of sediment removed is about 25,000 cubic yards. Since 1961, all materials have been disposed of at the Alcatraz Site. No maintenance is programmed for the immediate future.

J. Suisun Bay Channel

This channel is used primarily by commercial ships and only predominant shoaling areas require annual dredging. The average annual amount of dredged material is 220,000 cubic yards

with similar amounts scheduled for future maintenance. A disposal site has not been selected.

Private maneuvering areas near the channel are periodically dredged by the oil companies that have facilities in the area. There is other dredging done under Corps permit in the area.

K. Suisun (Slough) Channel

Dredging in this sinuous, 13-mile long channel, extending from Suisun Bay to the City of Suisun, depends on volume and extent of shoaling. Characteristic shoaling areas are located at the mouth and head of Suisun Slough. Dredging was last performed in 1970 when 172,000 cubic yards were removed. Material from the harbor was placed on land along the west edge of Suisun Channel. Material taken from the mouth was placed in open water along the eastern edge of Morrow Island. Next maintenance is indefinite at this time.

L. New York Slough Channel

New York Slough Channel is a segment of the main shipping channel to Stockton and is roughly situated between Pittsburg and Antioch, forming the downstream reach of San Joaquin River Channel. Since 1965 dredging was performed once with 16,000 cubic yards of material deposited on Brown's Island. Next maintenance dredging has not been scheduled due to lack of shoaling in the area. When dredging is done, the estimated quantity of material will be 20,000 cubic yards. A disposal site has not been determined yet.

M. Concord Naval Weapons Station

This facility ships and receives large quantities of ordinance for the Navy and dredging is done by the Navy. Dredging takes place every other year with an average of 52,000 cubic yards removed each time. Last permit for the project was issued for Fiscal Year 1975. Next dredging has not been scheduled, but is expected to be completed during Fiscal Year 1978 with 50,000 to 60,000 cubic yards to be removed and deposited on land or at an approved water disposal site. Dredging would require a new Corps permit.

N. Alameda Naval Air Station

The station berths Naval carriers and large service ships of the Pacific Fleet and requires periodic dredging at the entrance channel, turning basin, and berthing area. Some dredging is done

by the Corps through an interservice agreement. The latest dredging permit is only good for Fiscal Year 1975 to perform "clean up" work around piers and approach channel. Average annual quantity of dredging is estimated at 900,000 cubic yards with the most contaminated material disposed of at the 100-fathom site. Other material is usually disposed in the Bay at the Alcatraz Disposal Site. Maintenance dredging for Fiscal Year 1976 is expected to be more than Fiscal Year 1975 and will require another permit. About 600,000 cubic yards will be removed by hopper dredge and disposed at Alcatraz Disposal Site. Approximately 250,000 cubic yards will then be removed by clam-shell and probably disposed of at the 100-Fathom Disposal Site.

O. Military Ocean Terminal, Bay Area (North)

This is a four-berth military cargo terminal on the north side of Oakland Outer Harbor. Dredging is handled by the Corps through an interservice agreement with the Navy. Last dredging was performed in 1967 when 27,000 cubic yards were removed by the Corps during Oakland Outer Harbor dredging. Another 54,000 cubic yards were removed by a private firm.

Future dredging needs are estimated at 10,000 cubic yards per year with next maintenance dredging expected in three to six years. If the Corps does the work, another interservice agreement and permit would be required.

P. Naval Supply Center, Oakland

This is an 18-berth Navy terminal located in Oakland Middle Harbor. Previous dredging has been handled by the Navy, averaging 125,000 cubic yards dredged every two to three years. The Navy may request the Corps to handle future hopper dredging of the area. Last maintenance dredging was in 1970. No future dredging has been planned, but might be required by Fiscal Year 1977 or 1978. The sediment would either be disposed at Alcatraz, or the 100-fathom site.

Q. Military Ocean Terminal, Bay Area (East)

This is a four-berth Navy cargo terminal on the south side of Oakland Inner Harbor and is often called Naval Supply Center, Alameda Facility. Available data indicate that about 120,000 cubic yards of material are removed once every three years. No dredging, however, has been required since 1970.

R. Point Molate

Point Molate is a Navy fuel depot located just north of the Richmond-San Rafael Bridge on the Richmond shoreline. Maintenance dredging is performed by the Corps once every two and a half years. The latest permit for this project covered Fiscal Year 1975 and allowed for the removal of 120,000 cubic yards of material.

Next maintenance dredging has not been scheduled, but will most likely be required by Fiscal Year 1977 when about 400,000 cubic yards will be removed and disposed of at the Alcatraz site.

S. Government Island

The Corps performs this project at the request of the Coast Guard who uses this facility for berthing three large cutters. Government Island is located in Oakland Inner Harbor. The last maintenance took place in 1967 which involved removing only 1,000 cubic yards. It is estimated that maintenance is required every 5-10 years when 20,000 to 30,000 cubic yards are removed. No maintenance is anticipated for the next few years.

T. Horseshoe Cove

The Corps performs maintenance dredging at this site located in Fort Baker at the southern tip of Marin County, at the request of the U.S. Sixth Army Region. Horseshoe Cove is used as a recreational facility for area servicemen. Since 1944 dredging has only been performed twice. During the last maintenance (FY 71), 10,000 cubic yards were removed under contract and barged to Alcatraz for disposal.

U. Maintenance Dredging Permits

The following are some recent maintenance dredging permits the Corps has issued around the Bay, and have been included here to aid evaluation of cumulative dredging and aquatic disposal impacts in the Bay. The projects listed below include only maintenance dredging, excluding relatively infrequent port construction and permit activities not involved with dredging navigation channels. Listed projects do not represent all dredging done in the Bay and quantities are estimates based on 1971 through 1975 permits issued.

San Francisco Harbor. Port of San Francisco dredges average annual amounts of about 500,000 cubic yards from piers and wharves extending from Aquatic Park to India Basin. Private firms dredge 100,000 cubic yards annually from their own piers. The Navy dredges about 150,000 cubic yards per year at Hunter's Point with future dredging uncertain pending sale or lease of the Shipyard. Most material from these dredging operations is disposed at Alcatraz.

Oakland Harbor. Port of Oakland dredges approximately 143,000 cubic yards yearly from its berths in Inner and Outer Harbors. Private firms dredge another 35,000 cubic yards. All disposal is done at Alcatraz. Federal dredging projects that are done in the harbor and that require permits are discussed above.

Redwood City Harbor. Approximately 10,000 cubic yards are dredged annually from Redwood Creek and disposed on land.

Richmond Harbor. Standard Oil dredges about 200,000 cubic yards of material per year from its berthing area at Richmond Long Wharf. Other public and private firms dredge another 30,000 cubic yards annually. All disposal is done at Alcatraz.

Mare Island Strait. The Navy dredges about 500,000 cubic yards annually alongside Mare Island Naval Shipyard and pumps the slurry to the opposite side of Mare Island by hydraulic pipeline. The City of Vallejo removes 30,000 cubic yards from it's marina and pumps the slurry to an adjacent land area. The City dredges another 25,000 cubic yards per year to maintain berths at Kaiser Steel, with disposal at Carquinez Strait.

Carquinez Strait. Several oil companies maintenance dredge their berthing areas. Union Oil dredges 90,000 cubic yards per year at Oleum, and Exxon Oil at Benicia dredges 20,000 cubic yards per year. Gulf, Shell and Phillips dredge only infrequently and have not applied for permits in recent years. All dredged material is deposited at the Carquinez Strait Disposal Site.

Suisun Bay. Private concerns with berthing areas have not applied for permits in recent years. Dredging by the Navy is covered above as an interservice project.

Marinas. Most of the small-boat marinas in the Bay Area require infrequent dredging; a few more frequently. Amounts dredged vary, depending on need and funds available. Very little environmental information and sediment data are available for evaluation of the

effects of most of these marina dredgings. What is available suggests similarity in chemical concentrations to Corps-maintenance projects. If this is typical of all Bay Area marinas, then aquatic disposal would have the same general effect as Corps dredge disposal material. Land disposal would require individual evaluation and impacts would depend on the natural resources of the proposed sites.

III. ENVIRONMENTAL SETTING

A. General

This is a very general summary of the more detailed material found in Section II of the Composite. The Composite covers all of San Francisco Bay that is geographically limited by the nine counties bordering the Bay. San Francisco Bay is one of the world's largest estuaries and is approximately 55 miles long on the north-south axis and 2 to 13 miles wide on the east-west axis. Bay Area topography has a variety of land-forms dominated by coast range mountains, bay plains, and valleys. It is influenced by three major active fault zones: San Andreas, Hayward and Calaveras Faults.

Bay weather varies from area to area during the year in temperature, degree of wind, amount of rainfall, etc., depending on the area's distance from the ocean and amount of hill protection. Climate is generally milder than inland areas. Air pollution is very apparent in the Bay Area during summer months when poor ventilation does not disperse pollution caused by vehicular traffic, shipping, and industry.

The Bay has 440 square miles of surface with 127 square miles of marsh. The Bay can be divided into four sub-bays and their tributaries:

<u>Sub-Bay</u>	<u>Tributaries</u>
Suisun Bay	Walnut Creek
San Pablo Bay > North Bay	Napa River, Sonoma Creek and Petaluma River
Central San Francisco Bay	San Lorenzo Creek
South San Francisco Bay	Alameda Creek, Coyote Creek and Guadalupe River

The Sacramento and San Joaquin Rivers enter the Bay through the Delta.