



United States Department of the Interior



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In Reply Refer To:
FWS-LA-08B0378-08FA0035

Colonel Thomas H. Magness, IV
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U. S. Army Corps of Engineers
P.O. Box 532711
Los Angeles, California 90053-2325

MAY 9 2008

Attn: Ms. Joy Jaiswal, Ecosystem Planning Section

Subj: Draft Fish and Wildlife Coordination Act Report for the Port of Los Angeles Channel Deepening Project, Los Angeles County, California

Dear Colonel Magness:

Enclosed is our Draft Fish and Wildlife Coordination Act Report (Report) for the Port of Los Angeles Channel Deepening Project in Los Angeles County, California. This Report is provided as partial fulfillment of Scope of Work Agreement Number W81EYN71994081 between our agencies, requesting us to provide a draft and final Report for this project.

This Report is presented in partial fulfillment of the Fish and Wildlife Coordination Act and does not constitute the final report of the Secretary of the Interior as required by section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

If you have any questions regarding our Report please contact Christine Medak, Project Biologist, at (760) 431-9440 x298.

Sincerely,

for Karen Goebel
Assistant Field Supervisor

Enclosure (1)

DRAFT FISH AND WILDLIFE COORDINATION ACT REPORT

for the

Port of Los Angeles
Channel Deepening Project - Additional Disposal Capacity
Los Angeles County, California

Prepared for the

U.S. Army Corps of Engineers
Los Angeles District

by the

U.S. Fish and Wildlife Service
Carlsbad Fish and Wildlife Office
Carlsbad, California

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May 2008

EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers and the Port of Los Angeles are considering the feasibility of modifying the approved Channel Deepening Project in the Los Angeles Harbor to provide additional disposal capacity needed to complete the project. The Channel Deepening Project was authorized for construction by the Water Resources Development Act of 2000. Several changes to the project have been required since its authorization as a result of revised bathymetric data, the occurrence of shoaling and settlement of material, design changes, the need to dispose of surcharge, the opportunity to remove and confine contaminated dredge material, and other design and construction modifications. Disposal sites identified in the authorized Channel Deepening Project are inadequate for the total volume of sediments that require removal from the Main Channel and adjacent berth areas to complete the project. Approximately 3.0 million cubic yards of additional disposal capacity is needed.

The proposed modification to the Channel Deepening Project is another increment in a series of such dredge-and-fill projects over the last 20 years that have modernized and reshaped Los Angeles Harbor. Pacific Rim trade is increasing, as is the size of the ships. A century of harbor dredging and filling has eliminated thousands of acres of the historic Wilmington Lagoon Estuary. In its place, behind manmade breakwaters, is a marine embayment of relatively high biological diversity and productivity. Construction of landfills out of the marine habitats of San Pedro Bay is permanently destructive of significant fish and wildlife habitats there. The Port and the biological resource agencies have successfully and repeatedly resolved the issues of: a) evaluation of impacts to fish and wildlife resources in the harbor and b) identification and implementation of appropriate and acceptable compensatory mitigation for those impacts. Mitigation for harbor landfill construction is executed both inside and outside of the harbor boundaries. This process of harbor impact evaluation and mitigation was employed for the Channel Deepening Project. The subject project proposal simply proposes to continue this process, to construct no new landfills until such time as appropriate and acceptable mitigation is identified and assured of implementation.

PREFACE

This document constitutes the Draft Fish and Wildlife Coordination Act Report (Report) in partial fulfillment of the Scope of Work Number W81EYN71994081 between the U.S. Fish and Wildlife Service (USFWS) and the U.S. Army Corps of Engineers (USACE), and addresses the potential effects on fish and wildlife resources of implementing the proposed modification to the Channel Deepening Project. We have prepared this Report pursuant to the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and in keeping with the spirit and intent of the National Environmental Policy Act (P.L. 91-190).

A Notice of Intent/Preparation to prepare a Supplemental Environmental Impact Statement/ Supplemental Environmental Impact Report (SEIS/SEIR) on the proposed project was circulated for review in November, 2004 and a supplemental Notice was circulated in October, 2005. The USFWS, National Marine Fisheries Service (NMFS) and the California Department of Fish and Game (CDFG), collectively referred to as the Resources Agencies, met with the Los Angeles Harbor Department (LAHD) and USACE staff on September 19, 2005, November 8, 2005, December 12, 2006 (USFWS and NMFS), and March 11, 2008 (USFWS and CDFG), in regards to the coordination of mitigation and endangered species requirements.

The proposed project and environmental documentation supplements a previous Federal Project at the Port of Los Angeles, the Channel Deepening Project, which was authorized by the Water Resources Development Act of 2000. Construction of navigational improvements and in-bay disposal of dredge material was initiated in September 2002. To date the project has resulted in the disposal of 13.691 million cubic yards (mcy) of material and creation of approximately 137 acres of fill in Los Angeles Harbor. During the environmental and approval process, our agency provided significant written and verbal input on the Channel Deepening Project in a planning aid letter (USFWS 1999), Coordination Act Report (USFWS 2000), and during meetings attended by the USACE, the LAHD and the Resource Agencies on and between December 13, 2001, and May 11, 2004. Environmental commitments associated with this project were implemented in accordance with measures worked out with the LAHD and USACE.

In the proposed SEIS/SEIR, the LAHD and the USACE will evaluate the environmental effects of providing additional disposal capacity needed to complete the authorized Channel Deepening Project at the Port of Los Angeles. This Coordination Act Report reviews this project in light of the environmental considerations established during the Channel Deepening Project and ongoing coordination between USFWS, NMFS, CDFG, LAHD and the USACE.

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INTRODUCTION

The Port of Los Angeles (Port) is a major center of international commerce on the west coast of the United States. Development of a permanent industrial base within the Port was gradual and began with increased harbor improvements and transportation in the early 1900's. The main channel was deepened by 10 feet to a depth of -45 feet mean lower low water (MLLW) in 1982 and dredged material was used to create Pier 300 (USACE and LAHD 2000). The authority to construct Channel Deepening Improvements at the Port was originally provided under the Water Resources Development Act (WRDA) of 1986. The authorization was modified by language in subsequent WRDAs, including WRDA 1988, and 1996, which provided additional detail of the features to be analyzed, focusing on deep draft navigation channels and landfill needed in the outer harbor area to accommodate the anticipated increase in cargo shipments and handling requirements on the west coast (VZM 1988). Construction of the Deep Draft Navigation Project in the outer harbor was completed in 2000.

The Water Resources Development Act of 2000 further authorized dredging of the Main Channel of the Port and associated berths to allow the new generation of deeper draft container vessels that require a depth of -53 feet Mean Lower Low Water (MLLW) to navigate and access the container terminals along the Main Channel of the Port. Construction of this project was initiated in September 2002; however, the project cannot be completed until additional sites are identified to dispose of approximately 3.0 million cubic yards (mcy) of remaining dredge material and surcharge. The U.S. Army Corps of Engineers in conjunction with the Los Angeles Harbor Department are now examining options to provide additional disposal capacity necessary to complete the project.

DESCRIPTION OF THE PROJECT AREA

The project site (Port of Los Angeles) is located in San Pedro Bay, at the southern end of the City of Los Angeles, Los Angeles County. The two competing and independent commercial ports, the Port of Los Angeles and the Port of Long Beach, share the San Pedro Bay marine ecosystem. These man-made harbors have been created through a century of dredging and filling of the former 3,450-acre Wilmington Lagoon. The Port of Los Angeles encompasses 7,500 acres of land and water including 43 miles of waterfront and 26 cargo terminals. Land uses within the Port of Los Angeles are largely industrial although a variety of other uses (*e.g.*, recreation, commercial fishing) are also supported.

The outer limit of the Port of Los Angeles is defined by breakwaters that were constructed during the early to mid 1900's (MEC 2002). The majority of the harbor waters within the Port of Los Angeles range in depth from 30 to 60 feet (MEC 2002) with navigation channels dredged to depths of 45 feet and greater (USFWS 2000). The Port of Los Angeles also contains several hundred acres of waters shallower than 20 feet, primarily constructed by sub-aquatic fill of deeper areas to increase biological values.

PROJECT DESCRIPTION

The U.S. Army Corps of Engineers (USACE), with the Los Angeles Harbor Department (LAHD) as the local sponsor, is considering the feasibility of modifying the approved Channel

Deepening Project to provide additional capacity for disposal of dredged material associated with completing the Channel Deepening Project. This description is being evaluated in a Supplemental Environmental Impact Statement/ Supplemental Environmental Impact Report (SEIS/SEIR), which is the fifth supplement to the Deep Draft Navigation Project Environmental Impact Statement/ Environmental Impact Report (USACE and LAHD 1992a).

Project History

Federal Authorization and involvement in providing navigation features and improvement for Los Angeles harbor dates from 1856 (USFWS 2000). Since that time congress has authorized Federal participation in the study of a number of improvements in response to requests from local sponsors.

On January 24, 1994, the USACE approved the Deep Draft Navigation Project in the Outer Los Angeles Harbor (USACE and LAHD 1992b). The Federal authorization for the feasibility study and environmental documentation were derived from a series of Congressional resolutions dating from 1945 to 1968. As a result of the authorization, the LAHD began construction of the first phase of the project (Pier 400 Stage 1) in September of 1994 to create approximately 274 acres of fill (USFWS 2000). In July of 1997, construction of Stage 2 of the project was initiated which would complete the navigation improvements and in-bay disposal of dredge material to create an additional 305 acres of fill (Pier 400 Stage 2). Construction of the Deep Draft Navigation Project was completed in 2000.

A component of the justification for the Deep Draft Navigation Project was the assumption that existing facilities at the Port of Los Angeles (Port) would be optimized in concert with the dredging of new channels and creation of new land for cargo terminals (USACE and LAHD 1992b, Appendix A). In fact, many landside terminals/facilities at the Port were upgraded to improve the efficiency of these terminals (*e.g.*, West Basin Redevelopment Project, Evergreen Backlands Improvement Project, Terminal Island Container Terminal Facility Project, Badger Avenue Bridge Replacement Project, Alameda Corridor Project, *et al.*) (USACE and LAHD 2000). One such project, the Channel Deepening Project (LAHD 1997), was approved by the LAHD in 1998 (USACE and LAHD 2000). This project would improve efficiency of shipping and port operations by deepening the Main Channel and associated channels and turning basins from -45 feet MLLW to -50 feet MLLW to accommodate new container vessels with a -46 foot draft (LAHD 1997).

Following approval of the original Channel Deepening Project by the LAHD, it was determined that new ships in the world container fleet were planned with a draft of -52 feet and would require a navigational channel as deep as -55 feet with a two-foot overdraft. The Channel Deepening Project, subsequently authorized by WRDA 2000, would allow container vessels that require a depth of -53 feet MLLW to navigate and access the container terminals along the Main Channel of the Port (USACE and LAHD 2000). Construction of the Channel Deepening Project was initiated in September 2002.

Several changes to the Channel Deepening Project have been required since its authorization as a result of revised bathymetric data, the occurrence of shoaling and settlement of material, design

changes, the need to dispose of surcharge, the opportunity to remove and confine contaminated dredge material, and other design and construction modifications. These changes resulted in an increase in the total volume of dredge material requiring disposal from 6.6 mcy to 12.7 mcy. The project changes were analyzed and documented in three separate Supplemental Environmental Assessments (USACE 2002, 2003, 2004).

The present study, which is being carried out by the USACE and the LAHD under the authority provided by WRDA 2000, examines the environmental effects of providing additional disposal capacity necessary to complete the authorized Channel Deepening Project.

Purpose and Need

The Channel Deepening Project was approved to allow a new generation of deeper draft container ships access to terminals along the Main Channel of the Port. The purpose of the proposed project is to complete the Channel Deepening Project and optimize the beneficial use of the dredged material within the Port. Additional disposal sites are needed because disposal sites developed for the approved Channel Deepening Project are inadequate for the total volume of sediments that require removal from the Main Channel and adjacent berth areas to complete the project. An estimated 3.0 mcy of material require removal based on a project depth of -53 feet MLLW, plus two feet of over-depth allowance. The areas requiring material removal are identified in Figure 1 and include 1.025 mcy from East Basin Channel (Dredge Footprint), and 0.675 mcy from berth deepening (Dredged Berth Areas). In addition, 0.815 mcy of surcharge temporarily placed on the Southwest Slip Disposal Area would be removed and 0.412 mcy of material would be dredged to prepare foundations for the rock dikes that would be constructed around new disposal sites.

Description of Disposal Sites

The proposed project includes six optional disposal sites, five within the harbor area and one ocean disposal alternative.

Berths 243-245

Berths 243-245 disposal site consists of two open water slips covering approximately 8 acres that were formerly was part of the Southwest Marine Shipyard (Figure 1, Proposed Fill). The slips at Berths 243-245 contain contaminated sediments from past shipyard operations (Weston Solutions 2006). The site would be used to create a Confined Disposal Facility (CDF) for existing harbor bottom contaminated sediments, as well as for contaminated dredge material associated with completing the Channel Deepening Project (approximately 0.080 mcy) which is unsuitable for open water disposal. The site would dispose of 0.368 mcy of material and create 8 acres of land. A rock dike would be constructed across the opening of the berths to a final elevation of +11 feet MLLW to contain the dredge material. Use of the site as a CDF would be in accordance with discharge requirements to preclude release of contaminated sediments into surrounding waters.

Northwest Slip

This disposal site has the capacity for 0.128 mcy of clean sediment and would result in a 5-acre landfill (Figure 1, Proposed Fill). The new landfill would be contained behind a rock dike constructed to +11 feet MLLW and would be used to improve the wharf roadway configuration at Berths 136-139 to provide safer and more efficient truck and equipment movement.

Cabrillo Shallow Water Habitat Expansion Area

This submerged site would expand the existing Cabrillo Shallow Water Habitat (CSWH) by approximately 50 acres and would be used to dispose of 1.700 mcy of clean, non-structural-quality dredge material (fine grain) with a sand cap (Figure 1, Proposed Submerged Disposal Site). The material would be supported by a new submerged dike on the north side and by the existing CSWH submerged dike on the remaining sides. Fine grained material that otherwise would be disposed of at an ocean disposal site would be placed to an elevation of -17 feet MLLW. A coarse grain cover would then be placed to the final -15 feet MLLW elevation. Construction of this site would create increased habitat value for inclusion in the Port's Outer Harbor Mitigation Bank.

Eelgrass Habitat Area

The establishment of a 40-acre Eelgrass Habitat Area on top of the existing and proposed CSWH would allow for disposal of approximately 0.800 mcy of dredge material (Figure 1, Proposed Submerged Disposal Site). A dike, constructed of quarry run and armor stone, to an elevation of +14 to +12 feet MLLW would protect the Eelgrass Habitat Area from short period storm waves on all but the north side. A quarry run dike would be constructed across the northern opening to an elevation of -6 feet MLLW. Fine grained material that otherwise would be disposed of at an ocean disposal site would be placed to an elevation between -8 feet and -4 feet MLLW. A two-foot surface cover would then be placed between -6 feet and -2 feet MLLW. The dike would result in removal of approximately 1.7 acres of open water.

Ocean Disposal (LA-2)

Any remaining clean material could be disposed of at the U.S. Environmental Protection Agency-approved ocean disposal site, LA-2. This site is located 5.9 miles south-southwest of the entrance to Los Angeles Harbor on the outer continental shelf margin. This disposal option does not result in any beneficial reuse of material.

Anchorage Road Soil Storage Site (ARSSS)

This upland disposal site has previously been used to contain minor amounts of contaminated material. The amount of contaminated material associated with completing the Channel Deepening Project is currently estimated at 0.080 mcy.

Construction Methods and Timing

For the Berths 243-245 site, and the Northwest Slip site, the initial work would involve demolition and removal of existing structures as needed. A clamshell dredge would construct a trench along the perimeter of the fill area to key in the dike foundation. The dike would be initially constructed to a depth of -12 feet MLLW to allow entrance by barges to the fill area.

All clamshell dredge sediments would be bottom-dumped into the site. The dike would then be completed and the remaining sediments would be pumped into the site by pipeline from the hydraulic dredge or re-handled by clamshell into the disposal site. The Berths 243-245 site would require approximately 0.15 mcy of surcharge to be placed to an elevation of +30 feet MLLW to promote densification of deposited dredge material. Bulldozers would then be used for final grading of the landfill and a surface cover layer of sand would be placed on the site. A contaminated sediment management plan would be developed in cooperation with State and Federal agencies prior to moving and disposing of the contaminated sediments.

For construction of the CSWH Expansion Area and Eelgrass Habitat Area, dikes would be constructed from quarry run material delivered by barge from Santa Catalina Island, and then sediments would be pumped into the sites by pipeline from the hydraulic dredge or from hopper barges.

Use of the ARSSS site would require sediments to be placed in barges and shipped to an offloading site at Shore Road. From there the sediments would be removed from the barges by clamshell and placed into trucks for transport to the disposal site, approximately 0.15 miles away.

Dredging for the Channel Deepening Project is expected to resume in January 2009 (using the newly approved disposal areas) and be completed in approximately 15 months (*i.e.*, March 2010). Construction of the CSWH Expansion Area would occur between January and August 2009 and construction of the Eelgrass Habitat Area would occur between May and December 2009. Dredging is tentatively scheduled 24 hours per day, seven days a week.

Alternatives

The proposed project is to provide disposal capacity to complete the authorized Channel Deepening Project in accordance with the project objectives. Two disposal alternatives (“Port Development and Environmental Enhancement” and “Environmental Enhancement and Ocean Disposal”) and a “No Action” alternative will be considered in the SEIS/SEIR. Table 1 provides a summary of the disposal volumes and distribution of fill for each alternative.

Port Development and Environmental Enhancement

The Port Development and Environmental Enhancement alternative focuses on using dredge material for port development and environmental enhancement (Figure 1). This alternative would result in new land at the Northwest Slip, a CDF at Berths 243-245 for disposal of contaminated sediments, and approximately 50 acres of new shallow water habitat. In addition, a 40-acre Eelgrass Habitat Area would be constructed on approximately 16 acres of the proposed 50-acre CSWH Expansion and on approximately 24 acres of the existing CSWH Area. The remainder of clean material (0.004 mcy) would be disposed of at the ocean disposal site.

Environmental Enhancement and Ocean Disposal

The Environmental Enhancement and Ocean Disposal alternative focuses on environmental enhancement related uses of the remaining material and does not create any new land areas (Figure 2). Under this alternative, dredge material would be used to create approximately 50

acres of new shallow water habitat and the 40-Acre Eelgrass Habitat Area. Contaminated sediments would be placed in the Anchorage Road Soil Storage Site and remaining clean material (0.440 mcy) would be disposed of at the ocean disposal site.

No Action

Under the No Action Alternative, since all approved disposal sites have been completed, no further dredging would take place and the Channel Deepening Project would not be completed (Figure 3). Approximately 1.700 mcy of material within the Main Channel and berthing areas would remain to be dredged and disposed. A total of 0.815 mcy of surcharge on Southwest Slip Area would remain to be removed and disposed. An estimated 0.080 mcy of contaminated material would remain within the Main Channel of the Port. The opportunities for beneficial use of dredged material identified for port development and environmental enhancement would be deferred until such time that other sources of material could be made available.

Table 1. Disposal volume summary for three alternatives (mcy).

Disposal Sites	Port Development and Environmental Enhancement	Environmental Enhancement and Ocean Disposal	No Action
Berths 243-245 (a)	0.368 (b)	-	-
Northwest Slip	0.128 (b)	-	-
Eelgrass Habitat Area	0.800	0.800	-
CSWH Expansion	1.700 (b)	1.700 (b)	-
ARSSS (a)	-	0.080	-
Ocean Disposal Site (mcy)	0.004	0.440	-
Total Volume	3.000	3.020	-

(a) Site would be used for material unsuitable for ocean disposal

(b) Additional dredging of 0.090 mcy for Berths 243-245, 0.050 mcy for Northwest Slip, and 0.040 mcy for CSWH is required for trenching dike foundations and is not included in the volumes presented in this table.

DESCRIPTION OF BIOLOGICAL RESOURCES

The fish and wildlife resources of the Los Angeles Harbor part of San Pedro Bay are reported in great detail and summarized in the 1988 and 2000 biological baseline reports (MEC 1988, 2002). The studies reported in these documents were conducted by the Port using the advice and guidance of the biological resource agencies. Only a brief summary of available information is provided herein, based primarily on the 2000 biological baseline report. The important biological resource groups of San Pedro Bay are marine fishes and water-associated birds.

Fish populations of San Pedro Bay (including Long Beach and Los Angeles harbors) are diverse and abundant. During surveys conducted in 2000 a total of 74 species were recorded and an estimated 44 million fish occupied both harbors. Generally, schooling fishes were the most abundant species recorded. The five most abundant species accounted for 92% of the total fish populations. These included northern anchovy (*Engraulis mordax*), white croaker (*Genyonemus*

lineatus), queenfish (*Seriphus politus*), Pacific sardine (*Sardinops sagax*), and topsmelt (*Atherinops affinis*). Other relatively abundant species included shiner surfperch (*Cymatogaster aggregata*), salema (*Xenistius californiensis*), and jacksmelt (*Atherinopsis californiensis*). Less numerous but ecologically or recreationally important species recorded were California barracuda (*Sphyræna argentea*), California halibut (*Paralichthys californicus*), barred sand bass (*Paralabrax nebulifer*), California corbina (*Menticirrhus undulatus*), white seabass (*Atractoscion nobilis*), California grunion (*Leuresthes tenuis*) and several species of sharks, and rays. More species were collected at the shallow water stations than deep water stations, and generally fewer species were caught in the inner harbor than outer harbor.

Higher biological values are attributed to shallow water areas in the harbor due to the nursery function, greater production, and relatively high abundance of fish. That is, more fish are there because they find good conditions for growth and sustenance. Studies conducted in the shallow areas of the Outer Harbor, including the Pier 300 Shallow Water Habitat (MEC 1988, 1999) which was created in 1984, and the Cabrillo Shallow Water Habitat (MEC 1999) which was constructed in 1997, have shown that these areas have higher diversity and greater abundance of fish and invertebrates than the deeper soft bottom portions of the harbor. There is also a greater abundance of juvenile fish present in these areas and they appear to enter these areas relatively soon after they have been created. As a result of the high numbers of small fish in these areas, more birds are also found there because, for the most part, they are fish-eating birds and find more food there.

Los Angeles Harbor provides a valuable habitat for foraging, resting, and breeding birds. During the 2000-2001 monitoring year, a total of 99 species, representing 31 families were observed within San Pedro Bay. Of these species, 69 are considered to be dependent on marine habitats. Gulls comprised 44.5 percent of the birds observed in 2000, with aerial foragers (22.4 percent) and waterfowl (21.4 percent) also common. The remaining 21.7 percent of the birds were small and large shorebirds, wading/marsh birds, raptors, and upland birds. The most abundant birds included several gull species (western, Heermann's, and California), brown pelican, elegant tern, western grebe, Brant's cormorant, double-crested cormorant, surf scoter, and rock dove. Survey zones in the vicinity of Cabrillo Beach and Fish Harbor supported the highest densities of birds in Los Angeles Harbor.

The State and Federal Endangered California least tern (*Sterna antillarum browni*) is a piscivorous sea bird that makes significant breeding use of San Pedro Bay (KBC 2005). The least tern has a long history of nesting on Terminal Island and Pier 400 in the Port of Los Angeles (Figure 4). The nesting site of this bird is relatively flat, barren sandy areas where it lays and incubates its eggs, and chicks fledge. Its nesting period extends from April through August. During the remainder of the year, the birds are gone from the area. The location of the tern nesting site(s) in the Port has varied from year to year (KBC 1998) depending largely on the Port's development activities. The LAHD manages the nest site pursuant to a Memorandum of Agreement with the USFWS, USACE, and CDFG (LAHD *et al.* 2006). A 15.7-acre fenced nesting site is currently located at the southern tip of Pier 400 although nesting also occurs outside of this designated area.

Least tern nesting in the Port has been monitored annually since 1973. The greatest documented nesting activity for the tern has occurred since the birds utilized the newly constructed Pier 400 as a nesting site in 1997 (Figure 4). The number of recorded nests peaked at 1,322 in 2005, then declined to 906 in 2006, and further declined to 710 in 2007 (KBC 2007). The principal foraging areas for least tern in the harbor vary somewhat from year to year, but during the chick rearing period, the shallow water areas of the harbor appear to be used heavily, probably due to the relatively greater abundances of prey fish found there (see MEC 1988, 1999). Measures to protect the least tern during channel dredging and landfill construction (USFWS 1992) have proven very successful. Those measures have included nesting area and predator management, shallow water area conservation, and protection of water quality in the shallow water areas during breeding season.

The Federal Endangered brown pelican (*Pelecanus occidentalis*) can also be found in large numbers in San Pedro Bay (MEC 2002). This bird breeds on the offshore Channel Islands, and forages widely along the Southern California coast on small fishes. It makes heavy use of the Outer Harbor breakwaters for roosting.

Several other piscivorous seabirds began nesting in the Port following construction of Pier 400 (Table 2). The royal tern (*Sterna maxima*), Caspian tern (*Sterna caspia*), elegant tern (*Sterna elegans*) and black skimmer (*Rhynchops niger*) had each been recorded nesting on Pier 400 up until 2005 (KBC 2005). No nesting was recorded in 2006 or 2007 (KBC 2007). The new landfill initially provided a large expanse of suitable nesting habitat directly adjacent to a well developed forage base (small fish) in the Outer Harbor; however, development of Pier 400 is now almost complete and undeveloped areas outside of the least tern nesting site contain very little, if any, suitable nesting habitat.

Table 2. Nest numbers for large tern species at Pier 400, 1997-2005 (KBC 2005).

Species	1997	1998	1999	2000	2001	2002	2003	2004	2005
Caspian Tern	25	146	250	336	160	151	170	125	125
Elegant Tern	0	3,662	0	3,656	166	5,598	1,516	10,170	2,700
Royal Tern	0	17	0	0	1	5	5	8	0
Black Skimmer	0	10	170	115	0	0	0	25	0

Two areas supporting significant eelgrass beds were mapped in Los Angeles Harbor during 2000. Near-shore waters off Cabrillo Beach supported approximately 42 acres of eelgrass beds and Pier 300 supported approximately 43 acres. An additional 14.5-acre eelgrass mitigation area was constructed adjacent to the Seaplane Anchorage in 2003 and supported approximately 13 acres of eelgrass in 2006 (Merkel & Associates 2006). The proliferation of this shallow water, aquatic vegetation which has special protection under the Clean Water Act, is likely due to improved water quality that has occurred in the harbor in recent years. Eelgrass provides excellent habitat for invertebrates and small fish.

SAN PEDRO BAY LANDFILL MITIGATION HISTORY

The agency consensus mitigation goal for San Pedro Bay landfill impacts has been no net loss of habitat value for in-kind resources, as near to the site of loss as feasible, in advance but not later than concurrently with the fill (USACE and LAHD 1992a, Appendix B). For the last many years, the USFWS, CDFG, NMFS, and the LAHD have been designing and executing mitigation plans for port development projects. The process employs a modified habitat evaluation procedure and involves evaluation of the habitat value in the impacted harbor area and compares predicted habitat value increases at conceptual mitigation areas (Figure 5). This accounting of debits and credits is written into each of the mitigation agreements that have already been completed.

On-Site Creation of New or Shallow Water as Landfill Mitigation

Following credible measures for avoiding and minimizing impacts to fish and wildlife, on-site mitigation has been conducted in the Port consisting of limited creation of new water area and creation of shallow water from deep.

In 1984 our agency, NMFS, CDFG and the LAHD entered into the Inner Harbor Mitigation Bank (LAHD *et al.* 1984) which created a system of debits and credits within the Inner Harbor of the Port of Los Angeles. This agreement took into account all gains and losses of water occurring at the Port since the passage of the Clean Water Act in 1975. With a beginning credit of approximately 17 acres, this bank has been debited and credited on a number of occasions and presently contains approximately six credits (Table 3). The use of this bank is restricted to water areas within the Inner Harbor.

Table 3. Mitigation credits available for landfill in the Port of Los Angeles.

Mitigation Bank	Approximate Credits Available(a)	Value in Deep Outer Harbor (b)	Value in Shallow Outer Harbor (b)	Value in Inner Harbor Slips (b)
Bolsa Chica	106	106	71	212
Outer Harbor	49	49	33	98
Inner Harbor (c)	6	NA	NA	6
Total	161	155	103	316

(a) Approximately 67 credits, to be confirmed from as-built drawings, need to be debited for completed Channel Deepening Projects leaving about 88 available for new projects.

(b) Value of credits is 1/1 for Outer Harbor deep habitat, 1/1.5 for Outer Harbor shallow water habitat, and 1/0.5 for Inner Harbor

(c) NA = not applicable; Inner Harbor Bank credits not available

In 1985, as a condition of the Harbor Deepening Project in the Port of Los Angeles, the USACE created 190 acres of shallow water (*i.e.*, water less than -20 feet MLLW) as mitigation for the filling of 190 acres of shallow water to make the land area now called Pier 300. The shallow water created, now called the Pier 300 Shallow Water Habitat, has been the subject of several

biological investigations (MEC 1988, 1999) and shown to be a highly productive habitat. It is also an important foraging area for the California least tern (KBC and Aspen Environmental Group 2004).

The Outer Harbor Mitigation Bank was established in 1997 to capture excess habitat value created when the Port of Los Angeles constructed the Cabrillo Shallow Water Habitat in the Outer Los Angeles Harbor (LAHD *et al.* 1997b). Approximately 137 credits were deposited in this mitigation bank as a result of the construction of 272 acres of shallow water habitat (Figure 6, Phase 1 and 2). Presently this mitigation bank contains approximately 49 credits (Table 3). An additional 54 acres of shallow water habitat was added to this area in association with the Channel Deepening Project (Figure 6, Phase 3) but will not be credited to the mitigation bank until final values are confirmed through as-built drawings.

Coastal Wetland Restoration as Landfill Mitigation

Following all credible measures for avoiding and minimizing impacts to fish and wildlife, and the limited availability of on-site mitigation, the primary habitat loss compensation measure has been creation off-site of new, tidally influenced waters and wetlands or restoration of tidal flows to suitable, low-lying coastal areas. These types of mitigation projects can create replacement habitats of value to many of the same species harmed by harbor landfills or ecological equivalent species. Hence, even though the habitat types being exchanged are not exactly the same, fish and wildlife resources are. Another factor in this agency consensus view is that Southern California coastal wetlands have been diminished nearly 90 percent in the last 100 years, and that those wetland areas that do remain include many that are badly damaged by human activities, but are restorable.

Several of these coastal wetland restoration plans have involved habitat creation in advance of loss. Interagency agreements were used to formalize this process with one port or the other. Each agreement included a habitat value tradeoff evaluation. Four such interagency agreements associated with off-site mitigation have been completed.

The first landfill mitigation agreement, completed in 1984 with the Port of Long Beach, involved excavation to below mean sea level of about 28 acres of floodplain, high ground in Upper Newport Bay Ecological Reserve, City of Newport Beach, Orange County. The Port completed a landfill at Pier A. The tradeoff ratio consisted of 1.5 acres of inner harbor landfill for 1.0 acres of new, tidally influenced water area created at Upper Newport Bay. The Port of Long Beach encumbered their remaining mitigation credits from this project in the implementation of their Pier J project.

A second agreement, completed in 1986 with the Port of Long Beach, called for restoration of tidal waters to about 110 acres of mostly upland at Seal Beach National Wildlife Refuge (Anaheim Bay in Orange County) to create mitigation credits for a 147-acre landfill at Pier J. The tradeoff ratio was 1.32 landfill acres for 1.0 acres of new estuarine waters and wetlands. The wetland restoration project was completed in March 1990 and was the subject of a five-year monitoring project (MEC 1995). The monitoring showed that fish populated the newly created water area rapidly and that a productive and mature marine habitat had become established

within two years of project construction and exceeded the habitat value of the harbor habitat within five years. This area also had the extra benefit of providing new foraging area for least terns in the Anaheim Bay area and has allowed for the natural expansion of the salt marsh.

A third off-site mitigation agreement with the Port of Los Angeles, primarily addressed habitat compensation for outer harbor landfills through excavation to restore tidal influence to Batiquitos Lagoon, in the City of Carlsbad, San Diego County. The tradeoff ratio was 1.062 landfill acres for each acre within the 360 acres subject to mitigation credit. The 381 credits generated by the Batiquitos Lagoon Restoration Project were expended through the construction of Pier 400 in the Outer Los Angeles Harbor. Batiquitos Lagoon was opened to tidal flushing in December of 1996 and was the subject of a ten-year monitoring program (years 1,2,3,5 and 10). Monitoring results following year five indicate that a flourishing marine habitat has established where previously there was virtually no marine habitat values (Merkel & Associates 2002). The number of marine fish alone has increased from approximately 5 species before restoration to 66 species five years later. The lagoon has significantly better water quality and there is significant increase in the number of shorebirds and several endangered bird species in the lagoon. Eelgrass planted in the lagoon is spreading rapidly and the existing salt marsh is expanding around the edges of the lagoon.

A fourth interagency agreement, the Bolsa Chica Mitigation Agreement, approved in 1996 (and amended in December of 1996, March of 1997, and December of 2005) established mitigation banks for the Port of Los Angeles and the Port of Long Beach (LAHD *et al.* 1996a, b, 1997a, 2005). This project acquired and restored a large portion of the Bolsa Chica Wetland lowland including 420 acres of full tidal area and 169 acres of muted tidal area for which the Ports received 610 credits. Of the 305 credits received by the Port of Los Angeles, 199 have been used as mitigation for the completion of Pier 400 and Berth 100 landfills. The Port of Los Angeles has approximately 106 credits remaining in this mitigation bank (Table 3).

IMPACTS OF THE PROPOSED PROJECT ON BIOLOGICAL RESOURCES

The proposed project involves deepening of East Basin Channel and several berthing areas to a depth of -53 feet MLLW (plus two feet of over-depth allowance) with the disposal of dredge material at a variety of locations including creation of shallow water and new land. The proposed dredging of deep (i.e., greater than 20 feet) water areas of San Pedro Bay does not involve significant habitat loss or degradation warranting mitigation.¹ Anticipated impacts are associated with disposal of dredge material and include: 1) the permanent elimination of fish and wildlife habitats associated with the in-bay disposal sites/landfills; 2) a temporary reduction in available foraging habitat for piscivorous bird species, including the California least tern due to turbidity generated by the project; and 3) the potential modification of water circulation and degradation of habitat in shallow Outer Harbor waters as a result of the placement of fills.

¹ Historically, mitigation has been required for dredging that deepens shallow water areas, 20 feet deep or less, because the deepening reduces or eliminates the fish nursery and bird foraging values. No such impacts are anticipated with this project.

Landfill

Disposal sites that would result in landfill within the Port include Berths 243-245 (8 acres), Northwest Slip (5 acres), and the Eelgrass Habitat Area (1.7 acres). The Port Development and Environmental Enhancement alternative would result in a total of 14.7 acres of landfill and the Environmental Enhancement and Ocean Disposal would result in 1.7 acres of landfill.

Turbidity

The disposal of dredge material to create shallow water creates a temporary impact but a long term benefit due to the higher values for fish and wildlife attributable to shallow water. The construction of rock dikes and placement of dredge material in the Cabrillo Shallow Water Habitat Expansion Area and Eelgrass Habitat Area would cause turbidity over an existing California least tern foraging area (Cabrillo Shallow Water Habitat) for approximately one year. Due to the large disposal capacity provided by the CSWH Expansion Area and Eelgrass Habitat Area, construction of both of these sites is currently proposed during the California least tern breeding season, contrary to prior measures established to protect the least tern during channel dredging and landfill construction (USFWS 1992, USACE and LAHD 2000). The size and duration of the turbidity plume generated by dredging and disposal activities is dependent on grain size of the suspended material and current velocities at the time the activity is conducted (USACE and LAHD 2000); therefore, not readily predicted. The amount of turbidity is generally greater in the immediate vicinity of the filling operation than at the dredge site because the dredge operates with suction while the filling operation is by discharge from a pipe (USACE and LAHD 2000). However, based on past disposal operations, the extent of the turbidity plume is not expected to be greater than several hundred feet. Because several hundred acres of shallow water foraging habitat are available for piscivorous bird species within the Port, the area of disturbance would represent a minor portion of available foraging habitat.

Water Circulation

The Corps evaluated pre- and post-project water circulation conditions around the proposed disposal sites to identify potential long-term effects on water circulation within the Port (USACE 2008). This report concluded that water velocities would be lowered inside the Eelgrass Habitat Area and increased immediately to the west of the CSWH Expansion Area in the vicinity of the Inner Cabrillo Beach. A reduction in circulation within the Eelgrass Habitat Area has the potential to reduce water quality and habitat conditions for eelgrass; however the change was not considered significant. The predicted increase in velocity (west of the CSWH Expansion Area) of 10 cm/sec was determined to be insignificant but to have the potential to result in increased erosion of existing shallow water habitats, depending on the character of the bottom material and the values of instantaneous currents. Erosion of the substrate could reduce the suitability of the habitat in this area for benthic invertebrates and in turn reduce the value of the habitat for some fish species. Because the Memorandum of Agreement for the Outer Harbor Mitigation Bank (LAHD *et al.* 1997b) contains provisions for the monitoring and long-term maintenance of habitat values within the CSWH, we anticipate any changes in water circulation that result in a decrease in habitat value within the bank will be addressed by the LAHD.

RECOMMENDATIONS

The Fish and Wildlife Coordination Act states that "...wildlife conservation shall receive equal consideration and be coordinated with other features of water-resource development projects through the effectual and harmonious planning, development, maintenance, and coordination of wildlife conservation...." (16 U.S.C. 661). Should either of the two action alternatives be implemented, incorporation of the following recommendations would avoid, minimize, and compensate for impacts to fish and wildlife resources associated with completion of the Channel Deepening Project. These measures are adapted and revised from environmental documentation for the Channel Deepening Project (USACE and LAHD 2000).

In accordance with the Fish and Wildlife Coordination Act, we make the following recommendations:

1. The Port of Los Angeles shall apply credits available in existing mitigation banks, in accordance with the provisions of the Memorandum of Agreements governing their use², to compensate for loss of fish and wildlife habitat due to construction of fill at Berths 243-245, Northwest Slip, and the Eelgrass Habitat Area. Mitigation requirements for each alternative are presented in Table 4. Approximately 161 credits are available in existing banks for application at varying values to this project (see Table 3).
2. Unless specifically allowed by the CDFG and USFWS, the LAHD/USACE shall not allow turbidity from dredge and fill activities in the vicinity of the Cabrillo Shallow Water Habitat to extend over an area greater than 13-acres of shallow Outer Harbor waters (*i.e.*, less than 20 feet deep) at any one time during the April-to-September breeding season of the California least tern. This requirement shall be monitored as provided for in measure 3 below and shall be based on visually observed differences between ambient surface water conditions and any dredging turbidity plume.
3. The LAHD/USACE shall provide a qualified least tern biologist, acceptable to the USFWS and CDFG and approved by USACE, to monitor and manage the least tern colony during the nesting season. This program shall be carried out for up to one year following construction of the last element of the Port of Los Angeles Channel Deepening Project. The biologist shall coordinate with the agencies pursuant to the existing least tern MOA (LAHD *et al.* 2006) and shall:
 - a. Monitor nesting and fledgling success of the least tern colony and provide an annual report in the format provided in previous years.
 - b. Provide an education program for construction crews regarding the identity of the least tern and their nests, restricted areas and activities, actions to be taken if least tern nesting sites are found outside the designated least tern nesting sites (*e.g.*, Southwest Slip surcharge area).

² Bolsa Chica (LAHD *et al.* 1996a,b, 1997a, 2005), Outer Harbor (LAHD *et al.* 1997b), Inner Harbor (LAHD *et al.* 1984)

- c. Assist the USFWS and CDFG in predator control, prior to and during the least tern nesting season during the construction period.
 - d. Visually monitor and report to the dredging contractor or LAHD/USACE contract manager and CDFG/USFWS any turbidity from project dredging which extends over greater than 6.5-acres of shallow Outer Harbor waters.
4. If California least tern or other protected species nests are found outside of the designated nesting site (e.g., Southwest Slip surcharge area) during construction, then all work in the immediate area shall be halted, and the least tern biologist shall be notified immediately. An appropriate buffer zone around the nest(s) and protection shall be specified by the biologist in coordination with CDFG and USFWS.
 5. Prior to crediting the Outer Harbor Mitigation Bank for the CSWH Expansion, the LAHD/USACE shall modify the existing Memoranda of Agreement for this bank (LAHD *et al.* 1997b) consistent with previously agreed-upon procedures (*i.e.*, USACE and LAHD 2000, BIO-1, pages 3.4-18-20).

Table 4. Biological mitigation requirements for completion of the Channel Deepening Project.

Alternative	Disposal Sites Resulting in Landfill*									Total Credits
	Berths 243-245			Northwest Slip			Eelgrass Habitat Area			
	Acres	Value	Credits	Acres	Value	Credits	Acres	Value	Credits	
Port Development and Environmental Enhancement	8	0.5	4	5	0.5	2.5	1.7	1.5	2.6	9.1
Environmental Enhancement and Ocean Disposal	-	-	-	-	-	-	1.7	1.5	2.6	2.6
No Action	-	-	-	-	-	-	-	-	-	-

* Value of credits is 1/1 for Outer Harbor deep habitat, 1/1.5 for Outer Harbor shallow water habitat, and 1/0.5 for Inner Harbor.

- Not applicable

SUMMARY

The Fish and Wildlife Service, together with the National Marine Fisheries Service, and the California Department of Fish and Game have committed a great deal of effort in resolving the very significant fish and wildlife issues related to harbor developments in San Pedro Bay as has the Port of Los Angeles. We have been proud of our accomplishments with regard to identifying and implementing mitigation for landfills in Los Angeles and Long Beach Harbors. Our recommendations are to continue to proceed following the path that has been firmly established.

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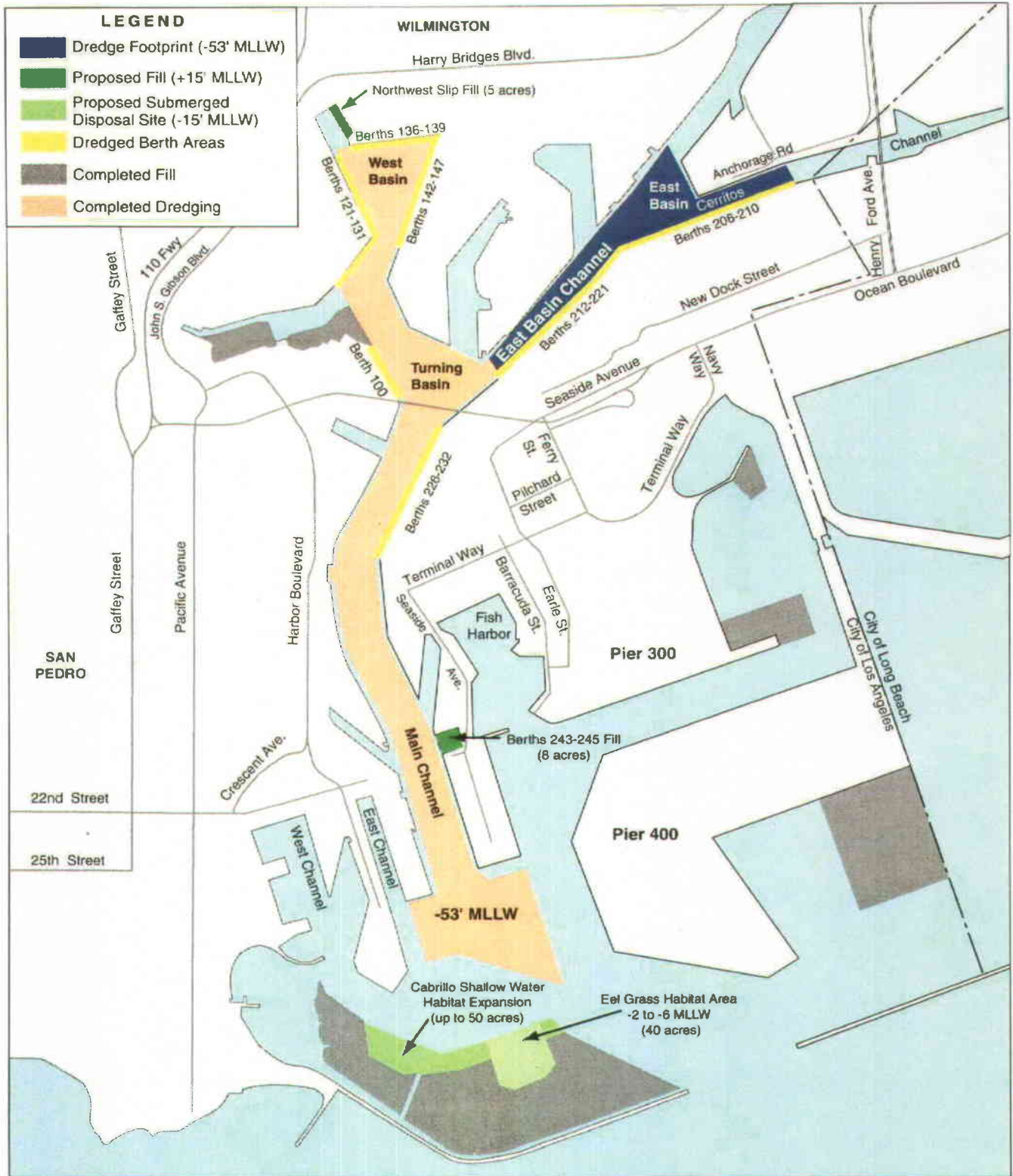
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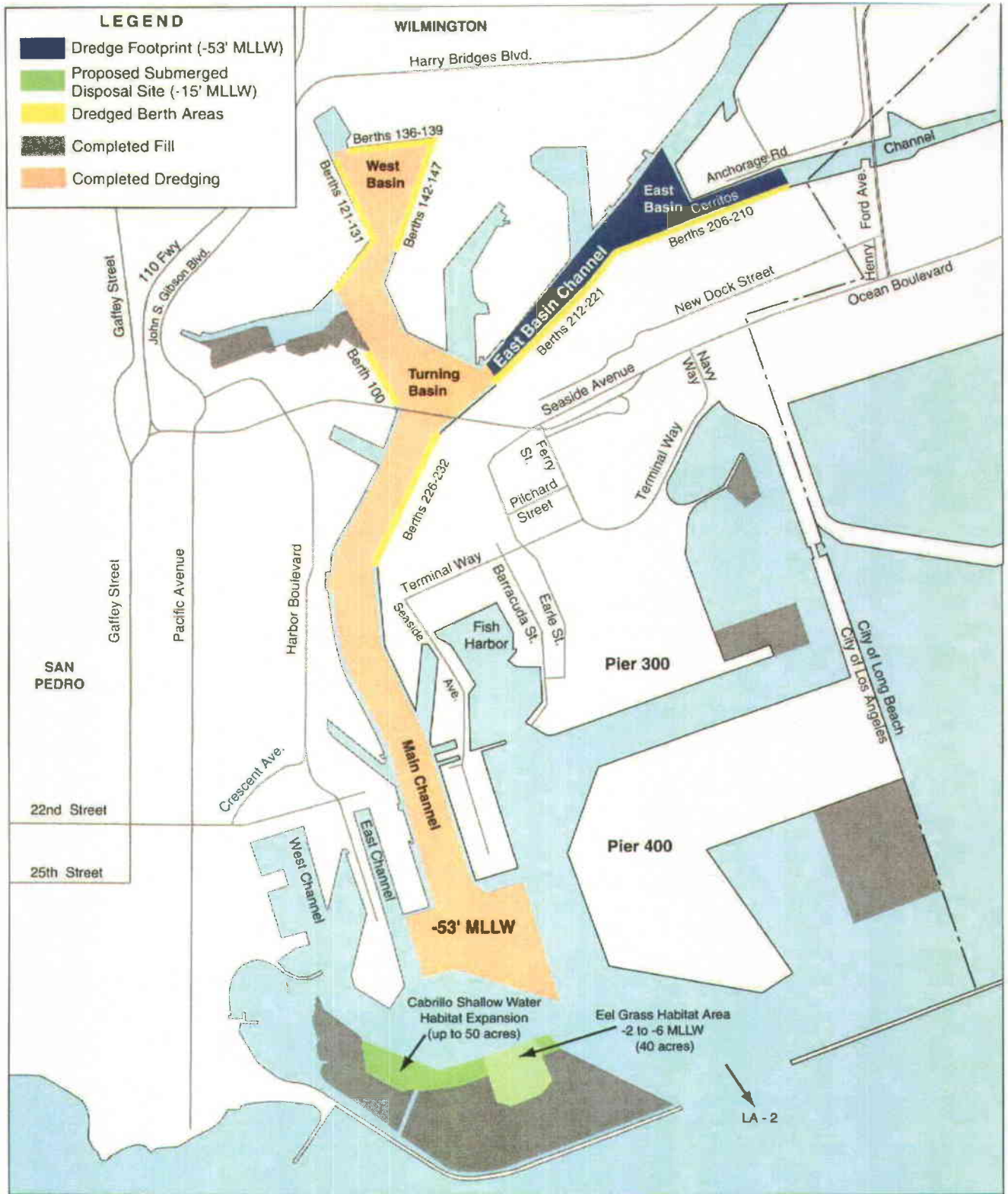
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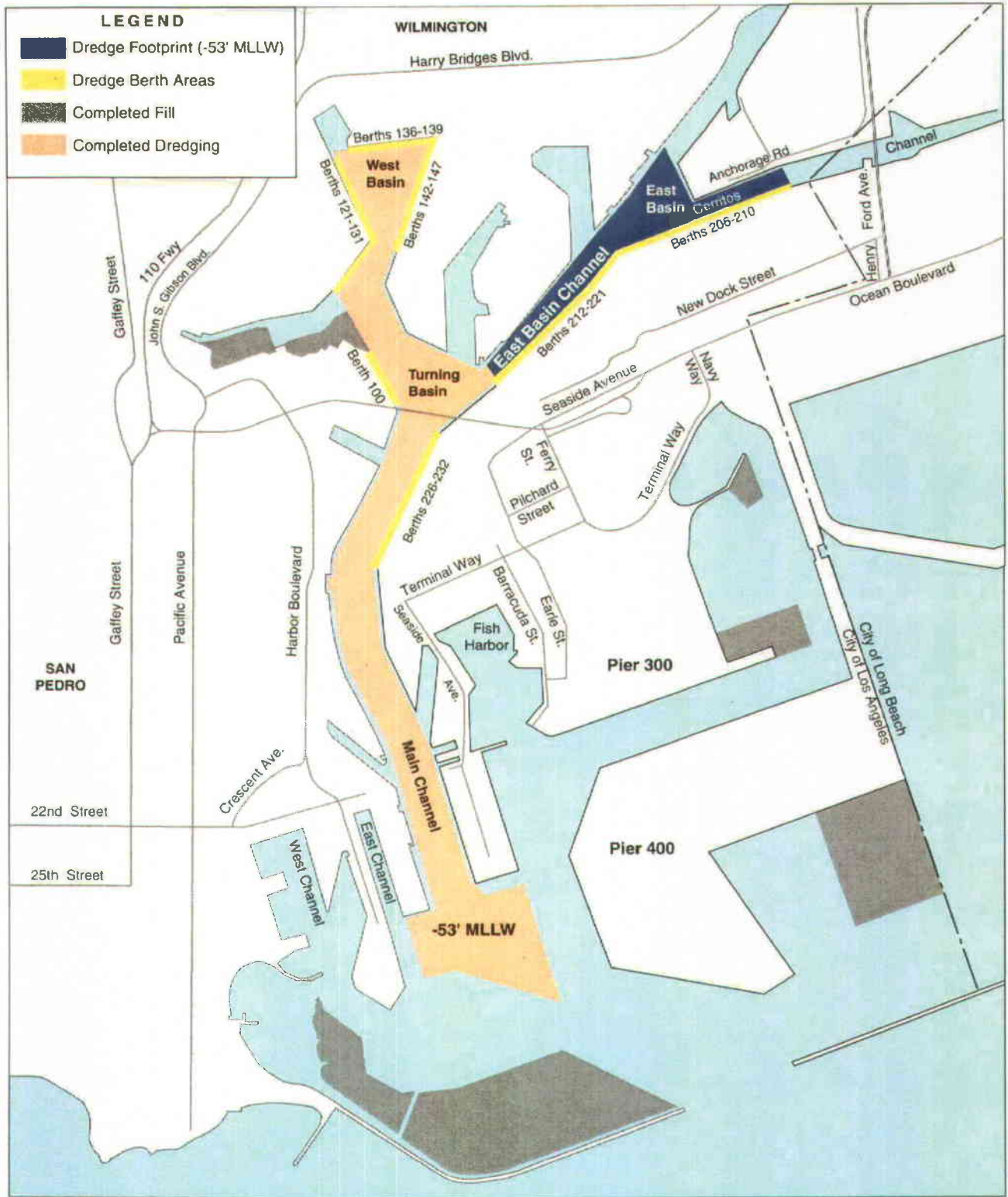
Alternative 1 - Port Development and Environmental Enhancement

Figure 1



Alternative 2 - Environmental Enhancement and Ocean Disposal

Figure 2

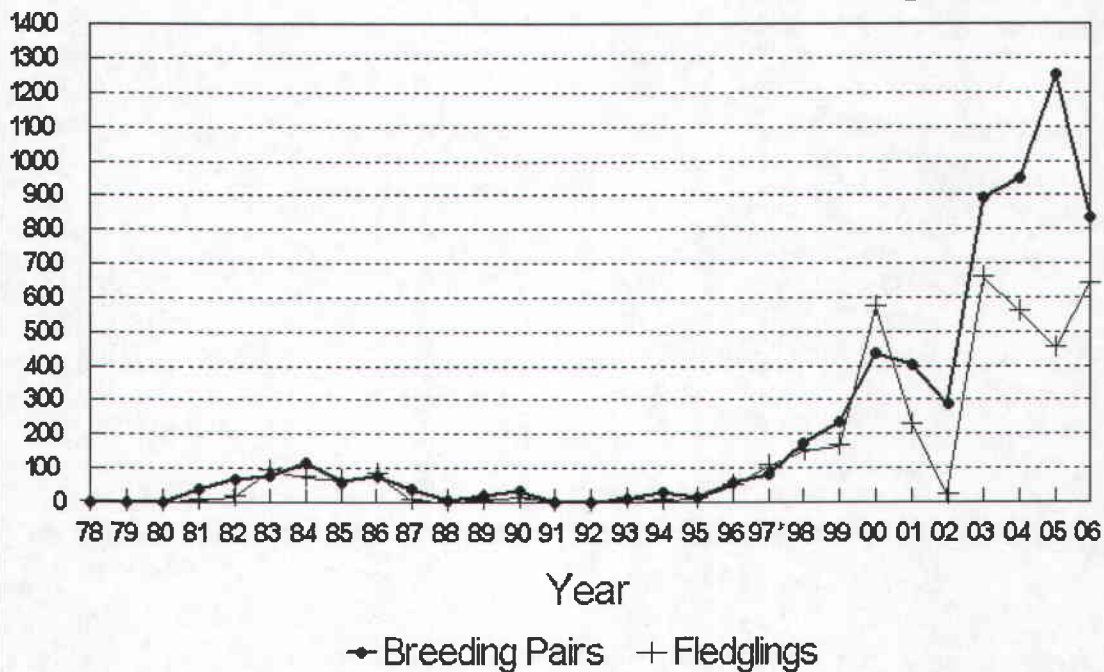


Alternative 3 - No Action

Figure 3

California Least Tern

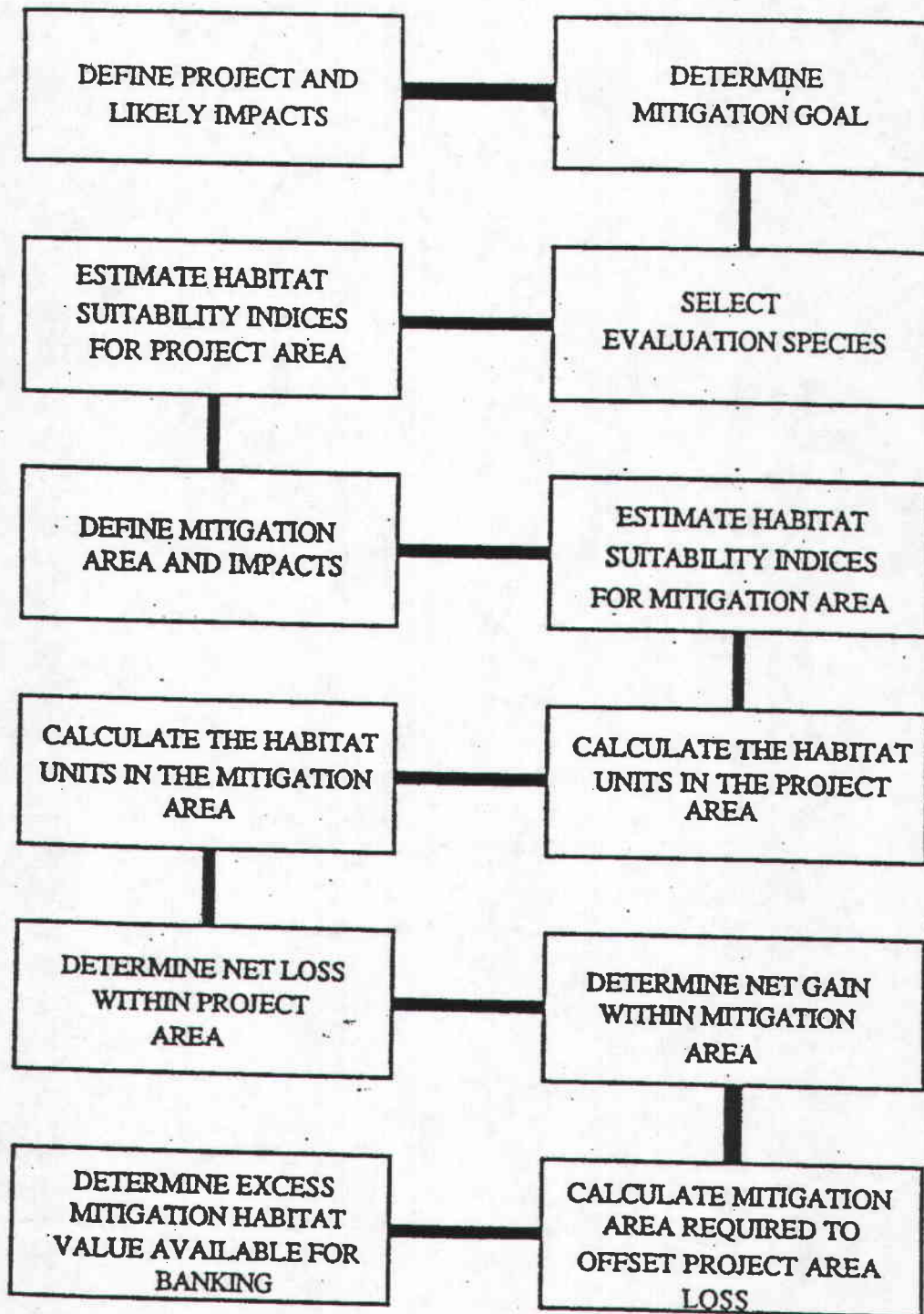
Terminal Island, Port of Los Angeles



Nest sites shifted to Pier 400 note: breeding pair and fledgling values are averaged when a range was given

California least tern nesting history in the Port of Los Angeles 1978-2006.

Figure 4



HABITAT EVALUATION PROCESS FLOW DIAGRAM

Figure 5

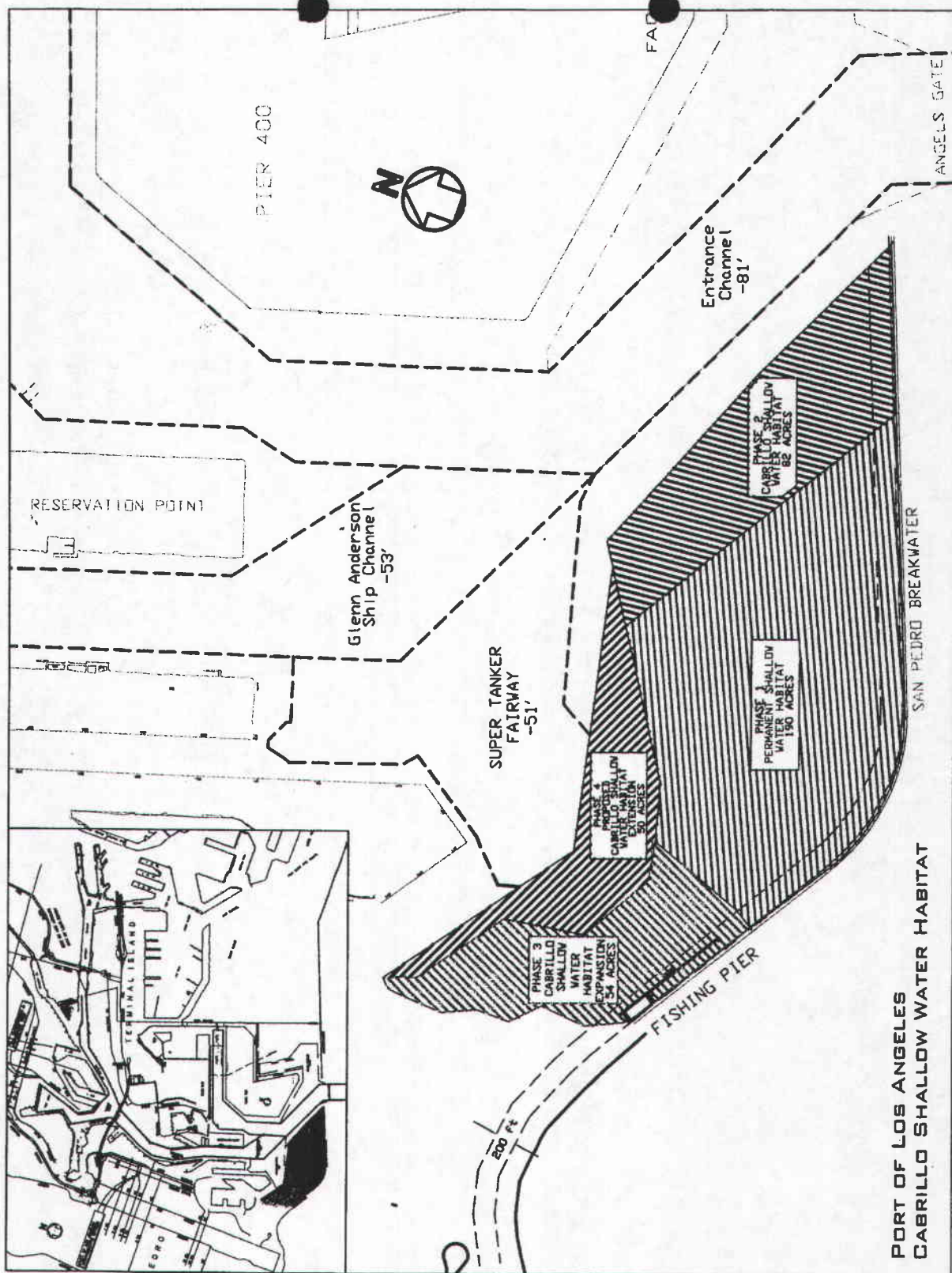


Figure 6