# FINDING OF NO SIGNIFICANT IMPACT (FONSI)
# CHANNEL ISLANDS/PORT HUENEME HARBORS
# MAINTENANCE DREDGING
# VENTURA COUNTY, CALIFORNIA

The U.S. Army Corps of Engineers, Los Angeles District (Corps) has conducted an environmental analysis in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended. The Final Environmental Assessment (EA) evaluates the potential environmental impacts associated with proposed operation and maintenance dredging and placement activities over a six-year period (2024-2029) for Channel Islands and Port Hueneme Harbors in Ventura County, California.

The Final EA, incorporated herein by reference, evaluated two alternatives: the No Action and the Proposed Action. Under the No Action Alternative, no Federal action would be undertaken to address the shoaling of the Federal navigation channels, entrance channels, and sand traps in Channel Islands and Port Hueneme Harbors. Federal placement of suitable dredged material on the beach/surf zone or nearshore environment would also not occur. The Proposed Action consists of biennial maintenance dredging of littoral drift material from federal navigation channels and sand traps in Channel Islands and Port Hueneme Harbors, as well as placement of suitable dredged material on nearby beaches and/or in the nearshore environment. The maximum total amount of sediment that would be dredged over the multi-cycle program period is 8,250,000 cy (up to 2,750,000 cy per dredge cycle). The Proposed Action is similar in kind to previous Federal maintenance dredging projects in Channel Islands and Port Hueneme Harbors. The Proposed Action is the recommended plan.

For both alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the Proposed Action are listed in Table i. All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the Proposed Action. Environmental commitments as detailed in the Final EA would be implemented, as appropriate, to minimize impacts. No compensatory mitigation is required as part of the recommended plan.

A Public Notice on a preparation of a draft EA was published on March 4, 2024, for a 30-day public review period and was distributed to interested parties soliciting review and comment. All comments submitted during the public review period were responded to in the Final EA (see Appendix A).

**Table i. Summary of Potential Effects of the Proposed Action**

| Resource | Insignificant Effects | Insignificant Effects as a Result of Mitigation | Unaffected by Action |
|---|---|---|---|
| Oceanography and Water Quality | | X | |
| Biological Resources | | X | |
| Air Quality | | X | |
| Noise | | X | |
| Recreation | | X | |
| Cultural Resources | | X | |
| Vessel Traffic and Safety | | X | |
| Ground Transportation and Traffic | | X | |
| Aesthetics | X | | |
| Environmental Justice | | | X |
| Greenhouse Gases | X | | |

In accordance with the 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act, the Corps prepared an Essential Fish Habitat (EFH) assessment for the Proposed Action. The Corps concluded that the Proposed Action would not result in a substantial, adverse impact to EFH. The Corps initiated EFH consultation with the NMFS on February 26, 2024, and concurrence was received on February 29, 2024. NMFS did not provide additional conservation measures. Correspondence related to this consultation is in Appendix C of the Final EA.

Pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended, the Corps determined that the Proposed Action would have no effect on the gray whale. The Corps determined that the Proposed Action may adversely affect the federally listed endangered California Least Tern (*Sternula antillarum browni*), federally listed threatened Western Snowy Plover (*Charadrinus nivosus nivosus*) and its Designated Critical Habitat. Formal consultation pursuant to section 7 of the ESA of 1973, as amended, was previously initiated with USFWS on August 31, 2022, and was completed with receipt of a Biological Opinion (BO) from USFWS on December 15, 2022 (Appendix D). USFWS confirmed this BO remains valid on June 14, 2024 (Appendix D).

Pursuant to the Coastal Zone Management Act of 1972, the Corps coordinated the Proposed Action with California Coastal Commission (CCC) staff. On February 8, 2024, a draft Consistency Determination (CD) was submitted to the CCC Federal Consistency Group for project concurrence along with the project description. On May 17, 2024, the CCC concurred CD-0001-24 was applicable on the Proposed Action. Correspondence related to the CD is in Appendix G of the Final EA.

A water quality certification pursuant to section 401 of the Clean Water Act (CWA) was obtained from the Los Angeles Regional Water Quality Control Board for the Proposed Action on April 29, 2024, and amended on July 29, 2024, and October 28, 2024. Correspondence related to this certification is in Appendix I of the Final EA. The placement of dredged or fill material associated with the recommended plan has been found to be compliant with CWA section 404(b)(1) Guidelines (40 CFR 230) (see Appendix B in the EA).

Pursuant to Section 106 of the National Historic Preservation Act of 1966 as amended, the Corps determined no historic properties would be affected by the Proposed Action. The State Historic Preservation Office concurred with the Corps' determination on March 5, 2024. Correspondence related to this consultation is in Appendix F of the Final EA.

All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives and coordination with appropriate agencies and officials has been completed. Based on this Final EA, the reviews by other Federal, State, and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the Proposed Action would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

November 14, 2024
Date

Andrew J. Baker
Colonel, U.S. Army
Commanding

# FINAL ENVIRONMENTAL ASSESSMENT
# FOR
# CHANNEL ISLANDS/PORT HUENEME HARBORS
# MAINTENANCE DREDGING

## VENTURA COUNTY, CALIFORNIA


**PREPARED BY**

**U.S. ARMY CORPS OF ENGINEERS**

**SOUTH PACIFIC DIVISION**

**LOS ANGELES DISTRICT**

**NOVEMBER 2024**

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# 1. INTRODUCTION

This environmental assessment (EA) covers a proposed six-year maintenance dredging program at Channel Islands and Port Hueneme Harbors in Ventura County, California (Figure 1), approximately 65 miles northwest of Los Angeles. The area would encompass approximately 3 miles of shoreline, extending from Hollywood Beach to Hueneme Beach (Figure 2). The proposed project consists of maintenance dredging of up to a maximum cumulative quantity of 8.25 million cubic yards (CY) from both harbors over a six-year period. The majority of dredged materials is expected to be placed on Hueneme Beach, with smaller quantities of material potentially placed on Silver Strand Beach or in the Hueneme Nearshore Placement Site.

## 1.1 Location and Background

### Channel Islands Harbor

Channel Islands Harbor is located in the city of Oxnard (Figure 1; Figure 3). Channel Islands Harbor is predominantly a recreational and light commercial harbor that also hosts a U.S. Coast Guard installation. The harbor entrance is protected by structural features consisting of a 2,300-foot-long offshore detached breakwater, entrance jetties, and an entrance channel leading to the harbor interior. The Entrance Channel and Basin is 3,400 feet long and varies in width from approximately 300 feet at the entrance to 600 feet within the harbor. Authorized depth of the Entrance Channel (Area A as shown in Figures 2 and 3) is -20 feet Mean Lower Low Water (MLLW). The Entrance Basin (Area E) may be dredged during this six-year cycle, if needed. Authorized depth of the Entrance Basin is -20 feet MLLW. The Inner Basin (Area F) will not be dredged during this six-year cycle and is not addressed in this EA.

The offshore detached breakwater and entrance jetties form a Sand Trap which was designed to accumulate sand prior to its entry into Channel Islands Harbor and Port Hueneme navigation channels. Sand which is carried downcoast by littoral drift is trapped in the Sand Trap and minimizes shoaling in the Entrance Channel. The Sand Trap is divided into three parcels as shown in Figures 2 and 3: Areas B, C, and D. The Sand Trap Areas B, C, & D were designed to be maintained at a depth of -35 feet MLLW. Area G will not be dredged during the first cycle but is designed to be maintained to -25 ft MLLW.

Channel Islands Harbor receives sediments from upcoast beaches and streams by the southerly littoral transport system. Maintenance dredging has been conducted routinely by the Corps since the 1960s at Channel Islands Harbor. During the most recent biennial dredge cycle (Fiscal Year 2023), 2,405,000 CY of material was dredged from the Channel Islands Harbor dredge template. The Corps is responsible for the federal structures at Channel Islands Harbor (North Jetty, South Jetty, and Detached Breakwater), maintenance of these structure is conducted as needed. Most recent repairs to the North Jetty, South Jetty, and Detached Breakwater were completed in 2021.

### Port Hueneme Harbor

Port Hueneme Harbor is located in the city of Port Hueneme (Figure 1; Figure 4). Port Hueneme Harbor provides critical Navy infrastructure for Naval Base Ventura County as well as providing the only commercial industrial deep-water harbor located between the Port of Los Angeles and port facilities within San Francisco Bay. Port Hueneme Harbor is principally an international trade port operating for 88 years in the region. The Port Hueneme Harbor contributes $2.2 billion to the region and provides 20,032 trade related jobs to the region’s economy.

This harbor is located approximately one mile southeast of Channel Islands Harbor (Figure 2). Port Hueneme Harbor features include two entrance jetties, an Approach Channel, Entrance Channel, Channel A, and a Turning Basin (Figure 4). The Approach Channel is approximately 1800 feet long, 600 feet wide, and has an authorized depth of -44 feet MLLW. The Entrance Channel is 1,400 feet long, 330 feet wide, and has an authorized depth of -40 feet MLLW. Channel A and the Turning Basin will not be dredged during this six-year cycle and are not addressed in this EA.

Construction of Port Hueneme Harbor was completed in 1940 and receives sediments from both southerly and northerly littoral transport. With the construction of Port Hueneme Harbor, downcoast sand supply was interrupted resulting in beach erosion damage. The first effort to address sand supply was a 2,000,000 CY dredging in 1953-1954 from the upcoast surf zone. This was met with severe issues that ultimately led to the 1958-1961 construction of the Channel Islands Harbor detached breakwater and sand trap to capture sand and provide a safe area from which sand could be dredged and bypassed immediately downcoast of Port Hueneme Harbor.

Previous routine maintenance dredging has been conducted by the Corps as needed at Port Hueneme Harbor dating back to 1975. During the 2008/2009 Port Hueneme Confined Aquatic Disposal (CAD) Project, a total of 685,000 CY of sand was hydraulically dredged from a prescribed area of the harbor's Turning Basin to create a CAD cell to facilitate confined aquatic disposal of contaminated sediment from the harbor. The uncontaminated dredged sand (685,000 CY) was pumped directly onto Hueneme Beach. Approximately 280,000 CY of submerged contaminated dredge material from the Port Hueneme Harbor was placed in the CAD site. Another 130,000 CY of clean sediment was then dredged from the Entrance Channel and placed on top to "cap" and sequester the contaminants, with a small amount of rock placed over the cap to protect capping material from being displaced by tides, near-shore currents, and propeller wash from passing vessels.

The channels of Port Hueneme were deepened in 2021 to the current authorized depths of – 44 feet and – 40 feet MLLW; approximately 384,000 CY of sediment was removed during the 2021 Port Hueneme Deepening Project. Approximately, 21,900 CY was deemed unsuitable for beach or nearshore placement and were placed within the Port Hueneme CAD in the Turning Basin. The remaining 362,100 CY was placed onto Hueneme Beach or in the Hueneme Nearshore Placement Site.

The Corps is responsible for the federal structures at Port Hueneme Harbor (West Jetty and East Jetty), maintenance of these structure is conducted as needed. Most recent repairs to the West Jetty and East Jetty were completed in 2000.

**Silver Strand Beach**

Silver Strand Beach is a heavily utilized recreational beach located in the city of Oxnard, between Channel Islands Harbor and Port Hueneme Harbor (Figure 2). Silver Strand beach is approximately 5,000 feet long and typically 200-300 feet wide. Construction of Channel Islands Harbor and Port Hueneme Harbor has altered the natural transport of littoral material to down coast beaches. Silver Strand Beach is heavily used during the summer. Beach replenishment through deposition of dredged materials is considered a beneficial use. On average, approximately 100,000 to 200,000 CY of material from the Channel Islands Harbor dredging program is deposited on Silver Strand Beach every two years.

### Hueneme Beach Placement Site

Hueneme Beach is located in the city of Port Hueneme, southeast and immediately adjacent of the Port Hueneme Harbor (Figure 2). Hueneme Beach Placement Site is approximately 3,500 feet long from the Port Hueneme East Jetty to approximately 500 feet south of Market Street. The beach width varies from 0 to 800 feet wide. Construction of Port Hueneme Harbor has altered the natural transport of littoral material to downcoast beaches. This beach is heavily used during the summer. Beach replenishment is necessary to maintain the beaches for shoreline protection and recreational uses. Beach replenishment through placement of dredged materials is considered a beneficial use.

### Hueneme Nearshore Placement Site

The Hueneme Nearshore Placement Site is located offshore of Hueneme Beach (Figure 2). The Hueneme Nearshore Placement Site is approximately 3,700 feet long, 1,000 feet wide, and ranges in depth from –10 feet to –30 feet MLLW with an average depth of –20 feet MLLW. Placement of dredge materials in the nearshore zone is a proven method of nourishing adjacent and downcoast beaches. During the 2021 Port Hueneme Deepening project, approximately 140,000 CY were placed in the Hueneme Nearshore Placement Site. During the previous twelve years no material from the Channel Islands Harbor/Port Hueneme Harbor dredging programs were deposited in the Hueneme Nearshore Placement Site, although this remains an option for a small portion of the material (Table 2) depending on needs, constraints, or opportunities at the time of dredging.

### Surface Warfare Engineering Facility Beach

Surface Warfare Engineering Facility (SWEF) Beach is located on Naval Base Ventura County (NBVC) – adjacent to Silver Strand Beach and at the entrance of Port Hueneme Harbor (Figure 2). A security fence separates SWEF Beach from Silver Strand Beach. Wind-blown sand from Silver Strand Beach naturally accumulates in the Drift Sand Pile on NBVC, and spills onto Venice Road within NBVC.

## 1.2 Project Purpose and Need

**Purpose:** The project would serve the following purposes: (1) dredging to maintain the Federal navigation channels at authorized depths and widths which are subject to continual filling by littoral transport processes; (2) biennial dredging of the sand traps at Channel Islands Harbor to maintain a littoral sediment balance to the feeder beach (Hueneme Beach Placement Site); (3) assure the continued safe navigation for maritime traffic within the harbors by minimizing the risk of hazardous shoaling conditions; and (4) provide beach nourishment material for downcoast beaches (Silver Strand and Hueneme Beach).

**Need:** Federal navigation channels within Channel Islands and Port Hueneme Harbors are subject to continual infill of sand from littoral processes. Without frequent dredging, sediment would eventually shoal the channels to such an extent that vessels would not be able to navigate safely. Degradation of safe navigation into and out of Channel Islands and Port Hueneme Harbors would have significant economic impact to the region, disrupting commerce from the industrialized port facilities of Port Hueneme, and adversely effecting commercial and recreational benefits associated with Channel Islands Harbor. This would also adversely affect U.S. Coast Guard and Navy operations from these harbor facilities. In addition, the presence of Port Hueneme Harbor interrupts the natural transport of sand, resulting in decreased nourishment and increased erosion of downcoast beaches.

## 1.3 Authorization

The Channel Islands project for construction and maintenance was authorized by section 101 of the Rivers and Harbors Act of 1954 (P.L. 83-780) on the basis of House Document No. 362 (HD 83-362). HD 83-362 includes the Chief of Engineers' Report ("Chief's Report) which recommended a harbor for light-draft vessels about one mile northwest of the existing deep-draft harbor at Port Hueneme, and shore protection works to remedy the erosion caused by construction of the deep-draft harbor. The navigation improvements to consist of an entrance channel, two parallel jetties, entrance basin, and a channel to and including an inner basin, with deposition of dredged material to restore downcoast shoreline/beaches. The shore protection works to remedy the erosion caused by construction of the deep-draft harbor at Port Hueneme to consist of an offshore breakwater to form a sand trap and initial and then biennially dredging about 1 million cubic yards of material from the sand trap and depositing the dredged material on the feeder beach on Hueneme Beach so long as Federal ownership of lands and improvements necessitates such protection. The harbor for light-draft vessels authorized by the Rivers and Harbors Act of 1954 was named Channel Islands Harbor by the local operating agency, and P.L. 90-46, approved July 4, 1967, adopted the name "Channel Islands." The project authorization was modified by section 305 of the Water Resources Development Act of 1996 (P.L. 104-303) to "authorize biennial dredging and sand bypassing at an annual downcoast replenishment rate to establish and maintain a littoral sediment balance which is estimated at 1,254,000 cubic yards per year. The cost of such dredging and sand bypassing shall be 100 percent Federal as long as Federal ownership of the entrance channel and jetties of the Port of Hueneme necessitates restoration and maintenance of the downcoast shoreline." Dredging of Area G may go forward in cycle 2 (2026-2027) or cycle 3 (2028-2029) under this authority or per an additional dredging request from a non-federal sponsor.

The Port Hueneme project for construction and maintenance was authorized by section 101 of the Rivers and Harbors Act of 1968 (P.L. 90-483) on the basis of House Document 362 (HD 90-362). HD 90-362 includes the Chief's Report which recommended adoption of the existing deep-draft harbor at Port Hueneme as a Federal project and improvement of the harbor by deepening the central basin and widening, deepening, and lengthening channel A. The central basin and channel A were deepened in 1975. The Approach Channel and Entrance Channel were deepened in 2021 pursuant to section 107 of the Rivers and Harbors Act of 1960, as amended (33 USC 577).

# 2. PROJECT ALTERNATIVES

The proposed project criteria requirements include legislation that authorizes maintenance dredging at Channel Islands Harbor and Port Hueneme Harbor to ensure continued safe navigability within the harbors and to biennially maintain a littoral sediment balance from the Channel Islands Harbor sand traps to the feeder beach (Hueneme Beach Placement Site).

The Rivers and Harbors Act of 1954, Section 101 authorizes maintenance dredging operations to occur biennially at Channel Islands Harbor from the sand traps and placement of dredge material at the Hueneme Beach Placement Site to maintain a littoral sediment balance; therefore, no other alternative sites or alternative timing are considered viable for this phase of the project. The Rivers and Harbors Acts of 1954 and 1968, Section 101 authorizes maintenance dredging to specifically occur at Channel Islands and Port Hueneme Harbors, respectively, to assure continued safe navigability within the harbors.

Evaluation criteria have been established to evaluate potential alternatives. The criteria are: 1) timing; 2) technical feasibility and effectiveness; 3) environmental impacts; and 4) cost. Potential alternative timing, dredge footprints and dredged material placement areas were considered but were determined to be infeasible as they would either not fully meet the purpose and need statement or would not be technically or logistically feasible or would be inconsistent with project authorization. For instance, dredging less frequently or dredging less area than the proposed action within the Federal Navigation Channel would potentially leave areas in an unnavigable or unsafe condition as the channels shoal in. Disposing of material further downcoast or offshore would result in additional environmental impacts due to increased emissions, reduced recreational opportunities on adjacent downcoast beaches to the harbor, increased timeframe for dredging and disposal and expanded footprint. Placement of material in upcoast areas would result in additional shoaling as the material moves back into the harbors through littoral transport and is inconsistent with project authorization. Congressional authorization associated with Channel Islands Harbor and Port Hueneme Harbor must occur specifically at these two harbors, no other alternative sites for maintenance dredging are considered viable.

## 2.1 Proposed Action

Dredging would occur in three biennial cycles (every two years, beginning in years 1, 3 and 5) over a six-year period (2024-2029). This schedule allows for maximum sediment loading within the Channel Islands Harbor dredge template while still allowing for safe navigability. However, the amount of sediment buildup in the Port Hueneme Harbor is not normally sufficient to require biennial dredging, so that area would likely be dredged less frequently within the six-year period, dependent on sediment discharges to the littoral cell and wave transport conditions.

At Channel Islands Harbor, material would be dredged from the Entrance Channel, Sand Traps, Entrance Basin (Area E), and Area G. Note, only a portion of Area E was sampled and deemed physically suitable by the Southern California - Dredged Material Management Team (SC-DMMT) for placement at the Hueneme Beach Placement Site, consistent with the area that is planned to be dredged in the first cycle. If the remainder of Area E requires dredging during the six-year period, that area would be tested and evaluated for suitability prior to dredging. Area G would not be dredge during the first cycle. Each biennial dredging cycle could remove up to 2.5 million CY of material from the entire Channel Islands Harbor dredge template. Dredging would occur to authorized depths plus 2 feet of allowable over-depth. Authorized depths are as follows; -20 feet Mean Low Water (MLLW) at the Entrance Channel and Entrance Basin (Area E), -35 feet MLLW at the Sand Trap Areas B, C, & D, and -25 feet MLLW at Area G.

At Port Hueneme Harbor, material would be dredged from the Approach Channel and Entrance Channel. Note, only a portion of the Entrance Channel is currently approved by the SC-DMMT for dredging and placement at the receiver sites. If the remainder of the Entrance Channel requires dredging during the six-year period, that area would be reevaluated for suitability, as discussed in more detail below. The proposed dredging is planned to be accomplished as needed on the same schedule as the dredging of Channel Islands Harbor (i.e., during one or more of the three biennial cycles), removing up to 250,000 CY of material per dredge cycle. Dredging would occur to authorized depths plus 2 feet of allowable over-depth. Authorized depths are as follows: -44 feet MLLW at the Approach Channel and -40 feet MLLW at the Entrance Channel.

Project authorization mandates a majority of dredge material from Channel Islands Harbor dredge template be placed on Hueneme Beach to fulfill established commitments for sand bypass. Placement at Silver Strand Beach (up to 250,000 CY per cycle) may also occur on an as-needed basis to offset periodic erosion. Total project dredging would not exceed 8.25 million CY cumulatively for all three biennial dredging cycles at both harbors over the six-year period.

Throughout the six-year period, a cumulative total of approximately 10,000 CY may be removed from the Drift Sand Pile on NBVC and placed within the SWEF Beach pipeline corridor to secure the discharge pipeline as needed using equipment such as an end loader. The contractor may completely demobilize the discharge pipeline at the end of each biennial cycle or potentially: (1) bury or leave above ground the discharge pipeline on SWEF Beach for the duration of the six-year construction contract, and/or (2) bury the discharge pipeline on Silver Strand Beach for the duration of the six-year construction contract.

Additional subsurface and surface sediment samples (Vibracore and grab samples) may be taken as needed within the Action Area (defined in Section 3.1 of this EA) during the six-year period.

To avoid potential impacts to protected resources, no construction/dredging activities (i.e., equipment mobilization, dredging, equipment demobilization) would be conducted within the Channel Islands and Port Hueneme Harbors and adjacent beaches (Silver Strand, Hollywood Beach, SWEF Beach, and Hueneme Beach) and Hueneme Nearshore Placement Site, from March 1 through September 30. Biennial dredging and beach placement would occur between October 1 and February 28 to accommodate sensitive environmental windows (western snowy plover nesting season – March 1 – September 15; California least tern nesting season – April 1 to September 15; California grunion – March 1 to August 31), and nonpeak beach use. Work windows and timelines within the allowable work window (October 1 – February 28) are variable due to weather patterns and other factors such as equipment availability, working performance of the equipment, contractual commitments, and availability of funds. Marine staging areas would be located within Channel Islands Harbor, in the lee of the Channel Islands detached breakwater, and within Port Hueneme Harbor. Terrestrial staging areas would occur immediately adjacent to Channel Islands Harbor, on Silver Strand Beach, and at Hueneme Beach. Construction operations would occur seven days a week, 24 hours a day. The Environmental Commitments (Section 6.2) are included as part of the Proposed Action.

### Construction Equipment

Work could be accomplished by a variety of dredge types. Table 2 shows potential dredge types to be used and their respective sediment placement locations and methods. To ensure public safety, the public would be restricted from entering or transiting through the active work site. When necessary, temporary fencing would be erected to further minimize public interactions with active construction areas.

**Hydraulic Pipeline Dredge:** Typically, a floating dredge with an attached hydraulic cutterhead is used to dredge the sand. Approximately 10,000 to 40,000 CY of sediment can be piped to the beach per day using a hydraulic dredge. The sand slurry is pumped through a pipeline onto the receiver beach for beach placement. Sand ramps would be built over the temporary pipeline to ensure emergency vehicles and the public can continue to access the beach, when safety permits. When necessary, as part of the placement operations a temporary sand dike may be built adjacent to the discharge location to maximize sediment retention within the beach placement site and to control runback into the surf zone. The dike would be constructed using existing sandy materials from the beach adjacent to the discharge point. The dike would be positioned parallel to the shoreline and seaward of the discharge point. The sand dike would be dismantled upon completion of discharge activities. Following pipeline transport, the sand is uniformly spread over the beach using conventional earth moving equipment. Additional construction equipment typically required to support dredging activities are: conventional earth moving equipment and support vessels (i.e., an anchor tender, a pipe tender, tug vessels, and a crew boat).

**Clamshell Dredge:** This method consists of a crane mounted on a barge outfitted with a clamshell bucket and a scow. Dredged materials are placed into a scow for transport to the Nearshore Placement Site. Approximately 4,000 to 10,000 CY of sediment can be removed and transported to the Nearshore Placement Site per day using a clamshell dredge. Additional construction equipment typically required to support dredging activities are support vessels (i.e., tug vessels and a crew boat).

***Table 1. Potential Dredge Types and Placement Options***

| Dredge Template Location | Dredge Type(s) | Placement Method | Placement Site Location(s) |
|---|---|---|---|
| Channel Islands Harbor Dredge Template (Areas A, B, C, D, E*, & G) | Hydraulic Pipeline Dredge | Beach Placement | Silver Strand Beach, Hueneme Beach |
| Channel Islands Harbor Area A | Clamshell Dredge | Nearshore Placement | Hueneme Nearshore Placement Site |
| Port Hueneme Harbor Dredge Template | Hydraulic Pipeline Dredge | Beach Placement | Silver Strand Beach, Hueneme Beach |
| Port Hueneme Harbor Dredge Template | Clamshell Dredge | Nearshore Placement | Hueneme Nearshore Placement Site |

*Portion of Area E material currently approved for dredging is only deemed suitable for beach placement at the Hueneme Beach Placement Site.

***Table 2. Dredge Quantities and Placement Location Options***

| Dredge Template Location | Maximum Dredge Quantity per Cycle | Placement Site Location Options |
|---|---|---|
| Channel Islands Harbor | 2.5 million CY | Hueneme Beach<br>Silver Strand Beach (up to 250,000 CY per cycle, Area E material excluded)<br>Hueneme Nearshore Placement Site (Area A material only) |
| Port Hueneme Harbor | 250,000 CY | Hueneme Beach<br>Silver Strand Beach<br>Hueneme Nearshore Placement Site |

## 2.2 No Action Alternative

The No Action Alternative is to not perform the proposed maintenance dredging and placement of material. This would allow the harbors to shoal which would eventually result in a condition of unsafe or impassable navigation conditions. Eventual harbor closures could result. This would result in a loss to recreational, commercial, and national security operations. There is also potential for danger to life and property if the harbors are not maintained at safe depths. Without nourishment, the downcoast local beaches would continue to erode and deteriorate. This would eventually impact beach visitation, reducing the value of the recreational experience. In addition, downcoast erosion would result in a loss of sandy beach, coastal dune, and estuary habitat. Loss of use would result in serious economic losses to the local community. Losses of down coast beaches would also result in an increased risk of storm damage as a result of narrowed beaches allowing storm waves to overtop coastal protection structures

designed to function behind beaches. USACE interprets its Civil Works authorities to impose a non-discretionary duty to maintain existing projects so that they continue to serve their Congressionally authorized project purposes, subject to appropriations and budgeting principles. This alternative is inconsistent with such obligation.

# 3. ENVIRONMENTAL ASSESSMENT PROCESS

The EA process follows a series of prescribed steps. The first, scoping, has been completed with the purpose of soliciting comments from other federal and state agencies as well as the public. This was accomplished by publishing a Public Notice for a 30-day public review period from March 4, 2024, to April 5, 2024, during which time written and verbal comments on the Proposed Action and issues to evaluate in the EA were solicited (Appendix A). The next step is preparation of a Final EA that incorporates and responds to any comments received. If it is determined that the project will not have a significant impact upon the existing environment or the quality of the human environment, the final step is preparing a Finding of No Significant Impact (FONSI). If the EA determines that the environmental impacts of the Proposed Action will be significant, an EIS would be required. Previous documents related to federal channel maintenance are incorporated herein: Corps 2018; Corps 2023.

The potential impacts associated with the Proposed Action and No Action Alternatives were assessed and only the resources that would potentially be affected are analyzed. The resources evaluated are:

- Oceanography and Water Quality
- Biological Resources
- Air Quality
- Noise
- Cultural Resources
- Vessel Traffic and Safety
- Ground Transportation and Traffic
- Recreation
- Aesthetics
- Greenhouse Gases

## 3.1 NEPA Scope of Analysis

As part of the NEPA process, the Corps is responsible for establishing the NEPA scope of analysis pursuant to 33 CFR Part 230. The NEPA scope of analysis for the Proposed Action includes the dredge template, sediment placement areas, staging areas, transit corridor between sites, plus a 300-foot buffer around aquatic activities to account for indirect effects such as turbidity. The NEPA scope of analysis is also referred to as the Action Area throughout this EA. The NEPA scope of analysis directly encompasses approximately 289 acres and indirectly encompasses approximately 378 acres (transit corridor and 300-foot buffer around aquatic features) for a total of 667 acres (Figure 5).

## 3.2 Relationship to Environmental Protection Statutes, Plans, and Other Requirements

The Corps is required to comply with all pertinent federal laws and regulations. Project compliance is summarized in Section 6.1.

# 4. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section provides an assessment of the affected environment, including physical, natural, and socioeconomic characteristics within the NEPA scope of analysis, which is also referred to as the Action Area throughout this EA (Figure 5). The environmental consequences are presented for the Proposed Action as well as the No Action Alternative. If analyses indicate significant adverse impacts may occur, then mitigation measures are included.

## 4.1 Oceanography and Water Quality

### 4.1.1 Affected Environment

#### *Physical Processes*

The Pacific Coast has two high and two low tides of diurnal inequality. Tidal ranges in the Action Area are typical of the southern California coast. The mean tide range is 3.6 feet with a mean daily range of 5.6 feet and a maximum range of 9.9 feet. Nearshore currents consist of tidal and subtidal currents as well as wave-induced longshore currents in the surf zone. The general surface flow near the Action Area is onshore in late winter and a southward flow in spring and summer; however, seasonal, short-term northward reversals of longshore current can occur during southern swells.

The aquatic conditions of the Nearshore Placement Site are generally dominated by the oceanographic conditions in the Southern California Bight (SCB). For the most part, open coast nearshore sand communities in the SCB are remarkably similar. The Nearshore Placement Site is dynamic in nature, with constant and continual longshore and onshore/offshore sediment transport (littoral transport). These processes vary seasonally in intensity depending upon oceanographic and weather conditions occurring both locally and throughout the eastern Pacific Ocean region. Particles of sediment that are moved via this erosional process are typically suspended in the water column by wave or current action, transported some distance by longshore currents, and then deposited on adjacent beaches.

Generally, at the end of each biennial cycle, sand has built up in the Channel Islands Harbor sand trap extending from the existing beach, sand buildup has narrowed the channel into Channel Islands Harbor, and the downcoast beaches have lost sand. The northern end of Hueneme Beach typically erodes completely back to the revetment fronting city property. Silver Strand Beach experiences erosion to a lesser degree.

#### *Water Quality*

Water quality is typically characterized by salinity, pH, temperature, dissolved oxygen (DO), light transmission, and/or turbidity. Table 3 characterizes the overall water quality parameters for the Action Area during the 2022/2023 maintenance dredging cycle.

Section 303(d) of the 1972 Clean Water Act (CWA) requires states to identify water bodies that do not meet water quality objectives and to identify the pollutant or stressor causing impairment. As of 2022, the California Regional Water Quality Control Board has identified four 303(d) listed water bodies within the Action Area (California Regional Water Quality Control Board, 2022): Hobie Beach (pollutant: indicator bacteria), Harbor Beach (indicator bacteria), Hueneme Beach (indicator bacteria), and Hueneme Harbor (Polychlorinated biphenyls [PCBs]).

***Table 3. Water Quality Characteristics in the Action Area during 2022/2023 Maintenance Dredging (Merkel & Associates 2023)***

| Parameter | Range |
|---|---|
| Salinity (parts per thousand) | 32.4 to 33.7 |
| Water Column Temperature (Celsius) | 12.1 to 18.9 |
| pH | 8.0 to 8.3 |
| Dissolved Oxygen (mg/l) | 6.5 to 9.2 |
| Light Transmission | 1.4% to 94.4% |
| Turbidity (NTUs) | 0.1 to 29.6 |

### *Sediment Quality and Suitability Analysis*

A Sampling and Analysis Plan (SAP) was developed in June 2023 to determine suitable placement sites for the dredged material in accordance with the Inland Testing Manual guidelines (USEPA & USACE 1998), the CWA Section 404(b)(1) Guidelines, and the Southern California Dredge Material Management Team (SC-DMMT) Sampling and Analysis Plan Results Guidelines for southern California. The SC-DMMT member agencies include the USACE, the USEPA, California Coastal Commission (CCC), the Regional Water Quality Control Board (RWQCB), U.S. Fish and Wildlife Service (USFWS), and California Department of Fish and Wildlife (CDFW). The SAP was discussed and approved by the SC-DMMT in June 2023.

In September 2023, Vibracore sampling was performed to collect subsurface sediment data at 28 locations throughout Channel Islands Harbor and 5 locations in Port Hueneme Harbor (4-6 samples per dredge area; Corps, 2024). Subsamples from each location were combined with like subsamples into seven composite samples (one for each dredge area: six in Channel Islands; one in Port Hueneme) for chemical and grain size testing and archived for possible bioassay testing.

A series of surface grabs were also collected in September/October 2023 along five transects perpendicular to the shore at Silver Strand, Hueneme, and SWEF Beaches (Corps, 2024). Beach transect sampling aimed to collect surface grab samples at eight elevations (+12, +6, 0, -6, -12, -18, -24 and -30 feet MLLW) along the five transects. However, surf conditions on the day of sampling prevented the crew from safely accessing the -6-foot elevation; therefore, samples at this location were not collected. Grab samples were collected at 11 randomly placed locations in the Hueneme Nearshore Placement Site. Grain size testing was performed on all grab samples.

**Chemistry:** Chemical analyses were performed on the seven composite samples. These composite samples were analyzed for total and volatile solids, pH, total organic carbon, oil & grease, petroleum hydrocarbons, ammonia, metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc), butyltins, pyrethroid pesticides, chlorinated pesticides, PCB congeners, phenols, phthalates, and polycyclic aromatic hydrocarbon (PAH) compounds. Bulk sediment chemistry results were evaluated against National Oceanic and Atmospheric Administration (NOAA) toxicity effects-based screening levels (effects range-low [ERL] and effects range-medium [ERM] values; Long et al., 1995) and federal and California human health objectives (USEPA, 2021; CalEPA, 2010).

All analyte concentrations in the Channel Islands and Port Hueneme Harbors composite samples were below detection limits or low compared to screening values. No analyte concentrations exceeded a NOAA ERL value. Arsenic was the only metal to exceed a human health objective, but this was at a level typical of southern California beaches (Bradford et al., 1996).

**Grain Size:** To determine if the sediments to be dredged are physically compatible with placement sites, receiver beach grain size gradation data were compared with grain size gradation data from the individual cores. The sediments sampled from within Port Hueneme Approach Channel and Channel Islands Harbor Areas A, B, C, D, and G were determined to be physically suitable to be placed at all three placement sites (Silver Strand, Hueneme Beach, Hueneme Nearshore). Sediments within the southeast portion of Channel Islands Harbor Area E were deemed physically suitable to be placed only at Hueneme Beach. If the remainder of Channel Islands Harbor Area E requires dredging (restricted dredge area; Figure 3) during the six-year period of this EA, that area would be re-evaluated for geotechnical suitability as discussed in the next paragraph.

On January 24, 2024, the Sampling and Analysis Plan Results (SAPR) Report and Appendices (including a grain size compatibility report) were presented to the SC-DMMT for comments. During this SC-DMMT meeting, all material in the areas of the dredge templates included in this EA were characterized as predominantly sandy material and deemed suitable for beach placement or nearshore placement, with the exception of a portion of Channel Islands Harbor Area E, as described in Section 2.1 of this EA.

### 4.1.2 Environmental Consequences

**Significance Criteria:** An impact to oceanography and water quality will be considered significant if an alternative would:

- Cause substantial changes in topography or physical processes acting on the system;
- Result in a release of toxic substances that would be deleterious to human, animal, or plant life, or if discharges create a pollution, contamination, or nuisance; or
- Create a far-ranging and long-term pollution, contamination, or nuisance that extends beyond the project duration.

#### *Proposed Action*

In this section, direct impacts are defined as adverse changes to oceanography and water quality that would occur within the dredge or placement footprints and caused by those activities. Indirect effects would result from plumes of suspended sediment or changes in water quality that occurs within the 300-foot buffer within the Action Area.

Direct Effects: The Proposed Action would use a hydraulic pipeline, clamshell, or a combination thereof to remove sediment from the harbors (see Section 2.1 for equipment details). Placement activities would require ancillary land- and sea-based equipment (i.e., bulldozers, tugboats, crew boats), depending on the type of dredge used. The Corps routinely samples and monitors dredge and placement areas and measures standard water quality parameters during maintenance dredging actions. Previous monitoring has not identified any significant or lingering water quality issues associated with dredging or placement activities.

**Turbidity:** Both dredge types and respective placement equipment generally do not create extensive turbidity plumes (cloudy or muddy appearance of water). The extent of sediment plumes caused by dredges depends on site-specific conditions such as grain size, currents, local bathymetry, and tidal phase. When such conditions are equivalent, hydraulic dredges tend to resuspend less sediment into the water column than clamshell dredges. Turbidity plumes caused by dredging typically decrease exponentially with time and distance from the active dredge site due to settling and dispersion (Anchor Environmental, 2003). In sandy sediments like those in the Action Area, turbidity plumes are expected to extend approximately 100 feet from the immediate work area and the vast majority of resuspended

sediments would settle close to the dredge within one hour (Grimwood, 1983; Schroeder, 2009). Therefore, turbidity impacts during dredging would be temporary and would return to baseline values after the conclusion of operations.

During dredging activity, decreases in DO, increases in nutrients, suspended and dissolved contaminants can occur. Turbidity from dredging has the potential to temporarily decrease DO in the immediate vicinity (within about 300 feet) of the dredge. Because the dredging would occur in open waters (Channel Islands Harbor Sand Traps, Port Hueneme Approach Channel) or in waters immediately adjacent to open waters (Channel Islands Entrance Channel, Port Hueneme Entrance Channel) where DO levels are normally above 5 milligrams per liter (mg/l), the potential for decreasing below that level is low.

Water quality may also be temporarily affected by placement activities. Decreases in DO; increases in nutrients, suspended and dissolved contaminants, and turbidity could occur. Beach placement may utilize temporary sand dikes, using native sand, which could minimize nearshore turbidity. It is expected that any impacts to water quality would not be significantly greater than those caused by natural surf zone processes. The dredged material would redistribute and settle as a result of normally occurring surf and littoral transport processes. Temporary sand dikes would be removed and the sand would be redistributed and regraded to match the existing beach contours upon completion of construction.

Based on testing conducted during previous dredging cycles, sediments in these harbors consist of clean sandy material (96 to 100% between 0.25 mm and 1.00 mm; Corps, 2024). Because pollutants tend to remain tightly bound to fine-grained sediment particles, organic detritus and chemical contaminants are not expected to occur in these sandy materials. Additionally, there have been no significant contaminant spills in the area recently. Channel Islands Harbor was last dredged in 2022/2023 and Port Hueneme Harbor was last dredged in 2021, limiting the ability of contaminants to accumulate. Therefore, increases in dissolved contaminants are not expected to occur due to the proposed dredging or placement activities.

Sediment samples and suitability determinations were assessed in accordance with the Inland Testing Manual (USEPA & USACE, 1998) and coordinated with the SC-DMMT on January 24, 2024 (see Section 4.1.1). A Tier II assessment was conducted, including limited sampling and testing for geotechnical compatibility and sediment chemistry analyses. Should any major event that would cause a change in environmental baseline conditions (i.e., an oil spill), sediments would be reassessed.

During construction there may be minor inputs of contaminants from construction vessels, i.e., minor leaks and spills. Any such contaminants would be rapidly dispersed and/or cleaned up. Because no toxic materials would be used for dredging and placement operations, a large spill of a toxic substance is extremely unlikely. Impacts to water quality would be adverse but not significant. The dredge contractor would be required to have a Spill Prevention Plan in place to detail how spill events would be contained and cleaned up, should any occur.

Dredging and placement of material could temporarily impact up to approximately 622 acres of Waters of the U.S. (WOTUS) during each dredge episode, which area includes the dredge template, placement sites and transit corridor. The discharge of dredged material would create local and short-term impacts to WOTUS and subtidal area during placement activities. As a result, the dredged material is expected to settle out quickly, minimizing the duration and extent to WOTUS and the subtidal area (Appendix B).

Indirect Effects: As the dredged materials are predominantly sandy sediments, the sediment plume is expected to remain within 300-feet of the dredge and placement activities. Water quality monitoring would be performed before, during, and after construction activities. The Corps would monitor standard

water quality parameters in situ, including turbidity, DO, light transmissivity, salinity, pH, and water temperature throughout the project duration. This would ensure there are no water quality impacts beyond 300-feet of the dredge activities. Indirect impacts due to dredging and placement operations such as mortality of organisms, temporary reductions in growth and reproduction, temporary increases in turbidity, clogged gills and breathing apparatuses, suspension of sediments from propeller wash, release of contaminants from equipment, entrainment, and noise would be negligible.

The Proposed Action would not cause substantial changes in topography or physical processes, a release of toxic substances that would be deleterious to human, fish, or plant life, or a far-ranging or long-term pollution, contamination, or nuisance. Therefore, impacts to oceanography and water quality would be less than significant.

#### *No Action Alternative*

Under the No Action Alternative, the Channel Islands and Port Hueneme Harbor federal channels would not be dredged. The No Action Alternative would avoid temporary impacts to oceanography and water quality because there would be no maintenance dredging or placement activities.

## 4.2 Biological Resources

### 4.2.1 Affected Environment

**Habitats**: The dominant marine habitat in the immediate project area includes the marine waters and sandy bottom benthic habitat of the Federal Navigation Channels' maintenance dredging template, and the sandy bottom benthic intertidal and subtidal habitat of the Beach Placement Sites and Nearshore Placement Site. Marine habitats along the margins and immediately adjacent to the project area are dominated by sandy bottom benthic habitat and in some areas the artificial rocky habitats created by the surrounding jetties and breakwater. Canopy kelp occurs intermittently on the outside of the Federal Navigation Channel and within artificial rocky substrate of the breakwater and jetty structures. The proposed dredge template and placement sites experience sandy bottom benthic habitat disturbance due to both the annual maintenance dredging activities and highly active natural littoral transport processes occurring in the littoral cell. Vegetation in the dredge areas is expected to be minimal due to the sandy, unconsolidated nature of the seafloor and the frequent dredging which takes place in these areas. Nearshore areas and sandy beaches where sediment placement would occur supports a typical sand bottom community with little or no aquatic vegetation due to high energy currents and turbidity caused by wave action. The drift sand pile is devoid of established vegetation due to high winds and active sand transport. Surveys for aquatic vegetation such as eelgrass and invasive *Caulerpa* species were conducted prior to the previous maintenance dredging cycle. Surveys conducted in August 2022 by the U.S. Navy observed no eelgrass within Port Hueneme Harbor. Surveys conducted in September 2022 by the Corps observed no eelgrass within the 2022/2023 Channel Islands Harbor dredge cycle template or marine staging area.

Southern foredune habitat has developed within and adjacent to the Channel Islands Harbor sand trap as a result of the influence of the detached breakwater and north jetty of Channel Islands Harbor creating an area of sand aggregation that has widened the beach adequately to develop conditions suited to the natural establishment of aeolian dunes. The first sign of dunes on Hollywood Beach occurred at the southerly end of the beach between 1959 and 1967, after the commencement of construction of the breakwater. By 1985, sparse dunes were noted to extend from the northern jetty northward to approximately the tip of the detached breakwater. This is approximately the distribution of

dunes today, although the dunes have matured and stabilized considerably since establishment. Dunes expand and contract within the sand trap and adjacent beach area in the lee of the detached breakwater relatively rapidly and in response to dredging cycle removal of sand and natural rebuilding of the beach between cycles. Invasive species within the dunes are dominated by European beach grass (*Ammophila arenaria*) and hottentot fig (*Carpobrotus edulis*). Additional invasive species include crystalline ice plant (*Mesembryanthemum crystallinum*), wild radish (*Raphanus raphanistrum subsp. sativus*), and sea rocket (*Cakile maritima*) among others. Native plants that are currently plentiful on Hollywood Beach include beach-bur (*Ambrosia chamissonis*), beach saltbush (*Atriplex leucophylla*), beach morning-glory (*Calystegia soldenella*), red sand verbena (*Abronia maritima*), and beach evening primrose (*Camissonia cherianthifolia*). Surf- or water-deposited organic debris (or “wrack”), such as seaweed or driftwood can often be found along the seaward edge of these dunes. The wrack and the dunes themselves support many small invertebrates, such as crabs, worms, flies, beetles, spiders, sand hoppers, clams, and ostracods, which are important food sources for shorebirds.

**Invertebrates:** The organisms most likely present within and immediately surrounding the dredging template consist of species such as polychaete worms, molluscs, echinoderms and crustaceans. Organisms typical of sandy beaches and coastal nearshore waters are expected in the proposed placement sites. The sedimentary habitats within the intertidal and nearshore zones are expected to support clams, polychaete worms, crabs, isopods, and other crustaceans, echinoderms, and molluscs.

**Birds:** Numerous avian species utilize Channel Islands and Port Hueneme Harbors and the surrounding area. The beaches, marine waters, and surrounding jetties and breakwaters provide loafing, foraging, and roosting areas for a variety of avian species. In addition, Hollywood Beach is utilized as a nesting area. Of the birds frequently encountered within the Action Area, only the western snowy plover and California least tern are listed under the federal Endangered Species Act and are discussed in more detail in the Threatened and Endangered Species section below.

**Fish and Essential Fish Habitat (EFH):** The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (hereafter, The Act; 16 USC 1801, et seq.) set forth a number of mandates for the National Marine Fisheries Service (NMFS), regional fishery management councils, and other federal agencies to identify and protect important marine and anadromous fish habitat. The Councils, with assistance from NMFS, are required to delineate "essential fish habitat" (EFH) for all managed species. The Act defines EFH as " ... those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The Act identifies discrete subsets of EFH referred to as Habitat Areas of Particular Concern (HAPC) that are defined as exhibiting one or more of the following traits: rare, stressed by development, provide important ecological functions for federally managed species, or are especially vulnerable to anthropogenic (or human impact) degradation. Federal action agencies which fund, permit, or carry out activities that may adversely impact EFH are required to consult with NMFS regarding the potential effects of their actions on EFH and respond in writing to the NMFS’s recommendations.

See the Corps’ EFH Assessment (Appendix C) for detailed background information regarding fish and EFH.

**Marine Mammals:** Marine mammals are protected under the Mammal Protection Act (MMPA) of 1972. The marine waters in the region support a variety of marine mammal species including blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), sei whale (*Balaenoptera borealis*), gray whale (*Eschrichtius robustus*), humpback whale (*Megaptera novaeangliae*), sperm whale (*Physeter macrocephalus*), minke whale (*Balaenoptera acutorostrata*), killer whale (*Orcinus orca*), pilot whale (*Globicephala spp.*), Northern right whale dolphin (*Lissodelphis borealis*), Pacific white-sided dolphins (*Lagenorhynchus obliquidens*), Dall's porpoise (*Phocoenoides dalli*), Risso's dolphin (*Grampus griseus*), harbor porpoise (*Phocoena phocoena*), common dolphin (*Delphinus delphis*), bottlenose dolphins (*Tursiops truncatus*), northern elephant seal (*Mirounga angustirostris*), California sea lion (*Zalophus californianus*), harbor seal (*Phoca vitulina*), and Guadalupe fur seal (*Arctocephalus townsendi*). The Action Area is comprised of the harbors and very shallow nearshore waters, absent of the deep offshore waters and suitable habitat occupied by many of these species with the exception of the California sea lion, harbor seal, bottlenose dolphin, and gray whale. Those that regularly occur in the harbors and nearshore waters include the California sea lion and harbor seal, to a lesser extent in both frequency and numbers the bottlenose dolphin, and infrequently gray whales.

### *Threatened and Endangered Species*

A list of federally listed and proposed species and designated and proposed critical habitat in the Action Area was obtained from the NMFS (Appendix C) and the USFWS (Appendix D). Some of these species and designated critical habitat (DCH) are not known to occur within the Action Area, or do not have potential habitat within the Action Area, so they are not discussed further in this EA (see Appendix D and Section 6.1.3).

Three species listed as threatened or endangered by the USFWS or NMFS under the federal Endangered Species Act (ESA) of 1973, as amended, have the potential to occur within the Action Area (Table 4).

Designated critical habitat (DCH) is an area specified by the USFWS or NMFS as essential to the conservation of a federally protected threatened or endangered species. DCH for western snowy plovers occurs within the Action Area.

***Table 4. Federal ESA-listed Species with Potential to Occur in the Action Area.***

| Common Name | Scientific Name | ESA Status | Lead Agency | Likelihood in Action Area |
|---|---|---|---|---|
| California least tern | Sterna antillarum browni | Endangered | USFWS | Moderate / Seasonal |
| Western snowy plover | Charadrius nivosus nivosus | Threatened | USFWS | High |
| Gray whale | Eschrichtius robustus | Western North Pacific DPS listed as Endangered | NMFS | Not Expected / Seasonal |

**California least tern (tern)** is a black and white colonially nesting seabird. It was listed as federally endangered in 1970 (under the precursor to the ESA- the Endangered Species Conservation Act of 1969) (35 FR 8491). The California least tern is listed as a subspecies of least tern and not a distinct population segment (DPS) (USFWS 2020). No critical habitat has been designated for this species. The state of California listed the species under the California ESA in 1971.

Terns are migratory birds that breed in colonies on the coast of California from mid-April through September. They prefer beachfront habitat with sparse or low-lying vegetation and low disturbance from humans and mammalian predators. During their stay in California, terns feed primarily on fish such as northern anchovy (*Engraulis mordax*) and topsmelt (*Atherinops affinis*) in estuaries, embayments, and nearshore waters (Atwood and Minsky 1983). Terns frequently shift foraging areas within and between nesting seasons based on prey availability (Atwood and Minsky, 1983; Baird, 1997).

From April to September, the California least tern may use waters in the Action Area for foraging and portions of Hollywood Beach for breeding and nesting. Most recently the 2020 and 2022 breeding seasons saw the establishment of tern nests with 26 breeding adults each year, followed by subsequent breeding seasons declines (zero nests in 2021 and 2023) (Barringer, 2021, 2023, & 2024). While small nesting groups have occurred in recent years, no fledging success has been documented since 2015.

No terns nested on Hollywood Beach during the 2023 breeding season. However, on May 15, 2024, a pair of terns landed on the beach within the fenced area but no nests were found upon inspection. Other observations were limited to flyovers and foraging behaviors in nearshore waters.

**Western snowy plover (plover)** is a small tan and white shorebird. The Pacific Coast DPS was listed as federally threatened in 1993 (58 FR 12864). Critical habitat for the species was designated on December 7, 1999 (64 Fed. Reg. 68,508), and revised September 29, 2005 (70 Fed. Reg. 56,970) and again on June 19, 2012 (77 Fed. Reg. 36,727). It is also a California “species of special concern”.

This subspecies breeds primarily on coastal beaches from southern Baja California to southern Washington near sand spits, dune-backed beaches, unvegetated beach strands, open areas around estuaries, and beaches at river mouths. The nesting season of this DPS extends from March 1 through September 15 (USFWS, 2007). Snowy plovers primarily forage on invertebrates in wet sand, among surf cast kelp within the intertidal zone, and in sandy areas above the high tide line.

Plovers are known to utilize Hollywood Beach, including portions of the Action Area year-round. Hollywood Beach has been extensively surveyed for wintering plovers since at least 2012. The beach is utilized as a habitual wintering area for plovers. Nesting by snowy plovers has been monitored regularly at Hollywood Beach for at least 20 years. The monitoring shows a relatively consistent number of nests on the beach ranging from approximately 5-10 nests with nest counts falling outside of this range being anomalous (Merkel & Associates, 2024).

Approximately 90 acres of western snowy plover DCH occur within the Action Area (USFWS, 2012), including portions of Hollywood Beach and Hueneme Beach. Two acres occur directly within Channel Islands Harbor Dredge Area D. Plovers are known to use the DCH on Hollywood Beach, but they are not known to use DCH on Hueneme Beach.

**Gray whale** is a mottled gray baleen whale species about 45 feet in length. The gray whale was listed as endangered on June 2, 1970 (under the precursor to the ESA- the Endangered Species Conservation Act of 1969). No critical habitat has been designated for this species. There are two distinct population segments (DPS) of the gray whale that overlap in southern California: the Eastern North Pacific (ENP) DPS and the Western North Pacific (WNP) DPS. The ENP DPS is not listed under the ESA while the WNP DPS is listed as endangered under the ESA. The ENP DPS is found along the west coast of North America and constitutes the majority of the gray whales observed off the southern California coast. The WNP DPS is primarily found along the coast of eastern Asia. Although western and eastern stocks of gray whales were thought to be relatively isolated from each other, recent satellite tagging data and photo-identification and genetic matches have shown that at least some western North Pacific gray whales migrate across the northern Gulf of Alaska, and along the west coast of British Columbia, the United States, and Mexico (NOAA Fisheries 2023). In the northern Pacific Ocean, gray whales are found mainly in shallow coastal waters, although they sometimes use deep waters far from shore during migration. Gray whales are the only baleen whales that are primarily bottom feeders, consuming a wide range of benthic and epibenthic invertebrates. In southern California, gray whales are typically seen far from shore. In recent years, they have been occasionally observed entering some southern California harbors during seasonal migration periods, including a siting in Channel Islands (Ventura County Star 2021). As the ENP and WNP DPSs are impossible to distinguish visually, the Corps would assume any gray whale observed in the Action Area is the ESA-listed WNP DPS.

### 4.2.2 Environmental Consequences

**Significance Criteria.** An impact to biological resources will be considered significant if an alternative would:

- Degrade habitat for, or reduce, the population size of a federally threatened or endangered species, such that the local population size or capacity is permanently reduced, or its designated critical habitat is destroyed or adversely modified;
- Substantially or permanently impede the movement or migration of fish; or
- Cause a substantial loss in the population or habitat of any native fish, wildlife, or vegetation (a substantial loss is defined as any change in a population which is detectable over natural variability for a period of 5 years or longer).

#### *Proposed Action*

**Habitats:** Terrestrial staging areas are highly disturbed and have no significant habitat value. They are nearly devoid of vegetation, aside from some ruderal weeds. Temporary sand dikes constructed as part of beach nourishment activities using native sand would be removed and the sand would be redistributed and regraded to match the existing beach contours upon completion of construction. The dredged material would redistribute and settle as a result of normal surf and littoral transport processes. There would be no long term impacts due to placement activities at the highly disturbed sandy beaches and sandy benthic habitat of the beach placement sites. A full assessment of potential direct and indirect impacts to marine habitats and EFH is provided in Appendix C.

Biennial maintenance dredging of the Channel Islands Harbor sand trap may adversely impact beachfront and Southern foredune habitat on Hollywood Beach due to potential removal of the habitat and loss of beachfront foraging and nesting habitat for avian species. A full assessment of potential direct and indirect impacts to Hollywood Beach habitat and previously established mitigation commitments is provided in Appendix D and G. Habitat restoration commitments are occurring and

ongoing in accordance with the requirements of the Corps 2023 SEA (Corps, 2023), 2022 Biological Opinion (08EVEN00-2022-0085983-S7; Appendix D), and Consistency Determination concurrence (Appendix G).

**Invertebrates:** In this section, direct impacts are defined or described as injury or mortality to invertebrate organisms from direct entrainment or burial that would occur because of dredging or placement of dredge materials in the placement sites. Indirect impacts would potentially be caused by plumes of suspended sediment or other changes in water quality that could occur as a result of dredging or placement of dredge material activities and that may extend beyond the direct dredge template and placement sites.

Direct effects due to dredging and placement operations could result in temporary disturbance to sandy benthic habitat, direct mortality of organisms due to removal/burial/crushing, and loss of fish foraging habitat and prey. Some invertebrates are expected to be relocated, smothered, or buried, while others may experience clogging to gills and feeding apparatuses, depressed filtration rates, increased mucous secretion, and increased susceptibility to disease. Organisms displaced by dredging and disposal activities would quickly recolonize the impacted areas once construction is complete (Newell et al., 1998; Soule et al, 1993). Invertebrate mortality would provide food for opportunistic marine organisms, while some relocated fauna would survive after relocation.

Indirect effects due to dredging and placement operations such as mortality of organisms, temporary reductions in growth and reproduction, temporary increases in turbidity, clogged gills and breathing apparatuses, suspension of sediments from propeller wash, release of contaminants from equipment, entrainment, and noise would be negligible. Turbidity levels are expected to be temporary and minor because the dredged material is composed primarily of sandy material. Turbidity caused by dredging activities would subside to ambient levels within 1 to 24 hours as suspended sandy sediments quickly resettle (Anchor Environmental, 2003). To ensure water quality is controlled and confined to the Action Area, per the environmental commitments in Section 6.2 of this EA, the Corps would monitor standard water quality parameters such as turbidity, salinity, pH, temperature, and dissolved oxygen regularly throughout the project duration (see Section 4.1).

***Birds:*** In this section, direct impacts (if they occurred) would be defined or described as injury or mortality to birds from direct collisions that would occur as a result of dredging or placement of dredge materials at the placement sites. Indirect impacts would potentially be caused by changes in nesting or foraging habitat or other environmental conditions that could occur as a result of dredging or placement of dredge materials and that may extend beyond the direct dredge template and placement sites.

Direct Effects: Direct collisions with birds are not expected to occur as a result of the Proposed Action. Many birds roost on the breakwater, jetties, and other structures in the Action Area. However, due to the distance of the dredge from these structures and the slow-moving nature of Proposed Action vessels, birds are not anticipated to experience injury or mortality due to the Proposed Action.

Indirect Effects: The Proposed Action may temporarily degrade water quality in a localized area. Turbidity can impact visually foraging piscivorous seabirds by making it difficult for them to see their prey. Thus, it is likely that visual feeders would avoid foraging in the immediate vicinity of the dredge and placement activities. Forage fish would also likely avoid direct disturbance areas, so these species would be available for capture as prey elsewhere. Disturbance of feeding or roosting birds may cause a temporary dispersal away from the dredging area. Birds would be expected to return quickly after excavation and placement activities cease. A reduction in overall prey availability would be

experienced in the dredge and placement areas until recolonization and recovery of the community has occurred. The immediate active dredge area and placement areas are a small footprint and relatively small fraction of the available foraging area within the surrounding marine waters.

Dredging and placement activities may temporarily increase ambient noise levels, which could cause indirect disturbances to some bird species. Increased levels of anthropogenic activity within the harbor may decrease avian use of the breakwaters and other nearby structures for roosting. However, due to the distance of the dredge to these structures, the slow-moving nature of the dredge, and the high volume of ambient vessel traffic within the harbors, birds are not anticipated to be substantially disturbed by the Proposed Action. Birds are expected to rapidly acclimate to noise produced by the Proposed Action (Climo, 1987).

For evaluation of impacts to the California least tern and western snowy plover, see below section on Threatened and Endangered Species.

**Fish and EFH:** In this section, direct effects are defined or described as injury or mortality to fish or EFH from direct entrainment or burial that would occur as a result of dredging or placement of dredge materials at the placement sites. Indirect impacts would potentially be caused by noise, turbidity plumes, or other changes in water quality that could occur as a result of dredging or placement activities and that may extend beyond the direct dredge template and placement sites.

A full assessment of potential impacts to fish and EFH is provided in Appendix C. The Corps has determined the Proposed Action may result in a temporary adverse effect to EFH, but impacts would not be substantial.

Direct Effects: Noise levels generated by project activities are not expected to rise to levels that would result in hearing loss, physical injury, or mortality of fish. Many EFH species forage on bottom-dwelling organisms, such as polychaete worms, crustacean, and other EFH prey types. Dredging is expected to adversely affect these prey species in the Action Area by directly removing, burying, or crushing these organisms; however, these effects would be temporary and localized to within 300 feet of the immediate work area (Newell et al., 1998).

Indirect Effects: Some fish may avoid the immediate project area during dredging and placement activities because of the increased turbidity, noise levels, and potential oxygen depletion caused by dredging operations. Other fish species may be attracted to the Action Area to feed on mollusks, crustaceans, and other organisms which may have been caught up in, or exposed by, the dredged material. The Action Area is a small percentage of available open water and sandy bottom benthic habitat; therefore, fish movement and migration would not be permanently impeded due to dredging and placement activities.

**Marine Mammals:** In this section, direct effects (if they occurred) would be defined as injury or mortality to mammals from collisions with the dredge, dozers, or other construction equipment. Indirect effects would potentially be caused by changes in resting, breeding or foraging habitat or other environmental conditions that could occur as a result of dredging or material placement activities that may extend beyond the direct dredge prism and placement areas.

Direct Effects: Direct collisions with marine mammals are not expected to occur as a result of the Proposed Action. Sea lions, harbor seals, and dolphins have the greatest potential to occur in the Action Area. However, due to the distance of the dredge from structures they use (e.g., docks as haul-out sites), marine mammal mobility, and the slow-moving nature of the Proposed Action vessels (see

speed discussion below), marine mammals are expected to avoid the immediate work area and are not anticipated to experience injury or mortality due to the Proposed Action.

Indirect Effects: Marine mammals are not expected to be affected by the Proposed Action given the amount of adjacent foraging areas, and the existing environmental baseline of almost constant human presence and recreational and commercial activity that occurs in the area. For example, Hawaiian monk seals (*Monachus schauinslandi*) observed transiting near similar dredging methods did not appear startled or adversely affected, with no observable change in swim speed or direction (Gilmartin, 2003). Marine mammals react to dredging and associated support vessels as they do to any other vessels they encounter. Vessels used for the Proposed Action typically travel at approximately 1-2 knots within the harbor and at or below approximately 6-8 knots outside the harbor, both below the maximum speed recommended by the NMFS (10 knots) for minimizing impacts to marine mammals. This relatively slow speed allows marine mammals to avoid construction-related vessel traffic. While marine mammals may occur in the Action Area, no marine mammal breeding areas are present, and their presence is expected to be transitory in nature.

Dredging-related sounds are not known to physiologically damage marine mammal auditory systems (Todd et al., 2015). Anticipated effects are most likely to be short-term relocations and changes to prey availability. Marine mammals in the area are highly mobile and are expected to avoid the immediate project area; thus, they would likely compensate for small-scale changes in prey abundance by switching prey species, moving to alternative foraging grounds, or increasing foraging time (Todd et al., 2015). The proposed activities pose no substantial risk to marine mammals. Furthermore, the Corps will have a marine mammal monitor on site when working in areas where California sea lions are congregated to ensure harassment of the pinnipeds does not occur within the Action Area. Proposed Action activities, therefore, are not expected to result in a take, as defined in the MMPA.

For evaluation of impacts to ESA-listed marine mammals, see below section on Threatened and Endangered Species.

## Threatened and Endangered Species

In this section, direct impacts (if they occurred) would be defined or described as injury or mortality to federally listed threatened or endangered species from direct collisions or burial that would occur as a result of dredging or placement of dredge materials at placement sites. Indirect impacts would potentially be caused by changes in nesting, spawning, or foraging habitat or other environmental conditions that could occur as a result of dredging or placement of dredge material activities that may extend beyond the direct dredge template and placement sites.

**Western snowy plover (plover):** The Corps has determined that the Proposed Action may adversely affect, the western snowy plover and its DCH. The Corps has determined that effects to wintering plover, nesting plover, and up to 13.47 acres of plover DCH on Hollywood Beach could potentially occur due to the Proposed Action. The Corps has committed to offsetting such effects through the restoration and expansion of plover habitat at a 1:1 ratio in accordance with the requirements of the 2022 Biological Opinion (Appendix D). The Corps prepared a Biological Assessment of potential direct and indirect effects to the species and DCH that occur from dredging of the sand trap and, as confirmed during 2024 coordination with the USFWS, effects are addressed in the 2022 Biological Opinion (08EVEN00-2022-0085983-S7; Appendix D).

**California least tern (tern):** The Corps has determined that the Proposed Action may adversely affect the California least tern. The Corps has determined that effects to nesting tern, and nesting habitat on Hollywood Beach could potentially occur due to the Proposed Action. The Corps has committed to offsetting such effects through the restoration and expansion of tern habitat in accordance with the requirements of the 2022 Biological Opinion (Appendix D). The Corps prepared a Biological Assessment of potential direct and indirect effects to the species and, as confirmed during 2024 coordination with the USFWS, effects are addressed in the 2022 Biological Opinion (08EVEN00-2022-0085983-S7; Appendix D).

**Gray whale (WNP DPS)**

Direct Effects: The Action Area is very close to shore and in shallow depths. It does not overlap with or intersect any known whale migration routes. Gray whales have entered southern California harbors previously; however, these occurrences have taken place during the spring and summer seasons coinciding with the seasonal migration of adults and calves migrating northward along the United States West Coast. Therefore, gray whales would not be expected in the Action Area due to the timing of the project to occur outside of this migratory period. Vessels associated with the Proposed Action would be slow-moving: vessels and equipment with the harbor would be stationary or slow moving (approximately 1-2 knots), tugs towing barges outside of the harbor are limited to approximately 6 knots when loaded and 8 knots when empty, less than the NMFS's recommended speed limit of 10 knots. This relatively slow speed allows vessel operators and whales to avoid collisions. No direct effects to whales are anticipated. However, implementation of environmental commitments as part of the Proposed Action (Section 6.2) would further ensure no direct effects to whales would result.

Indirect Effects: Indirect effects would not occur during the Proposed Action because the Action Area does not overlap with any known whale foraging, resting, or migrating areas.

The Corps has concluded that the Proposed Action would have No Effect on the endangered WNP gray whale DPS.

The Proposed Action would not degrade habitat for, or reduce, the population size of a federally threatened or endangered species, such that the local population size or capacity is permanently reduced, or its designated critical habitat is destroyed or adversely modified; not substantially or permanently impede the movement or migration of fish; or cause a substantial loss in the population or habitat of any native fish, wildlife, or vegetation. Therefore, impacts are considered to be less than significant.

***No Action Alternative***

Under the No Action Alternative, there would be no temporary, adverse impact to biological resources at either the dredge or placement sites. Therefore, the No Action Alternative would not result in significant impacts to biological resources within the NEPA scope of analysis.

## 4.3 Air Quality

### 4.3.1 Affected Environment

Located along the Pacific Ocean, the Action Area experiences an inversion layer, and pollutants are forced to accumulate within the lower layer. The climate in the Action Area is characterized by moderate summer temperatures, mild winters, frequent morning coastal stratus clouds, infrequent rainfall confined mainly from late fall to early spring, and moderate onshore breezes. Because of the low average wind speeds in the summer and a persistent daytime temperature inversion, emission of hydrocarbons and oxides of nitrogen have an opportunity to combine with sunlight to produce smog. Prevailing winds blow from the southwest at an average speed of 3.4 miles per hour.

Air quality (AQ) in the Action Area is generally good, although standards for ozone (O3) are exceeded (most often in summer months). The major source of air pollution in the project area is the automobile, followed by recreational facilities powerboats, and agricultural equipment. Harbor boating activity and outlying traffic-congested roadways and intersections have the potential to generate localized high levels of carbon dioxide (CO2). The Action Area is within the South-Central Coast Air Basin (SCCAB) under the jurisdiction of the Ventura County Air Pollution Control District (VCAPCD).

**National Ambient Air Quality Standards**: The Clean Air Act of 1970 (CAA) identified and established the National Ambient Air Quality Standards (NAAQS) for a number of air criteria pollutants in order to protect public health and welfare. The air criteria pollutants include ozone ($O_3$), carbon monoxide (CO), nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), suspended particulate matter (PM), and lead (Pb). PM emissions are regulated in two size classes: particulates up to 10 microns in diameter ($PM_{10}$) and particulates up to 2.5 microns in diameter ($PM_{2.5}$).

A region is given the federal status of “attainment” or “unclassified” if the NAAQS have not been exceeded. A status of “nonattainment” for particular criteria pollutants is assigned if the NAAQS have been exceeded. The SCCAB in Ventura County is currently designated as serious non-attainment area for $O_3$ (Table 5). All other criteria pollutants are in attainment.

***Table 5. Federal Attainment Status for Ventura County***

| Pollutant | NAAQS SCCAB Attainment Designation [1] | General Conformity Applicability Rates (Tons/Year)[1] |
|---|---|---|
| $O_3$ (VOC [2] or $NO_x$ as precursors) | Serious Non-Attainment | 50 |

[1] Source=USEPA 2024; [2] VOC = Volatile Organic Compound.

**General Conformity Rule**: The General Conformity Rule, established pursuant to Section 176(c) of the CAA, requires Federal actions to comply with the NAAQS. A federal agency cannot issue a permit for, or support an activity within, a nonattainment or maintenance area that would cause or contribute to any new violation of a NAAQS; increase the frequency or severity of any existing NAAQS violation; or delay attainment of any NAAQS standard, interim emission reduction, or other milestone. The USPEA’s regulations at 40 CFR 93.153(c)(ix) exclude from the requirements of the General Conformity Rule maintenance dredging and debris removal where no new depths are required, applicable permits are secured, and disposal will be at an approved disposal site.

### 4.3.2 Environmental Consequences

**Significance Criterion**. Impacts to air quality will be considered significant if an alternative:

- Resulted in emissions that equal or exceed General Conformity Applicability Rates.

Although the General Conformity Rule does not apply to emissions associated with maintenance dredging, the applicability rate for $O_3$ for the Ventura County portion of the SCCAB is used evaluate significance of impacts under NEPA for disclosure purposes.

***Proposed Action***

Direct effects to air quality would be those associated with emissions generated from temporary operation of the dredge, equipment used to lay and remove pipe, and other associated equipment. No indirect or permanent effects to air quality would occur.

As shown in Table 2, Channel Islands and Port Hueneme Harbors dredging could use a hydraulic pipeline dredge with beach placement or could use a clamshell dredge with nearshore placement. Hydraulic pipeline dredging typically requires the following support equipment: conventional earth moving equipment (i.e., dozers and loaders) and support vessels (i.e., anchor tender vessel, pipe tender vessel, tugboat vessels, and crew boat). Clamshell dredging typically requires the following support vessels: tugboat vessels, crew boat, and scows/barges. Sections 1.2 and 2.1 of the EA describe work and equipment in detail. Dredging and placement activities would occur between October 1 and February 28 (approximately 150 days) biennially (at years 1, 3, and 5). The Action Area directly encompasses approximately 289 acres and indirectly encompasses approximately 378 acres (transit corridor and 300-foot buffer around aquatic features) for a total of 667 acres.

Detailed air emission estimates for the Proposed Action are provided in Appendix E and summarized in Tables 6a, 6b, and 7a and 7b. Sea-based dredging equipment (hydraulic pipeline; clamshell) and supporting sea-vessel/engine information (i.e., engine rated power [horsepower]; engine load factor; emissions rates [pounds/hour] was accessed from Sacramento Metropolitan Air Quality Management District (SMAQMD 2017; 2023; Appendix E). Estimated biennial air emissions for the sea-based dredging equipment and support sea-vessel boats and for beach and nearshore placement activities were calculated using EXCEL spreadsheet air quality emission calculations developed by the Corps. Estimated biennial air emissions for land-based construction equipment (i.e., dozers and loaders) for beach placement using a hydraulic pipeline dredge were calculated using California Emissions Estimator Model (CalEEMod) version 2022.1.1.21. A clamshell dredge does not typically use land-based construction equipment. Therefore, emissions were not calculated for land-based construction equipment for clamshell dredging.

If a clamshell dredge is used, emissions associated with the Proposed Action would come mainly from the dredge motor drive. This operation would cause some minor air quality impacts. Because of the temporary nature of the emissions and the offshore location of the dredge operation, it is not expected to have a significant impact on air quality in the area. Materials would be placed onto barges and transported by tugboat to the Nearshore Placement Site. A crew boat would be used to ferry crew out to the derrick barge and for miscellaneous transport of personnel and equipment on an as-needed basis. Nearshore placement of dredged material would not produce dust or odors since both of these operations are aquatic activities.

If a hydraulic dredge is used, dredged materials would be pumped through pipelines to the receiver sites on Hueneme Beach, and limited quantities on Silver Strand Beach. Construction equipment (dozers or excavators) would be used to grade the newly placed sand. A work boat would be used to move the hydraulic dredge as necessary within the dredge template. A crew boat would be used to

ferry crew out to the dredge, and for miscellaneous transport of personnel and equipment on an as-needed basis.

Emissions at the beach placement site would come from land-based construction equipment used to grade the newly placed sand. Because of the intermittent and short-term nature of the work, it is not expected to have a significant impact on air quality in the area. Beach placement of dredged material would not produce dust since the material is primarily wet sand with small amounts of organic material. There may be some odor from the freshly dredged organic material placed on the beach, but it would be minor, short-term, and would not significantly affect air quality in the Action Area.

Table 6a and 6b show total maximum emissions estimates for the respective dredge platforms. Total maximum emissions assume that all areas would be dredged and that all dredging will occur within the calendar year. As shown, total maximum emissions would remain below the General Conformity Rates.

***Table 6a. Total Maximum Construction Emissions Estimates Using Hydraulic Dredge [4]***

| Pollutant | Federal General Conformity Rate [1] | Channel Islands Harbor (Areas A, B, C, D, E[3], & G) Estimated Emissions (tons/year) | Port Hueneme Harbor Estimated Emissions (tons/year) | Total Emissions (tons/year) |
|---|---|---|---|---|
| $O_3$ (VOC[2] as precursor) | 50 | 0.682 | 0.067 | 0.749 |
| $O_3$ ($NO_x$ as precursor) | 50 | 13.951 | 1.380 | 15.331 |

[1] Source=USEPA, 2024;
[2] VOC (Volatile Organic Compounds). Reactive Organic Gases (ROG) emission factors in Appendix E used for VOC due to similarity with VOC;
[3] Portion of Area E material currently approved for dredging is only deemed suitable for beach placement at the Hueneme Beach Placement Site.
[4] Emission factors from SMAQMD (2017; 2023); California Emissions Estimator Model (CalEEMod) version 2022.1.1.21.

***Table 6b. Total Maximum Construction Emissions Estimates Using Clamshell Dredge [4]***

| Pollutant | Federal General Conformity Rate [1] | Channel Islands Harbor (Areas A, B, C, D, E[3], & G) Estimated Emissions (tons/year) | Port Hueneme Harbor Estimated Emissions (tons/year) | Total Emissions (tons/year) |
|---|---|---|---|---|
| $O_3$ (VOC [2] as precursor) | 50 | 0.434 | 0.043 | 0.477 |
| $O_3$ ($NO_x$ as precursor) | 50 | 9.103 | 0.900 | 10.003 |

[1] Source=USEPA, 2024;
[2] VOC (Volatile Organic Compounds). Reactive Organic Gases (ROG) emission factors in Appendix E used for VOC due to similarity with VOC;
[3] Portion of Area E material currently approved for dredging is only deemed suitable for beach placement at the Hueneme Beach Placement Site.
[4] Emission factors from SMAQMD (2017; 2023); California Emissions Estimator Model (CalEEMod) version 2022.1.1.21.

Tables 7a and 7b show emissions data where the total emissions have been prorated for dredge years and dredge areas. With respect to dredge years, construction window is October 1 through February 28. Thus, for all dredge cycles, emissions occur across the calendar year. Dredge Cycle 1 (2024/2025) would start in December and end in February of the following year. Dredge Cycle 2 (2026/2027) and Dredge Cycle 3 (2028/2029) would start in October and end in February of the following year. In Dredge Cycle 1 (2024/2025), Area G in the Channel Islands Harbor would not be dredged. It would be dredged for the Dredge Cycle 2 (2026/2027) and Dredge Cycle 3 (2028/2029). As shown, the prorated emissions would remain below the General Conformity Rates.

***Table 7a. Construction Emissions Estimates Using Hydraulic Dredge Prorated by Dredge Acreage and Dredge Years.***

| Pollutant | General Conformity Applicability Rates | Dredge Cycle 1 Emissions 2024 (tons/year) | Dredge Cycle 1 Emissions 2025 (tons/year) | Dredge Cycle 2 Emissions 2026 (tons/year) | Dredge Cycle 2 Emissions 2027 (tons/year) | Dredge Cycle 3 Emissions 2028 (tons/year) | Dredge Cycle 3 Emissions 2029 (tons/year) |
|---|---|---|---|---|---|---|---|
| Ozone (VOC Precursor) | 50 | 0.24 | 0.48 | 0.45 | 0.30 | 0.45 | 0.30 |
| Ozone (NOx Precursor) | 50 | 4.87 | 9.74 | 9.20 | 6.13 | 9.20 | 6.13 |

***Table 7b. Construction Emissions Estimates Using Clamshell Dredge Prorated by Dredge Acreage and Dredge Years.***

| Pollutant | General Conformity Applicability Rates | Dredge Cycle 1 Emissions 2024 (tons/year) | Dredge Cycle 1 Emissions 2025 (tons/year) | Dredge Cycle 2 Emissions 2026 (tons/year) | Dredge Cycle 2 Emissions 2027 (tons/year) | Dredge Cycle 3 Emissions 2028 (tons/year) | Dredge Cycle 3 Emissions 2029 (tons/year) |
|---|---|---|---|---|---|---|---|
| Ozone (VOC Precursor) | 50 | 0.15 | 0.30 | 0.29 | 0.19 | 0.29 | 0.19 |
| Ozone (NOx Precursor) | 50 | 3.18 | 6.35 | 6.00 | 4.00 | 6.00 | 4.00 |

The contractor would be required to obtain all necessary air quality permits and comply with VCAPCD guidelines.

The Proposed Action would not result in emissions that equal or exceed General Conformity Applicability Rate for ozone. Air quality would return to pre-project condition upon completion of the Proposed Action. Impacts would be less than significant.

### *No Action Alternative*

Under the No Action Alternative, the Channel Islands and Port Hueneme Harbor federal channels would not be dredged. The No Action Alternative would avoid temporary impacts to air quality because there would be no maintenance dredging or placement activities.

## 4.4 Noise

In general, noise is defined as unwanted sound. Noise environment consists of a base of steady background or “ambient” noise that is the sum of many distant and indistinguishable noise sources. Superimposed on ambient noise is the sound from individual local sources, which can vary from an occasional aircraft to virtually continuous noise from traffic on an adjacent street or highway. Noise environments vary depending on land use.

The effects of noise on people range from annoyance to inconvenience to temporary or permanent hearing loss. Level of annoyance or impact produced by a sound depends on its loudness, duration, time of day, and location. Sound measurements are usually expressed as decibels (dB) which equally weights all frequencies. As the human ear is not equally sensitive to sounds at all frequencies, A-weighted decibels (dBA) are used to express the relative loudness of sounds in air as perceived by human ears (Table 8). The dB level decreases with distance from the source, usually by a rate of 6 dB for every doubling of distance.

***Table 8. Range of Noises***

| Noise Level (dBA) | Examples | Human Response |
|---|---|---|
| 0 | Empty recording studio | Human hearing threshold |
| 20 | Ticking watch | Just audible |
| 30-50 | Conversational speech | Quiet |
| 60 | Background music | Moderate |
| 80 | Garbage disposal | Loud |
| 110 | Nightclub | Very loud |
| 120 | Rock concert | Pain threshold |

Source: https://hearinghealthfoundation.org/keeplistening/decibels

### 4.4.1 Affected Environment

The noise environmental setting for the Action Area is a very active urban environment with both natural and human-induced noise sources including ocean waves, wind conditions, a large number of shorebirds and sea lions, watercraft engine noise, radios, navigation horns, and land-and sea-based vehicles. Noise levels tend to increase during summer months due to increased recreational utilization. Noise levels in the Action Area are relatively high for a coastal area (compared to beaches that are not adjacent to busy marinas). Ambient noise levels in the Action Area range from Leq 57 to 72 dBA (based on data recorded in January 2024), depending on the time of day, day of the week, and local conditions such as wind and wave action. The closest sensitive noise receptors to the Action Area are approximately 150-feet away and include harbor-adjacent residences and recreational facilities.

### 4.4.2 Environmental Consequences

**Significance Criterion.** An impact to noise will be considered significant if an alternative results in:

- Permanently elevated noise levels within the Action Area.

***Proposed Action***

Direct Effects are noise impacts associated with temporary operation of the dredge, supporting sea vessels, and other associated land use equipment. No permanent effects would occur. Indirect effects to wildlife are discussed in Section 4.2.

If a clamshell dredge is used, project noise sources would be limited to the dredge, scows, and ancillary sea-based vessels. The clamshell dredge, tugboat, and scows would operate 24 hours a day, 7 days a week. Other supporting sea vessels typically operate 8 hours per day, 7 days per week. When considering all equipment associated with clamshell dredging, noise levels typically reach 80 dBA within a 35-foot radius and reach 65 dBA within 200 feet (Epsilon, 2006). Noise levels are atmospherically attenuated by a factor of 6 dB per doubling of the distance. Based on a point source spherical radiator equation (Hatano, 1980), clamshell dredging activities would fade into peak ambient conditions (72 dBA) around 100 feet from project activities (Table 9).

If a hydraulic dredge is used, project noise sources would be limited to the dredge, ancillary sea-based vessels, and land-based equipment used to place the temporary pipeline and move sand within beach placement sites. The hydraulic dredge, ancillary sea vessels, and land equipment would operate 24 hours per day, 7 days a week. However, to limit noise disturbance to nearby residences, grading or other activities requiring use of heavy equipment on Silver Strand Beach would be limited to the hours of 7 AM to 7 PM (Section 6.2). When considering all equipment associated with hydraulic dredging, noise levels typically reach a maximum of 78 dBA within a 100-foot radius (based on data collected by the Corps in February 2024). Therefore, hydraulic dredging activities would fade into peak ambient noise (72 dBA) around 200 feet from project activities (Table 9).

***Table 9. Proposed Action Noise Output***

| Distance from Construction Activities (feet) | Clamshell Dredge Operations Noise Levels (dBA) | Hydraulic Dredge Operations Noise Levels (dBA) | Average Ambient Noise (dBA Leq) |
|---|---|---|---|
| 50 | 77 | 84 | 67 |
| 100 | 71 | 78 | 67 |
| 200 | 65 | 72 | 67 |
| 300 | 61 | 68 | 67 |

Proposed Action activities would occur at least 150-feet from sensitive receptors (see Figure 3 for location of nearest sensitive receptors such as residences). As a result, noise impacts at sensitive receptors from dredging and placement activities would be attenuated at the levels indicated above, resulting in minimal or no change to ambient noise conditions. The Proposed Action is not expected to result in permanently elevated noise levels within the Action Area. Noise levels would return to baseline conditions upon completion of construction. Impacts from dredging and placement activities would be temporary and not significant. Implementation of environmental commitments as part of the Proposed Action would further minimize effects to the noise environment (Section 6.2).

### *No Action Alternative*

Under the No Action Alternative, the Channel Islands and Port Hueneme Harbor federal channels would not be dredged. The No Action Alternative would avoid temporary impacts to noise because there would be no maintenance dredging or placement activities.

## 4.5 Cultural Resources

### 4.5.1 Affected Environment

The Proposed Action would renew a program of routine maintenance dredging and disposal of sediments in the same locations as the previous three six-year dredging cycles. Routine maintenance dredging in the Channel Islands Harbor has occurred every two years since 1969 and every four years in Port Hueneme Harbor beginning in 1975. Dredged materials have always been used to nourish Hueneme and Silver Strand Beaches, both of which are active beaches that are continually subject to erosion. One nearshore disposal area off Hueneme Beach was analyzed and added in 1994. In close proximity to the Drift Sand Pile is a World War II pistol range. Further information is provided in Appendix F.

### 4.5.2 Environmental Consequences

**Significance Criterion.** An impact to cultural resources will be considered significant if an alternative:

- Results in an alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register of Historic Places.

### *Proposed Action*

The Proposed Action would remove accumulated sand from two manmade harbors plus the Drift Sand Pile and place it on two actively eroding beaches or in the Nearshore Placement Site, where the sand would eventually accumulate on Hueneme Beach. No intact soils would be disturbed, and the same placement sites would continue to be used.

The Area of Potential Effect (APE) has been assessed for the presence of properties listed or eligible for listing on the National Register of Historic Places (NRHP) and the results of these studies were coordinated with the State Historic Preservation Officer (SHPO). In 36 CFR 800.16(d), the APE is defined the geographical area in which historic properties could be directly or indirectly affected. For the Proposed Action, the APE is the entirety of the Action Area, as described in Section 1.1 and as depicted in the Figures of Section 11. The Corps has consulted with the SHPO regarding maintenance dredging of the harbors and placement of the material to restore Hueneme and Silver Strand Beaches on three previous occasions. On December 23, 2022, the SHPO concurred that no historic properties would be affected by the maintenance dredging program (Appendix F). Most recently, the SHPO concurred in a letter dated March 5, 2024, that removal of the Drift Sand Pile and the placement of the sediment to secure the dredging pipeline on SWEF Beach would not affect historic properties. Therefore, impacts of the Proposed Action are less than significant.

### *No Action Alternative*

There would be no ground disturbing activities under the No Action Alternative, so no cultural resources would be affected.

## 4.6 Vessel Traffic and Safety

### 4.6.1 Affected Environment

Channel Islands is heavily used by recreational and small commercial vessels. Port Hueneme Harbor is a shared port between the Naval Base Ventura County and Oxnard Harbor District. The port is utilized for commercial use, industrial use, and is an operating facility of Naval Base Ventura County. It is not used for recreational purposes. Safe navigation is maintained by well-marked channels and the presence and activity of various law enforcement agencies (i.e., County Lifeguards, U.S. Coast Guard [USCG], and California Department of Fish and Wildlife [CDFW]).

### 4.6.2 Environmental Consequences

**Significance Criteria.** An impact to vessel traffic and safety will be considered significant if an alternative would:

- Create a navigational hazard to boat traffic or interfere with any emergency response or evacuation plans; or
- Substantially change vessel traffic or patterns.

#### *Proposed Action*

Direct effects and benefits to vessel traffic and safety would be those related to or caused by the physical presence of the dredge and associated supporting sea vessel equipment during construction, as well as bathymetric changes to the channels related to dredging. No indirect effects would occur.

Egress lanes in the harbors would be established and regulated. Vessel traffic would be able to easily navigate around any short-term obstacles created by construction traffic. All construction vessels would be marked and lighted in accordance with USCG regulations and notices would be published in Local Notice to Mariners warning boat users about times, durations, and locations of construction activities.

Project activities are not expected to significantly increase vessel traffic levels in the Action Area. The Proposed Action would use a maximum of eight sea vessels (a clamshell or hydraulic dredge, a derrick barge, two scows, two tugboats, a crew boat, and a survey boat). The dredge, scows, and supporting sea vessels would typically remain in the harbors during most project activities. If nearshore placement occurs, the tugboats and scows would regularly transit south to the Nearshore Placement Site during placement operations. Timing requirements to avoid impacts to sensitive species would result in the Proposed Action taking place during the off-peak season. Therefore, boat traffic would be at a minimum during all construction activities.

Construction would not impede access to entrances, create a navigational hazard to boat traffic, interfere with any emergency response/evacuation plans, or substantially change vessel traffic or patterns. Therefore, impacts to vessel traffic and safety are considered insignificant.

#### *No Action Alternative*

There would be no maintenance dredging or placement activities under the No Action Alternative. Sea vessel traffic and traffic patterns would remain unchanged since there would be no additional vessels in the Action Area.

## 4.7 Ground Transportation and Traffic

### 4.7.1 Affected Environment

The Action Area is accessed by several major roads. It is accessed from most directions via U.S. Highway 101. Alternatively, Pacific Coast Highway (Hwy 1) runs northwest/southeast along the east side of the Action Area and provides surface street access. Annual Average Daily Traffic (AADT) capacities represent the general level of daily traffic that each roadway type can carry (Table 10). Seasonal variations can result in large differences in road use. Summer is the peak season and it is the basis for design of road capacity.

### 4.7.2 Environmental Consequences

**Significance Criterion.** An impact to ground transportation and traffic will be considered significant if an alternative would result in:

- A substantial increase in AADTs of main arteries used to access the Action Area.

#### *Proposed Action*

Direct effects to ground transportation and traffic would be those related to or caused by the physical presence and transit of personnel work crew vehicles and trash hauling. No indirect or permanent effects would occur.

The Proposed Action would require commuting vehicles for the crew to travel to and from the Action Area daily and large trucks mainly at the beginning and end of the project to deliver and pick up heavy equipment. This analysis assumes a maximum of 18 vehicles would travel round trip daily, for a total of 36 daily trips. These 36 trips would not result in an insignificant (less than 1 percent) increase in AADTs of roads used within the Action Area (Table 10). The Proposed Action would not require the closure of any roads. Traffic conditions would return to baseline levels upon completion of construction. Impacts would be temporary, short-term, and insignificant.

***Table 10. Baseline Traffic Volumes in the Action Area and Proposed Action Increases***

| Roadway Name | AADT Count | Source | Projected Increase in AADT | Percent Increase in AADT |
|---|---|---|---|---|
| US Hwy 101 (at Victoria Avenue) | 117,000 | CalTrans 2024 | 36 | 0.03 % |
| US Hwy 101 (at Rice Avenue) | 120,000 | CalTrans 2024 | 36 | 0.03 % |
| Pacific Coast Highway 1 (at Hueneme Rd) | 10,900 | CalTrans 2024 | 36 | 0.33 % |
| Harbor Boulevard (south of Gonzales Road) | 20,900 | Ventura County 2022 | 36 | 0.17 % |
| Channel Islands Boulevard (west of Rice Avenue) | 11,300 | Ventura County 2022 | 36 | 0.31 % |
| Hueneme Road (west of Olds Road) | 13,000 | Ventura County 2022 | 36 | 0.28 % |

### *No Action Alternative*

There would be no maintenance dredging or placement activities under the No Action Alternative. The No Action Alternative would avoid temporary ground transportation and traffic because there would be no maintenance dredging or placement activities.

## 4.8 Recreation

### 4.8.1 Affected Environment

The Action Area is a densely populated area, characterized by residences and a variety of commercial land uses oriented toward public use of the harbors and beaches such as restaurants, hotels, shops, and sportfishing facilities. Recreational uses include boating, fishing, whale watching, and beach activities on Hollywood, Silver Strand, and Hueneme Beaches. Silver Strand and Hueneme Beaches are widely used year-round by beachgoers, with peak recreational uses during the summer season. Channel Islands Harbor is a small craft harbor that provides boat rentals, a public launch ramp, and a USCG Station. The jetties near Channel Islands Harbor are often utilized by pedestrians and fishermen. Port Hueneme Harbor is a shared port between the NBVC and Oxnard Harbor District. The port is utilized for commercial use, industrial use, and is an operating facility of NBVC. It is not used for recreational purposes. SWEF Beach is a fenced-in Navy property that does not allow public access.

### 4.8.2 Environmental Consequences

**Significance Criteria.** An impact to recreation will be considered significant if an alternative:

- Results in a permanent change or loss of existing recreational uses.

### *Proposed Action*

Direct effects to recreation would be those related to or caused by the physical presence of the dredge, associated equipment, and sand placement during construction, as well as bathymetric changes to the channels related to dredging. Indirect effects would be those related to post-construction topographic changes to navigation channels and to local beach profiles resulting from sediment placement.

Direct Effects: The presence of the dredge and supporting vessels would slightly restrict vessel traffic to both harbors during dredging within the dredge template and marine staging areas. However, boat ingress and egress would be maintained throughout all stages of construction. Navigational impacts would be minimized during dredging by issuing a Notice to Mariners and properly marking the immediate dredging area so that surfers, kayakers, and boaters would be able to safely avoid the immediate work area. Timing requirements to avoid impacts to sensitive species would result in the Proposed Action taking place during non-peak recreational season. Boat traffic would therefore be at a minimum during all construction activities. Recreation would be limited within the terrestrial staging areas; however, the total area comprises a small footprint in relation to the total available beach area and are not within areas typically used for recreational activities.

If sediment is placed on beaches, public access to portions of Silver Strand Beach and Hueneme Beach may be restricted during mobilization and demobilization of land-based equipment, sediment placement, and beach grading to ensure public safety. However, public access restrictions would be temporary, limited to only a small portion of the total available beach, and relatively short in duration (from days to months every other year). In addition, dredging and placement activities would take place during the fall and winter months, when beach use is at its lowest point. As SWEF Beach is closed to

the public, there would be no impacts to recreation on SWEF Beach. Nearby beaches would remain open and unrestricted. The ramps placed over the pipeline would allow access to the surf and near beach areas for recreational uses during construction. Temporary sand dikes would also be constructed as part of beach nourishment activities using native sand. However, earthmoving equipment would recontour the stockpiles to match the natural topography of the beach. Sand dikes would be removed, and the sand would be redistributed and regraded to match the existing beach contours upon completion of construction. Wave action would also disperse sediment to smooth out uneven or irregular contours.

Indirect Effects: Over the long-term, dredging would ensure a safe channel depth for recreational boat passage. If sediment is placed on beaches, beach nourishment would result in wider beaches, yielding increased recreational opportunities. If sediment is placed in the Nearshore Placement Site, topographic changes would only be visible below the surface of the water.

The Proposed Action would not result in a permanent change or loss of existing recreational uses. It would improve navigational safety and enhance and maintain the overall recreational values by renourishing the beach. Recreation would return to baseline conditions upon completion of construction. Impacts would be less than significant.

#### *No Action Alternative*

Under the No Action Alternative, the Channel Islands and Port Hueneme Harbor federal channels would not be dredged. The No Action Alternative would avoid temporary impacts to recreation because there would be no maintenance dredging or placement activities.

## 4.9 Aesthetics

### 4.9.1 Affected Environment

The principal scenic and visual resources of the Action Area include the harbor, marina, beaches, sailboats, yachts, and wildlife. Certain portions of the Action Area offer views of the low hills and the Channel Islands.

### 4.9.2 Environmental Consequences

**Significance Criteria.** An impact to aesthetics will be considered significant if an alternative results in:

- A substantial and permanent modification to the scenic vista

#### *Proposed Action*

Direct effects to the aesthetic character or viewshed would be those related to or caused by the physical presence of the dredge and associated equipment during construction. Indirect effects would not occur.

Direct Effects: Dredging and material placement may temporarily diminish or alter the aesthetic character of the Action Area. The dredge and supporting vessels would be present in the harbor for a maximum of five months every two years, which would not permanently affect views of the harbor, beach, ocean, or coastline in the Action Area. Temporary safety fencing would be a high visibility orange colored, high density polyethylene grid, a minimum of 48 inches high and maximum mesh size

of 2 inches. Pipeline, access ramps and discharge dikes would be visible from nearby residences and visible to beach users. The construction equipment (bulldozers and scrapers), fencing, pipeline, ramps, and sand dikes would be low relief features that would temporarily impact aesthetics. Sand dikes and ramps would be removed, and the sand would be redistributed and regraded to match the existing beach contours upon completion of construction. Wave action would also disperse sediment to smooth out uneven or irregular contours. Equipment present within the terrestrial staging areas may temporarily restrict visibility of scenic vistas from certain angles. All scenic vistas would return to pre-project conditions upon completion of the Proposed Action.

The Proposed Action would not result in substantial and permanent modification to the scenic vista. Therefore, impacts to aesthetics would be less than significant.

#### *No Action Alternative*

Under the No Action Alternative, the Channel Islands and Port Hueneme Harbor federal channels would not be dredged. The No Action Alternative would avoid temporary impacts to aesthetics because there would be no maintenance dredging or placement activities.

## 4.10 Greenhouse Gases

### 4.10.1 Affected Environment

Greenhouse gases (GHGs) are gaseous compounds that trap solar radiation and contribute to an increase in global average temperature resulting in global climate change. Natural processes as well as anthropogenic activities such as fossil fuel combustion, deforestation, and other activities result in emission of GHGs. Major GHGs include carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are the principal GHGs emitted which contribute to global warming. Emissions of $CO_2$ are largely byproducts of fossil fuel combustion, while $CH_4$ results from off-gassing, natural gas leaks from pipelines and industrial processes, and incomplete combustion associated with agricultural practices, landfills, energy providers, and other industrial facilities. Other anthropogenic GHGs include fluorinated gases such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, which have much higher potential for heat absorption than $CO_2$ and are byproducts of certain industrial processes.

The ability of each type of compound to absorb solar radiation is identified by its global warming potential (GWP). For example, $N_2O$ has 265 times GWP of $CO_2$ for a 100-year timescale. Carbon dioxide equivalent ($CO_2e$) allows for comparison of different amounts of various compounds and their respective GWPs by using $CO_2$ as a reference gas and is expressed in metric tons. For example, the $CO_2e$ of 1 metric ton of $N_2O$ is equivalent to 265 metric tons $CO_2e$. That is, 1 metric ton of $N_2O$ will absorb solar radiation equivalent to 265 metric tons of $CO_2$.

**National and State Inventories of Greenhouse Gases**

In 2021, the United States total gross GHG emissions were approximately 6,340.2 million metric tons of CO2e. Emissions decreased by 2.3 percent from 1990 to 2021 though there have been noteworthy fluctuations in recent years. There was a sharp decline from 2019 to 2020 due to reductions in emissions from travel and other economic activity due to the COVID-19 pandemic. Emissions from fossil fuel production rebounded from 2020 to 2021. Of the major sectors nationwide, transportation accounts for the highest volume of GHG emissions at approximately 27 percent of the total, followed by

electricity, industry, commercial and residential, and agriculture contributing 25 percent, 24 percent, 13 percent and 11 percent of the total, respectively (USACE, 2023).

In 2020, the State of California emitted approximately 369.2 million metric tons of CO2e. Similar to trends seen nationwide, California experienced decreases in emissions from 2019 to 2020 due to the COVID-19 pandemic, with the largest decreases from the transportation sector at approximately 27 million metric tons of $CO_2e$ compared to 2019, a 16 percent decrease. Commercial, residential, and agricultural emissions have stayed consistent from 2000 to 2020 in California, with decreases largely from residential emissions starting in 2011 and onwards which is largely attributable to a series of warmer winters which required less need for residential space heating in winter months. The agricultural sector contributed approximately 8.6 percent of statewide GHG emissions in 2020, mainly from methane and nitrous oxide sources. Approximately 71 percent of agricultural sector GHGs are emitted by livestock in California and were 18 percent higher in 2020 compared to 2000 levels. California increased its usage of electricity generated using hydroelectric, wind, and nuclear energy sources from 2000 to 2020, such that in 2020 approximately 45 percent of total electricity generation came from non-fossil fuel sources. As of 2020 only 16 percent of statewide GHG emissions were from electricity generation, a decrease compared to previous years (USACE, 2023).

## Applicable Greenhouse Gas Guidance

**Interim NEPA Guidance on Consideration of Greenhouse Gas Emissions and Climate Change:** On January 9, 2023, the Council on Environmental Quality (CEQ) released National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change. This guidance provides recommendations to federal agencies for incorporation of GHG and climate change considerations into the NEPA process. Extent of GHG consideration efforts is to be guided by the rule of reason. That is, level of analysis should be proportional to GHG emission levels. The guidance recommends quantification and disclosure of GHG emissions as well as the associated social costs.

**USACE Engineering and Construction Bulletin (ECB) 2024-9:** ECB 2024-9 provides a detailed analytic process to ensure USACE's GHG analyses comply with the CEQ guidance and as well as directives from various Executive Orders.

## Social Costs of Greenhouse Gases

Social costs of GHG are based on *Technical Support Document: EPA Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances* (November 2023). Table 11 provides dollar cost by year of construction and near-term rates per metric ton of $CO_2e$. The USACE uses the 2.5% near-term rate.

***Table 11. Social Costs Per Metric Ton of CO2e at 2.5% Near-Term Rate***

| Emissions Year | Social Costs |
|---|---|
| 2024 | $128 |
| 2025 | $130 |
| 2026 | $133 |
| 2027 | $136 |
| 2028 | $139 |
| 2029 | $141 |

### 4.10.2 Environmental Consequences

There are currently no Federal GHG emission thresholds. Therefore, a quantitative GHG significance threshold to assess impacts is not proposed. Rather, in compliance with NEPA implementing regulations as well as CEQ's GHG guidance, the quantified GHG emissions as well as their associated social costs are disclosed for each alternative.

In the absence of a quantitative GHG threshold, Section 5(c) of ECB 2024-9 recommends use of the Federal 2050 Net-Zero GHG Emissions Reduction Goal as a significance criterion for evaluation of GHG effects. That is, the GHG emissions from a project alternative will be considered significant if GHG emissions would prevent the Federal 2050 Net-Zero GHG Emissions Reduction Goal from being met. The assessment is qualitative.

**Significance Criterion.** Greenhouse gas impacts are considered significant if a project alternative:

- Prevents the Federal 2050 Net-Zero GHG Emissions Reduction Goal from being met.

***Proposed Action***

Direct Effects. Use of marine vessels, dredging equipment, off-road vehicles, and on-road vehicles would result in emissions of GHGs.

Tables 12a and 12b show total maximum GHG emissions estimates for the respective dredge platforms. Total maximum emissions assume that all areas would be dredged and that all dredging will occur within the calendar year.

Tables 13a and 13b show GHG emissions data where the total emissions have been prorated for dredge years and dredge areas and the associated social costs. With respect to dredge years, construction window is October 1 through February 28. Thus, for all dredge cycles, emissions occur across the calendar year. Dredge Cycle 1 (2024/2025) would start in December and end in February of the following year. Dredge Cycle 2 (2026/2027) and Dredge Cycle 3 (2028/2029) would start in October and end in February of the following year. In Dredge Cycle 1 (2024/2025), Area G in the Channel Islands Harbor would not be dredged. It would be dredged for the Dredge Cycle 2 (2026/2027) and Dredge Cycle 3 (2028/2029).

Nationwide and statewide trends indicate reduction in GHG emissions especially in the areas of transportation and power generation. However, the Proposed Action is maintenance of an existing federal project. The proposed work would not affect trends in transportation or energy generation.

Indirect Effects: The Proposed Action would contribute to nationwide and statewide GHG emissions. However, the additional tonnage of GHG added would be de minimis relative to nationwide and statewide GHG inventories.

Based on the analysis of direct and indirect effects above, GHG emissions associated with the Proposed Action would not prevent the Federal 2050 Net-Zero GHG Emissions Reduction Goal from being met. Impacts would be less than significant.

***Table 12a. Total Maximum GHG Emissions (Hydraulic Dredge)***

| Location and Type of Dredge | Estimated GHG Emissions (Metric Tons /Year) [1] |
|---|---|
| Channel Islands Harbor Dredge Template (Areas A, B, C, D, E[2], & G) Hydraulic Pipeline Dredge | 1,465.736 |
| Port Hueneme Harbor Dredge Template Hydraulic Pipeline Dredge | 144.963 |
| **Total** | **1,610.70** |

[1]SMAQMD (2017; 2023); California Emissions Estimator Model (CalEEMod) version 2022.1.1.21.
[2] Portion of Area E material currently approved for dredging is only deemed suitable for beach placement at the Hueneme Beach Placement Site

***Table 12b. Total Maximum GHG Emissions (Clamshell Dredge)***

| Location and Type of Dredge | Estimated GHG Emissions (Metric Tons /Year) [1] |
|---|---|
| Channel Islands Harbor Area A (Clamshell Dredge), Areas B, C, D, E[2], & G) Hydraulic Pipeline Dredge Estimated Emissions | 906.769 |
| Port Hueneme Harbor Dredge Template Clamshell Dredge | 89.680 |
| **Total** | **996.45** |

[1] SMAQMD (2017; 2023); California Emissions Estimator Model (CalEEMod) version 2022.1.1.21.
[2] Portion of Area E material currently approved for dredging is only deemed suitable for beach placement at the Hueneme Beach Placement Site

***Table 13a. Prorated GHG Emissions and Social Costs (Hydraulic Dredge)***

| Emissions Year | Social Costs[1] | Estimated GHG Emissions (Metric Tons /Year) | Estimated Net Social Costs[2] |
|---|---|---|---|
| 2024 | $128 | 512 | $65,493 |
| 2025 | $130 | 1023 | $133,034 |
| 2026 | $133 | 966 | $128,534 |
| 2027 | $136 | 644 | $87,622 |
| 2028 | $139 | 966 | $134,332 |
| 2029 | $141 | 644 | $90,843 |

[1] EPA Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances (November 2023). Table A.5.1. 2.5% near-term rate for year 2025.
[2] Per ECB 2024-9, estimated GHG emissions for action alternatives are to account for GHG emissions associated with the No Action Alternative – i.e., emissions for the No Action Alternative would be subtracted from each of the action alternative emissions totals to yield net emissions for the action alternatives. In this instance, the No Action Alternative would not result in GHG emissions and there would be no social costs. Thus, the total social costs for this alternative are equivalent to the net social costs.

*Table 13b. Prorated GHG Emissions and Social Costs (Clamshell Dredge)*

| Emissions Year | Social Costs[1] | Estimated GHG Emissions (Metric Tons /Year) | Estimated Net Social Costs[2] |
|---|---|---|---|
| 2024 | $128 | 317 | $40,517 |
| 2025 | $130 | 633 | $82,300 |
| 2026 | $133 | 598 | $79,517 |
| 2027 | $136 | 399 | $54,207 |
| 2028 | $139 | 598 | $83,104 |
| 2029 | $141 | 399 | $56,200 |

[1] EPA Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances (November 2023). Table A.5.1. 2.5% near-term rate for year 2025.

[2] Per ECB 2024-9, estimated GHG emissions for action alternatives are to account for GHG emissions associated with the No Action Alternative – i.e., emissions for the No Action Alternative would be subtracted from each of the action alternative emissions totals to yield net emissions for the action alternatives. In this instance, the No Action Alternative would not result in GHG emissions and there would be no social costs. Thus, the total social costs for this alternative are equivalent to the net social costs.

### *No Action Alternative*

Under the No Action Alternative, the harbor channels would not be dredged. There would be no emissions of GHGs. There would be no associated social costs.

# 5. GROWTH INDUCEMENT AND CUMULATIVE IMPACTS

## 5.1 Growth Inducement

Dredging of the federal channel is a routine, recurring maintenance dredging. The Corps last performed maintenance dredging at Channel Islands Harbor in 2022/2023 and in Port Hueneme Harbor in 2021. Placement activities of dredged material is a beneficial use for beach nourishment. The Proposed Action is not in support of planned infrastructure improvements that would result in additional growth. The Proposed Action would not require additional employees other than temporary contractor employees. The Proposed Action would not displace numbers of people except for temporary disruption to vessels utilizing the harbors and people recreating at the placement sites. The Proposed Action would not induce growth within the Action Area.

## 5.2 Cumulative Effects

NEPA requires that cumulative effects be analyzed and disclosed. CEQ regulations define “cumulative effects” as “effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from actions with individually minor but collectively significant effects taking place over a period of time.” 40 C.F.R. 1508.1(i)(3).

A cumulative effects assessment should consider how the direct and indirect environmental effects caused by the federal action (i.e., the incremental impact of the action) contribute to the aggregate effects of past, present, and reasonably foreseeable actions, and whether that incremental contribution

is significant or not.

The geographic scope of the cumulative effects analysis includes the Action Area plus approximately 300 feet beyond the Action Area.

The timeframe for analysis of cumulative effects can be described as the reasonable and foreseeable estimate for implementation of cumulative projects, in addition to the proposed action. For purpose of this analysis and discussion of existing, ongoing, or planned projects, this timeframe would extend from the present to approximately 2031, a period of time comprised of the projected completion of the project and one year of monitoring and adaptive management before the next dredging cycle, expected to being in 2032, which would have its own cumulative effects assessment.

The Corps has been routinely performing maintenance dredging of Channel Islands since the 1960s and Port Hueneme Harbor as needed dating back to 1975 (Section 1.1). During the 2008/2009 Port Hueneme Confined Aquatic Disposal (CAD) Project, a total of 685,000 CY of sand was hydraulically dredged from a prescribed area of the harbor's Turning Basin to create a CAD cell to facilitate confined aquatic disposal of contaminated sediment from the harbor. The channels of Port Hueneme were deepened in 2021 to the current authorized depths. The Corps is responsible for the federal structures at Channel Islands Harbor (North Jetty, South Jetty, and Detached Breakwater), maintenance of these structure is conducted as needed. Most recent repairs to the North Jetty, South Jetty, and Detached Breakwater were completed in 2021. The Corps is responsible for the federal structures at Port Hueneme Harbor (West Jetty and East Jetty), maintenance of these structure is conducted as needed. Most recent repairs to the West Jetty and East Jetty were completed in 2000.

Identification of other relevant projects entailed the following:

1. Consultation with appropriate entities including: Naval Base Ventura County (NBVC), Channel Islands Harbor Authority, Port of Hueneme – Oxnard Harbor District, Corps Regulatory Division, and other relevant stakeholders.
2. Review of Corps Regulatory Division database for Regulatory actions within the geographic scope of analysis.

As confirmed with Corps Regulatory Division in February 2024, Regulatory Division permit actions for other projects or activities within the Federal Navigation Channel or dredge material placement sites are found in Table 14.

***Table 14. Corps Regulatory Permit Actions***

| Permit ID | Past, Present, or Future Action | Applicant | Work Type | Permit Begin Date | Permit End Date | Description |
|---|---|---|---|---|---|---|
| 11985137 | Past | Christina Birdsey (Oxnard Harbor District) | Dredging; deepening and maintenance; Wharf Improvement | 27-SEP-2022 | 28-NOV-2023 | The project includes deepening the berths to -40 feet MLLW plus 2 feet of overdepth. The OHD is now proposing to complete the deepening of Wharf 1 by dredging Berth 3 to -40 feet MLLW and improving the adjacent wharf to accommodate the new depth. OHD proposes to perform knockdown dredging of high spots within Berths 1 and 2 to restore them to their design depth of -40 feet MLLW. The total volume of material proposed for dredging from the OHD berths is estimated to be 8,000 cy, consisting of approximately 6,300 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | cy from Berth 3 and 1,700 cy from Berths 1 and 2. Sediment was characterized to determine suitability for beach nourishment in the nearshore zone at Hueneme Beach, and the 6,300 cy of sediment from Berth 3 was approved by the DMMT for nearshore placement at Hueneme Beach. Wharf improvements include installing a sheet pile toe wall along the base of the wharf. Existing fender pile system would be removed to install the toe wall, and a new fender pile system would be installed alongside the toe wall. |
| SPL-2023-00650-AJS | Future | Robert Kimnach III Commanding Officer NBVC | Naval Base Ventura County Sand Management Program | 31-JAN-2024<br><br>(Begin Program Comment period) | | Establish the Naval Base Ventura County Sand Management Program, consisting of periodic removal of sand accumulation impacting upland facilities and infrastructure and placing the material on beaches subject to ongoing erosion within Naval Base Ventura County Point Mugu and Port Hueneme (centered around 34.096243, -119.104860). |
| 11616813 | Past | NBVC | NBVC Port Hueneme Wharf Repair | 20-AUG-2021 | 22-OCT-2021 | Repair a 25-foot section of Wharf 3 damaged by a vessel collision. Demolition phase: Extract and dispose of three (3) damaged composite fender piles using cranes. Demolish and dispose of 18 linear feet of concrete edge beam at damaged piles. Extract and dispose of two (2) damaged concrete tee beams using cranes. Construction phase: Install two (2) concrete tee beams using a crane to drive new tee beams in place. Cast new 18ft concrete edge beam using formed and cast in place techniques. Install new composite fender piles driving in place of existing piles. Replace damaged stainless steel ladder. Repair 1,00 square feet of concrete cracks and damage including repair of spalling of existing decking |
| 11232057 | Past | Randy Short (Bahia Marina) | Structure/ Dock/ Floating | 17-JUL-2020 | 11-SEP-2020 | Bahia Marina Dock Expansion and Replacement |
| 11817501 | Past | Peninsula Yacht Marina | Structure/ Maintenance<br><br>Marina Reconstruction | 31-MAR-2022 | 17-MAY-2022 | The Ventura County Harbor Department proposes to replace 201 boat slips with 179 new slips ranging in size from 19 feet to 80 ft. in length, demolish and replace dock infrastructure, including placement of new piers, abutments, and gangways, new dock boxes, and electrical utility systems located at the Peninsula Yacht Anchorage recreational boating marina. |
| Corps file no. SPL-2018-00040-AJS | Past, Present, and Future | Ventura County Public Works, Watershed Protection District | O&M Activities | 2-JUN-2022<br><br>(Notice to Proceed) | | (1) Santa Paula Street Outlet Relocation-Reconstruct and relocate a storm drain outfall (at 34.152258°N; 119.219757°W). The existing outlet would be demolished and relocated landward approximately 30 feet to a point above the high tide line. |

As confirmed with Naval Base Ventura County (NBVC) in May 2024, the Navy has ongoing Port Operations, significant vessel activity, and various training and testing activities, including, but not limited to dredging training, port damage repair training, and testing of manned and unmanned vessels. These activities, while not well defined, may contribute to cumulative effects, most likely in vessel traffic, water quality, air quality, and noise from concurrent operations.

### 5.2.1 Cumulative Effects Assessment

Under the No Action Alternative, maintenance dredging and placement activities would not occur. Existing conditions within the geographic scope of analysis would persist. As the No Action Alternative would not result in any incremental impacts, there would be no resulting cumulative effects even with consideration of past, present, or reasonably foreseeable actions. Cumulative effects of the implementation of the proposed action in consideration with other past, present, and reasonably foreseeable actions are discussed below.

**Oceanography and Water Quality:** As discussed in Section 4.1, water quality would be temporarily affected during the dredging and placement processes. When considering the direct and indirect impacts that would result from the Proposed Action, in relation to the overall direct and indirect impacts from other past, present, and reasonably foreseeable actions, the incremental effects of the Proposed Action to cumulative effects in the geographic scope of analysis would be less than significant. This is because water quality effects of the Proposed Action are short term and not expected to extend more than a few hundred feet beyond the dredge or persist for more than a few hours.

**Biological Resources:** As discussed in Section 4.2, effects to biological resources that would result from the Proposed Action would be temporary and insignificant. Most species that occur within the dredge and disposal footprint are common to nearshore environments and widespread throughout the harbor and adjacent coastline and all effects (primarily avoidance of the immediate work area) would be temporary. Corps has concluded that the Proposed Action would have No Effect on the endangered WNP gray whale DPS (*Eschrichtius robustus*). The Proposed Action may adversely affect the federally listed endangered California Least Tern (*Sternula antillarum browni*), federally listed threatened Western Snowy Plover (*Charadrinus nivosus nivosus*) and its Designated Critical Habitat (Appendix D). When considering the direct and indirect impacts that would result from the Proposed Action, in relation to the overall direct and indirect impacts from other past, present, and reasonably foreseeable actions, the incremental effects of the Proposed Action to cumulative effects in the geographic scope of analysis would be less than significant.

**Air Quality:** As discussed in Section 4.3, the Action Area is in non-attainment for ozone (O3) and in maintenance for NO2, CO, SO2, PM2.5, PM10, and Lead. Emissions resulting from the Proposed Action would not equal or exceed the general conformity applicability rates. When considering the direct and indirect impacts that would result from the Proposed Action, in relation to the overall direct and indirect impacts from other past, present, and reasonably foreseeable actions, the incremental effects of the Proposed Action to cumulative effects in the geographic scope of analysis would be less than significant.

**Noise:** As discussed in Section 4.4, noise impacts resulting from construction activities of the Proposed Action would be temporary and intermittent. When considering the direct and indirect impacts that would result from the Proposed Action, in relation to the overall direct and indirect impacts from other past, present, and reasonably foreseeable actions, the incremental effects of the Proposed Action to cumulative effects in the geographic scope of analysis would be less than significant.

**Cultural Resources:** As discussed in Section 4.5, the APE has been assessed for the presence of cultural resources listed or eligible for listing on the National Register of Historic Places (NRHP). The results of these studies were coordinated with the State Historic Preservation Officer (SHPO).

The Proposed Action is expected to avoid impacts to historic properties. The high-energy nature of the shoreline environment along the California coast and the high degree of previous disturbance in the Action Area makes preservation of intact submerged cultural resources very unlikely. When considering the direct and indirect impacts that would result from the Proposed Action, in consideration with past, present, and reasonably foreseeable actions, the incremental effects of the Proposed Action to cumulative effects in the geographic scope of analysis would be less than significant.

**Vessel Traffic and Safety:** As discussed in Section 4.6, the Proposed Action avoids to the extent practicable interruption of the vessel operations in the harbor and provides a benefit to recreational and commercial uses of the harbor. Therefore, the risk of vessel traffic and safety is negligible. When considering the direct and indirect impacts that would result from the Proposed Action, in combination with past, present, and reasonably foreseeable actions, the incremental effects of the Proposed Action to cumulative effects in the geographic scope of analysis would be less than significant.

**Ground Transportation and Traffic:** As discussed in Section 4.7, the Proposed Action is expected to have minor adverse impacts on local traffic by not adding substantially to existing traffic in the area nor creating hazardous traffic conditions. The construction crew vehicles and equipment would temporarily impact traffic on local roads; however, this impact would not be significant because they would not add to the average daily traffic volume. All of the large equipment would come by sea and would not impact local roads. When considering the direct and indirect impacts that would result from the Proposed Action, in combination with past, present, and reasonably foreseeable actions, the incremental effects of the Proposed Action to cumulative effects in the geographic scope of analysis would be less than significant.

**Recreation:** As discussed in Section 4.8, the Proposed Action would not result in a permanent loss of existing recreational uses. Any negative effects to water quality or access issues during placement of dredged material would be temporary. The Proposed Action would nourish nearby and downcoast beaches, particularly Silver Strand and Hueneme Beaches, and therefore have a positive effect on recreational uses. When considering the direct and indirect impacts that would result from the Proposed Action, in combination with past, present, and reasonably foreseeable actions, the incremental effects of the Proposed Action to cumulative effects in the geographic scope of analysis would be less than significant.

**Aesthetics:** As discussed in Section 4.9, visual effects from past dredging and placement activities would be short-term. The presence of the dredge and support equipment may be noticeable but would not significantly, adversely affect the visual character of the harbor or nearshore placement area. When considering the direct and indirect impacts that would result from the Proposed Action, in combination with past, present, and reasonably foreseeable actions, the incremental effects of the Proposed Action to cumulative effects in the geographic scope of analysis would be less than significant.

**Greenhouse Gases (GHG):** As discussed in Section 4.10, GHG emissions from all construction activities are categorized as direct, short term, and local. The temporary nature of these emissions along low levels of predicted emissions would not prevent the federal GHG reduction goal from being met. When considering the direct and indirect impacts that would result from the Proposed Action, in relation to the past, present, and reasonably foreseeable actions, the incremental effects of the Proposed Action to cumulative effects in the geographic scope of analysis would be less than significant.

# 6. ENVIRONMENTAL COMPLIANCE AND COMMITMENTS

## 6.1 Compliance

### 6.1.1 National Environmental Policy Act (NEPA) of 1969, as amended (42 USC 4321 et seq.); Council on Environmental Quality Regulations for Implementing NEPA, 40 CFR Parts 1500 to 1508; USACE Regulations for Implementing NEPA, 33 CFR Part 230.

This EA has been prepared in accordance with NEPA and implementing regulations. A Public Notice on a Preparation of an EA was circulated for public review on March 4, 2024, for a 30-day public review period ending April 5, 2024, during which time comments on the Proposed Action were solicited (Appendix A). Public comments on the Proposed Action and responses to comments can be found in Appendix A.

### 6.1.2 Clean Water Act (CWA) of 1972, as amended (33 USC 1251, et seq.)

A pre-filing meeting request was submitted to the LARWQCB on December 12, 2023, and the pre-filing meeting was held on January 11, 2024. On February 9, 2024, the Corps submitted a request to the LARWQCB for a Water Quality Certification under Section 401 of the CWA for the Proposed Action. A Water Quality Certification was obtained April 29, 2024. Following receipt, the Corps identified and discussed with LARWQCB concerns with several provisions of the certification. The LARWQCB addressed some but not all of the concerns in amendment 1 issued July 29, 2024 (Appendix I). The LARWQCB addressed the outstanding concerns in amendment 2 issued October 28, 2024. The discharge of dredged or fill material associated with the Proposed Action has been found to be compliant with section 404(b)(1) Guidelines (40 CFR 230; Appendix B). The Proposed Action is in compliance with the CWA.

### 6.1.3 Endangered Species Act (ESA) of 1973, as amended (16 USC 1531, et seq.)

Pursuant to section 7 of the ESA of 1973, as amended, the Corps determined that the Proposed Action would have no effect on the gray whale. The Corps determined that the Proposed Action may adversely affect the federally listed endangered California Least Tern (*Sternula antillarum browni*), federally listed threatened Western Snowy Plover (*Charadrinus nivosus nivosus*) and its Designated Critical Habitat. Formal consultation pursuant to section 7 of the ESA of 1973, as amended, was previously initiated with USFWS on August 31, 2022, and was completed with receipt of a Biological Opinion (BO) from USFWS on December 15, 2022 (Appendix D). USFWS confirmed this BO remains valid on June 14, 2024 (Appendix D).

### 6.1.4 Fish and Wildlife Coordination Act, as amended (16 USC 661, et seq.)

The Fish and Wildlife Coordination Act requires the Corps to consult with the USFWS whenever the waters of any stream or other body of water are proposed to be impounded, diverted, or otherwise modified. The Proposed Action will not result in an impoundment, diversion, or modification of any body of water; therefore, a Coordination Act Report is not required. The Corps has coordinated the Proposed Action with the USFWS and the NMFS. The Proposed Action is in compliance with the Fish and Wildlife Coordination Act.

### 6.1.5 Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-711)

The MBTA makes it unlawful to possess, buy, sell, purchase, barter or “take” any migratory bird listed in 50 CFR Part 10. “Take” is defined as possession or destruction of migratory birds, their nests, or eggs. The Proposed Project would not entail the taking, killing or possession of any migratory birds and is therefore in compliance with the Act. The Proposed Action also complies with Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds. The Proposed Action is in compliance with the Act.

### 6.1.6 Coastal Zone Management Act of 1976, as amended (16 USC 1456, et seq.)

A Consistency Determination was submitted to the California Coastal Commission for concurrence on February 8, 2024. Consistency Determination concurrence was received on May 17, 2024 (Appendix G). The Proposed Action is in compliance with the Coastal Zone Management Act.

### 6.1.7 Magnuson-Stevens Fishery Management and Conservation Act (MSA), as amended (16 USC 1801, et seq.)

In accordance with the MSA, the Corps prepared an Essential Fish Habitat (EFH) assessment for the Proposed Action (Appendix C). The Corps concluded that the Proposed Action would not result in a substantial, adverse impact to EFH. The Corps initiated EFH consultation with the NMFS via email on February 26, 2024. NMFS concurred with the Corps’ determination via email on February 29, 2024, and did not provide additional conservation recommendations (Appendix C). The Proposed Action is in compliance with the MSA.

### 6.1.8 Marine Mammal Protection Act (MMPA) of 1972, as amended (16 USC 1361, et seq)

The Corps evaluated the potential for the Proposed Action to affect marine mammals in the Action Area during dredging and placement activities. Analysis in this EA demonstrates the Proposed Action would not affect marine mammals, including federally listed whale species and Distinct Population Segments. Marine mammals react to dredging and associated support vessels as they do to any other vessels they encounter. Vessels used for the project typically travel at approximately 1-2 knots within the harbor and at or below approximately 6-8 knots outside the harbor, both below the maximum speed recommended by the NMFS (10 knots) for minimizing impacts to marine mammals. This relatively slow speed allows marine mammals to avoid construction-related vessel traffic. This level of interaction does not result in take or harassment under the MMPA. Therefore, the Proposed Action is in compliance with the MMPA.

### 6.1.9 Clean Air Act of 1969, as amended (42 USC 7401, et seq.)

Proposed Action is exempt from the General Conformity Rule pursuant to 40 CFR 93.153(c)(2)(ix). Therefore, the Proposed Action is in compliance with the Clean Air Act.

### 6.1.10 National Historic Preservation Act of 1966, as amended (54 USC 300101, et seq.)

Section 106 of the Act requires Federal agencies to take into account the effects of their undertaking on historic properties. Previous consultation with the SHPO and tribes resulted in a determination and concurrence that no historic properties would be affected by the undertaking. Consultation was first

initiated for the current dredge cycle on September 27, 2022, for all parts of the Action Area, with the exception of the Drift Sand Pile. The 2022 consultation received concurrence on December 23, 2022 (Appendix F). Consultation was reinitiated with SHPO and tribes on February 2, 2024, to include removal of sediments from the Drift Sand Pile and to place an additional volume of sediments on SWEF Beach, which the SHPO concurred with on March 5, 2024. If previously unknown cultural resources are identified during project implementation, all activity will cease until requirements of 36 CFR 800.13, *Post-review discoveries*, are met. The project is in compliance with the Act.

### 6.1.11 Executive Order 12898, Environmental Justice in Minority and Low-Income Populations, Executive Order 14008, Tackling the Climate Crisis at Home and Abroad, and Executive Order 14096, Revitalizing Our Nation's Commitment to Environmental Justice for All, and 40 CFR 1508.1

Environmental justice (EJ) is defined as the "just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision making and other Federal activities that affect human health and the environment so that people: (1) Are fully protected from disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens, and the legacy of racism or other structural or systemic barriers; and (2) Have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices".

Executive Order (EO) 12898 requires all Federal agencies to conduct programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons from participation in, denying persons the benefits of, or subjecting persons to discrimination under, such programs, policies, and activities, because of their race, color, or national origin. EO 12898, as supplemented by EO 14096, requires Federal agencies to identify and address disproportionately and adverse human health or environmental effects and hazards of programs on People of Color (POC) and low-income populations. Additionally, provisions of EO 14008 guidance regarding Environmental Justice and Justice40 initiative, and EO 14096 on Revitalizing Our Nation's Commitment to Environmental Justice for All dated April 21, 2023, apply as well.

Use of the USEPA's Environmental Justice Screening and Mapping Tool (EJSCREEN; USEPA 2022) is recommended to describe the attributes of a community (https://ejscreen.epa.gov/mapper/). The CEQ released the Climate and Economic Justice Screening Tool (CEJST; https://screeningtool.geoplatform.gov/en) per EO 14008 to provide a consistent government-wide identification of communities with EJ concerns. Based on ASA(CW) guidance (Memo on Implementation of Environmental Justice and the Justice40 Initiative dated March 15, 2022, the Corps is to use CEQ's and USEPA's EJ tools for the purpose of addressing EJ concerns. The tools are also useful for identifying POC and low-income populations for compliance with EO 12898 and EO 14008.

To identify disadvantaged communities within the Action Area, an analysis was performed using the CEQ's CEJST. Complete CEJST results can be found in Appendix H. Disadvantaged communities were identified within and adjacent to the Affected Area (census tracts 06111004400, 06111004715, and 06111004506).

Additionally, an EJSCREEN analysis of demographic data was conducted to further derive information on the approximate locations of low-income and POC populations in the affected area. Because the analysis considers disproportionate impacts, two areas must be defined to facilitate comparison between the area directly affected and a larger regional area that serves as a basis for comparison and

includes the area actually affected. The larger regional area is defined as the smallest political unit that includes the affected area and is called the community of comparison. For purposes of this analysis, the affected area is the Action Area plus a 1-mile buffer. The communities of comparison are the cities of Port Hueneme and Oxnard.

EO 12898 defines POC as individuals belonging to one of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A POC population is identified if the percentage in the affected area: 1) is greater than 50% or 2) is meaningfully greater than the communities of comparison. Low-income is defined as persons in households where the household income is less than or equal to twice the federal "poverty level". A low-income population is identified if the percentage of low-income persons in the affected area: 1) is greater than 50% or 2) is meaningfully greater than the communities of comparison.

Existing demographics of these three areas are shown in Table 15. The complete EJ SCREEN output can be found in Appendix H.

***Table 15. Environmental Justice Study Area Demographics***

| Demographic Indicator | Affected Area | City of Port Hueneme | City of Oxnard |
|---|---|---|---|
| People of Color Population | 68 % | 73 % | 87 % |
| Low Income Population | 41 % | 37 % | 34 % |

The Affected Area includes a POC population. The POC population percentage in the Affected Area exceeds 50 %. The POC population in the Affected Area is not meaningfully greater than the communities of comparison (Table 15). The Affected Area does not include a low-income population. The low-income population percentage in the Affected Area does not exceed 50 % and is not meaningfully greater than those in the communities of comparison (Table 15).

Construction of the Proposed Action would affect POC and low-income populations in the Affected Area. However, these impacts are minor: no adverse human health or environmental effects are anticipated. Moreover, the need for this project is fixed to this particular location. Dredging of the Federal channels would not be conducted if there were not a navigational risk in the area. Environmental impacts would not be disproportionately borne by POC or low-income populations. The Proposed Action would not result in a substantial shift in population, housing, and employment, or a disproportionately and adverse human health or environmental effect on POC or low-income populations. Local populations would directly benefit from Channel Islands/Port Hueneme Harbors maintenance dredging project. The Proposed Action is in compliance with the EOs.

## 6.2 Environmental Commitments

The following environmental commitments are included as part of the Proposed Action:

### 6.2.1 Water Quality (WQ)

**WQ-1:** The Contractor shall implement a Water Quality Monitoring Plan. Water quality parameters, including pH, turbidity, DO, light transmissivity, salinity, and temperature will be monitored weekly throughout dredging operations. The Clean Water Act (CWA) Section 401 Water Quality Certification will be implemented by the Corps and the Contractor to ensure compliance.

**WQ-2:** Should turbidity or any of the other parameters exceed action levels, prescribed actions may be taken (i.e., slowing dredge cycle times, relocating operations to areas less susceptible to the current drift at the time of dredging or placement operations, and/or temporarily halting dredging/placement activities).

**WQ-3:** Standard dredge specifications include a Spill Prevention Plan and Cleanup Plan that includes measures to prevent spills and to clean up any spills that could occur, employee training, and the staging of materials on site to clean up accidental spills. Spills will be cleaned up immediately (within 10 minutes).

**WQ-4:** All dredging and fill activities will remain within the boundaries specified in the plans. There will be no dumping of fill or material outside of the project area or within any adjacent aquatic community.

**WQ-5:** Project features shall not interfere with tidal circulation and/or freshwater inflows into and through water bodies.

**WQ-6:** The Contractor shall remove all trash, debris, and excess construction material from the dredge operations and from dredged material placement site at the end of each workday and shall dispose of all materials at an approved disposal site. All debris will be disposed of as solid waste.

**WQ-7:** The Contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters and to minimize interference with, disturbance to, and damage of fish and wildlife.

**WQ-8:** The restricted portions of Channel Islands Harbor Area E and the Entrance Channel in Port Hueneme Harbor will not be dredged unless and until sediment testing has been performed and a suitability determination made by the Corps in coordination with the SC-DMMT.

### 6.2.2 Biological Resources (BR)

**BR-1**: To avoid potential impacts to protected resources, no construction/dredging activities (i.e., equipment mobilization, dredging, equipment demobilization) will be conducted within the Channel Islands and Port Hueneme Harbors and adjacent beaches (Silver Strand, Hollywood Beach, SWEF Beach, and Hueneme Beach) and Hueneme Nearshore Placement Site, from March 1 through September 30. Biennial dredging and beach placement will occur between October 1 and February 28 to accommodate sensitive environmental windows (western snowy plover nesting season – March 1 – September 15; California least tern nesting season – April 1 to September 15; California grunion – March 1 to August 31).

**BR-2**: Environmental Training shall be provided to all Contractor and Sub-Contractor personnel prior to work commencing to ensure full understanding of all project environmental protection and reporting requirements. Training shall include, but not limited to:

1) recognition and protection of archaeological sites and artifacts.
2) recognition and importance of the invasive algae, Caulerpa species.
3) recognition and protection of endangered species, their associated habitats, and nesting / spawning behavior in the project area
4) domestic pets are prohibited at the work site to avoid disturbance of endangered species that may occupy the beach areas.
5) general provisions of the Endangered Species Act (ESA) and the legal ramifications of violating the ESA;
6) recognition of marine mammals and laws prohibiting harassment, harassment defined per the Marine Mammal Protection Act of 1972.
7) recognition and importance of water quality protection commitments, pollution prevention measures, Best Management Practices (BMPs) implementation and measures.
8) recognition of the Spill Control Plan and Protocols, including anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants
9) recognition and importance of eelgrass, surfgrass, and canopy kelp.
10) recognition of the Migratory Bird Treaty Act.
11) conservation measures to be implemented during project construction to avoid impacts to sensitive resources, including avoidance areas, vehicle travel corridor limits, speed limits, and approved placement of construction materials.
12) protocol to resolve conflicts that may arise at any time during the construction process.
13) methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual.

**BR-3**: Perform a pre-construction and post-construction Hollywood Beach Dune Survey and analysis of impacts to dunes should they occur for each dredge cycle.

**BR-4**: The Consistency Determination (CD- 0001-24) conditions will be implemented by the Corps to ensure compliance.

**BR-5**: The Corps will implement the commitments and requirements of the Biological Opinion (08EVEN00-2022-0085983-S7), including the following Western snowy plover (WSP) and California least tern Avoidance and Minimize Measures to be implemented during construction:

1) The limits of the dredging and placement activities will be clearly marked to prevent heavy equipment from entering areas beyond the smallest footprint needed to complete the project;
2) Vehicles and all dredging activities will remain within the defined activity area and use only designated access points and staging areas;
3) The work area will be kept clean to avoid attracting predators and all food and trash will be disposed of in closed containers and removed from the project site;
4) No pets will be allowed on the construction site;
5) No dredging activities will be conducted in the sand trap area (adjacent to Hollywood Beach) during the shorebird/seabird nesting season (March 1 – September 30);
6) Prior to vehicles and equipment entering Hollywood Beach a qualified WSP monitor will survey the area. At all times a qualified WSP monitor will walk ahead of the vehicle(s) and equipment to assure that all WSPs are out of harm's way before the vehicle(s) or equipment can proceed on Hollywood Beach. Vehicles and equipment access to Hollywood Beach will be limited to safety signage and fencing installation, repairs, and removal;
7) Prior to vehicles and/or heavy equipment operation on Silver Strand Beach or Port Hueneme Naval Base SWEF Beach a qualified WSP monitor will survey the beach, the monitor will remain on site while operations involving vehicles and/or heavy equipment is occurring to ensure impacts to WSP are avoided, unless the Corps biologist in coordination

with the USFWS has determined there is no risk to WSP. If WSP are present the Corps Biologist will walk in front of the vehicles and/or equipment, ensuring the path taken by vehicles/equipment is one that avoids impacts to the WSP.

**BR-6**: Vessels will drop/retrieve anchors vertically, utilize crown buoys for anchoring, will not drag anchors, and will avoid visible canopy kelp to the maximum extent practicable.

**BR-7**: Perform a pre-construction eelgrass survey in accordance with NMFS's California Eelgrass Mitigation Policy prior to each biennial dredge cycle to confirm the absence of eelgrass within the dredge template, placement sites (as practicable), and immediate vicinity. Should eelgrass be found within the project area, the Corps will complete supplemental EFH consultation with the NMFS before any construction occurs.

**BR-8**: Conduct surveillance level surveys for *Caulerpa* species within the dredge template prior to each biennial dredging cycle in accordance with the *Caulerpa* Control Protocol, Version 5 October 2021.

**BR-9**: The Corps will monitor standard water quality parameters including turbidity, light transmissivity, salinity, pH, temperature, and DO throughout the project duration with prescribed actions to be taken should turbidity or any other parameters exceed compliance thresholds.

**BR-10**: Corps will have a marine mammal monitor on site when working in areas where California sea lions are congregated to ensure harassment of the pinnipeds does not occur within the Action Area.

**BR-11**: If a whale is observed within the harbor, dredging operations will immediately cease. The Corps will coordinate with the NMFS prior to commencing dredging operations if the whale remains in the area. If the whale leaves the work area, then dredging would again commence.

### 6.2.3 Air Quality (AQ)

**AQ-1:** The contractor must obtain all necessary air permit(s) prior to commencement of work, pay all associated fees, and follow all permit requirements.

**AQ-2:** The Contractor would use Tier IV engines for all off-road equipment.

### 6.2.4 Noise (N)

**N-1:** Grading or other activities requiring use of heavy equipment on the beach shall be limited to the hours of 7 AM to 7 PM on Silver Strand Beach.

### 6.2.5 Cultural Resources (CR)

**CR-1:** In the unlikely event that cultural resources are encountered during dredging, all action in the immediate area of the discovery would cease until the provisions of 36 CFR 800.13 (Post-review discoveries) are met.

**CR-2:** Avoidance flagging will be implemented to ensure removal of the Drift Sand Pile does not impact a potential World War II pistol range.

### 6.2.6 Vessel Traffic and Safety (VTS)

**VTS-1:** The Contractor shall mark the dredge and all associated equipment in accordance with USCG regulations. The Contractor must contact the USCG two weeks prior to the commencement of

dredging. The following information shall be provided: the size and type of equipment to be used; names and radio call signs for all working vessels; telephone number for on-site contact with the project engineer; the schedule for completing the project; and any hazards to navigation.

**VTS-2:** The Contractor shall move equipment upon request by the USCG and harbor patrol law enforcement and rescue vessels.

### 6.2.7 Ground Transportation and Traffic (GTT)

**GTT-1:** The contractor shall limit large truck (i.e., trash hauling or vendor equipment) trips of equipment and piping to off-peak commute periods and avoid sensitive receptor areas, schools, hospitals, convalescent homes, and residential areas, to the maximum extent possible.

### 6.2.8 Recreation (REC)

**REC-1:** The contractor shall provide public access to beaches, nearshore areas, sidewalks, recreation trails, roads, streets, and highways within the Action Area, to the maximum extent possible.

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# 8. ACRONYMS

| | |
|---|---|
| APE | Area of Potential Effects |
| AQ | Air quality |
| CAA | Clean Air Act |
| CCC | California Coastal Commission |
| CDFW | California Department of Fish and Wildlife |
| CEJST | Climate and Economic Justice Screening Tool |
| CEQ | Council on Environmental Quality |
| CO | Carbon monoxide |
| CO2 | Carbon dioxide |
| CWA | Clean Water Act |
| CY | cubic yards |
| DO | Dissolved oxygen |
| EA | Environmental Assessment |
| EFH | Essential Fish Habitat |
| ESA | Endangered Species Act |
| FMP | Fishery Management Plan |
| FONSI | Finding of No Significant Impact |
| MLLW | Mean Lower Low Water |
| NAAQS | National Ambient Air Quality Standards |
| NBVC | Naval Base Ventura County |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NMFS | National Marine Fisheries Service |
| NO2 | Nitrogen dioxide |
| O3 | Ozone |
| Pb | Lead |
| PCBs | Polychlorinated biphenyls |
| PM | Particulate matter |
| POC | People of Color |
| RWQCB | Regional Water Quality Control Board |
| SCCAB | South Central Coast Air Basin |
| SC-DMMT | Southern California Dredge Material Management Team |

| | |
|---|---|
| SEA | Supplemental Environmental Assessment |
| SHPO | State Historic Preservation Officer |
| SIP | State Implementation Plan |
| SMAQMD | Sacramento Metropolitan Air Quality Management District |
| SO2 | Sulfur dioxide |
| SWEF | Surface Warfare Engineering Facility |
| USCG | U.S. Coast Guard |
| USEPA | U.S. Environmental Protection Agency |
| USFWS | U.S. Fish and Wildlife Service |
| VCAPCD | Ventura County Air Pollution Control District |

# 9. DISTRIBUTION LIST

A Public Notice (PN) on a preparation of an EA was published to the public on the Corps' website and distributed to the following agencies soliciting review and comment:

**Federal Agencies**

- National Marine Fisheries Service
- U.S. Fish and Wildlife Service
- U.S. Environmental Protection Agency
- U.S. Coast Guard

**State Agencies**

- California Coastal Commission
- California Department of Fish and Wildlife
- Regional Water Quality Control Board, Los Angeles Region
- California State Lands Commission
- California Department of Parks and Recreation (Division of Boating and Waterways)
- California Department of Parks and Recreation (State Parks)
- California Department of Transportation (CalTrans), District 7
- California Natural Resources Agency
- State Historic Preservation Office

**Local Agencies**

- Native American Tribes
- SC-DMMT

# 10. PREPARERS AND REVIEWERS

**Preparers**

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- Catherine Carbone — Corps, Archeologist, Environmental Policy Section

**Reviewers**

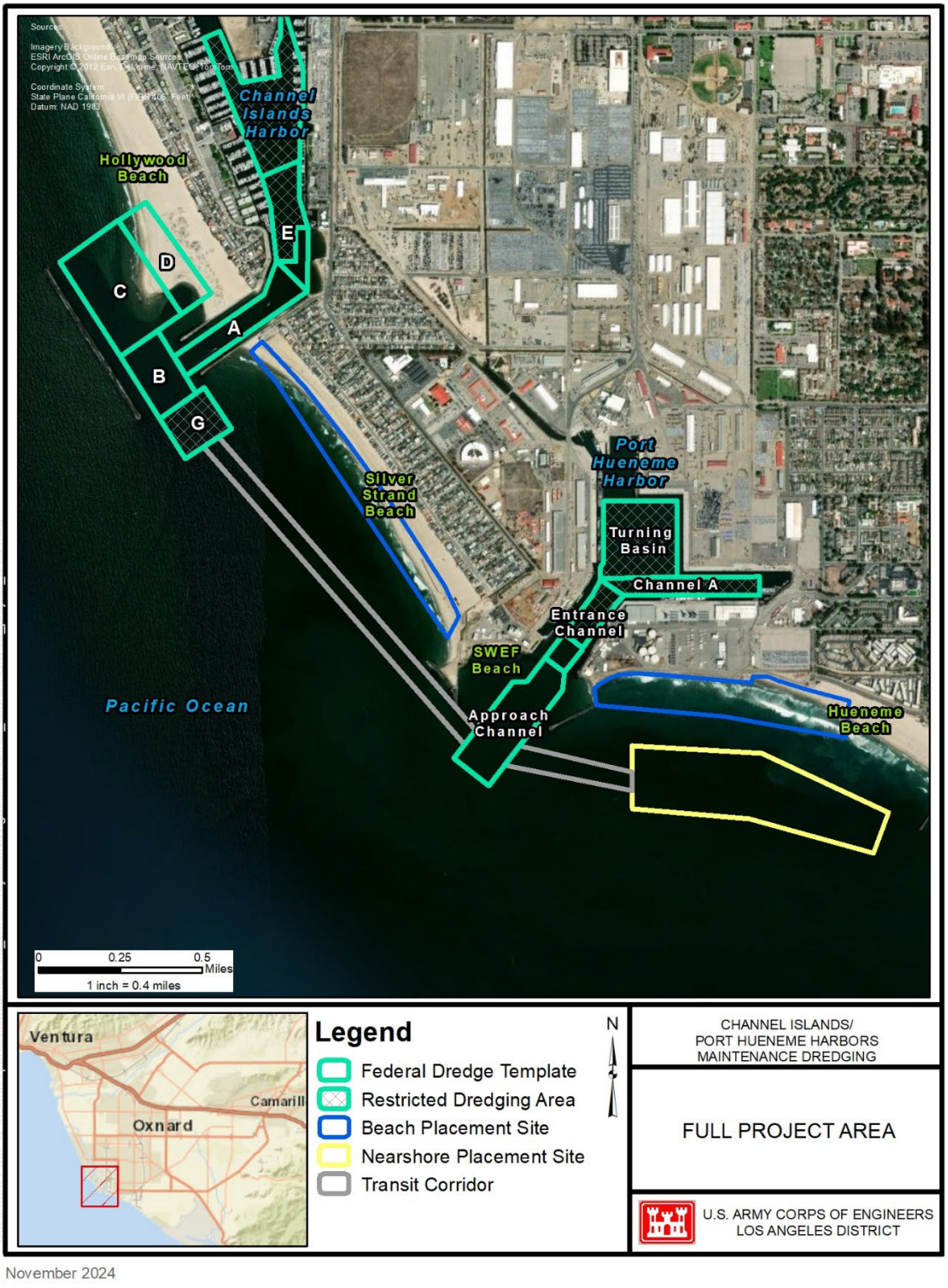
- Hayley Lovan — Corps, Chief, Ecosystem Planning Section
- Tiffany Bostwick — Corps, Chief, Environmental Resources Branch
- Joseph Ryan — Corps, Coastal Engineer, Coastal Engineering Section
- Victor Andreas — Corps, Project Manager, Programs and Project Management

# 11. FIGURES

***Figure 1. Vicinity Map***

February 2024

***Figure 2. Full Project Area***




November 2024

*Figure 3. Project Area (North)*

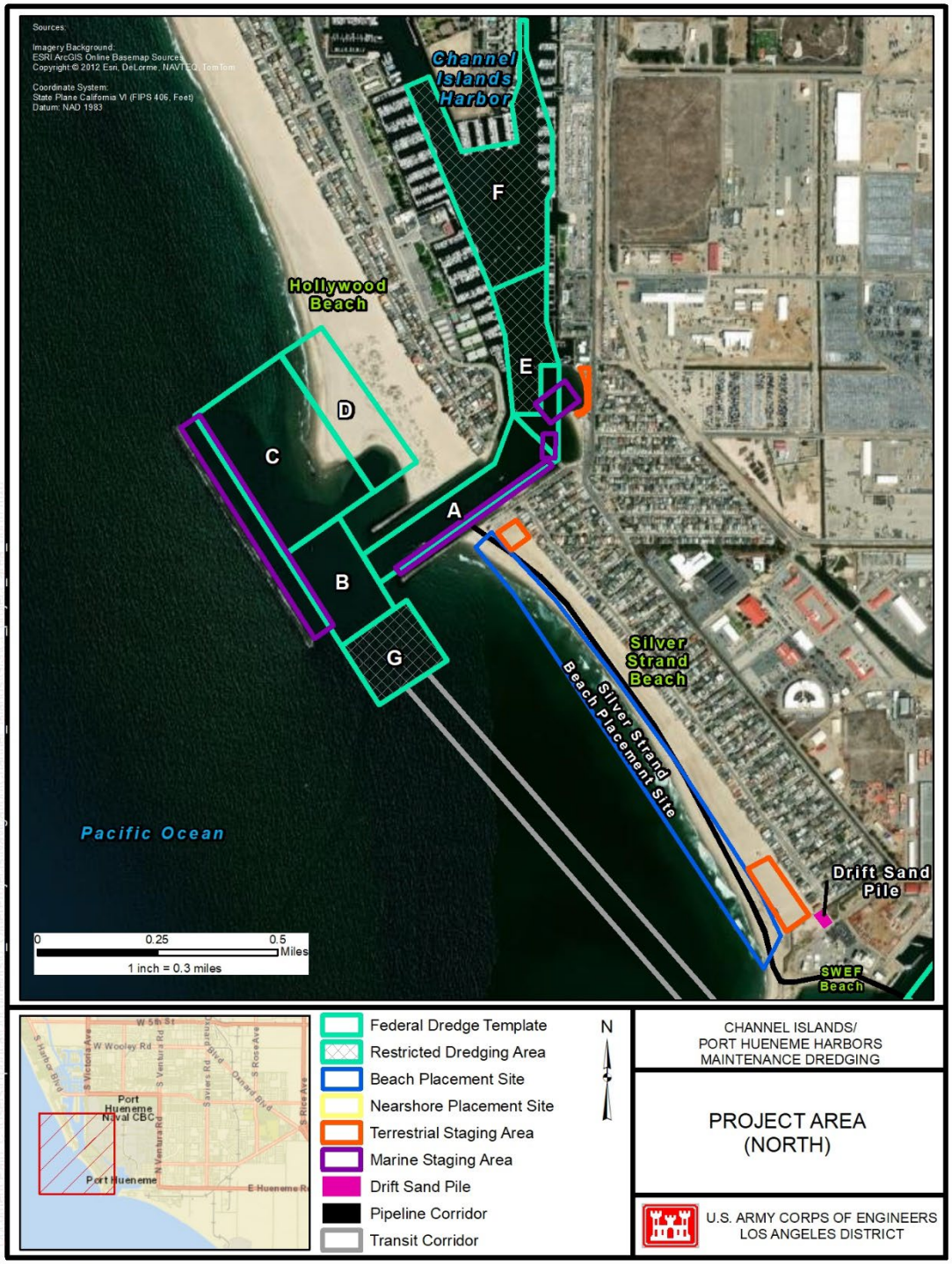


*Figure 4. Project Area (South)*

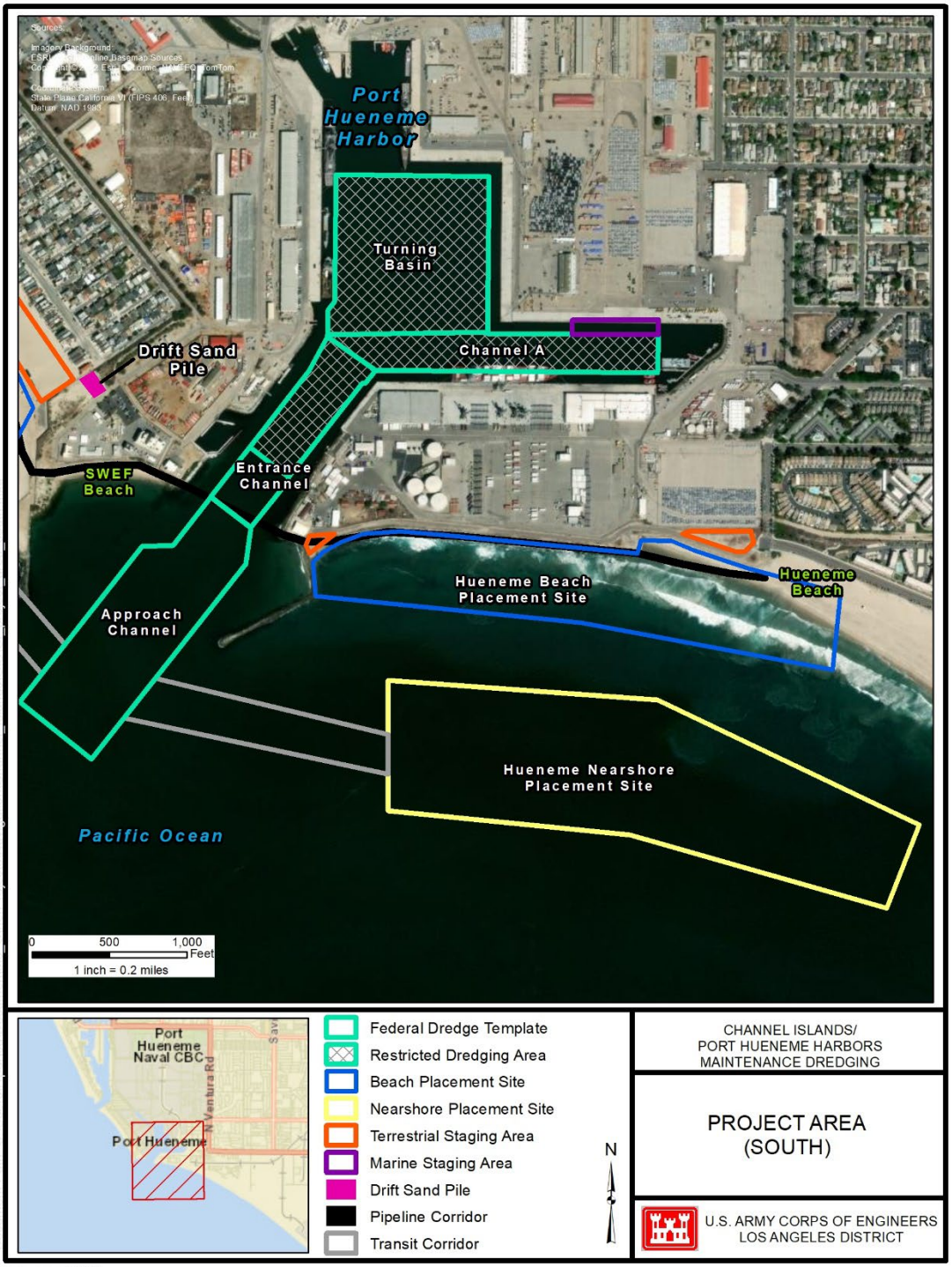
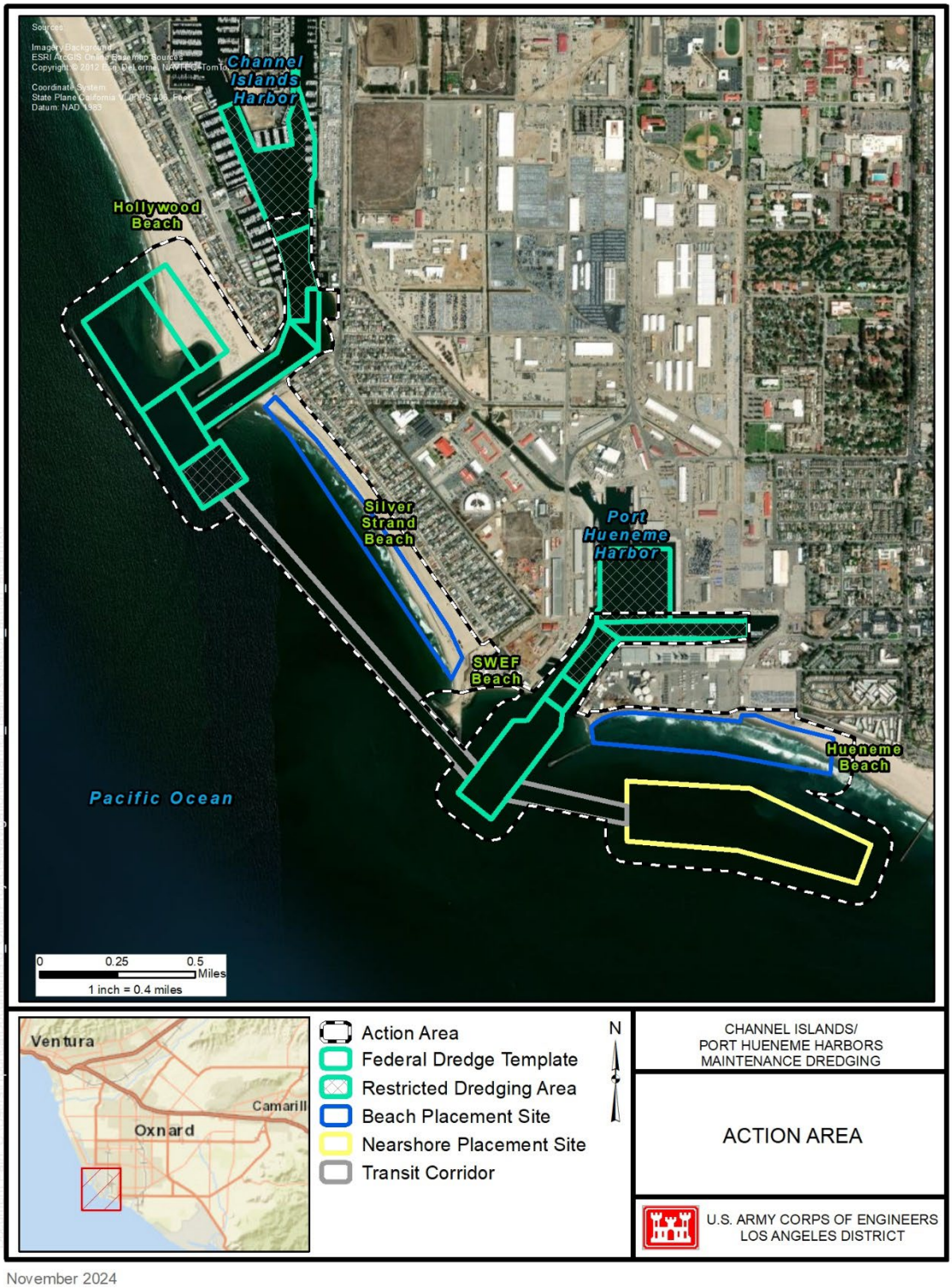


*Figure 5. Action Area (NEPA Scope of Analysis)*



# 12. APPENDICES

## APPENDIX A
## PUBLIC NOTICE OF DRAFT EA
## AND
## RESPONSES TO COMMENTS

# PUBLIC NOTICE

**U.S. ARMY CORPS OF ENGINEERS**
**LOS ANGELES DISTRICT**

**BUILDING STRONG®**

## CHANNEL ISLANDS AND PORT HUENEME HARBORS

## FEDERAL MAINTENANCE DREDGING PROGRAM

Pursuant to the National Environmental Policy Act (NEPA), the U.S. Army Corps of Engineers, Los Angeles District (Corps) is preparing an Environmental Assessment (EA) for maintenance dredging of the Channel Islands and Port Hueneme Harbors (Proposed Action), to evaluate potential environmental impacts of dredging and nearshore dredged material placement activities. If the EA identifies significant impacts that cannot be mitigated to a level that is less than significant, an Environmental Impact Statement would be prepared. If no unmitigable, significant impacts are identified, then a Finding of No Significant Impact would be prepared. Concurrently, preparation of a 404(b)(1) evaluation is underway pursuant to Section 404 of the Clean Water Act for discharges of dredged material into waters of the U.S.

As part of its Operations and Maintenance Program, the Corps proposes to dredge a maximum quantity of 8.25 million cubic yards (cy) over a period of 6 years from 2024 to 2029. The proposed project consists of dredging up to 2.75 million cy biennially (every two years) per dredge cycle, beginning in 2024, from Channel Islands and Port Hueneme Harbors, with up to approximately 2.5 million cy taken from Channel Islands Harbor and up to approximately 250,000 cy from Port Hueneme Harbor.

Placement of the majority of dredged materials is expected to be on Hueneme Beach, with smaller quantities of material potentially placed on Silver Strand Beach or in the Hueneme Nearshore Placement Site (Figure 1). Biennial maintenance dredging is tentatively scheduled to occur between October 1 and February 28, starting in 2024. Dredging will occur outside nesting and spawning seasons to minimize potential impacts to federally endangered and state sensitive species. The duration of dredging activity including mobilization and demobilization is approximately 150 days per cycle. Dredging is anticipated to occur 24 hours a day, 7 days a week within that time period.

Preliminary environmental analysis indicates that environmental resources potentially affected by the Proposed Action include geology, oceanography and water quality, biological resources, air quality, noise, cultural resources, recreation uses, ground transportation and traffic, vessel traffic and safety, and aesthetics.

A Draft Clean Water Act Section 404(b)(1) evaluation and a request for Section 401 Water Quality Certification were prepared and sent to the Los Angeles Regional Water Quality Control Board on February 9, 2024.

Federally listed species and critical habitat present in the vicinity of the dredging and placement areas and that would be affected by the Proposed Action include California least tern (*Sternula antillarum browni)*, western snowy plover (*Charadrius nivosus nivosus*), and western snowy plover designated critical habitat. In compliance with the Endangered Species Act, formal consultation with the United States Fish and Wildlife Service (USFWS) to address potential effects to these species and critical habitat was initiated by the Corps in August 2022. Consultation was completed when the USFWS provided a Biological Opinion on December 15, 2022.

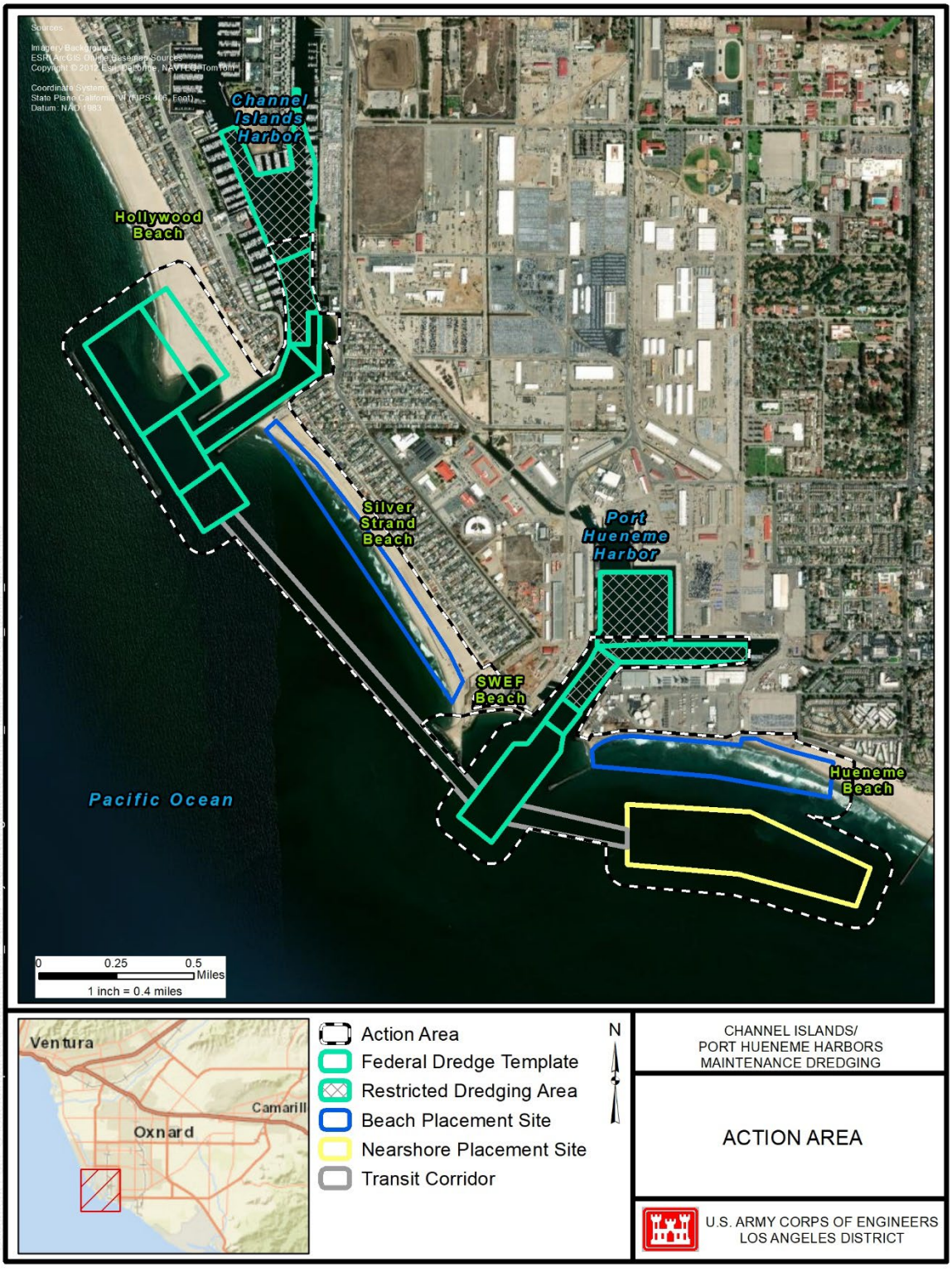
The Corps is consulting with local tribes and the State Historic Preservation Office on the Proposed Action, pursuant to Section 106 of the National Historic Preservation Act. Coordination is also ongoing with the California Coastal Commission (CCC) in compliance with the Coastal Zone Management Act. A Consistency Determination has been provided to the CCC with a request for their concurrence. In accordance with the 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act, an assessment of Essential Fish Habitat (EFH) has been conducted for the Proposed Action, and EFH Consultation with the National Marine Fisheries Service (NMFS) will be conducted.

Comments on this public notice will be accepted from March 4, 2024, through April 5, 2024. Comments may be submitted electronically to: CESPL-Channel-Islands-Hueneme-Dredging@usace.army.mil

**U.S. ARMY CORPS OF ENGINEERS – LOS ANGELES DISTRICT**

**Marina del Rey Harbor Federal Maintenance Dredging Program**

***Figure 1. Proposed Action Area***




February 2024

**EPA Comments, Emailed to CESPL-Channel-Islands-Hueneme-Dredging@usace.army.mil on 3/15/24**

Dear Los Angles District–

Below are the EPA's limited scoping comments on the March 4, 2024 notice to prepare an environmental assessment of Channel Island and Port Hueneme maintenance dredging, with references to potentially relevant information. We appreciate that the CWA §401, §404(b)(1), and resource agency permitting processes appear to be coordinated and expect the EA to have a level of detail sufficient to support impact findings and decisions on the placement of dredged materials. EPA understands that the EA may result in a Finding of No Significant Impact, or that an EIS would be prepared if the analysis identifies unmitigable, significant impacts.

The EPA recommends that the recent sediment suitability determination be reflected in the Environmental Assessment. In the January 2024 meeting of the interagency Dredged Materials Management Team (DMMT), EPA concurred with the Corps' assessment that the Channel Islands dredged material was suitable for beach or nearshore placement, except for Area E core locations 2, 4, 5, and 6 because these areas had too high of a fine grain content.

EPA also concurred that Port Hueneme Area A was suitable for nearshore or beach placement. Area E at Port Hueneme was not tested due to insufficient shoaling. However, EPA and the DMMT agreed that the small area within Area E that bordered Area A could be included in the Area A suitability determination since it represented one continuous shoal that was assessed with the Area A cores.

EPA encourages the Corps to continue to optimize the beneficial reuse of dredged materials to the maximum extent possible. Although most of the dredged materials is expected to be placed on Hueneme beach or at the nearshore placement site, consider other sites within Los Angeles County with needs to improve shoreline resilience. Please refer to the *Coastal Resilience Study* at https://file.lacounty.gov/SDSInter/dbh/docs/1155210_CoastalResiliencyStudy.pdf located on Los Angeles County's Coastal Resilience website.

Thank you for the opportunity to comment on this matter. When the Environmental Assessment and appendices, if any, are ready for public review, please forward electronic copies to me at Truitt.Robin@epa.gov and my manager Donez.Francisco@epa.gov.

Respectfully,

*Robin Truitt*, Life Scientist | Environmental Review Section
U.S. Environmental Protection Agency, Region 9
(415) 972-3742 | truitt.robin@epa.gov

**Corps Response:**
**The Corps has included the sediment suitability determination from the 24 JAN 2024 SC-DMMT meeting in the Environmental Assessment (Section 2.1, Section 4.1, and Figures 2-4).**

**Potential alternative dredged material placement areas were considered but were determined to be infeasible as they would be inconsistent with project authorizations.**

**NBVC Comments, EMAILED TO: CESPL-Channel-Islands-Hueneme-Dredging@usace.army.mil on 4/5/24**

The Navy appreciates the opportunity to provide comments on the Public Notice for SPL-2024-0304-NLH-Channel Islands and Port Hueneme Harbors. The Navy values its six decades plus partnership with the US Army Corps of Engineers (USACE) providing navigational maintenance dredging and Channel Islands and Port Hueneme Harbors and shoreline protection benefits for the littoral cell between Port Hueneme and Point Mugu. In furtherance of this partnership, the Navy requests thoughtful consideration of the following items for inclusion in the Environmental Assessment for Maintenance Dredging of the Channel Islands and Port Hueneme Harbors to minimize the potential for significant impacts that could trigger the requirement for an Environmental Impact Statement.

**Environmental Setting**

Naval Base Ventura County (NBVC) Point Mugu is host to a number of significant ecological resources. The site encompasses Mugu Lagoon, which is the largest salt marsh estuary in Southern California, and approximately 2,200 acres of jurisdictional wetlands. This estuarine coastal salt marsh provides habitat for numerous invertebrate, fish, bird and plant species, including one of the largest populations of the federally protected Salt Marsh Bird's Beak. Other sensitive species observed regularly at the wetlands include snowy plovers, clapper rail, least terns, Belding's savannah sparrow, and the California brown pelican. NBVC Point Mugu also has a resident population of Pacific harbor seals and California sea lions.

Immediately offshore of the NBVC Point Mugu coastline is the Mugu Submarine Canyon, and west of the base is the Hueneme Submarine Canyon, which play significant roles in wave refraction and shoaling as well as sediment capture. The Ventura and Santa Clara Rivers are the primary sources of sediment to the Santa Barbara littoral cell, and their contributions are reflected in the amount of sediment delivered to, captured by, and bypassed from the Channel Islands Harbor sand trap.

> **USACE Note: While this is not a comment on the Proposed Action or the USACE's NEPA evaluation, it is worth noting that the amount of sediment entering the system from the Ventura and Santa Clara Rivers has been substantially reduced over the years and further declines are anticipated as a result of upstream development.**

The sand bypassing program that delivers sand to Hueneme Beach is critical to maintaining a supply of sand to the NBVC Point Mugu shoreline. Between 1963 and 1981 the average annual bypass rate from the Channel Islands Harbor sand trap was similar to the historic rate of 1.2 million cubic yards per year. At present, significantly less sand is delivered. The frequency of dredging and bypass is currently every other year, as funding allows. An average of 1.2 million cubic yards was removed biennially between 1996 and 2016, approximately 600,00 cubic yards per year. During the last dredging contract (2018 - 2022) the average volume bypassed biennially increased to 2.0 million cubic yards per dredging cycle.

NBVC Point Mugu has several mission-critical facilities in close proximity to the coast, including: Runway 3-21, two Rifle Ranges, several ordnance buildings, lighting control building for airfield, Building 761, and Building 7020. Shoreline protection structures in the form of groins and revetments have been constructed through the years to protect these buildings as the shoreline has eroded.

Of particular interest to the long-term sustainability of mission-critical infrastructure is the Mugu Submarine Canyon headwall retreat rate. Minimizing the rate of headwall retreat is critical to the long-term stability of the Central and East Revetments and the infrastructure they protect. Headwall retreat is

highly dependent upon the amount of sand cover over the headwall substrate. Because the headwall is composed of horizontal layers of fine to very fine sand and silt with weak bonds between grains, it is highly susceptible to scour by the oscillatory action of waves when exposed. The Navy has estimated a recent headwall retreat rate of 1.7 feet/year (ft/yr) when the headwall was covered with a layer of littoral sand over 95% of the rim. If 100% of the rim substrate were to be exposed, it was concluded that the headwall would withdraw toward land at 10-15 ft/yr. Therefore, to protect the environmental and structural resources of Point Mugu Naval Base, it is of utmost importance to preserve a layer of littoral drift sand over the headwall, thus inhibiting the headwall retreat towards Point Mugu.

**Historical Context**

Maintenance dredging of Channel Islands and Port Hueneme Harbors is authorized by the River and Harbor Act (The Act) approved March 2, 1945, which allows for construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and other purposes. Further modifications of the Act have refined the authorization for Channel Islands and Port Hueneme harbors.

> **USACE Note: The Rivers and Harbors Act of 1945 did not authorize maintenance dredging of Channel Islands and/or Port Hueneme Harbors.**

These modifications include Public Law (P.L.) 780, sec 101 dated September 3, 1954 (68 Stat. 1252), P.L. 91-611, Sec 114 dated December 31, 1970, and P.L. 104–303, Sec 305, dated OCT. 12, 1996. These modifications are the vehicles by which the construction of Port Hueneme Harbor and Channel Islands Harbor was approved, indicated that the dredging and maintenance of the harbor areas would be the responsibility of the US Government, and authorized biennial dredging and sand bypassing at an annual downcoast replenishment rate to establish ***and maintain a littoral sediment balance*** which is estimated at 1,254,000 cubic yards per year.

> **USACE Note: Section 114 of the Rivers and Harbors Act of 1970 relates to Santa Barbara Harbor, not Channel Islands or Port Hueneme Harbors.**

It needs to be noted that the average sand bypass rate authorized by P.L. 104-303 to establish and maintain a littoral sediment balance of 1,254,000 cubic yards per year has not been achieved in any year since the promulgation date in 1996. The actual sand bypass rate for the period from 1996 through 2023 was approximately 700,000 cubic yards per year, only 56% of the authorization, leading to the post 1996 damages at Point Mugu listed further below.

Also relevant is the 1956 Cost Share Agreement (the Agreement) between the Department of the Army and the Department of the Navy (Navy) further detailing the scope and intent of the authorized project by the Act as modified in 1954. Specifically authorized was the construction of a navigation and shore protection project at Port Hueneme: The construction of a small craft harbor about one mile northwest of Port Hueneme Harbor to accommodate about 500 recreational and fishing vessels and shore protection work to extend from Port Hueneme to Point Mugu, a distance of about 10 miles. The Agreement also determined that the Navy would accrue benefits from the shore protection element of the authorized work consisting of prevention of loss of land and improvements and savings in the cost of acquiring additional land. Finally, the Agreement determined the Navy's equitable share for shore protection benefits to be 19% for initial construction and 19% on annual maintenance.

**USACE Response:** **The Channel Islands project for construction and maintenance was authorized by section 101 of the Rivers and Harbors Act of 1954 on the basis of House Document No. 362, 83rd Congress (HD 362). Section 101 provides:**

> **That the following works of improvement of rivers and harbors and other waterways for navigation, flood control, and other purposes are hereby adopted and authorized to be prosecuted under the direction of the Secretary of the Army and supervision of the Chief of Engineers, in accordance with the plans and subject to the conditions recommended by the Chief of Engineers in the respective reports hereinafter designated: Provided, That the provisions of section 1 of the River and Harbor Act approved March 2,1945 (Public, Numbered 14, Seventy-ninth Congress, first session), shall govern with respect to projects authorized in this title; and the procedures therein set forth with respect to plans, proposals, or reports for works of improvement for navigation or flood control and for irrigation and purposes incidental thereto, shall apply as if herein set forth in full: … Port Hueneme, California: House Document Numbered 362, Eighty-third Congress, at an estimated cost of $5,437,000;….**

**HD 362 includes the Chief of Engineers' Report ("Chief's Report) on a preliminary examination and survey of the harbor at Port Hueneme, California, with a view to shore protection, authorized by the River and Harbor Act, approved on July 24, 1946, and in partial response to the River and Harbor Act approved on March 2, 1945, which authorized a preliminary examination and survey of the coast of southern California, with a view to establishment of harbors for light-draft vessels. The project recommended therein consists of a harbor for light-draft vessels about one mile northwest of the existing deep-draft harbor at Port Hueneme, and shore protection works to remedy the erosion caused by construction of the deep-draft harbor by biennially dredging about 1 million cubic yards of material from the sand trap and depositing the dredged material on the feeder beach shown on Plate 1.**

**In a letter dated September 19, 1956, the Assistant Secretary of the Army (CMA) wrote to the Secretary of the Navy, stating:**

> **The River and Harbor Act adopted 3 September 1954 authorized construction of a navigation and shore protection project at Port Hueneme, California, in accordance with the recommendations contained in the report of the Chief of Engineers published as House Document Numbered 362, 83rd Congress. In his letter transmitting the report to Congress, the Secretary of the Army concurred in the position of the Bureau of the Budget that initial construction and subsequent maintenance operations in connection with the overall improvement be contingent on authorization and appropriation of an equitable share of military funds.**

**The ASA's letter then provides the proposed equitable share, based on an established economic method used by the USACE. It states that an equitable share of the costs is "considered as that portion of the allocated cost of the shore protection facilities proportional to the ratio of the shore protection benefits realized by the Navy to the total shore protection benefits." It identifies the share as 19 percent, stating, "It is pertinent to emphasize the fact that the percentage based on the current figures may change as the costs and benefits change due to refinements in the estimates and change in price levels; however, no appreciable change is expected." It then requests the Navy's views as to the acceptability of the method. In a response dated November 21, 1956, the Assistant Secretary of the Navy responded, stating**

**"The method outlined in your letter for determining the share of participation by the Navy, as indicated to be required by the Bureau of the Budget, is acceptable to the Navy Department." The exchange of letters has never been revisited or replaced.**

**The project authorization was modified by section 305 of the Water Resources Development Act of 1996 (P.L. 104-303) to "authorize biennial dredging and sand bypassing at an annual downcoast replenishment rate to establish and maintain a littoral sediment balance which is estimated at 1,254,000 cubic yards per year. The cost of such dredging and sand bypassing shall be 100 percent Federal as long as Federal ownership of the entrance channel and jetties of the Port of Hueneme necessitates restoration and maintenance of the downcoast shoreline."**

**The 1,254,000 cubic yards cited in P.L. 104-303 is only an estimate. For the years 2008 to 2023, the annual littoral transport ranged from a low of 500,000 cubic yards per year to a high of 1,250,000 cubic yards. Once material is placed on the feeder beach, the USACE's bypass maintenance project has no further influence on how or where sand is redistributed through natural coastal processes.**

***Shoreline Construction and Impacts Chronology***

Construction of shore protection structures along NBVC Point Mugu began in the late 1960s. These structures consisted of a groin field and four revetments and were typically constructed as an emergency response measure to protect infrastructure from the effects of long-term shoreline retreat, storm related erosion, and flood damage. A chronology of the construction and maintenance of each of these shoreline protection structures is provided below.

| Timeframe | Description |
|---|---|
| **Pre-1938** | Natural shoreline condition. Shoreline from Point Hueneme to Point Mugu was essentially stable (Herron and Harris 1966). |
| **1938/1939** | Arrowhead jetties constructed at Port Hueneme; west jetty extended to head of Port Hueneme Submarine Canyon. 2,600,000 CY of material placed on downcoast (i.e., Hueneme Beach). |
| **Mid-1950s** | Erosion extended 8-miles downcoast to NBVC Point Mugu; emergency 500,000 CY beach fill placed at Point Mugu to protect ammunition bunkers. |
| **1960** | Channel Islands Harbor constructed; 6,200,000 CY of sand placed on Hueneme and Ormond Beaches. |
| **1960+** | USACE Sand Bypassing program at Channel Islands Harbor begins. |
| **1967** | Three groins constructed at Point Mugu by Navy to protect access road. |
| **1964** | Rifle Range Revetment was constructed. |
| **1967+** | West seawall at Point Mugu constructed by Navy to protect access road. |
| **1966-1968** | Navy constructed Central Revetment to protect research facilities and East Revetment to protect recreational facilities on the northwest side of Mugu Lagoon. Revetments were constructed under an emergency basis. |
| **1983** | Rifle Range and East and Central Revetments damaged during winter storms. Emergency repairs made to East and Central Revetments. |
| **1987** | North Rifle Range was abandoned. Repairs to the remaining Rifle Range included sheet pile and metal pontoon retaining walls along with a supportdike. |

| | |
|---|---|
| **1988** | East and Central Revetments severely damaged; subsequent emergency repairs made. |
| **1992** | East Revetment damaged (most damage occurred west of pier) and subsequently repaired. |
| **1994/1995** | East Revetment failed and recreational pier was destroyed. Most damage occurred at west end of revetment. |
| **1997** | Almost half of the East Revetment was removed, and landward infrastructure relocated or removed. Western flank of Eastern Revetment also re-established. |
| **1997** | Approximately 950 ft of the Central Revetment was improved by adding outer layer of 6-ton armor stone along the central portion of the revetment and extending the toe 20 to 40 ft seaward. |
| **1998-1999** | Central Revetment repairs to fill several gaps and construct a flatter seaward slope of 2:1 over a length of about 2,300 ft. |
| **1999** | West Revetment improvements to increase height, extend toe, and add outer layer of armor stone. |
| **2002** | Stone was added (capped) to the west end of the Central Revetment (west of Building 761, near the end of the runway). |
| **2009/2010** | The east end of the Western Revetment was extended 100 ft. |
| **2011** | The central and seaward portion of the Central Revetment was armored with a layer of 6-ton stone. The remainder of the seaward slope was armored with 4- ton stone, and the landward side was armored with 2-ton stone. |
| **2014** | Hurricane Marie created high surf along the entire NBVC coastline causing multiple road and beach closures due to flooding caused by waves overtopping seawalls. |
| **2024** | Multiple storms cause wave overtopping at Family Beach and Eastern Arm Beach. 1,400 feet of Beach Rd was destroyed, and beach sand was deposited in Mugu Lagoon. This has dangerously narrowed the sand peninsula which may no longer provide a separation between the ocean and the lagoon, in the event of future storms. In the event of a future breech, the lagoon hydrology will be greatly altered causing flooding, undermining of roads, loss of all facilities and operational areas along the southern border of the base including the southern portion of the airfield. |

**Comments on Public Notice SPL-2024-0304-NLH-Channel Islands and Port Hueneme Harbors**

In addition to the overarching comments on the Project above, the Navy offers the following comments for the USACE to consider and integrate during the development of the EA. As a financial contributor, the Navy specifically requests to be provided copies of all draft documents prior to authorization and provided adequate opportunity to review and provide comments on the proposed activities.

**USACE Response: As the NEPA Lead Agency for this project, the USACE determined that release of a public notice and resource agency/stakeholder coordination and consultation would be appropriate for this recurring maintenance activity which is similar to previous sand bypass projects for which Draft and Final Environmental Assessments were circulated for review. The USACE will consider and respond to all comments received on the public notice and will provide the Final Environmental Assessment to all interested parties.**

1) PROJECT PURPOSE AND NEED:
    a. The purpose and need of the Action must include Point Mugu to the list of downcoast beaches receiving beach nourishment material. Shore protection benefits at Point Mugu

form the basis of the Navy's participation and cost sharing in the project per the terms of the 1956 USACE & Navy Cost Share agreement.

**USACE Response: The purpose of the Proposed Action is biennial dredging and sand bypassing to renourish downcoast beaches.**

i. This purpose and need should include the restoration of the NBVC Point Mugu shoreline back to historical levels, and then to maintain them at this level.

**USACE Response: The Proposed Action is to continue implementing the authorized project for the next six years. Whether or not this is sufficient to restore and maintain the historic shoreline specifically at Point Mugu is unknown, but further action or evaluation would be beyond the scope of the authorized project and outside of the NEPA scope of analysis.**

b. The purpose and need statement for the Proposed Action should be restructured to include the Navy's need for an increase in the volume of sand bypassed in order to avoid significant adverse effects to national defense and natural resources. Based on USACE data, the Navy currently estimates the dredging deficit to lie at approximately 32.5 million cubic yards of sand since 1940. This would have helped maintain the missing 7,000,000 cubic yards the beach is lacking today.

**USACE Response: To determine the littoral sediment balance consistent with section 305 of the Water Resources Development Act of 1996, for the years 2008 to 2023, the USACE has determined the annual littoral transport ranged from a low of 500,000 cubic yards per year to a high of 1,250,000 cubic yards.**

i. This alternative should consider the importation of sand to restore beaches to their width prior to the period of sustained erosion.

**USACE Response: Restoration of beaches to historical levels is not part of the authorized project.**

2) Project Background:

a. The project background must include are reference to the WATER RESOURCES DEVELOPMENT ACT OF 1996, Public Law 104-303, which modified section 101 of the River and Harbor Act of 1954 (68 Stat. 1252) and codified the required annual downcoast replenishment rate to establish and maintain a littoral sediment balance at Channel Islands Harbor, estimated at 1,254,000 cubic yards per year.

**USACE Response: Relevant project authorities will be referenced in the Final Environmental Assessment.**

i. The Navy appreciates that the average biennial sand transfer rate has been increasing of late, to approximately 2.0 million cubic yards removed per biennial dredging cycle for the period from 2018 to 2022.

b. The Project background must include a full list of technical studies that currently exist documenting sand transport analysis downcoast, to accurately assess if the current

Action continues to meet the purpose and need of the Project. These studies should be added as Appendices to the document and made available (in their entirety) as part of the Administrative Record.

**USACE Response: Additional technical studies to determine the fate of that sediment or whether the bypass project in and of itself is sufficient to protect Navy facilities is beyond the scope of the authorized project and outside of the NEPA scope of analysis.**

3) ALTERNATIVES CONSIDERED:
   a. The USACE's stated approach of evaluating "Proposed Action" and "No Action" does not meet the NEPA or the 404(b)(1) requirements of a "Reasonable range of alternatives". A simple alternative of dredging "up to 2.5 million" is insufficient to determine or distinguish potential differences in the significance of impacts on downcoast recipients.

      **USACE Response: The purpose of the project is not to determine how much sand would be needed to maintain Point Mugu, but to bypass material around Port Hueneme Harbor and dredge Channel Islands and Port Hueneme Harbors. Other alternatives were considered but were not carried forward for full evaluation because they would not meet the project purpose or would not be within the project's authorization. See Section 2 in the EA.**

      i. The Navy requests information and input onto how the Alternative's for the proposed Action were developed and requests a review of the Alternatives Analysis report for the proposed Action.

         **USACE Response: Section 2 of the EA addresses how alternatives were developed and evaluated.**

      ii. What are the Project/Screening Criteria used to evaluate the alternatives?

         **USACE Response: The evaluation criteria can be found in Section 2 of the EA.**

   b. Given the history of periodic shortfalls, a third alternative of dredging less than the 2.5 million cubic yards per biennial dredging cycle must be added. This alternative would reflect the actual conditions over the previous years. As reported to the Navy by the USACE, an average of 1.2 million cubic yards was removed *biennially* between 1996 and 2016. This increased between 2012 and 2018 to an average volume of 1.5 million cubic yards removed per two-year dredging cycle (USACE January 2023) and again in 2018 to 2022 to an average volume of 2.0 million cubic yards removed per two year dredging cycle.

      **USACE Response: The actual amount dredged biennially is dependent on funding received, the quantity of material available within the sand trap, and other limiting factors which could include inclement weather resulting in unsafe conditions. For the years 2008 to 2023, the annual littoral transport ranged from a low of 500,000 cubic yards per year to a high of 1,250,000 cubic yards. Purposefully limiting the project to dredge less material than available despite receiving full appropriation would not be consistent with the project purpose and need.**

i. Naval Base Ventura County Point Mugu has suffered severe coastal erosion during this period, damaging & destroying infrastructure (such as roadways, piers, buildings, training facilities, ranges, airfield facilities, and seawalls) and the destruction or coastal dune habitat (~1 acre per year). The most recent loss occurred in February 2024 with destruction of ¼ mile of coastal access road due to wave damage and beach erosion with an estimated repair cost of $30M.
    1. The Navy estimates that Family Beach alone has lost approximately 100,000 cubic yards of sand in 2024.

c. Given the requirement in the Water Resources development Act of 1996 (sec 305), to "establish and maintain a littoral sediment balance.", the USACE should integrate and consider the feasibility of a fourth alternative to bring the littoral sediment balance back to the estimated 1,254,000 cubic yards per year.

**USACE Response: As reflected in the WRDA 1996, the USACE is authorized to conduct biennial dredging and sand bypassing at an annual downcoast replenishment rate to establish and maintain a littoral sediment balance which is estimated at 1,254,000 cubic yards per year. WRDA 1996 also specifies the location of the area to be dredged and placement site, which limits the USACE's ability to consider other alternatives beyond the dredging and bypassing of sediment at the entrance of Channel Islands Harbor and placement of the dredged material [Hueneme Beach Placement Site]. The 1,250,000 cubic yards (cy) per year is the estimated upper end of material volume that is needed to maintain the littoral sediment balance. Actual amount of material that deposits within the dredge template year to year is directly related to the intensity of the storm season and wave climate and may be less than the 1,250,000 cy. The USACE requests funding each funding and contract cycle to dredge approximately 2.5 million cy (mcy) of material every two years to plan for the potential upper limit of material that may deposit within the dredge template. The amount of material dredged is ultimately dependent upon the amount of funding received for a funding and contract cycle as well as the amount of material that deposits within the dredge template. Other factors also include weather conditions and equipment repairs that may impact the available work days. The USACE will continue to plan for and request funding to dredge up to an estimated 2.5 mcy of material every two years within the project authorization.**

4) SECTION 4 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES:
    a. Discussion of the affected environment and assessment of potential impacts associated with the 3rd alternative of dredging less the required 2.5 million cubic yard biennial littoral sediment balance must be added.

**USACE Response: As stated above, purposefully limiting the project to dredge less material than available despite receiving full appropriation would not be consistent with the project purpose and need.**

b. The historic USACE funding shortfalls has resulted in insufficient dredge volume and a significant sand deficit. Continued funding shortfalls (such as the one upcoming due to the lack of FY25 budget), must be analyzed in the document. These shortfalls have real, potentially significant, impacts which have not been analyzed previously. Just at Point Mugu, these may include (but are not limited to):

i. Loss of beach width equates to loss of nesting habitat for Federally listed nesting birds.
ii. Narrow beaches increase wave over wash which washes out active nests of listed bird species, and damages existing facilities such as roadways.
iii. Severe narrowing of beaches creates opportunities for ocean to erode and access lagoon – this could lead to catastrophic hydrological change in the 2,300-acre lagoon system.
iv. Increased flooding of military operational areas and facilities leading to the need for relocation of these facilities elsewhere, and the follow-on associated effects of that relocation.
v. Loss of existing terrestrial, dune, and marsh habitat via conversion to open water
vi. Degradation and erosion of base infrastructure
vii. Potential impacts (such as flooding, undermining) to Pacific Coast Highway (PCH) if ocean energy breaks through eastern sand spit
viii. Potential loss of SCE power lines along PCH

**USACE Response: See response to 3c, above. Further action or evaluation would be beyond the scope of the authorized project and outside of the NEPA scope of analysis.**

c. All significant adverse environmental effects identified should be mitigated by additional environmental commitments with the USACE EA.

**USACE Response: The analysis in the EA concludes the Proposed Action would not result in significant impacts.**

i. The Project must consider the documented, and existing significant adverse effects on the Navy resources downcoast from the Project area as a result of the shortfalls in dredged material .
ii. The additional environmental commitments should include the explicit allowance of emergency actions by the Navy, without separate permitting, to protect life, property, and habitats in the event of beach erosion due to the reduced sand bypass alternative and be included in all projects permits and consultations.

**USACE Response: The USACE is not authorized to waive the Navy's responsibility to comply with environmental laws and regulations for any actions they may propose to implement.**

d. The Navy requests that the direct, indirect, and cumulative impact analysis for this action consider and include the potential downstream effects of the proposed Action.

**USACE Response: Section 4 of the EA addresses direct and indirect impacts within the NEPA scope of analysis which includes all areas within and immediately surrounding the USACE's operational boundaries. Section 5 of the EA provides the USACE's cumulative impact assessment.**

The Navy appreciates the opportunity to review and provide comment on the proposed Action and is standing by to participate in the development of alternatives, mitigation measures, and identify the potential scope of the impacts associated with this proposed activity.

V/r,

Patrick Meddaugh
NEPA Program Manager
Naval Base Ventura County
Mobile: 707-508-5974

# APPENDIX B
# 404(B)(1) EVALUATION

# CHANNEL ISLANDS/PORT HUENEME HARBORS
# MAINTENANCE DREDGING PROJECT
## Ventura County, California

## Final Clean Water Act 404(B)(1) Evaluation

**U.S. Army Corps of Engineers Los Angeles District**
**November 2024**

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## 1.0 INTRODUCTION

This 404(b)(1) analysis is for the proposed six-year maintenance dredging program at Channel Islands and Port Hueneme Harbors in Ventura County, California. The area would encompass approximately 3 miles of shoreline, extending from Hollywood Beach to Hueneme Beach. The area is located approximately 65 miles northwest of Los Angeles at the edge of the Oxnard Plain in Ventura County. Placement of the majority of dredged materials is expected to be on Hueneme Beach, with smaller quantities of material potentially placed on Silver Strand Beach or in the Hueneme Nearshore Placement Site. The proposed project consists of maintenance dredging of up to a maximum cumulative quantity of 8.25 million cubic yards (CY) from both Harbors over the six-year period.

Federal navigation channels within Channel Islands and Port Hueneme Harbors are subject to continual infill of sand from littoral processes. Without frequent dredging, sediment would eventually change the bathymetry to such an extent that vessels would not be able to navigate safely. In addition, the presence of the harbors interrupts the natural transport of sand, resulting in decreased nourishment and increased erosion of downcoast beaches.

The proposed project would maintain conditions for a safe and navigable harbor and provide beach replenishment for down coast beaches (Silver Strand and Hueneme Beach). Beach replenishment will maintain the beaches for shoreline protection and recreational uses.

### 1.1 Location

The project is in the cities of Oxnard and Port Hueneme, Ventura County, California. See Figures 1-4.

February 2024

**Figure 1: Vicinity Map**

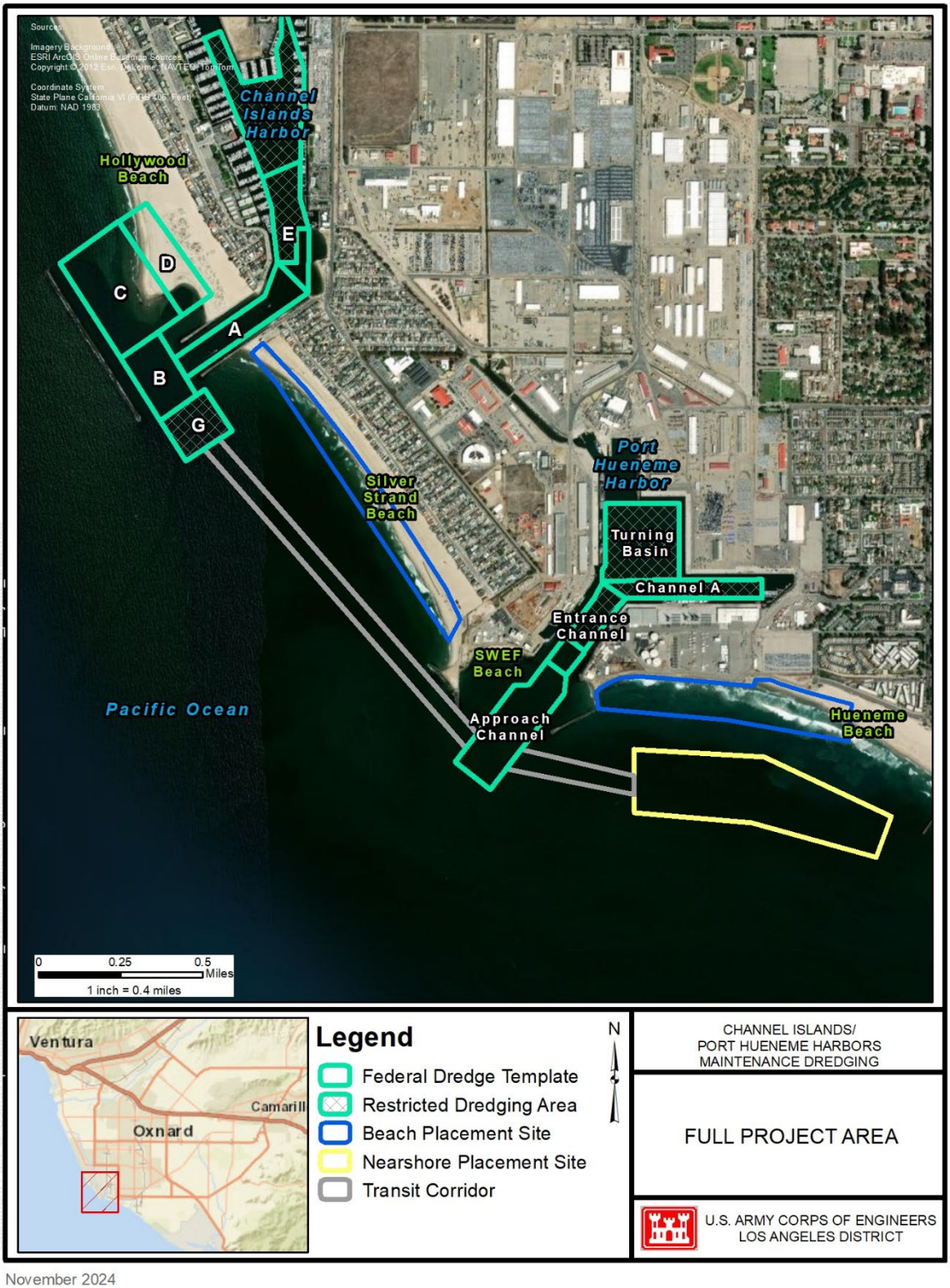


**Figure 2: Project Area**

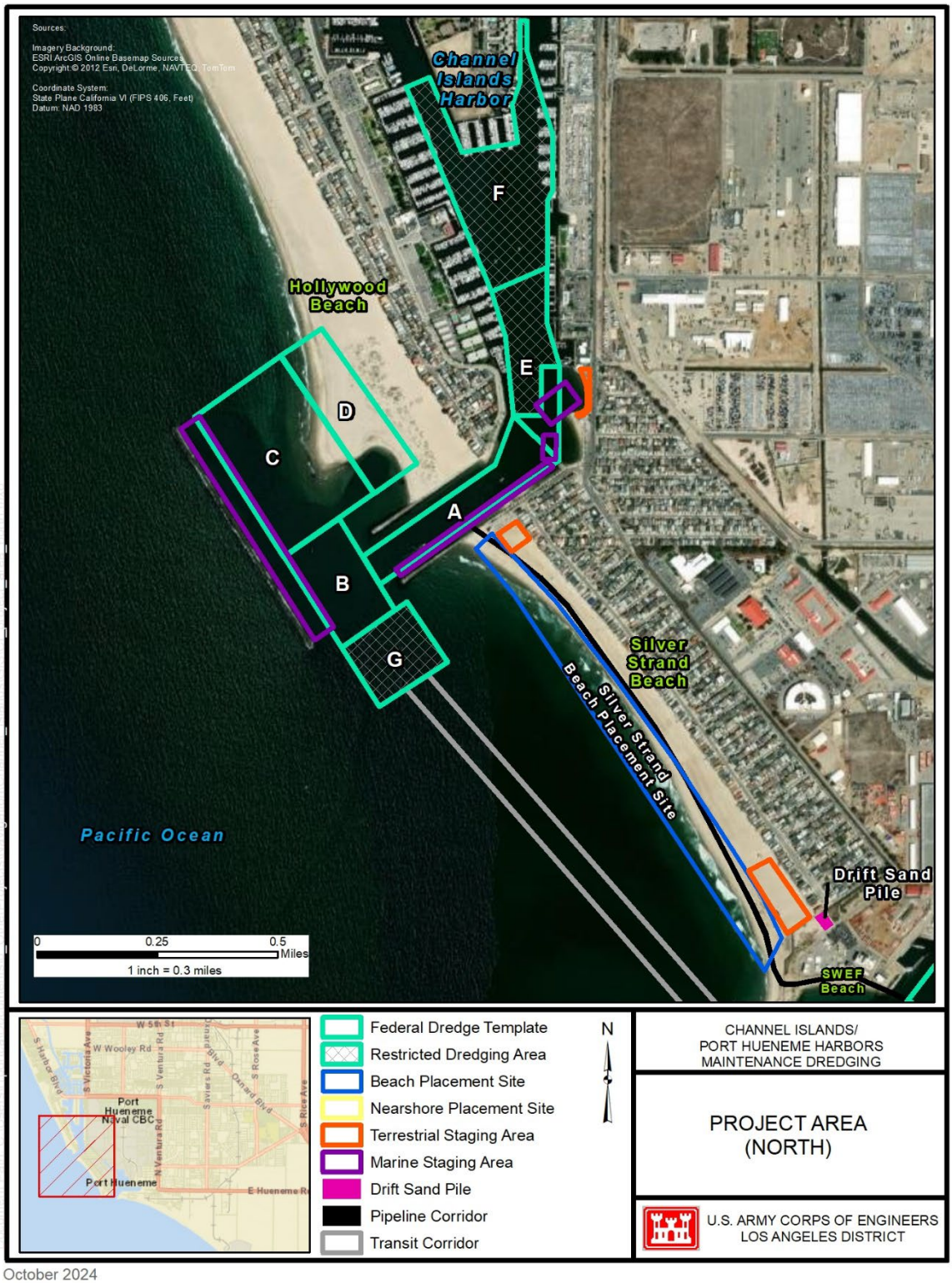


**Figure 3: Project Area (North)**

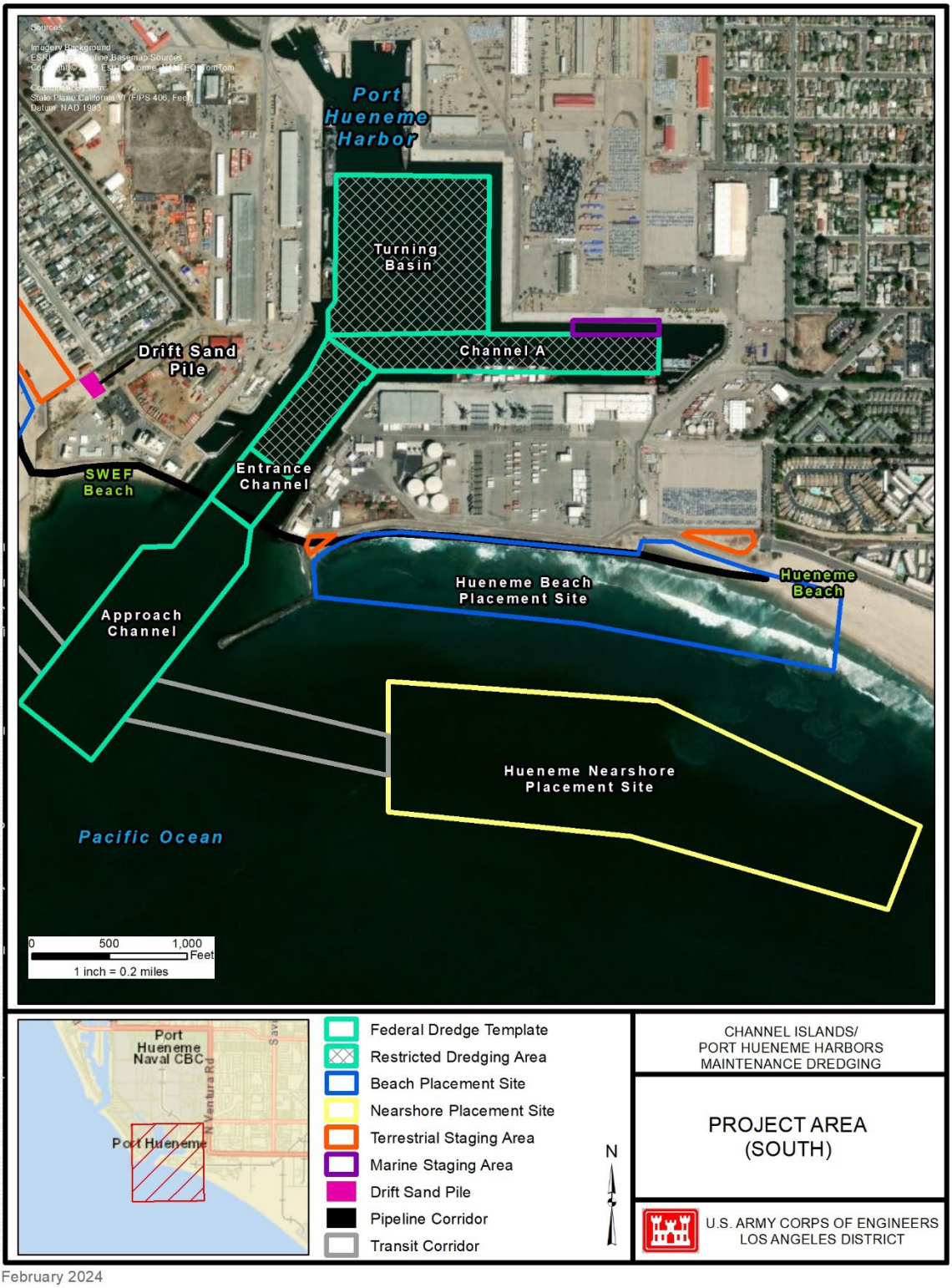


**Figure 4: Project Area (South)**

### 1.1.1 Channel Islands Harbor

Channel Islands Harbor is located in the city of Oxnard (Figure 1). Channel Islands Harbor is predominantly a recreational and light commercial harbor that also hosts a U.S. Coast Guard installation. The harbor entrance is protected by structural features consisting of a 2,300-foot- long offshore detached breakwater, entrance jetties, and an entrance channel leading to the harbor interior. The Entrance Channel and Basin is 3,400 feet long and varies in width from approximately 300 feet at the entrance to 600 feet within the harbor. Authorized depth of the Entrance Channel (Area A as shown in Figures 2 and 3) is -20 feet Mean Lower Low Water (MLLW). The Entrance Basin (Area E) may be dredged during this six-year cycle, if needed. Authorized depth of the Entrance Basin is -20 feet MLLW. The Inner Basin (Area F) will not be dredged during this six-year cycle and is not addressed in this EA.

The offshore detached breakwater and entrance jetties form a Sand Trap which was designed to accumulate sand prior to its entry into Channel Islands Harbor and Port Hueneme navigation channels. Sand which is carried downcoast by littoral drift is trapped in the Sand Trap and minimizes shoaling in the Entrance Channel. The Sand Trap is divided into three parcels as shown in Figures 2 and 3: Areas B, C, and D. The Sand Trap Areas B, C, & D were designed to be maintained at a depth of -35 feet MLLW. Area G will not be dredged during the first cycle but is designed to be maintained to -25 ft MLLW.

Channel Islands Harbor receives sediments from upcoast beaches and streams by the southerly littoral transport system. Maintenance dredging has been conducted routinely by the Corps since the 1960s at Channel Islands Harbor. During the most recent biennial dredge cycle (Fiscal Year 2023), 2,405,000 CY of material was dredged from the Channel Islands Harbor dredge template. The Corps is responsible for the federal structures at Channel Islands Harbor (North Jetty, South Jetty, and Detached Breakwater), maintenance of these structure is conducted as needed. Most recent repairs to the North Jetty, South Jetty, and Detached Breakwater were completed in 2021.

### 1.1.2 Port Hueneme Harbor

Port Hueneme Harbor is located in the city of Port Hueneme (Figure 1). Port Hueneme Harbor provides critical Navy infrastructure for Naval Base Ventura County as well as providing the only commercial industrial deep- water harbor located between the Port of Los Angeles and port facilities within San Francisco Bay. Port Hueneme Harbor is principally an international trade port operating for 88 years in the region. The Port Hueneme Harbor contributes $2.2 billion to the region and provides 20,032 trade related jobs to the region’s economy.

This harbor is located approximately one mile southeast of Channel Islands Harbor (Figure 2). Port Hueneme Harbor features include two entrance jetties, an Approach Channel, Entrance Channel, Channel A, and a Turning Basin (Figure 4). The

Approach Channel is approximately 1800 feet long, 600 feet wide, and has an authorized depth of -44 feet MLLW. The Entrance Channel is 1,400 feet long, 330 feet wide, and has an authorized depth of -40 feet MLLW. Channel A and the Turning Basin will not be dredged during this six-year cycle and are not addressed in this EA.

Construction of Port Hueneme Harbor was completed in 1940 and receives sediments from both southerly and northerly littoral transport. With the construction of Port Hueneme Harbor, downcoast sand supply was interrupted resulting in beach erosion damage. The first effort to address sand supply was a 2,000,000 CY dredging in 1953-1954 from the upcoast surf zone. This was met with severe issues that ultimately led to the 1958-1961 construction of the Channel Islands Harbor detached breakwater and sand trap to capture sand and provide a safe area from which sand could be dredged and bypassed immediately downcoast of Port Hueneme Harbor.

Previous routine maintenance dredging has been conducted by the Corps as needed at Port Hueneme Harbor dating back to 1975. During the 2008/2009 Port Hueneme Confined Aquatic Disposal (CAD) Project, a total of 685,000 CY of sand was hydraulically dredged from a prescribed area of the harbor's Turning Basin to create a CAD cell to facilitate confined aquatic disposal of contaminated sediment from the harbor. The uncontaminated dredged sand (685,000 CY) was pumped directly onto Hueneme Beach. Approximately 280,000 CY of submerged contaminated dredge material from the Port Hueneme Harbor was placed in the CAD site. Another 130,000 CY of clean sediment was then dredged from the Entrance Channel and placed on top to "cap" and sequester the contaminants, with a small amount of rock placed over the cap to protect capping material from being displaced by tides, near-shore currents, and propeller wash from passing vessels.

The channels of Port Hueneme were deepened in 2021 to the current authorized depths of – 44 feet and – 40 feet MLLW; approximately 384,000 CY of sediment was removed during the 2021 Port Hueneme Deepening Project. Approximately, 21,900 CY was deemed unsuitable for beach or nearshore placement and were placed within the Port Hueneme CAD in the Turning Basin. The remaining 362,100 CY was placed onto Hueneme Beach or in the Hueneme Nearshore Placement Site.

The Corps is responsible for the federal structures at Port Hueneme Harbor (West Jetty and East Jetty); maintenance of these structure is conducted as needed. Most recent repairs to the West Jetty and East Jetty were completed in 2000.

### 1.1.3 Silver Strand Beach

Silver Strand Beach is a heavily utilized recreational beach located in the city of Oxnard, between Channel Islands Harbor and Port Hueneme Harbor (Figure 2). Silver Strand Beach is approximately 5,000 feet long and typically 200-300 feet wide. Construction of Channel Islands Harbor and Port Hueneme Harbor has altered the natural transport of littoral material to down coast beaches. Silver Strand Beach is heavily used during the summer. Beach replenishment through deposition of dredged

materials is considered a beneficial use. On average, approximately 100,000 to 200,000 CY of material from the Channel Islands Harbor dredging program is deposited on Silver Strand Beach every two years.

### 1.1.4 Hueneme Beach Placement Site

Hueneme Beach is located in the city of Port Hueneme, southeast and immediately adjacent of the Port Hueneme Harbor (Figure 2). Hueneme Beach Placement Site is approximately 3,500 feet long from the Port Hueneme East Jetty to approximately 500 feet south of Market Street. The beach width varies from 0 to 800 feet wide. Construction of Port Hueneme Harbor has altered the natural transport of littoral material to downcoast beaches. This beach is heavily used during the summer. Beach replenishment is necessary to maintain the beaches for shoreline protection and recreational uses. Beach replenishment through placement of dredged materials is considered a beneficial use.

### 1.1.5 Hueneme Nearshore Placement Site

The Hueneme Nearshore Placement Site is located offshore of Hueneme Beach (Figure 2). The Hueneme Nearshore Placement Site is approximately 3,700 feet long, 1,000 feet wide, and ranges in depth from –10 feet to –30 feet MLLW with an average depth of –20 feet MLLW. Placement of dredge materials in the nearshore zone is a proven method of nourishing adjacent and downcoast beaches. During the 2021 Port Hueneme Deepening project, approximately 140,000 CY were placed in the Hueneme Nearshore Placement Site. During the previous twelve years no material from the Channel Islands Harbor/Port Hueneme Harbor dredging programs were deposited in the Hueneme Nearshore Placement Site, although this remains an option for a small portion of the material (Table 2) depending on needs, constraints, or opportunities at the time of dredging.

### 1.1.6 Surface Warfare Engineering Facility Beach

Surface Warfare Engineering Facility (SWEF) Beach is located on Naval Base Ventura County (NBVC) – adjacent to Silver Strand Beach and at the entrance of Port Hueneme Harbor (Figure 2). A security fence separates SWEF Beach from Silver Strand Beach. Wind-blown sand from Silver Strand Beach naturally accumulates in the Drift Sand Pile on NBVC, and spills onto Venice Road within NBVC.

## 2.0 PROPOSED ACTION

Dredging would occur in three biennial cycles (every two years, beginning in years 1, 3 and 5) over a six-year period (2024-2029). This schedule allows for maximum sediment loading within the Channel Islands Harbor dredge template while still allowing for safe navigability. However, the amount of sediment buildup in the Port Hueneme Harbor is

not normally sufficient to require biennial dredging, so that area would likely be dredged less frequently within the six-year period, dependent on sediment discharges to the littoral cell and wave transport conditions.

At Channel Islands Harbor, material would be dredged from the Entrance Channel, Sand Traps, Entrance Basin (Area E), and Area G. Note, only a portion of Area E was sampled and deemed physically suitable by the Southern California - Dredged Material Management Team (SC-DMMT) for placement at the Hueneme Beach Placement Site, consistent with the area that is planned to be dredged in the first cycle. If the remainder of Area E requires dredging during the six-year period, that area would be tested and evaluated for suitability prior to dredging. Area G would not be dredged during the first cycle. Each biennial dredging cycle could remove up to 2.5 million CY of material from the entire Channel Islands Harbor dredge template. Dredging would occur to authorized depths plus 2 feet of allowable over-depth. Authorized depths are as follows; -20 feet Mean Low Water (MLLW) at the Entrance Channel and Entrance Basin (Area E), -35 feet MLLW at the Sand Trap Areas B, C, & D, and -25 feet MLLW at Area G.

At Port Hueneme Harbor, material would be dredged from the Approach Channel and Entrance Channel. Note, only a portion of the Entrance Channel is currently approved by the SC-DMMT for dredging and placement at the receiver sites. If the remainder of the Entrance Channel requires dredging during the six-year period, that area would be reevaluated for suitability, as discussed in more detail below. The proposed dredging is planned to be accomplished as needed on the same schedule as the dredging of Channel Islands Harbor (i.e., during one or more of the three biennial cycles), removing up to 250,000 CY of material per dredge cycle. Dredging would occur to authorized depths plus 2 feet of allowable over-depth. Authorized depths are as follows: -44 feet MLLW at the Approach Channel and -40 feet MLLW at the Entrance Channel.

Project authorization mandates a majority of dredged material from Channel Islands Harbor dredge template be placed on Hueneme Beach. Placement at Silver Strand Beach (up to 250,000 CY per cycle) may also occur on an as-needed basis. Total project dredging would not exceed 8.25 million CY cumulatively for all three biennial dredging cycles at both harbors over the six-year period.

Throughout the six-year period, a cumulative total of approximately 10,000 CY may be removed from the Drift Sand Pile on NBVC and placed within the SWEF Beach pipeline corridor to secure the discharge pipeline as needed using equipment such as an end loader. The contractor may completely demobilize the discharge pipeline at the end of each biennial cycle or potentially: (1) bury or leave above ground the discharge pipeline on SWEF Beach for the duration of the six-year construction contract, and/or (2) bury the discharge pipeline on Silver Strand Beach for the duration of the six-year construction contract.

Additional subsurface and surface sediment samples (Vibracore and grab samples) may be taken as needed within the Action Area (defined in Section 3.1 in the EA) during the six-year period.

To avoid potential impacts to protected resources, no construction/dredging activities (i.e., equipment mobilization, dredging, equipment demobilization) would be conducted within the Channel Islands and Port Hueneme Harbors and adjacent beaches (Silver Strand, Hollywood Beach, SWEF Beach, and Hueneme Beach) and Hueneme Nearshore Placement Site, from March 1 through September 30. Biennial dredging and beach placement would occur between October 1 and February 28 to accommodate sensitive environmental windows (western snowy plover nesting season – March 1 – September 15; California least tern nesting season – April 1 to September 15; California grunion – March 1 to August 31), and nonpeak beach use. Work windows and timelines within the allowable work window (October 1 – February 28) are variable due to weather patterns and other factors such as equipment availability, working performance of the equipment, contractual commitments, and availability of funds. Marine staging areas would be located within Channel Islands Harbor, in the lee of the Channel Islands detached breakwater, and within Port Hueneme Harbor. Terrestrial staging areas would occur immediately adjacent to Channel Islands Harbor, on Silver Strand Beach, and at Hueneme Beach. Construction operations would occur seven days a week, 24 hours a day.

**Construction Equipment**

Work could be accomplished by a variety of dredge types. Table 2 shows potential dredge types to be used and their respective sediment placement locations and methods. To ensure public safety, the public would be restricted from entering or transiting through the active work site. When necessary, temporary fencing would be erected to further minimize public interactions with active construction areas.

Hydraulic Pipeline Dredge: Typically, a floating dredge with an attached hydraulic cutterhead is used to dredge the sand. Approximately 10,000 to 40,000 CY of sediment can be piped to the beach per day using a hydraulic dredge. The sand slurry is pumped through a pipeline onto the receiver beach for beach placement. Sand ramps would be built over the temporary pipeline to ensure emergency vehicles and the public can continue to access the beach when safety permits. When necessary, a temporary sand dike may be built adjacent to the discharge location to maximize sediment retention within the beach placement site and to control runback into the surf zone. The dike would be constructed using existing sandy materials from the beach adjacent to the discharge point. The dike would be positioned parallel to the shoreline and seaward of the discharge point. The sand dike would be dismantled upon completion of discharge activities. Following pipeline transport, the sand is uniformly spread over the beach using conventional earth moving equipment. Additional construction equipment typically required to support dredging activities are: conventional earth moving equipment and support vessels (i.e., an anchor tender, a pipe tender, tug vessels, and a crew boat).

Clamshell Dredge: This method consists of a crane mounted on a barge outfitted with a clamshell bucket and a scow. Dredged materials are placed into a scow for transport to the Nearshore Placement Site. Approximately 4,000 to 10,000 CY of sediment can be removed and transported to the Nearshore Placement Site per day using a

clamshell dredge. Additional construction equipment typically required to support dredging activities are support vessels (i.e., tug vessels and a crew boat).

*Table 1. Potential Dredge Types and Placement Options*

| Dredge Template Location | Dredge Type(s) | Placement Method | Placement Site Location(s) |
|---|---|---|---|
| Channel Islands Harbor Dredge Template (Areas A, B, C, D, E*, & G) | Hydraulic Pipeline Dredge | Beach Placement | Silver Strand Beach, Hueneme Beach |
| Channel Islands Harbor Area A | Clamshell Dredge | Nearshore Placement | Hueneme Nearshore Placement Site |
| Port Hueneme Harbor Dredge Template | Hydraulic Pipeline Dredge | Beach Placement | Silver Strand Beach, Hueneme Beach |
| Port Hueneme Harbor Dredge Template | Clamshell Dredge | Nearshore Placement | Hueneme Nearshore Placement Site |

*Portion of Area E material currently approved for dredging is only deemed suitable for beach placement at the Hueneme Beach Placement Site.

*Table 2. Dredge Quantities and Placement Location Options*

| Dredge Template Location | Maximum Dredge Quantity per Cycle (in CY) | Placement Site Location Options |
|---|---|---|
| Channel Islands Harbor | 2.5 million | Hueneme Beach<br>Silver Strand Beach (up to 250,000 CY per cycle, Area E material excluded)<br>Hueneme Nearshore Placement Site (Area A dredge material only) |
| Port Hueneme Harbor | 250,000 | Hueneme Beach<br>Silver Strand Beach<br>Hueneme Nearshore Placement Site |

## 3.0 CLEAN WATER ACT SECTION 404(B)(1) REGULATORY BACKGROUND

Section 404 of the Clean Water Act (CWA) governs the discharge of dredged or fill material into waters of the U.S. Although the USACE does not process and issue permits for its own activities, the USACE authorizes its own discharges of dredged or fill material by applying all applicable substantive legal requirements, including application of the Section 404(b)(1) Guidelines. 33 C.F.R. 336.1(a).

Under the Section 404(b)(1) Guidelines, an analysis of practicable alternatives is the primary tool used to determine whether a proposed discharge is prohibited. The Section 404(b)(1) Guidelines prohibit discharges of dredged or fill material into waters

of the US if a practicable alternative to the proposed discharge exists that would have less adverse impacts on the aquatic ecosystem, including wetlands, as long as the alternative does not have other significant adverse environmental impacts (40 C.F.R. 230.10(a)). An alternative is considered practicable if it is available and capable of being implemented after considering cost, existing technology, and logistics in light of the overall project purpose (40 C.F.R. 230.10(a)(2)). The Section 404(b)(1) Guidelines follow a sequential approach to project planning that considers mitigation measures only after the project proponent shows no practicable alternatives are available to achieve the overall project purpose with less environmental impacts. Once it is determined that no practicable alternatives are available, the guidelines then require that appropriate and practicable steps be taken to minimize potential adverse effects on the aquatic ecosystem (40 C.F.R. 230.10(d)). Such steps may include actions controlling discharge location, material to be discharged, the fate of material after discharge or method of dispersion, and actions related to technology, plant and animal populations, or human use (40 C.F.R. 230.70-230.77).

Beyond the requirement for demonstrating that no practicable alternatives to the proposed discharge exist, the Section 404(b)(1) Guidelines also require the USACE to compile findings related to the environmental impacts of discharge of dredged or fill material. The USACE must make findings concerning the anticipated changes caused by the discharge to the physical and chemical substrate and to the biological and human use characteristics of the discharge site.

These guidelines also indicate that the level of effort associated with the preparation of the alternatives analysis be commensurate with the significance of the impact and/or discharge activity. 40 C.F.R. 230.6(b).

## 4.0 BASIC AND OVERALL PROJECT PURPOSE

### 4.1 Basic Project Purpose

Where the activity associated with a discharge which is proposed for a special aquatic site (e.g., wetland, riffle pool, tidal marsh, etc.) does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose (i.e., is not “water dependent”), practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise. In addition, where a discharge is proposed for a special aquatic site, all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise. The basic project purpose comprises the fundamental, essential, or irreducible purpose of the proposed project. For purposes of this evaluation, the basic project purpose is beach nourishment, which is water dependent.

## 4.2 Overall Project Purpose

The overall project purpose serves as the basis for the USACE's section 404(b)(1) alternatives analysis and is determined by further defining the basic project purpose in a manner that more specifically describes the goals and accounts for logistical considerations for the project, and which allows a reasonable range of alternatives to be analyzed. It is critical that the overall project purpose be defined to provide for a meaningful evaluation of alternatives. It should not be so narrowly defined as to give undue deference to the preferred alternative, thereby unreasonably limiting the consideration of alternatives. Conversely, it should not be so broadly defined as to render the evaluation unreasonable and meaningless.

The overall project purpose is provision of beach nourishment material for downcoast beaches (Silver Strand and Hueneme Beach), severely eroded by the harbor disruption of the longshore transport of sand.

# 5.0 JURISDICTIONAL DETERMINATION OF WATERS OF THE US

The harbors, the beach nourishment sites, and the nearshore placement sites are in the Pacific Ocean, a Traditional Navigable Water (TNW) and thus a water of the U.S. pursuant to 33 C.F.R. 328.3(a)(1).

In the absence of adjacent wetlands, jurisdictional limits in tidal waters of the U.S. extend to the high tide line. When adjacent coastal wetlands (wetlands associated with salt and brackish water) are present, jurisdiction extends beyond the high tide line to the limit of the adjacent wetlands. No adjacent wetlands were identified in the project area. Thus, jurisdictional limits of waters of the U.S. are limited to the polygons depicted on Figures 1 – 4.

# 6.0 REGULATED AND UNREGULATED DISCHARGES

Dredging would result in discharges of dredge material at the dredging site (i.e., the two harbors where dredging will occur) and the discharge sites (i.e., receiving beaches and the nearshore).

Pursuant to 33 CFR 323.2(d)(3)(ii), incidental movement of dredged material occurring during normal dredging operations, defined as dredging for navigation in navigable waters of the United States is excepted from regulation under Section 404 of the CWA. Discharges of dredge material including construction of temporary sand dikes at the receiver beaches below the high tide line are regulated under Section 404 CWA. Likewise, discharge of sand into the Hueneme Beach nearshore are regulated. Relocation of sand from Drift Sand Pile on NBVC along Venice Road and placed on SWEF Beach to secure the dredge pipe is also a regulated discharge.

# 7.0 ALTERNATIVES ANALYSIS

## 7.1 Restrictions on Discharge

The 404(b)(1) Guidelines prohibit the discharge of dredged or fill material into waters of the U.S. if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. 40 C.F.R. 230.10(a). To be "practicable," an alternative must be "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." 40 C.F.R. 230.10(a)(2).

Alternatives to the proposed action were evaluated in the EA and rejected from consideration. The no action alternative does not meet the overall project purpose because it would result in malnourishment of eroded beaches downcoast. Thus, the No Action Alternative is not carried forward consideration in the 404(b)(1) evaluation. Accordingly, this analysis evaluates the proposed action.

# 8.0 ENVIRONMENTAL EFFECTS

In accordance with the Section 404(b)(1) Guidelines, the potential short-term or long-term effects of a proposed discharge of dredged or fill material on the physical, chemical, and biological components of the aquatic environment must be determined. The following discussion evaluates impacts of both alternatives on environmental resources identified in Subpart C through Subpart F of the Section 404(b)(1) Guidelines.

## 8.1 Potential Direct and Secondary (Indirect) Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C)

### 8.1.1 Substrate

***Direct Impacts***

Sediment testing conducted in 2018 indicated dredged sediments at the harbors consist of clean sand, ranging from 96 to 100% sand ranging in size between 0.25mm and 1.00 mm. Furthermore, 2018 testing also confirmed compatibility of dredge materials with beach sand.

Per testing results from September 2023 all material in the areas of the dredge template are predominantly sandy material and are suitable for beach nourishment via beach placement or nearshore placement. The Channel Island Harbor Dredge Area E sandy sediment is only suitable for placement at Hueneme Beach or SWEF Beach, all other dredge areas within Channel Island Harbor and Port Hueneme are suitable for placement at all placement sites.

Temporary sand dikes constructed as part of beach nourishment activities using native sand would be removed and the sand would be redistributed and regraded to match the existing beach contours upon completion of construction. The dredged material would redistribute and settle as a result of normal surf and littoral transport processes.

Non-beach compatible sand is discharged into the Hueneme nearshore.

***Indirect Impacts***

There would be no indirect impacts.

### 8.1.2 Suspended particulates and turbidity

***Direct Impacts***

In general, discharge of dredge material at the receiver beaches and the nearshore placement area would temporarily increase suspended particulates and turbidity. Beach placement may utilize temporary sand dikes, which could minimize nearshore turbidity during discharge operations by retaining sand upon the beach. As the dredge material is primarily sand, the sediment plume would be localized to the area near the discharge locations and would settle out of the water column quickly. Localized turbidity associated with temporary blackening of sand caused by dredged material placement in nearshore of (chemically reduced) organic material onto the beach could occur. However, tidal action and littoral process would the amount of organic material over time.

Water quality monitoring report from the October 2022 through February 2023 maintenance dredging indicate the following (See Appendix B):

- **Turbidity:** Turbidity levels were the typical range for seawater throughout the water column. Turbidity levels fluctuated from 0.1 to 29.6 NTUs during the monitoring period, with significant variations resulting from intense storms and runoff from creeks and rivers.
- **Total Suspended Solids** (TSS): TSS values were similar across all stations during synchronous sampling periods; however, the levels varied substantially across sampling periods. In all cases, the range of variance was typical for winter conditions on the open shoreline. The variance may have been related to a combination of wave climates and intermittent larger storms.

Based on the above, impacts would be temporary and would be limited to the immediate discharge sites. Increases in turbidity is unlikely to be detected beyond 100 ft. of the discharge sites.

***Indirect Impacts***

Suspension of fines at the point of discharge has the potential to decrease dissolved oxygen (DO) in the immediate vicinity (about 300 feet) of the point of

discharge due to suspension of anaerobic fines. Suspended organic material would increase availability of nutrients. Also dissolved contaminants would also be resuspended. Light transmittance would be reduced. pH levels could also change. However, since the nearshore placement and beach placement below the high tide lines is a high energy environment due to currents and wave action, the impacts would be temporary due to rapid dispersion of anaerobic sediments.

Water quality monitoring report from the October 2022 through February 2023 maintenance dredging indicate the following (See Appendix B):

- **Light Transmission:** The threshold for light transmittance was reduction by 40% or more between control sites and down current sites. There were no exceedances of the 40% reduction standard in light transmittance occurred during any monitoring event.

- **Dissolved Oxygen (DO):** The threshold for DO was reduction below 5.0 mg/L. Over the course of monitoring, DO was always above 5.0 mg/l—ranging from 6.5 mg/l to 9.2 mg/l.
- **pH:** No standards were required for pH, but values at all stations were recorded and fell within normal ranges for seawater throughout the water column. The pH ranged from a low of 8.0 to a high of 8.3. Within each sampling period, there was low variability in pH between stations and depth strata.

### 8.1.3 Water Circulation, Fluctuation, and Salinity Determinations

***Direct Impacts***

Currents and littoral transport generally trend downcoast. All discharge locations are part of an open marine environment exposed to high energy wave action, currents, and littoral processes. These processes would quickly disperse discharged materials, restoring elevation and contours of the benthic and beach environment. Thus, discharged dredge material would not affect or interfere with currents and water circulation or cause changes in fluctuation of surface water levels. Source dredge material come from a saline ocean environment and would be discharged back into a saline ocean environment. Thus, there would be no impacts on salinity.

Temporary sand dikes constructed as part of beach nourishment activities would use native sand. These structures would temporarily and purposely impede the return of sediment laden slurry into the surf to maximize retention of sand upon the beach. They would be removed, and the sand would be redistributed and regraded to match the existing beach contours upon completion of construction. There would be no long-term impacts to water circulation.

Water quality monitoring report from the October 2022 through February 2023 maintenance dredging indicate the following (see Appendix B):

- **Salinity:** Values at all stations were recorded and fell within normal ranges for seawater throughout the water column. Salinity within the sampling area remained stable. The lowest salinity measured was 32.4 parts per thousand (ppt) and the highest was 33.7 ppt. Salinity values were consistent with typical oceanic conditions.

***Indirect Impacts***

There would be no indirect impacts.

### 8.1.4 Contaminants

***Direct Impacts***

Dredge materials proposed for discharge onto receiver beaches and the nearshore have historically been predominantly sand. Testing results from September 2023 align with this trend. Sand grains are electrically neutral and thus resistant to contaminant adhesion. Though predominantly sand, dredge material proposed for discharge could contain fines and anaerobic sediment. This fraction would have some amount of clayey materials which contaminants can adhere to. Discharge of this fraction could result in resuspension of contaminants into the water column.

Bulk sediment chemistry results from 2023 (see Appendix C) were evaluated against National Oceanic and Atmospheric Administration (NOAA) toxicity effects-based screening levels (effects range-low [ERL] and effects range-medium [ERM] values) and federal and California human health objectives. All analyte concentrations in the Channel Islands Harbor and Port Hueneme composite samples were below detection limits or low compared to screening values. No analyte concentrations exceeded a NOAA ERL value. Arsenic was the only metal to exceed a human health objective but at a level typically found on beaches.

Temporary sand dikes constructed as part of beach nourishment activities would use native sand. Temporary reconfiguration of native beach sand would not result in introduction of new contaminants. Upon completion of construction, the sand dikes would be removed, and the sand would be redistributed and regraded to match the existing beach contours upon completion of construction.

All discharge locations are part of an open marine environment exposed to high energy wave action, currents, and littoral processes. These processes would quickly disperse and dilute contaminants from discharged fine materials.

Water quality monitoring report from the October 2022 through February 2023 maintenance dredging indicate the following (see Appendix B):

- **Chlordane:** Chlordane was not detected at any station during sampling. This is expected as the dredging footprint is in a high energy environment supporting predominantly sand derived from littoral sources. As such, it is not considered to be a likely location for chlordane which would be expected to be

associated with fluvially derived fine particulate sediments.

***Indirect Impacts***

Aquatic organisms traversing through the turbidity plume could be exposed to resuspended contaminants. Furthermore, resuspension of contaminants is unlikely to notably increase their concentration in the water column since currents and littoral process would result in rapid dispersion and dilution of contaminants.

### 8.1.5 Cumulative Impacts

Federal navigation channels and features at Port Hueneme Harbor and Channel Islands Harbor have been dredged since completion of construction at various intervals to maintain the structures to authorized depths and dimensions. Construction of the navigation channels and associated breakwater disrupted littoral transport to down coast beaches such as Hueneme Beach and Silver Strand Beach. The authorization for maintenance of the harbors mandated placement of beach compatible sand onto Hueneme Beach.

Historically, 90% of beach compatible sand have been discharged onto Hueneme Beach and the remaining 10% have been placed onto Silver Strand Beach. Non-beach compatible sand is discharged into the Hueneme nearshore.

Due to periodic maintenance dredging of the harbors, many contaminants are below detectable levels or are below various screening thresholds as confirmed by past sediment sampling results as well as the 2023 sampling results (see Appendix C).

Current maintenance dredging regime proposed for implementation as well as maintenance dredging for the foreseeable future would likely continue to discharge clean beach compatible sand.

## 8.2 Potential Direct and Secondary Impacts on Biological Characteristics of the Aquatic Ecosystem (Subpart D)

The dominant marine habitat in the project receiver sites includes the sandy bottom benthic intertidal and subtidal habitat of the Beach Placement Sites and Nearshore Placement Site. Marine habitats along the margins and immediately adjacent to the discharge sites are dominated by sandy bottom benthic habitat and in some areas the artificial rocky habitats created by the surrounding jetties. Canopy kelp occurs intermittently within artificial rocky substrate of the jetty structures. The proposed discharge sites experience sandy bottom benthic habitat disturbance due to both the annual maintenance dredging activities and highly active natural littoral transport processes occurring in the littoral cell.

### 8.2.1 Endangered Species

Federally listed threatened and endangered species that may occur within the project area include the federally endangered California least tern (*Sternula antillarum browni*), the federally threatened Pacific coast population of western snowy plover (*Charadrinus nivosus nivosus*), and gray whale.

**Western snowy plover and critical habitat:**

Snowy plovers forage on invertebrates in the wet sand and cast-off kelp found in the intertidal zone, in dry sandy areas above high tide, on salt pans, and along the edges of salt marshes and salt ponds. This species nests near dunes of Ventura County beaches, with breeding activities beginning in March and sometimes fledging young as late as September. Plovers are known to nest on the established Hollywood Beach (north of Channel Islands Harbor), as well as on the temporary beach that occasionally forms in the sand trap. The main beach area of Hollywood Beach adjacent to the sand trap is a part of the revised critical habitat designated for the western snowy plover by the U.S. Fish and Wildlife Service. Examination of the designation shows a small portion of critical habitat is adjacent to the sand trap in Area D (approximately 1.6 acres).

Critical habitat is also designated at Hueneme Beach, including the western end where a beach exists only temporarily when the Corps places sand as part of the Channel Islands/Port Hueneme Harbors Maintenance Dredging Program. Although the proposed dredge material placement site is adjacent to designated critical habitat, the site does not contain primary constituent elements (PCE) essential to the conservation of the western snowy plover as identified in the species' listing rule.

Conditions at the beach placement site on Hueneme Beach preclude the use of this beach by foraging snowy plovers. This beach, at the start of placement operations, is eroded back to the rock revetment, so that no dry beach exists.

***Direct Impacts***

Discharge of dredged material at Hueneme Beach, in most years, is expected to be completed prior to the beginning of the western snowy plover nesting season (March 1 through September 30). Thus, direct effects to nesting snowy plovers would be avoided during the species' nesting season.

Temporary sand dikes constructed as part of beach nourishment activities using native sand would be removed and the sand would be redistributed and regraded to match the existing beach contours upon completion of construction.

There would be no impacts to designated critical habitat.

***Indirect Impacts***

There would be no indirect impacts.

### California least tern

The California least tern is present in numbers that vary year to year from April to August, using area beaches for breeding. The California least tern forage primarily on surface fishes such as topsmelt and anchovies. Nesting at Hollywood Beach has occurred in the past. A historical nesting colony is located at Ormond Beach two to three miles down coast from the dredging areas, two miles from Silver Strand Beach, and less than one mile from Hueneme Beach. No designated critical habitat occurs within the receiver sites.

***Direct Impacts***

Direct impacts would be the same as that characterized for snowy plovers.

***Indirect Impacts***

Indirect impacts would be the same as that characterized for snowy plovers.

## Gray Whale

***Direct Impacts***

The Hueneme Nearshore Placement Site is very close to shore and in shallow depths. It does not overlap with or intersect any known whale migration routes. Gray whales have entered southern California harbors previously; however, these occurrences have taken place during the spring and summer seasons coinciding with the seasonal migration of adults and calves migrating northward along the United States West Coast. Therefore, gray whales would not be expected in the Hueneme Nearshore Placement Site due to the timing of the project to occur outside of this migratory period. Vessels associated with the Proposed Action would be slow-moving: vessels and equipment with the harbor would be stationary or slow moving (approximately 1-2 knots), tugs towing barges outside of the harbor are limited to approximately 6 knots when loaded and 8 knots when empty, less than the NMFS's recommended speed limit of 10 knots. This relatively slow speed allows vessel operators and whales to avoid collisions. No direct effects to whales are anticipated. However, implementation of environmental commitments as part of the Proposed Action would further ensure no direct effects to whales would result.

### Indirect impacts

Indirect effects would not occur during the Proposed Action because the Hueneme Nearshore Placement Site does not overlap with any known whale foraging, resting, or migrating areas.

### 8.2.2 Other Wildlife (Reptiles, Birds, and Mammals)

The beach placement and nearshore placement sites and surrounding jetties and breakwaters provide loafing, foraging, and roosting areas for a variety of shorebirds and waterfowl. Brown pelicans (*Pelecanus occidentalis californicus*), gulls (*Larus* spp), double-crested cormorants (*Phalacrocorax auritus*), and elegant terns (*Thalasseus elegans*), use the breakwaters and jetties for loafing.

A variety of seabirds are expected to use the sandy beaches where dredge material would be deposited. This type of habitat along with the adjacent shallow waters also provide foraging and loafing areas for many shorebird species including the long-billed curlew (*Nemenius americanus*), willet (*Catoptrophorous semipalmatus*), black-bellied plover (*Pluvialis dominica*), sanderling (*Calidris alba*), marbled godwit (*Limosa fedoa*), and whimbrel (*Numenius phaeopus*). Seabirds observed foraging in nearshore waters include western grebes (*Aechmophorus occidentalis*), scoters (*Melanita* spp), and loons (*Gavia* spp).

***Direct Impacts***

Many birds roost on the breakwaters and other structures adjacent to the beach placement and nearshore placement sites and are unlikely to congregate at the discharge point during dredging operations. Furthermore, increased noise and other anthropogenic activity associated with discharge operations would scatter birds away from the immediate discharge area. Birds are not anticipated to experience injury or mortality due to discharge operations.

***Indirect Impacts***

Turbidity from discharge operations can impact visually foraging piscivorous seabirds by making it difficult for them to see their prey. Thus, it is likely that visual feeders will avoid foraging in the immediate vicinity of the placement activities. Forage fish would also likely avoid direct disturbance areas, so these species would be available for capture as prey elsewhere.

Discharge onto the beach and into the nearshore may cause a temporary dispersal of birds away from the discharge area. Birds would be expected to return quickly after discharge activities cease. A reduction in overall prey availability would be experienced in the placement areas until recolonization and recovery of the community has occurred. The beach and nearshore placement area comprise a small footprint relative to the available foraging area within the surrounding marine waters and shoreline.

### 8.2.3 Fish, Crustaceans, Mollusks and other Aquatic Organisms in the Food Web

Common fish species in the shallow nearshore environments include thornback rays

(*Platyrhinoides triseriata*), lizard fish (*Synodus lucioceps*), speckled sanddab (*Cithrichthys stigmaeus*), northern anchovy (*Engraulis mordax*), white croaker (*Genyonemus lineatus*), and walleye surfperch (*Hyperprosopon argenteum*). Grunions (*Leuresthes tenuis*) use the beaches at Silver Strand and may use the beaches at Hueneme Beach for spawning between March and September. Peak grunion spawning activity occurs between April and June. Grunion is considered a sensitive species by the state of California. Breakwaters and jetties support the following fishes: sargo (*Anisotremus davidsonii*), opaleye (*Girella nigricans*), rock wrasse (*Halichoeres semicinctus*), senorita (*Oxyjulis californica*), half moon (*Medialuna californiensis*), and kelp bass (*Paralabrax clathratus*).

The nearshore areas and sandy beaches, where the dredge material would be placed, is a rigorous environment typical of open coast sandy beaches. Characteristic sandy beach organisms typically consist of sand crabs, bloodworms (*Euzonus mucronata*), and beach hoppers (*Orchestoidea sp.).*

***Direct Impacts***

Some fish may avoid the discharge area during operations because of the increased turbidity, noise levels, and oxygen depletion caused by dredging operations. Other fish species may be attracted to the surf zone or nearshore area to feed on mollusks, crustaceans, and other organisms which may have been caught up in, or exposed by, the dredged material. The localized and limited project area is a small percentage of available open water and sandy bottom benthic habitat therefore fish movement and migration would not be impeded.

Beach replenishment is scheduled to be completed by March 1 for each dredging cycle, well in advance of the California grunion spawning and California least tern nesting seasons. Therefore, impacts at the placement site are expected to have no adverse effects on the California grunion.

Discharge operations could result in temporary disturbance to sandy benthic habitat, direct mortality of organisms due to removal/burial/crushing, and loss of fish foraging habitat and prey. Some invertebrates are expected to be relocated, smothered, or buried, while others may experience clogging to gills and feeding apparatuses, depressed filtration rates, increased mucous secretion, and increased susceptibility to disease. Organisms displaced by discharge activities would quickly recolonize the impacted areas once construction is complete. Invertebrate mortality would provide food for opportunistic marine organisms, while some relocated fauna would survive after relocation.

***Indirect Impacts***

Indirect effects due to placement operations such as mortality of organisms, temporary reductions in growth and reproduction, temporary increases in turbidity, clogged gills and breathing apparatuses, suspension of sediments from propeller wash, release of contaminants from equipment, entrainment, and noise would be

negligible. Turbidity levels are expected to be temporary and minor because the dredged material is composed primarily of sandy material. Turbidity caused by dredging activities would subside to ambient levels within 1 to 24 hours as suspended sandy sediments quickly resettle. Some fish may avoid the immediate placement site during placement activities because of the increased turbidity, noise levels, and potential oxygen depletion. Other fish species may be attracted to the placement site to feed on mollusks, crustaceans, and other organisms which may have been caught up in, or exposed by, the dredged material. The placement sites are a small percentage of available open water and sandy bottom benthic habitat; therefore, fish movement and migration would not be permanently impeded due to placement activities.

Nearshore discharge areas support a typical sand bottom community with little or no vegetation owing to the high energy currents present in the area and high turbidity caused by wave action stirring up and transporting bottom sediments. Eelgrass is not present in the discharge sites. There is no vegetation on the receiver beaches below the high tide line, the limits of jurisdiction of waters of the U.S.

***Direct Impacts***

There would be no impacts to vegetation.

***Indirect Impacts***

There would be no indirect impacts.

### 8.2.4 Cumulative Impacts

Discharge of dredge material would primarily affect shorebirds that nest and forage on the beaches and invertebrates. Discharges would have minimal to no impact on other wildlife.

Prior to the construction of the two harbors, the coastline in the area was continuous, unmodified with engineered structures. The shoreline was continuous and the littoral transport processes uninterrupted. The construction of Port Hueneme Harbor in 1940 and Channel Islands Harbor in 1963 and associated structures such as breakwaters modified the littoral process resulting in erosion of downcoast beaches. Furthermore, other developments, increasing human population and uses of the coastline have put additional pressure on shorebird habitat and population. Maintenance dredging has historically replenished eroded beaches. Thus, diminished habitat for shorebirds are periodically restored. However, historical discharge activities likely did not incorporate avoidance measures such as disposal outside the nesting season. Modern maintenance dredging discharge operations do incorporate avoidance measures and use of biological monitors. These practices are likely to remain for the foreseeable future. Thus, eroded beaches would be restored and direct impacts during nesting

season would be avoided or minimized. However, population pressure on shorebirds would remain due to development and continued recreational use of the coastline.

Historically, discharge activities have adversely affected invertebrates. However, due to their relative abundance, organisms quickly recolonize and repopulate impacted areas once construction is complete. Thus, impacts are temporary with no notable impacts on population and range. This trend is unlikely to change in the foreseeable future.

## 8.3 Potential Direct and Secondary Impacts on Special Aquatic Sites (Subpart E)

### 8.3.1 Sanctuaries and Refuges

There are no sanctuaries or refuges designated under state or federal laws within the beach nourishment sites. There would be no direct or indirect impacts.

### 8.3.2 Wetlands

There are no wetlands within the beach nourishment site. There would be no direct or indirect impacts.

### 8.3.3 Mudflats

Mudflats are generally found in intertidal, estuarine or near-shore habitats, in deltas, or at river mouths. None of these conditions occur in the beach nourishment sites. Discharge would take place on beaches and the nearshore. There would be no direct or indirect impacts.

### 8.3.4 Vegetated shallows

Vegetated shallows are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as sea grasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems. Owing to the high energy currents present and the sandy substrate, there are no vegetated shallows in the discharge areas. There would be no direct or indirect impacts.

### 8.3.5 Coral Reefs

Coral reefs consist of skeletal deposits, usually of calcareous or silicaceous materials, and occur in marine environments. There are no coral reefs in the discharge areas. There would be no direct or indirect impacts.

### 8.3.6 Riffle and Pool

Streams are sometimes characterized by riffle and pool complexes. The rapid movement of water over a coarse substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. There are no riffle and pool complexes in the discharge area. There would be no direct or indirect impacts.

### 8.3.7 Cumulative Impacts

The discharge areas are an open marine environment. There are no special aquatic sites present in the area due to currents and tidal energy. Construction of the harbors and subsequent maintenance dredging activities have not altered this physical environment. Thus, there have been no direct and indirect impacts historically and none are expected in the foreseeable future.

## 8.4 Potential Direct and Indirect Effects on Human Use Characteristics (Subpart F)

### 8.4.1 Municipal and Private Water Supplies

The discharge areas are an open marine environment. It is not a source for municipal or private water supplies. There would be no direct or indirect impacts.

### 8.4.2 Recreational and Commercial Fisheries

Commercial fisheries are not located within the discharge areas. Likewise, fisheries that provide for recreational deep-sea fishing are not located in the discharge areas. Surf fishing along the receiver beaches is possible.

***Direct Impacts***

Discharge activities on the beach and the nearshore would temporarily deny opportunities to recreationally fish in the immediate area. The areas would become available for recreational fishing after discharge activities are complete.

***Indirect impacts***

During discharge activities, fish would also likely avoid direct disturbance areas. Fish would reoccupy affected areas after cessation of discharge activities.

### 8.4.3 Water Related Recreation

Recreational uses of the beach and nearshore consist of a host of activities typical of other beach environments such as swimming, walking, birdwatching, sunbathing, picnicking, and kayaking.

***Direct Impacts***

Public access to portions of the beaches (Silver Strand Beach and Hueneme Beach) may be restricted during discharge and mobilization and demobilization of equipment to ensure public safety. However, restrictions will be temporary in nature, be limited to only a small portion of the total available beach, and be relatively short in duration (ranging from days to a few months every other year depending on the specific construction activity, location within the project area, weather delays, and efficiency of contractor's equipment). The areas would become available for recreation discharge activities are complete. The discharge would maintain the overall recreational values by renourishing the beach.

***Indirect impacts***

There would be no indirect impacts.

### 8.4.4 Aesthetics

***Direct Impacts***

Discharge of dredge material would result in the use of pipes and earthmoving equipment on the beach as well as barges in the nearshore discharge area. Their presence would temporarily disrupt the vista of an open and uninterrupted shoreline that transitions into an open horizon composed of sea and sky. All equipment would be removed upon completion of discharge activities.

Discharges on the beaches would temporarily create stockpiles of dredge material. Temporary sand dikes would also be constructed as part of beach nourishment activities using native sand. However, earthmoving equipment would recontour the stockpiles to match the natural topography of the beach. Sand dikes would be removed, and the sand would be redistributed and regraded to match the existing beach contours upon completion of construction. Wave action would also disperse sediment to smooth out uneven or irregular contours.

Presence of anaerobic substrate may cause discoloration resulting in dark streaks in the sand. The discoloration would be temporary as oxidation would restore some coloration. Furthermore, wave action would also disperse discolored sediment over time to restore homogeneity.

***Indirect Impacts***

There would be no indirect impacts.

### 8.4.5 Parks, national and historical monuments, national seashores, wilderness areas, and research sites

There are no national parks, historical monuments, national seashores, wilderness areas, and research sites nearby. There would be no direct or indirect impacts.

### 8.4.6 Cumulative Impacts

Prior to the construction of Channel Islands Harbor and Human uses of aquatic resources in the discharge areas were likely limited to recreational uses of the beaches and nearshore. Uses of offshore coastal fisheries for recreational and commercial fishing was likely as well but was likely limited since there were no local harbors. Construction of the two harbors likely increased use of offshore coastal fisheries. The harbors also made possible use of recreational boats. Furthermore, evolution of recreational activities resulted in uses of watercrafts such as standup paddle boards which can be used in the confines of the harbor and the nearshore.

Construction of the navigation channels and associated breakwaters for the harbors disrupted littoral transport to down coast beaches such as Hueneme Beach and Silver Strand Beach which likely affected recreational uses of the affected beaches. Thus, the authorization for construction of the harbors mandated placement of beach compatible sand onto Hueneme Beach to mitigate for erosion.

With no other notable human uses beyond those discussed above, human uses in the foreseeable are likely to be limited to recreational uses of the beaches and nearshore. The cycle of beach erosion and beach nourishment will continue. However, with a number of nearby beaches upcoast and downcoast available for recreational use, periodic loss of sand from Hueneme Beach and Silver Strand Beach are likely to have minimal impacts on beach-related recreation in the long-term.

## 9.0 EVALUATION AND TESTING (SUBPART G)

Dredge material to be discharged has been tested in accordance with 40 C.F.R. 230.60(a).

Vibracore samples were taken from 28 locations throughout the two harbors from September 18 to September 22, 2023. Composite samples were analyzed for total and volatile solids, pH, total organic carbon, oil & grease, petroleum hydrocarbons, ammonia, metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc), butyltins, pyrethroid pesticides, chlorinated pesticides, PCB congeners, phenols, phthalates, and PAH compounds.

Bulk sediment chemistry results were evaluated against National Oceanic and Atmospheric Administration (NOAA) toxicity effects-based screening levels (effects range-low [ERL] and effects range-medium [ERM] values) and federal and California human health objectives. All analyte concentrations in the Channel Islands Harbor and Port Hueneme composite samples were below detection limits or low compared to screening values. No analyte concentrations exceeded a NOAA ERL value. Arsenic was the only metal to exceed a human health objective but at a level typically found on beaches.

All material in the areas of the dredge template were characterized as predominantly sandy material and deemed suitable for beach nourishment via beach placement or nearshore placement. The Channel Island Harbor Dredge Area E sandy sediment is only suitable for placement at Hueneme Beach or SWEF Beach, all other dredge areas within Channel Island Harbor and Port Hueneme are suitable for placement at all placement sites.

Based on the test results, the SCDMMT deemed the dredge material to be suitable for discharge into the marine environment on January 24, 2024. Note, only a portion of Area E in Channel Islands Harbor was sampled and deemed physically suitable by the SC-DMMT for placement at the Hueneme Beach Placement Site, consistent with the area that is planned to be dredged in the first cycle. If the remainder of Area E requires dredging during the six-year period, that area would be tested and evaluated for suitability prior to dredging. At Port Hueneme Harbor, only a portion of the Entrance Channel is currently approved by the SC-DMMT for dredging and placement at the receiver sites. If the remainder of the Entrance Channel requires dredging during the six-year period, that area would be reevaluated for suitability.

## 10.0 MEASURES TO MINIMIZE HARM (SUBPART H)

WQ-1: The Contractor shall implement a Water Quality Monitoring Plan. Water quality parameters, including pH, turbidity, DO, light transmissivity, salinity, and temperature will be monitored weekly throughout dredging operations. The Clean Water Act (CWA) Section 401 Water Quality Certification will be implemented by the Corps and the Contractor to ensure compliance.

WQ-2: Should turbidity or any of the other parameters exceed action levels, prescribed actions may be taken (i.e., slowing dredge cycle times, relocating operations to areas less susceptible to the current drift at the time of dredging or placement operations, and/or temporarily halting dredging/placement activities).

WQ-3: Standard dredge specifications include a Spill Prevention Plan and Cleanup Plan that includes measures to prevent spills and to clean up any spills that could occur, employee training, and the staging of materials on site to clean up accidental spills. Spills will be cleaned up immediately (within 10 minutes).

WQ-4: All dredging and fill activities will remain within the boundaries specified in the plans. There will be no dumping of fill or material outside of the project area or within any adjacent aquatic community.

WQ-5: Project features shall not interfere with tidal circulation and/or freshwater inflows into and through water bodies.

WQ-6: The Contractor shall remove all trash, debris, and excess construction material from the dredge operations and from dredged material placement site at the end of each workday and shall dispose of all materials at an approved disposal site. All debris will be disposed of as solid waste.

WQ-7: The Contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters and to minimize interference with, disturbance to, and damage of fish and wildlife.

WQ-8: The restricted portions of Channel Islands Harbor Area E and the Entrance Channel in Port Hueneme Harbor will not be dredged unless and until sediment testing has been performed and a suitability determination made by the Corps in coordination with the SC-DMMT.

BR-1: To avoid potential impacts to protected resources, no construction/dredging activities (i.e., equipment mobilization, dredging, equipment demobilization) will be conducted within the Channel Islands and Port Hueneme Harbors and adjacent beaches (Silver Strand, Hollywood Beach, SWEF Beach, Hueneme Beach, and Hueneme Nearshore Placement Site), from March 1 through September 30. Biennial dredging and beach placement will occur between October 1 and February 28 to accommodate sensitive environmental windows (western snowy plover nesting season – March 1 – September 15; California least tern nesting season – April 1 to September 15; California grunion – March 1 to August 31).

BR-2: Environmental Training shall be provided to all Contractor and Sub-Contractor personnel prior to work commencing to ensure full understanding of all project environmental protection and reporting requirements. Training shall include, but not limited to:

1) recognition and protection of archaeological sites and artifacts.
2) recognition and importance of the invasive algae, Caulerpa species.
3) recognition and protection of endangered species, their associated habitats, and nesting / spawning behavior in the project area
4) domestic pets are prohibited at the work site to avoid disturbance of endangered species that may occupy the beach areas.
5) general provisions of the Endangered Species Act (ESA) and the legal ramifications of violating the ESA;
6) recognition of marine mammals and laws prohibiting harassment, harassment defined per the Marine Mammal Protection Act of 1972.

7) recognition and importance of water quality protection commitments, pollution prevention measures, Best Management Practices (BMPs) implementation and measures.
8) recognition of the Spill Control Plan and Protocols, including anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants
9) recognition and importance of eelgrass, surfgrass, and canopy kelp.
10) recognition of the Migratory Bird Treaty Act.
11) conservation measures to be implemented during project construction to avoid impacts to sensitive resources, including avoidance areas, vehicle travel corridor limits, speed limits, and approved placement of construction materials.
12) protocol to resolve conflicts that may arise at any time during the construction process.
13) methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual.

BR-3: Perform a pre-construction and post-construction Hollywood Beach Dune Survey and analysis of impacts to dunes should they occur for each dredge cycle.

BR-4: The Consistency Determination (CD- 0001-24) conditions will be implemented by the Corps to ensure compliance.

BR-5: The Corps will implement the commitments and requirements of the Biological Opinion (08EVEN00-2022-0085983-S7), including the following Western snowy plover (WSP) and California least tern Avoidance and Minimize Measures to be implemented during construction:

1. The limits of the dredging and placement activities will be clearly marked to prevent heavy equipment from entering areas beyond the smallest footprint needed to complete the project;
2. Vehicles and all dredging activities will remain within the defined activity area and use only designated access points and staging areas;
3. The work area will be kept clean to avoid attracting predators and all food and trash will be disposed of in closed containers and removed from the project site;
4. No pets will be allowed on the construction site;
5. No dredging activities will be conducted in the sand trap area (adjacent to Hollywood Beach) during the shorebird/seabird nesting season (March 1 – September 30);
6. Prior to vehicles and equipment entering Hollywood Beach a qualified WSP monitor will survey the area. At all times a qualified WSP monitor will walk ahead of the vehicle(s) and equipment to assure that all WSPs are out of harm's way before the vehicle(s) or equipment can proceed on Hollywood Beach. Vehicles and equipment access to Hollywood Beach will be limited to safety signage and fencing installation, repairs, and removal;

7. Prior to vehicles and/or heavy equipment operation on Silver Strand Beach or Port Hueneme Naval Base SWEF Beach a qualified WSP monitor will survey the beach, the monitor will remain on site while operations involving vehicles and/or heavy equipment is occurring to ensure impacts to WSP are avoided, unless the Corps biologist in coordination with the USFWS has determined there is no risk to WSP. If WSP are present the Corps Biologist will walk in front of the vehicles and/or equipment, ensuring the path taken by vehicles/equipment is one that avoids impacts to the WSP.

BR-6: Vessels will drop/retrieve anchors vertically, utilize crown buoys for anchoring, will not drag anchors, and will avoid visible canopy kelp to the maximum extent practicable.

BR-7: Perform a pre-construction eelgrass survey in accordance with NMFS's California Eelgrass Mitigation Policy prior to each biennial dredge cycle to confirm the absence of eelgrass within the dredge template, placement sites (as practicable), and immediate vicinity. Should eelgrass be found within the project area, the Corps will complete supplemental EFH consultation with the NMFS before any construction occurs.

BR-8: Conduct surveillance level surveys for Caulerpa species within the dredge template prior to each biennial dredging cycle in accordance with the Caulerpa Control Protocol, Version 5 October 2021.

BR-9: The Corps will monitor standard water quality parameters including turbidity, light transmissivity, salinity, pH, temperature, and DO throughout the project duration with prescribed actions to be taken should turbidity or any other parameters exceed compliance thresholds.

BR-10: Corps will have a marine mammal monitor on site when working in areas where California sea lions are congregated to ensure harassment of the pinnipeds does not occur within the Action Area.

BR-11: If a whale is observed within the harbor, dredging operations will immediately cease. The Corps will coordinate with the NMFS prior to commencing dredging operations if the whale remains in the area. If the whale leaves the work area, then dredging would again commence.

## 11.0 COMPENSATORY MITIGATION FOR LOSSES OF AQUATIC RESOURCES (SUBPART J)

The proposed discharge would replenish eroded beaches down coast of Channel Islands Harbor and Hueneme Harbor.

The proposed discharge of dredge material consists primarily of sand. Discharge into the marine environment would temporarily increase turbidity at the point of discharge and at the dredge site. Based on past water quality monitoring reports in both areas, the discharge is not expected to violate state water quality standards.

Discharge operations would be scheduled to avoid direct impacts during nesting and spawning seasons for the western snowy plover nesting season (March 1 – September 15), California least tern (April 1 to September 15) and the California grunion (March 1 to August 31). All avoidance and minimization measures will be implemented.

Minimal impacts to marine invertebrates are anticipated. Impacts to marine mammals are not expected.

The discharge will not affect special aquatic sites. Furthermore, with the exception of temporary impacts to recreation, no impacts to other human uses are expected.

Based on the above, and with the implementation of avoidance and minimization measures, no unavoidable adverse impacts remain. Therefore, compensatory mitigation is not required.

## 12.0 FINDINGS

### 12.1 There are no available, practicable alternatives having less adverse impact on the aquatic ecosystem and without other significant adverse environmental consequences that do not involve discharge into waters of US.

There are no available, practicable alternatives having less adverse impact on the aquatic environment. In the EA, alternatives were considered and rejected from further consideration. The Proposed (Biennial Dredging) meets the overall project purpose and is practicable with respect to cost, technology, and logistics. There would be no permanent loss of waters of the US. Thus, the proposed action is the least environmentally damaging practical alternative.

### 12.2 The discharge will not violate state water quality standards.

The proposed discharge of dredge material consists primarily of sand. Discharge into the marine environment would temporarily increase turbidity at the point of discharge and at the dredge site. Based on past water quality monitoring reports in both areas, the discharge is not expected to violate state water quality standards.

### 12.3 The discharge will not violate toxic effluent standards.

Bulk sediment chemistry results were evaluated against National Oceanic and Atmospheric Administration (NOAA) toxicity effects-based screening levels (effects

range-low [ERL] and effects range-medium [ERM] values) and federal and California human health objectives. All analyte concentrations in the Channel Islands Harbor and Port Hueneme composite samples were below detection limits or low compared to screening values. No analyte concentrations exceeded a NOAA ERL value. The discharge would not violate toxic effluent standards.

**12.4 The discharge will not jeopardize endangered or threatened species or their critical habitat.**

Discharge operations would be scheduled to avoid direct impacts during nesting and spawning seasons for the western snowy plover nesting season (March 1 – September 15), California least tern (April 1 to September 15) and the California grunion (March 1 to August 31). The Proposed Action will not jeopardize endangered or threatened species or their critical habitat.

**12.5 The discharge will not violate standards set by the Department of Commerce to protect marine sanctuaries.**

The proposed discharge locations are located within a marine environment or the shoreline. No sanctuaries as designated by the Marine Protection, Research and Sanctuaries Act of 1972 will be affected.

**12.6 The proposed discharge material will meet testing exclusion criteria.**

Based on past sediment testing results, the discharge meets the testing exclusion criteria for the following reason(s):

( ) based on the above information, the material is not a carrier of contaminants.

(x) the levels of contaminants are substantially similar at the extraction and disposal sites and the discharge is not likely to result in degradation of the disposal site and pollutants will not be transported to less contaminated areas.

( ) acceptable constraints are available and will be implemented to reduce contamination to acceptable levels within the disposal site and prevent contaminants from being transported beyond the boundaries of the disposal site.

However, as a matter of process, dredge material to be discharged has been tested in 2023 in accordance with 40 C.F.R. 230.60(a). Results were presented to the SCDMMT on January 24, 2024. The SCDMMT deemed the dredge material suitable for discharge into the marine environment, with the exception of a portion of Channel Islands Harbor Area E and the Entrance Channel in Port Hueneme Harbor.

**12.7 The discharge will not contribute to significant degradation of Waters of the United States through adverse impacts to human health or welfare, through pollution of municipal water supplies, fish, shellfish, wildlife and special aquatic sites.**

The discharge will not affect municipal water supplies, fish, and special aquatic

sites. Bulk sediment chemistry results were evaluated against National Oceanic and Atmospheric Administration (NOAA) toxicity effects-based screening levels (effects range-low [ERL] and effects range-medium [ERM] values) and federal and California human health objectives. All analyte concentrations in the Channel Islands Harbor and Port Hueneme composite samples were below detection limits or low compared to screening values. No analyte concentrations exceeded a NOAA ERL value. The discharge would not affect human health or welfare.

**12.8 The discharge will not contribute to significant degradation of Waters of the United States through adverse impacts to diversity, productivity, and stability of the aquatic ecosystem, such as the loss of fish or wildlife habitat, or loss of the capacity of wetland to assimilate nutrients, purify water or reduce wave energy.**

The proposed discharge will not adversely impact diversity, productivity, and stability of the aquatic ecosystem. The dominant marine habitat in the immediate project area includes the marine waters and sandy bottom benthic intertidal and subtidal habitat of the beach placement sites and nearshore placement site. The proposed discharge sites do not support features such as eelgrass, coral reefs, or wetlands that could support aquatic species and wildlife. With no impoundment of water of loss of waters of the U.S. there would be no change in currents or reduction in wave energy.

The primary service of waters of the U.S. at the discharge locations is the provision of recreation. The proposed discharge would not permanently affect this service.

**12.9 The discharge will not contribute to significant degradation of Waters of the United States through adverse impacts to recreational, aesthetic, and economic values.**

The primary service of waters of the U.S. at the discharge locations is the provision of recreation. The proposed discharge would not permanently affect this service. The economic values of waters of the U.S. would be maintained.

**12.10 The discharge includes all appropriate and practicable measures (40 C.F.R. §§ 230.70-77) to minimize the potential harm to the aquatic ecosystem.**

On the Basis of the Guidelines, the Proposed Disposal Site(s) for the Discharge of Dredged or Fill Material is:

____ (1) Specified as complying with the requirements of these guidelines; or,

X ___(2) Specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem; or,

____ (3) Specified as failing to comply with the requirements of these guidelines.

# APPENDIX C

# NATIONAL MARINE FISHERIES SERVICE CORRESPONDENCE

**From:** Dan Lawson - NOAA Federal
**To:** Martinez-Takeshita, Natalie M CIV USARMY CESPL (USA)
**Cc:** Justin Viezbicke - NOAA Federal; justin.greenman@noaa.gov; Chesney, Bryant; Andrea Dellapa - NOAA Federal
**Subject:** [Non-DoD Source] Re: Channel Islands and Port Hueneme Harbors Maintenance Dredging Project
**Date:** Tuesday, January 30, 2024 7:21:16 AM

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Hi Natalie

Briefly, I recommend that the False Killer Whale, Steller Sea Lion, and Killer Whale be removed from the ESA list. The distribution for the Mexico and Central America DPS of humpback whales is essentially the same, so they may occur there - I'd probably say likely in the area similar to blue/fin whales. Guadalupe fur seals also may occur, somewhat likely.

With respect to sea turtles, you should list the Leatherback Turtle, Loggerhead Turtle, and Olive Ridley Turtle as a rare occurrence, although they may occur there. Green sea turtles are more likely to occur there than the other species , so "somewhat likely" seems to fit well.

Dan

On Mon, Jan 29, 2024 at 8:09 PM Martinez-Takeshita, Natalie M CIV USARMY CESPL (USA) <Natalie.M.Martinez-Takeshita@usace.army.mil> wrote:

> Hi NMFS Team,
>
> I am working on finalizing the EA for the Channel Islands/Port Hueneme Harbors Maintenance Dredging Project (see attached project area figure and draft project description). The majority of the material with be placed on the beach via a pipeline. There is a small amount of material that could be placed in the nearshore placement site, depth ranges from -10 to -30 ft MLLW with the average being -20 feet MLLW.
>
> I searched the NOAA ESA species directory and created these two tables, I know sometimes those searches will give you species that are not pertinent to your actual project area. Can you please take a look and let me know if there are any species that are missing or should be removed from the list for this project? I believe the False Killer Whale and Steller Sea Lion should be removed from the ESA list for this project area, but please let me know. I tried to fill in the table using Justin's responses to Tiffany Armenta for the Marina Del Rey dredging project as I think the same Potential to Occur would apply for this Project Area, but please let me know if they need to be revised. I was not sure what the potential to occur would be for Guadalupe Fur Seal and Humpback Whale-Mexico DPS.
>
> The search also listed the following four turtle species: Green Sea Turtle, Leatherback Turtle, Loggerhead Turtle, and Olive Ridley Turtle. Can you also please let me know what you think the potential for each of these species is to occur in our project area?
>
> Thank you!

| Marine Mammals | Species Name | Species/DPS | ESA Status | Potential to Occur in Project Area |
|---|---|---|---|---|
| Blue Whale | *Balaenoptera musculus* | Species | Endangered | Likely in area but, not likely at this shallow depth and proximity to shore |
| False Killer Whale | *Pseudorca crassidens* | Main Hawaiian Islands Insular DPS | Endangered | Not found in US West Coast |
| Fin Whale | *Balaenoptera physalus* | Species | Endangered | Likely in area but, not likely at this shallow depth and proximity to shore |
| Gray Whale | *Eschrichtius robustus* | Western North Pacific DPS | Endangered | Highly Likely, based on migration and habitat use. However, occurrence is seasonal (Dec - May) |
| Humpback Whale | *Megaptera novaeangliae* | Central America DPS | Endangered | Somewhat Likely, as they do come into shallow depths if prey concentrates there |
| | | Mexico DPS | Threatened | |
| Killer Whale | *Orcinus orca* | None - for this population; Southern Residents are Endangered though they do not occur in this area | Endangered | Rare Occurrence, also not likely at this shallow depth and proximity to shore |
| North Pacific Right Whale | *Eubalaena japonica* | Species | Endangered | Rare Occurrence, also not likely at this shallow depth and proximity to shore |
| Sei Whale | *Balaenoptera borealis* | Species | Endangered | Rare Occurrence, also not likely at this shallow depth and proximity to shore |
| Sperm Whale | *Physeter macrocephalus* | Species | Endangered | Rare Occurrence, also not likely at this shallow depth and proximity to shore |
| Guadalupe Fur Seal | *Arctocephalus townsendi* | Species | Threatened | |
| Steller Sea Lion | *Eumetopias jubatus* | Western DPS | Endangered | Not present? Confirm with Justin |


Natalie Martinez-Takeshita

Biologist

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Los Angeles District US Army Corps of Engineers

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# Corps' NMFS ESA Determination Summary Table

| Resource | ESA Listing Status | Corps' ESA Determination | Determination Rationale |
|---|---|---|---|
| Blue Whale (*Balaenoptera musculus*) | Endangered | No effect | No suitable habitat (deep pelagic waters) in Action Area. Considered to be absent from the Action Area. |
| Fin Whale (*Balaenoptera physalus*) | Endangered | No effect | No suitable habitat (deep pelagic waters) in Action Area. Considered to be absent from the Action Area. |
| Gray Whale (*Eschrichtius robustus*) | Western DPS - Endangered | No effect | May occur in Action Area; however not expected because the timing of the project would occur outside of the species' migratory period. |
| Humpback Whale (*Megaptera novaeangliae*) | Mexico DPS - Threatened; Central America DPS - Endangered | No effect | No suitable habitat (offshore waters) in Action Area and timing of project is outside peak season. Considered to be absent from the Action Area. |
| North Pacific Right Whale (*Eubalaena japonica*) | Endangered | No effect | No suitable habitat (deep pelagic waters) in Action Area. Considered to be absent from the Action Area. |
| Sei Whale (*Balaenoptera borealis*) | Endangered | No effect | No suitable habitat (deep pelagic waters) in Action Area. Considered to be absent from the Action Area. |
| Sperm Whale (*Physeter macrocephalus*) | Endangered | No effect | No suitable habitat (deep pelagic waters) in Action Area. Considered to be absent from the Action Area. |
| Guadalupe Fur Seal (*Arctocephalus townsendi*) | Threatened | No effect | No suitable habitat (remote, undisturbed coastlines or deep pelagic waters) in Action Area. Considered to be absent from the Action Area. |
| Pacific Green Sea Turtle (*Chelonia mydas*) | East Pacific DPS- Threatened | No effect | Action Area is north of northernmost aggregations and designated critical habitat. No suitable habitat or food resources in Action Area. Considered to be absent from the Action Area. |
| Olive Ridley Turtle (*Lepidochelys olivacea*) | Threatened | No effect | No suitable habitat (pelagic waters) in Action Area. One record of a stranded individual exhibiting advanced decomposition in Action Area in 2018 (NMFS 2023 stranding data). Considered to be absent from the Action Area. |
| Loggerhead Turtle (*Caretta caretta*) | North Pacific DPS- Endangered | No effect | No suitable habitat (pelagic waters) in Action Area. Considered to be absent from the Action Area. |
| Leatherback Turtle (*Dermochelys coriacea)* | Endangered | No effect | No suitable habitat (pelagic waters) in Action Area. Considered to be absent from the Action Area. |

# Project Description

## Introduction

The Proposed Action covers a proposed six-year maintenance dredging program at Channel Islands and Port Hueneme Harbors in Ventura County, California. The area would encompass approximately 3 miles of shoreline, extending from Hollywood Beach to Hueneme Beach. The area is located approximately 65 miles northwest of Los Angeles at the edge of the Oxnard Plain in Ventura County (Figure 1). Placement of the majority of dredged materials is expected to be on Hueneme Beach, with smaller quantities of material potentially placed on Silver Strand Beach or in the Hueneme Nearshore Placement Site (Figure 2). The proposed project consists of maintenance dredging of up to a maximum cumulative quantity of 8.25 million cubic yards (CY) from both Harbors over the six-year period.

## Location and Background

### *Channel Islands Harbor*

Channel Islands Harbor is located in the city of Oxnard (Figure 1). Harbor structural features consist of a 2,300-foot long offshore detached breakwater, entrance jetties, and an entrance channel leading to the harbor interior. The Entrance Channel and Basin is 3,400 feet long and varies in width from approximately 300 feet at the entrance to 600 feet within the harbor. Authorized depth of the Entrance Channel (Area A as shown in Figures 2 and 3) is -20 feet Mean Low Water (MLLW). The Entrance Basin (Area E) may be dredged during this six-year cycle if needed. Authorized depth of the Entrance Basin is -20 feet MLLW. The Inner Basin (Area F) will not be dredged during this six-year cycle and is not addressed in this assessment.

The offshore detached breakwater and entrance jetties form a Sand Trap which was designed to trap sand. Sand which is carried downcoast by littoral drift is trapped in the Sand Trap to minimize shoaling in the Entrance Channel. The Sand Trap is divided into four parcels as shown in Figures 2 and 3: Areas B, C, D, & G. The Sand Trap Areas B, C, & D were designed to be maintained at a depth of -35 feet MLLW. Sand Trap Area G was designed to be maintained at a depth of -25 ft MLLW.

Channel Islands Harbor receives sediments from upcoast beaches and streams by the southerly littoral transport system. Maintenance dredging has been conducted routinely by the Corps since the 1960s at Channel Islands Harbor. During the most recent biennial dredge cycle in Fiscal Year 2023 2,405,000 cubic yards of material was dredged from the Channel Islands Harbor dredge template.

### *Port Hueneme Harbor*

Port Hueneme Harbor is located in the city of Port Hueneme (Figure 1). This harbor is located approximately one mile southeast of Channel Islands Harbor. Harbor features include two entrance jetties, an Approach Channel, Entrance Channel, Channel A, and a Turning Basin. The Approach Channel is approximately 1800 feet long, 600 feet wide, and has an authorized depth of -44 feet MLLW. The Entrance Channel is 1,400 feet long, 330 feet wide, and has an authorized depth of -

40 feet MLLW. Channel A and the Turning Basin will not be dredged during this six-year cycle and are not addressed in this assessment.

Port Hueneme Harbor was built in 1940 and receives sediments from both southerly and northerly littoral transport. Previous routine maintenance dredging has been conducted by the Corps as needed at Port Hueneme Harbor dating back to 1975. During the 2008/2009 Port Hueneme Confined Aquatic Disposal (CAD) Project, a total of 685,000 CY of sand was hydraulically dredged from a prescribed area of the harbor's Turning Basin to create a CAD cell to facilitate confined aquatic disposal of contaminated sediment from the harbor. The dredged sand (685,000 CY) was pumped directly onto Hueneme Beach. Approximately 280,000 CY of submerged contaminated dredge material from the Port Hueneme Harbor was placed in the CAD site. Another 130,000 CY of clean sediment was dredged from the Entrance Channel and placed on top to "cap" and sequester the contaminants, with a small amount of rock placed over the cap to protect capping material from being displaced by tides, near-shore currents, and propeller wash from passing vessels.

The channels of Port Hueneme were deepened in 2021 to the current authorized depths of – 44 feet and – 40 feet MLLW. 384,000 CY were removed during the 2021 Port Hueneme Deepening Project. 21,900 CY were unsuitable material and were placed within the Port Hueneme CAD in the Turning Basin. The remaining 362,100 CY was placed either onto Hueneme Beach or in the Hueneme Nearshore Placement Site.

***Silver Strand Beach***

Silver Strand Beach is located in the city of Oxnard, between Channel Islands Harbor and Port Hueneme (Figure 2). Silver Strand Beach is approximately 5,000 feet long and typically 200-300 feet wide. Construction of Channel Islands Harbor and Port Hueneme has altered the natural transport of littoral material to down coast beaches. Silver Strand Beach is heavily used during the summer. Beach replenishment through deposition of dredged materials is considered a beneficial use. On average approximately 100,000 to 200,000 CY of material from the Channel Islands Harbor dredging program is deposited on Silver Strand Beach every two years.

***Hueneme Beach Placement Site***

Hueneme Beach is located in the city of Port Hueneme, southeast of the harbor (Figure 2). Hueneme Beach Placement Site is approximately 3,500 feet long from the Port Hueneme East Jetty to approximately 500 feet south of Market Street. The beach width varies from 0 to 800 feet wide**.** Construction of Port Hueneme Harbor has altered the natural transport of littoral material to downcoast beaches. This beach is heavily used during the summer. Beach replenishment is necessary to maintain the beaches for shoreline protection and recreational uses. Beach replenishment through placement of dredged materials is considered a beneficial use.

***Hueneme Nearshore Placement Site***

The Hueneme Nearshore Placement Site is located offshore of Hueneme Beach (Figure 2). The Hueneme Nearshore Placement Site is approximately 3,700 feet long, 1,000 feet wide, and ranges

in depth from –10 feet to –30 feet MLLW with an average depth of –20 feet MLLW. Placement of dredge materials in the nearshore zone is a proven method of nourishing adjacent and down coast beaches. During the 2021 Port Hueneme Deepening project, approximately 140,000 CY were placed in the Hueneme Nearshore Placement Site. During the previous twelve years no material from the Channel Islands Harbor/Port Hueneme dredging programs were deposited in the Hueneme Nearshore Placement Site. This is due to the preference for beach placement by local officials.

***SWEF Beach***

Surface Warfare Engineering Facility (SWEF) Beach is located on Naval Base Ventura County (NBVC) – adjacent to Silver Strand Beach and at the entrance of Port Hueneme Harbor (Figure 2). A security fence separates SWEF Beach from Silver Strand Beach. Wind-blown sand from Silver Strand Beach naturally accumulates in the Drift Sand Pile on NBVC, and spills onto Venice Road within NBVC.

**Proposed Action**

Dredging would occur in three biennial cycles (every two years, beginning in years 1, 3 and 5) over a six-year period (2024-2029). This schedule allows for maximum sediment loading within the Channel Islands Harbor dredge template while still allowing for safe navigability. However, the amount of sediment buildup in the Port Hueneme Harbor is not normally sufficient to require biennial dredging, so that area would likely be dredged less frequently within the six-year period.

At Channel Islands Harbor, material will be dredged from the Entrance Channel (Area A), Sand Traps, and Entrance Basin (Area E). Note, only a portion of Area E is currently deemed physically suitable by the Southern California - Dredged Material Management Team (SC-DMMT) for placement at the Hueneme Beach Placement Site, consistent with the area that is planned to be dredged in the first cycle. If the remainder of Area E requires dredging during the six-year period, that area would be tested and evaluated for suitability prior to dredging. Each biennial dredging cycle could remove up to a maximum of 2.5 million CY of material from the entire Channel Islands Harbor dredge template. Dredging would occur to authorized depths plus 2 feet of allowable over-depth. Authorized depths are as follows; -20 feet Mean Low Water (MLLW) at the Entrance Channel (Area A) and Entrance Basin (Area E), -35 feet MLLW at the Sand Trap Areas B, C, & D, and -25 feet MLLW at Sand Trap Area G.

At Port Hueneme Harbor, material would be dredged from the Approach Channel and Entrance Channel. Note, only a portion of the Entrance Channel is currently approved by the SC-DMMT for dredging and placement at the receiver sites. If the remainder of the Entrance Channel requires dredging during the six-year period, that area would be re-evaluated for suitability. The required dredging is planned to be accomplished as needed on the same schedule as the dredging of Channel Islands Harbor (i.e., during one or more of the three biennial cycles), removing up to 250,000 CY of material per dredge cycle. Dredging would occur to authorized depths plus 2 feet of allowable over-depth. Authorized depths are as follows; -44 feet MLLW at the Approach Channel and -40 feet MLLW at the Entrance Channel.

Project authorization mandates a majority of dredge material from Channel Islands Harbor dredge template be placed on Hueneme Beach to fulfill established commitments for shoreline protection. Placement at Silver Strand Beach (up to 250,000 CY per cycle) may also occur on an as-needed basis to offset periodic erosion. Total project dredging would not exceed 8.25 million CY cumulatively for all three biennial dredging cycles at both harbors over the six-year period.

Throughout the 6-year period, a cumulative total of approximately 10,000 CY may be removed from the Drift Sand Pile on NBVC and placed within the SWEF Beach pipeline corridor to secure the discharge pipeline as needed using equipment such as an end loader. The contractor may completely demobilize the discharge pipeline at the end of each biennial cycle or potentially: (1) bury or leave above ground the discharge pipeline on SWEF Beach for the duration of the six-year construction contract, and/or (2) bury the discharge pipeline on Silver Strand Beach for the duration of the six-year construction contract.

Additional subsurface and surface sediment samples (Vibracore and grab samples) may be taken as needed within the Action Area during the 6-year period. After the completion of the third biennial dredge cycle and prior to the project's subsequent six-year Final EA, subsurface and surface sediment samples will be collected for the project's next Sampling and Analysis Plan Results Report (SAPR). Specific timing of sampling will depend on shoaling patterns and funding availability.

To avoid potential impacts to protected resources, no construction/dredging activities (i.e. equipment mobilization, dredging, equipment demobilization) would be conducted within the Channel Islands Harbor and adjacent beaches (Silver Strand and Hollywood Beach), from March 1 through September 30. Biennial dredging and beach placement would occur between October 1 and February 28 to accommodate sensitive environmental windows (western snowy plover nesting season – March 1 – September 15; California least tern nesting season – April 1 to September 15; California grunion – March 1 to August 31), and nonpeak beach use. Work windows and timelines within the allowable work window (October 1 – February 28) are variable due to weather patterns and other factors such as equipment availability, working performance of the equipment, contractual commitments, and availability of funds. Marine staging areas would be located within Channel Islands Harbor, in the lee of the Channel Islands detached breakwater, and within Port Hueneme Harbor. Terrestrial staging areas would occur immediately adjacent to Channel Islands Harbor, on Silver Strand Beach, and at Hueneme Beach (Figures 3 & 4) . Construction operations would occur seven days a week, 24 hours a day.

**Construction Equipment**

Work could be accomplished by a variety of dredge types.

***Hydraulic Pipeline Dredge.*** Typically, a floating dredge with an attached hydraulic cutterhead is used to dredge the sand. The sand slurry is pumped through a pipeline onto the receiver beach for beach placement. Following pipeline transport, the sand is uniformly spread over the beach using conventional earth moving equipment. Approximately 10,000 to 40,000 CY of sediment can be piped to the beach per day using a hydraulic dredge. Additional construction equipment typically

required to support dredging activities are conventional earth moving equipment and support vessels (i.e. an anchor tender, a pipe tender, tug vessels, and a crew boat).

***Clamshell Dredge.*** This method consists of a crane mounted on a barge outfitted with a clamshell bucket and a scow. Dredged materials would be placed into a scow for transport to the Nearshore Placement Site. Approximately 4,000 to 10,000 CY of sediment can be removed and transported to the Nearshore Placement Site per day using a clamshell dredge. Additional construction equipment typically required to support dredging activities are support vessels (i.e. tug vessels and a crew boat).

*Table 1. Potential Dredge Types and Placement Options*

| **Dredge Template Location** | **Dredge Type(s)** | **Placement Method** | **Placement Site Location(s)** |
|---|---|---|---|
| Channel Islands Harbor Dredge Template (Areas A, B, C, D, E*, & G) | Hydraulic Pipeline Dredge | Beach Placement | Silver Strand Beach, Hueneme Beach |
| Channel Islands Harbor Area A | Clamshell Dredge | Nearshore Placement | Hueneme Nearshore Placement Site |
| Port Hueneme Harbor Dredge Template | Hydraulic Pipeline Dredge | Beach Placement | Silver Strand Beach, Hueneme Beach |
| Port Hueneme Harbor Dredge Template | Clamshell Dredge | Nearshore Placement | Hueneme Nearshore Placement Site |

*Portion of Area E material currently approved for dredging is only deemed suitable for beach placement at the Hueneme Beach Placement Site.

*Table 2: Dredge Quantities and Placement Location Options*

| **Dredge Template Location** | **Maximum Dredge Quantity per Cycle (in CY)** | **Placement Site Location Options** |
|---|---|---|
| Channel Islands Harbor | 2.5 million | Hueneme Beach<br>Silver Strand Beach (max 250,000 CY per cycle, Area E material excluded)<br>Hueneme Nearshore Placement Site (Area A dredge material only) |
| Port Hueneme Harbor | 250,000 | Hueneme Beach<br>Hueneme Nearshore Placement Site<br>Silver Strand Beach |

## Existing Conditions

### Fish and Essential Fish Habitat (EFH)

The dominate marine habitat in the immediate project area includes the marine waters and sandy bottom benthic habitat of the Federal Navigation Channel's maintenance dredging template, and the sandy bottom benthic intertidal and subtidal habitat of the Beach Placement Sites and Nearshore Placement Site. Marine habitats along the margins and immediately adjacent to the project area are dominated by sandy bottom benthic habitat and in some areas artificial rocky habitat is created by the surrounding jetties and breakwater. Canopy kelp occurs intermittently outside of the Federal Navigation Channel and within the artificial rocky substrate of the breakwater and jetty structures. The proposed dredge template and placement sites experience sandy bottom benthic habitat disturbance due to both the maintenance dredging activities and highly active natural littoral transport processes occurring in the littoral cell.

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (hereafter, The Act; 16 USC 1801, *et seq*.) set forth a number of mandates for the National Marine Fisheries Service (NMFS), regional fishery management councils, and other federal agencies to identify and protect important marine and anadromous fish habitat. The Councils, with assistance from NMFS, are required to delineate "essential fish habitat" (EFH) for all managed species. The Act defines EFH as " ... those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The Act identifies discrete subsets of EFH referred to as Habitat Areas of Particular Concern (HAPC) that are defined as exhibiting one or more of the following traits: rare, stressed by development, provide important ecological functions for federally managed species, or are especially vulnerable to anthropogenic (or human impact) degradation. Federal action agencies which fund, permit, or carry out activities that may adversely impact EFH are required to consult with NMFS regarding the potential effects of their actions on EFH and respond in writing to the NMFS's recommendations.

For the Pacific region, EFH has been identified for a total of over 119 species covered by four FMPs under the auspices of the Pacific Fishery Management Council; Coastal Pelagic Species FMP, Pacific Coast Groundfish FMP, Pacific Coast Salmon FMP, and Highly Migratory Species FMP. Species managed under two of the FMPs have the potential to occur within the project area. The National Oceanic and Atmospheric Administration's (NOAA's) EFH Mapper (https://www.habitat.noaa.gov/apps/efhmapper) identified the harbors and surrounding project area as EFH for all life stages for groundfish and coastal pelagic finfish, and krill (*Thysonoessa spinifera*, *Euphausia pacifica*, and other krill species). Several of the species managed under the Pacific Coast Groundfish FMP and Coastal Pelagic Species FMP are known to occur commonly within the project area. In addition, many species identified as Ecosystem Component Species under the Pacific Groundfish Management Plan are present in the project area. Furthermore, many other native marine fish in the project area undoubtedly serve as prey for many of the managed species.

Two canopy kelp species, *Macrocystis pyrifera* and *Egregia menziesii*, have been documented to

occur intermittently outside of the Federal Navigation Channel within the artificial rocky substrate of the detached breakwater and jetty structures of Channel Islands and Port Hueneme Harbors (Merkel & Associates 2020 & JAN 2022). Also, the NOAA's EFH Mapper identifies the Federal Navigation Channel within Channel Islands Harbor and Port Hueneme Harbor as estuary HAPC, however, this is not correct as there are no river or stream inputs into either harbor. Both harbors are fully marine and do not have the salinity gradient characteristics of an estuary. A prior harborwide survey completed in 2005 found scattered eelgrass in the Channel Islands Harbor, including eelgrass within the coves occupied by Hobie Beach and Kiddie Beach (Merkel & Associates 2008). The 2005 survey was a comprehensive survey that detected a minor 1.2 acres of eelgrass within the entirety of the harbor. Surveys completed in 2005 were conducted using sidescan sonar in association with extensive diving ground-truthing conducted in association with saturation surveys for *Caulerpa taxifolia*. However more recent surveys conducted (US Coast Guard April 2020, USACE September 2020, USACE September 2022) of the project area did not detect eelgrass within the project area, including within Hobie Beach and Kiddie Beach (Merkel & Associates 2020 and SEP 2022). Eelgrass has not been documented in Port Hueneme Harbor, the majority of Port Hueneme Harbor was most recently surveyed by the US Navy in 2022 (Merkel & Associates DEC 2022).

## Environmental Consequences

**Fish and Essential Fish Habitat (EFH)**

In this section, direct impacts are defined or described as injury or mortality to fish from direct entrainment or burial, or changes to habitat that would occur as a result of dredging, placement or movement and maintenance of pipeline, or dredged material placement activities. Indirect impacts would potentially be caused by plumes of suspended sediment or changes in water quality that could occur as a result of dredging or placement activities and that may extend beyond the direct dredge template.

While proposed dredging and placement operations would be short-term in duration and localized, recurrent direct and indirect impacts to fish species and EFH would occur primarily due to benthic disturbance and elevated turbidity. The proposed dredge template and placement areas experience sandy bottom benthic habitat disturbance due to both the biennial maintenance dredging activities and highly active natural littoral transport processes occurring in the littoral cell. The dredging and placement operations could result in temporary disturbance to sandy benthic habitat, loss of fish foraging habitat, prey, and temporary increases in turbidity. Impacts to EFH within the project footprint may include direct mortality of organisms due to direct impacts such as removal/burial/crushing of organisms, and indirect impacts such as; temporary turbidity plumes and suspension of sediments from propeller wash, release of contaminants from equipment, entrainment, and noise. Direct disturbance to sandy benthic habitat due to removal/burial/crushing of organisms and water quality impacts would be considered potential adverse impacts to EFH. Turbidity caused by dredging activities would subside within an hour to 24 hours after dredging has completed as suspended sediments begin to settle. Displaced organisms from dredging and disposal activities would likely begin to quickly recolonize the

areas impacted by dredging and placement activities once construction is complete (Merkel & Associates, 2010).

Some fish may avoid the immediate project area during dredging and placement operations because of the increased turbidity, noise levels, and oxygen depletion caused by dredging operations. Other fish species may be attracted to the surf zone or nearshore area to feed on mollusks, crustaceans, and other organisms which may have been caught up in, or exposed by, the dredged material. The localized and limited project area is a small percentage of available open water and sandy bottom benthic habitat therefore fish movement and migration would not be impeded due to dredging and placement activities. While turbidity at the placement site could be more extensive than that at the dredge location, the surf zone has naturally high turbidity due to wave action.

While two canopy kelp species (*Macrocystis pyrifera* and *Egregia menziesii*) have been documented to occur intermittently within the surrounding project area, when present they often grow in a narrow band tightly constrained on the steep slope of the artificial rocky substrate of the breakwater and jetties. The breakwater and jetty structures of Channel Islands and Port Hueneme Harbors that support the kelp species are outside of the immediate work area of the dredge template and placement sites and are not expected to be impacted. Within the project area no eelgrass HAPC is present, however an eelgrass survey will be conducted prior to each biennial dredge cycle to confirm the absence of eelgrass within the applicable project area. In the unlikely event the nearshore placement method would be utilized a pre-construction eelgrass survey would be conducted of the nearshore placement site to confirm the absence of eelgrass. An annual pre-construction survey for *Caulerpa* species would be conducted prior to each biennial dredge cycle to ensure invasive *Caulerpa* species are not present within the dredge template and applicable surrounding project area.

The dredging operation would be monitored to ensure that any substantial increases in turbidity or decreases in dissolved oxygen are restricted to the immediate area around the dredge, and that these impacts dissipate within 300 feet of the dredge to be within acceptable compliance thresholds. The monitoring program also includes reporting requirements and measures that would be taken if impacts exceed acceptable levels. Greater potential for impacts would exist if there were substantial amounts of fine sediments in the dredging template; however, testing of samples of material to be dredged indicated that grain sizes are predominately fine to medium grain sands (USACE, 2024). This material settles quickly instead of remaining suspended in the water column.

With the minimization and avoidance measures outlined above to monitor and control water quality, and survey to ensure no eelgrass or *Caulerpa* species are within the project area, the Corps has determined the Proposed Action may result in a temporary adverse effect to EFH, but impacts would not be substantial.

## Environmental Commitments Summary

- Vessels will drop/retrieve anchors vertically, utilize crown buoys for anchoring, will not drag anchors, and will avoid visible canopy kelp to the maximum extent practicable.
- Perform a pre-construction eelgrass survey prior to each biennial dredge cycle to confirm the absence of eelgrass within the dredge template, placement sites (as practicable), and immediate vicinity. Should eelgrass be found within the project area the Corps will reinitiate EFH coordination and consultation with the NMFS.
- Conduct surveillance level surveys for *Caulerpa* species within the dredge template prior to each biennial dredging cycle in accordance with the *Caulerpa* Control Protocol, Version 5 October 2021.
- The Corps will monitor standard water quality parameters including turbidity, light transmissivity, salinity, pH, temperature, and DO throughout the project duration with prescribed actions to be taken should turbidity or any other parameters exceed compliance thresholds.

## EFH Determination

With the minimization and avoidance measures outlined above to monitor and control water quality and avoid or reduce impacts to species and habitat, the Corps has determined the Proposed Action may result in a temporary adverse effects to EFH, but impacts would not be substantial. The Proposed Action would not cause a substantial loss in the population or habitat of any native wildlife; or impede the movement or migration of fish. Therefore, the Proposed Action would result in less than significant impacts to fish and EFH.

## References

Merkel & Associates (2008). Southern California Caulerpa Surveillance Program - Final Status Report: Appendix A. Eelgrass Maps. Prepared for Southern California Caulerpa Action Team.

Merkel & Associates (2010). Demersal Fisheries Response to the 2004 Channel Deepening Project in San Diego Bay. Prepared for Port of San Diego, Port of Los Angeles, Port of Long Beach, NOAA Fisheries and Naval Facilities Engineering Command Southwest, California, January 2010.

Merkel & Associates (2020). Pre-Construction Seagrass and Canopy Kelp Surveys Report in Support of the Channel Islands Harbor Breakwater and Jetty Repairs Project. September 21, 2020.

Merkel & Associates (2022). Post-Construction Canopy Kelp Surveys Report in Support of the Channel Islands Harbor Breakwater and Jetty Repairs Project. January 19, 2022.

Merkel & Associates (2022). Channel Islands Harbor 2022-2023 Maintenance Dredging Pre-Construction Eelgrass Survey. September 21, 2022.

Merkel & Associates (2022). Marine Biology and Invasive Algae Surveys Naval Base Ventura County Port Hueneme. December 2022.

## Figures

*Figure 1. Regional Vicinity Map*

*Figure 2. Project Area (Dredge Template and Placement Sites).*

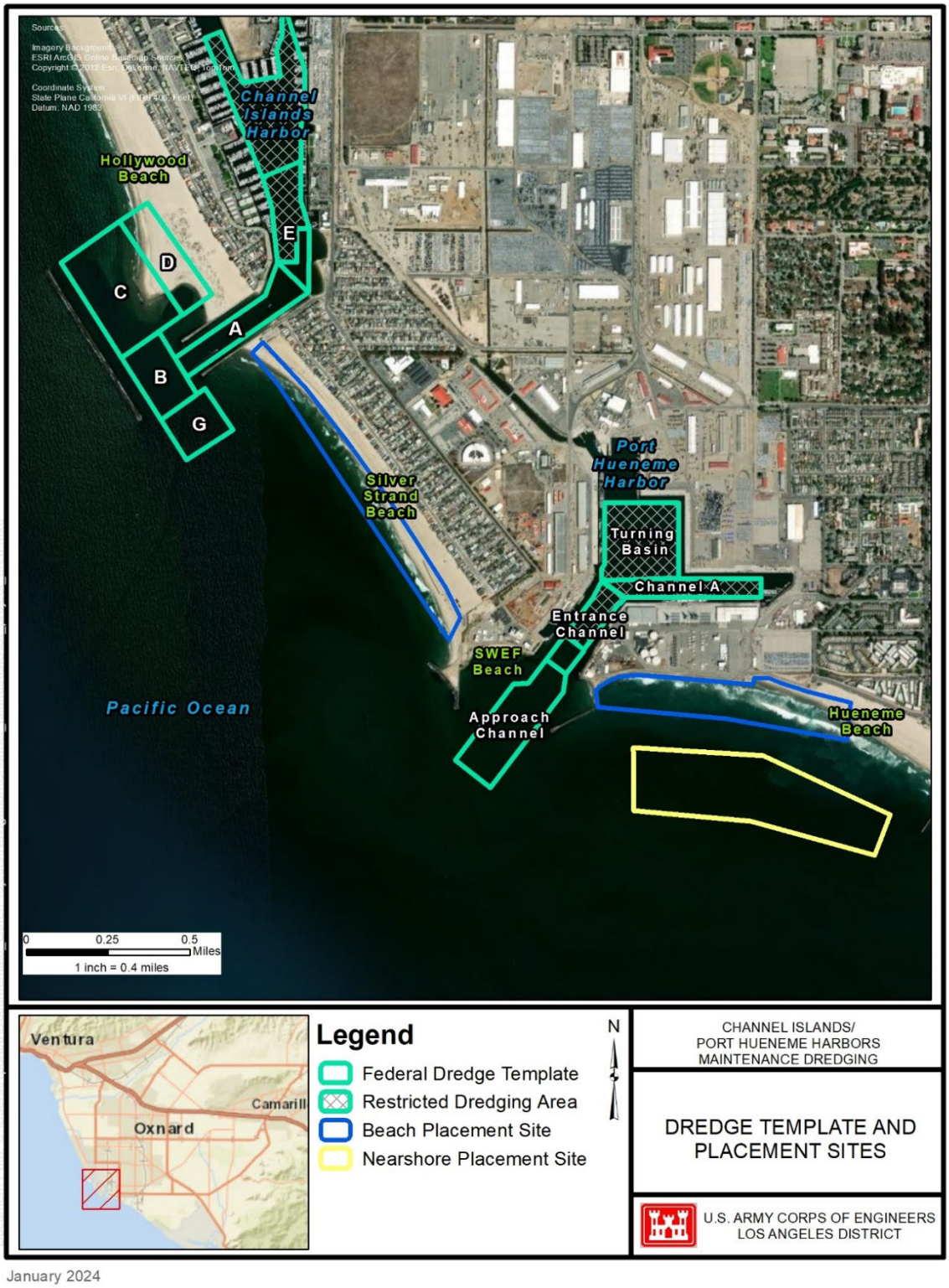


*Figure 3. Project Area North.*

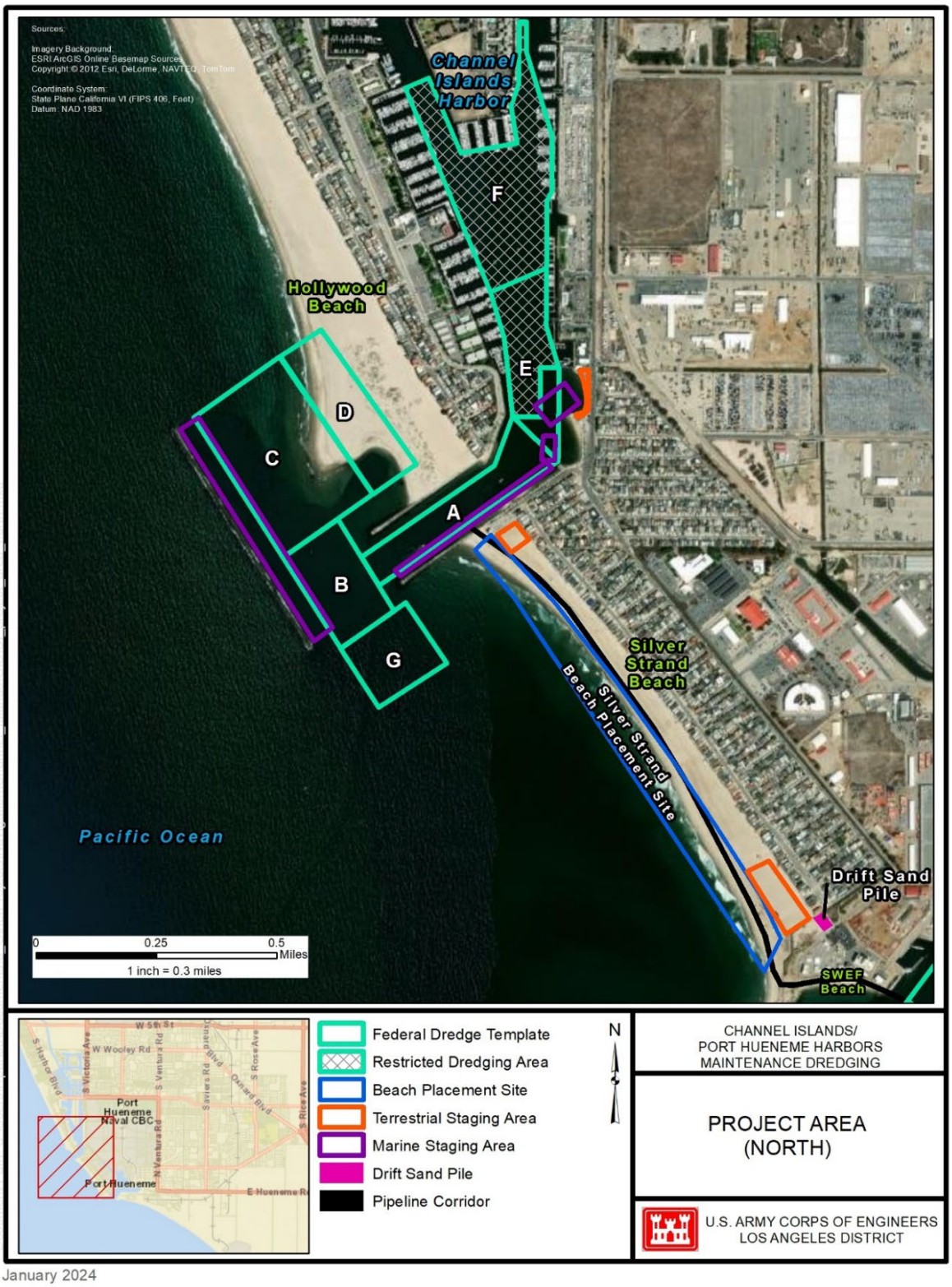
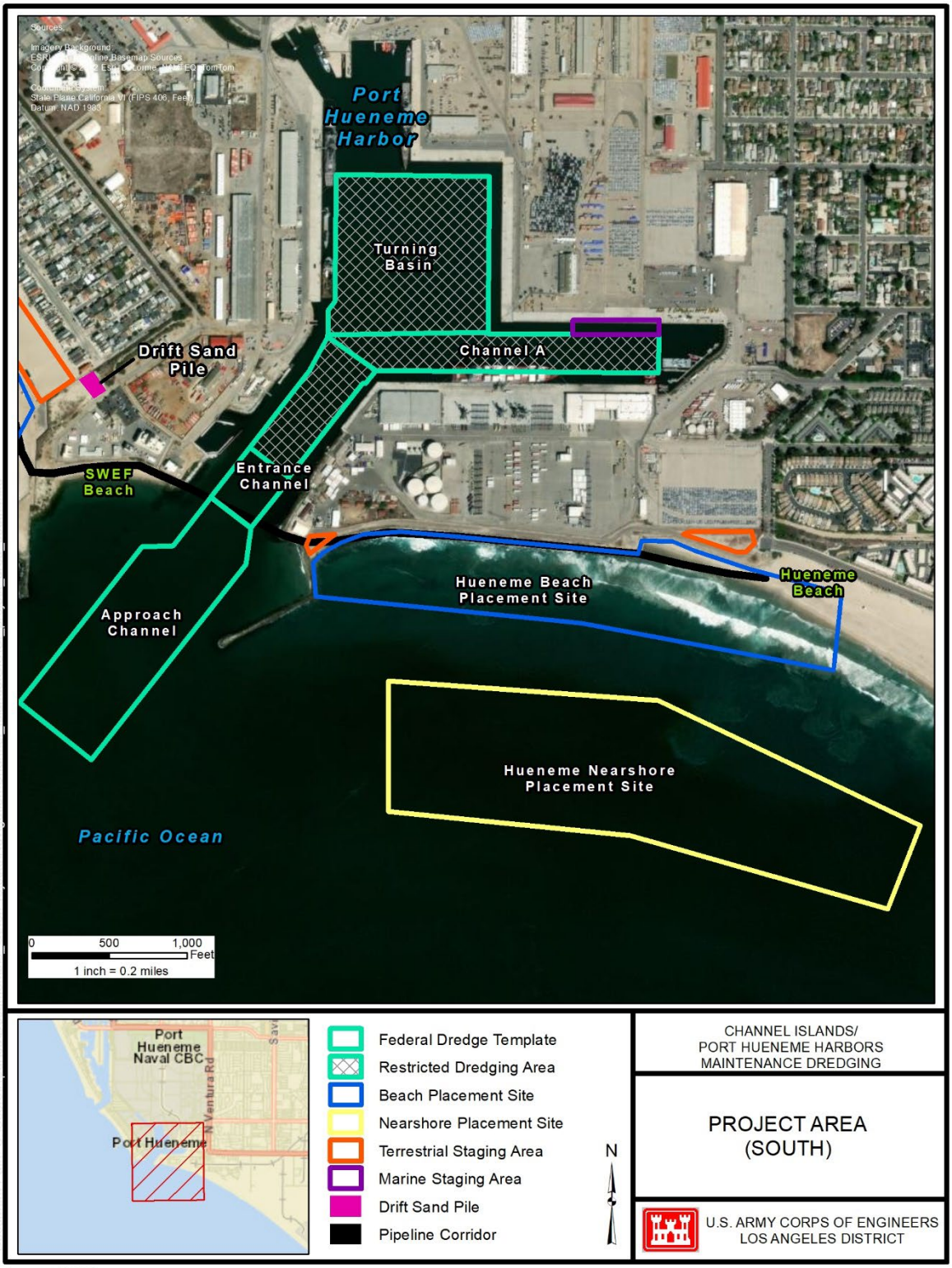


*Figure 4. Project Area South.*



**From:** Martinez-Takeshita, Natalie M CIV USARMY CESPL (USA)
**To:** Armenta, Tiffany C CIV USARMY CESPL (USA)
**Subject:** FW: [Non-DoD Source] Re: Channel Islands and Port Hueneme Harbors Maintenance Dredging EFH Consultation
**Date:** Wednesday, March 13, 2024 12:38:59 PM

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**From:** Andrea Dellapa - NOAA Federal <andrea.dellapa@noaa.gov>
**Sent:** Thursday, February 29, 2024 9:45 AM
**To:** Martinez-Takeshita, Natalie M CIV USARMY CESPL (USA) <Natalie.M.Martinez-Takeshita@usace.army.mil>
**Cc:** Dan.Lawson@noaa.gov
**Subject:** [Non-DoD Source] Re: Channel Islands and Port Hueneme Harbors Maintenance Dredging EFH Consultation

Hello Natalie,

NOAA's National Marine Fisheries Service (NMFS) has reviewed the U.S. Army Corps of Engineers (the Corps) request for concurrence, and associated essential fish habitat (EFH) assessment, for the proposed Channel Islands and Port Hueneme Harbors Maintenance Dredging Project located in Ventura County, California. NMFS offers the following comments pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA).

The Corps has proposed a six-year program to conduct maintenance dredging, up to a maximum volume of 8.25 million cubic yards (cy), at Channel Islands and Port Hueneme Harbors, with dredged sediment that will be placed on local beaches at Hueneme Beach and/or Silver Strand Beach to provide beach replenishment, or in the Hueneme Nearshore Placement Site.

- At Channel Islands Harbor, material will be dredged from the entrance channel (Area A), sand traps (Areas B, C, D, and G), and entrance basin (Area E). The required dredging is planned to be completed in three biennial cycles (every two years, beginning in years 1, 3 and 5). Each dredging cycle is expected to remove up to 2.5 million cy of material. Authorized project depth is -20 feet mean lower low water (MLLW) at the entrance channel and entrance basin, -35 feet MLLW at the sand trap areas B, C, and D, and -25 feet MLLW at sand trap area G, plus 2 feet of allowable over-depth.
- At Port Hueneme Harbor, material will be dredged from the approach and entrance channels. Dredging at this location is planned to be accomplished as needed on the same schedule as the Channel Islands Harbor (i.e., during one of the three cycles). Each dredging cycle would remove approximately 250,000 cy of material. Authorized project depth is -44 feet MLLW at the approach channel and -40 feet MLLW at the entrance channel, plus 2 feet of allowable over-depth.
- Project authorization mandates a majority of dredge material from Channel Islands Harbor dredge template be placed on Hueneme Beach to fulfill established commitments for shoreline protection. Placement at

Silver Strand Beach (up to 250,000 CY per cycle) may also occur on an as-needed basis to offset periodic erosion.

- Total project dredging would not exceed 8.25 million CY cumulatively for all three biennial dredging cycles at both harbors over the six-year period.

The proposed project occurs within EFH for various federally managed fish species within the Coastal Pelagic Species (CPS) and Pacific Coast Groundfish (PCG) Fishery Management Plans (FMPs). Additionally, the project occurs in the vicinity of estuary, eelgrass, and canopy kelp habitats, which have been designated as habitat area of particular concern (HAPC) for various federally managed fish species within the PCG FMP. HAPCs are not afforded any additional regulatory protection under the MSA; however, federal projects with potential adverse impacts to HAPC are more carefully scrutinized during the consultation process. Based on information provided by the Corps and included in the EFH assessment, canopy kelp occurs intermittently within and adjacent to the boundaries of the proposed project area, and eelgrass is not present within the project area, based on recent surveys conducted in 2022.

NMFS believes that the proposed project would adversely affect EFH for various federally managed fish species under the CPS and PCG FMPs. Adverse effects to EFH from dredging may include: 1) direct removal and/or burial of organisms and habitats; 2) increased turbidity and/or siltation; 3) contaminant release and uptake; 4) release of oxygen-consuming substances; 5) entrainment; 6) noise disturbance; 7) and alteration to hydrodynamic regimes and physical habitat. However, the proposed project includes conservation measures to avoid or minimize impacts to EFH. For instance, dredging and beach replenishment are scheduled to occur outside of the active growth period for eelgrass. Additionally, pre- and post-construction eelgrass surveys and monitoring will be conducted within the project area consistent with the NMFS California Eelgrass Mitigation Policy and Implementing Guidelines(CEMP). In compliance with CEMP, these surveys would be conducted within the appropriate survey period to maintain validity and, if post-construction surveys determine adverse impacts to eelgrass habitat, then impacts would be mitigated consistent with the CEMP. NMFS also requests copies of these surveys, when generated. Also, a pre-construction survey for *Caulerpa taxifolia* will be conducted in accordance with the *Caulerpa* Control Protocol (CCP) prior to any dredging in the entrance channel and entrance basin of Channel Islands Harbor and the entrance channel in Port Hueneme Harbor. If any *Caulerpa* is found, no work would be conducted until the infestation has been isolated, treated, and the risk of spread is eliminated. Also, vessels will drop/retrieve anchors vertically, utilize crown buoys for anchoring, will not drag anchors, and will avoid visible canopy kelp to the maximum extent practicable. Finally, training would be provided to contractor personnel including, but not limited to, identification and avoidance measures for endangered species and marine mammals, and *C. taxifolia* identification and notification.

NMFS believes that implementation of the proposed conservation measures will adequately address project-related impacts. Therefore, we have no additional EFH conservation recommendations to provide at this time.

Thank you for consulting with NMFS!

Best regards,

Andrea

On Mon, Feb 26, 2024 at 10:46 PM Martinez-Takeshita, Natalie M CIV USARMY CESPL (USA) <Natalie.M.Martinez-Takeshita@usace.army.mil> wrote:

Dear Mr. Dan Lawson,

The Corps, as part of its Operations and Maintenance Program, is proposing to perform maintenance dredging at Channel Islands and Port Hueneme Harbors, Ventura County, California. The Corps is requesting initiation of Essential Fish Habitat (EFH) consultation pursuant to the Magnuson-Stevens Fishery Conservation and Management Act, as amended. Comments and Conservation Recommendations, or concurrence with the Corps' EFH Assessment for the Channel Islands/Port Hueneme Harbors Maintenance Dredging Project attached here, are requested.

The Proposed Action covers a proposed six-year maintenance dredging program at Channel Islands and Port Hueneme Harbors in Ventura County, California. The area would encompass approximately 3 miles of shoreline, extending from Hollywood Beach to Hueneme Beach. The area is located approximately 65 miles northwest of Los Angeles at the edge of the Oxnard Plain in Ventura County. Placement of the majority of dredged materials is expected to be on Hueneme Beach, with smaller quantities of material potentially placed on Silver Strand Beach or in the Hueneme Nearshore Placement Site. The proposed project consists of maintenance dredging of up to a maximum cumulative quantity of 8.25 million cubic yards (CY) from both Harbors over the six-year period.

The project would serve the following purposes: (1) maintain the Federal navigation channels and sand traps at authorized depths and widths which are subject to continual filling by littoral transport processes; (2) assure the continued safe navigation for maritime traffic within the harbors by minimizing the risk of hazardous shoaling conditions; and (3) provide beach nourishment material for downcoast beaches (Silver Strand and Hueneme Beach), severely eroded by the harbor disruption of the longshore transport of sand.

Maintenance dredging of Channel Islands and Port Hueneme Harbors is authorized by the River and Harbor Act approved March 2, 1945. A modification to the Act (P.L. 91-611, Sec 114) dated December 31, 1970, provided that dredging and maintenance of Channel Islands and Port Hueneme Harbors would be the responsibility of the United States (U.S.) Federal government.

Attached is the Corps' EFH Assessment. Comments and Conservation Recommendations, or concurrence with the Corps' EFH Assessment, are requested by March 27, 2024.

If you have any questions regarding this consultation request, please contact me at (213) 452-3306 or via email at Natalie.M.Martinez-Takeshita@usace.army.mil.

Thank you,

Natalie Martinez-Takeshita
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**Andrea Dell'Apa, PhD** (he/him/his)
*Fish Biologist, West Coast Region*
*Protected Resources Division, Long Beach, California*
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https://www.fisheries.noaa.gov/region/west-coast

# APPENDIX D

# USFWS CORRESPONDENCE

# BIOLOGICAL ASSESSMENT AND BIOLOGICAL OPINION

# Channel Islands/Port Hueneme Harbors Maintenance Dredging Project

# Increased Dredge Quantity

# Biological Assessment

## 1.0 Introduction

This Biological Assessment (BA) has been prepared by the U.S. Army Corps of Engineers (Corps) in accordance with the requirements set forth under regulations implementing Section 7 of the Endangered Species Act (ESA) (50 CFR 402). This BA evaluates the potential effects of the Proposed Action on listed and proposed species and designated and proposed critical habitat and determines whether any species or habitat are likely to be adversely affected by the Proposed Action, as required in 50 CFR 402.12.

### 1.1 ESA-Protected Resources in the Action Area

Table 1 contains the ESA-protected resources that may be present in the Action Area (defined in Section 3.3) and the Corps' assessment of whether the Proposed Action is likely to adversely affect such species or habitat based on habitat suitability and best scientific and commercial data available. This table includes species that are part of the Corps' formal consultation request for the Proposed Action under Section 7 of the ESA. Supporting analyses are provided in Sections 4 and 5 of this document. An IPaC (USFWS Information for Planning and Consultation web portal) report was conducted on August 10, 2022 which revealed 18 threatened and endangered species in the larger Channel Islands Harbor area, with designated critical habitat for the Western snowy plover included. The species listed below comprise the species present in the Action Area and are analyzed here.

**Table 1: ESA-Protected Resources in the Action Area**

| Common Name | Scientific Name | Status | Corps' Determination |
|---|---|---|---|
| California least tern (CLT) | *Sterna antillarum browni* | E | May affect, likely to adversely affect |
| Western snowy plover (WSP) | *Charadrius nivosus nivosus* | T | May affect, likely to adversely affect |
| WSP critical habitat | *Charadrius nivosus nivosus* | D | May affect, likely to adversely affect |
| E = endangered, T = threatened, D = designated | | | |

## 2.0 Consultation History

### 2.1 Consultation History

On October 18, 2004, the Corps initiated formal consultation on maintenance dredging of the sand trap at Hollywood Beach because surveys conducted in the previous spring and summer found 51 pairs of CLT and 5 pairs of WSP had used the sand trap area for breeding and nesting. So that the Corps would not be delayed in its dredging operations, the USFWS issued a biological opinion (1-8-05-F-1) on October 21, 2004, that pertained only to dredging operations for the 2004/2005 cycle.

Formal consultation was initiated April 14, 2006, for the next 5-year maintenance dredging cycle, 2006-2011. The USFWS issued a biological opinion on September 20, 2006 (1-8-06-F-22).

Formal consultation was initiated July 30, 2012, for the next 6-year maintenance dredging cycle, 2012-2018. On September 10, 2012, the USFWS extended the time period covered by the 2006 biological opinion for this 6-year cycle.

Formal consultation was initiated August 16, 2018, for the next 6-year maintenance dredging cycle, 2018-2024. On August 23, 2018, USFWS issued an amendment to the 2006 biological opinion, as extended in 2012, that extended coverage for this 6-year cycle and included revised avoidance and minimization measures from the 2018 Environmental Assessment (EA) and the implementation of a Biological Monitoring Contingency Plan should work need to be extended beyond March 1st due to minor delays from equipment failure or late-winter storms.

## 3.0 Description of the Proposed Action & Action Area

### 3.1 Proposed Action

The Corps proposes to increase the volume of material dredged from the entrance channel and sand trap in Fiscal Year 2023 (see Figure 2) from 2.0 million cubic yards (cy) to 2.5 million cy for the purpose of additional sand bypassing to Hueneme Beach and other downcoast beaches, and to avoid sand being lost to the adjacent submarine canyon. Other elements (staging, equipment, placement locations, dredging depth and template, and timing) of the current 6-year maintenance dredging cycle remain unchanged.

### 3.2 Measures Intended to Avoid, Minimize or Offset Effects of the Proposed Action

The following measures have been included as part of the Proposed Action in order to avoid, minimize, or offset potential impacts. Measures 1-8 below are carried forward from the 2018 EA and the 2020 supplemental coordination between the USFWS and Corps staff.

1. The Contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters.
2. The Contractor shall implement a Water Quality Monitoring Plan at the dredge and beach placement sites.
3. The dredge contractor will be required to have in place a Spill Prevention and Cleanup Plan that includes measures to prevent spills and to cleanup any spills that could occur.
4. All dredging and fill activities will remain within the boundaries specified in the plans. There will be no dumping of fill or material outside of the project area or within any adjacent aquatic community.
5. The Contractor shall keep construction activities under surveillance, management, and control to minimize interference with, disturbance to, and damage of fish and wildlife.
6. Dredging may begin as early as October 1. Should dredging extend past March 1 the following measures will be required:
   a. The Corps will coordinate with concerned federal and state resource agencies concerning possible impacts to threatened or endangered species;
   b. Beach placement will be limited to a diked, single-point placement site to minimize turbidity and grunion smothering;
7. The following avoidance and minimization measures would be implemented to ameliorate potential impacts from dredging and placement activities in the proposed Action Area:

• The limits of the dredging and placement activities shall be clearly marked to prevent heavy equipment from entering areas beyond the smallest footprint needed to complete the project.
• Vehicles and all dredging activities shall remain within the defined activity area and use only designated access points and staging areas.
• The work area shall be kept clean to avoid attracting predators. All food and trash shall be disposed of in closed containers and removed from the project site.
• No pets shall be allowed on the construction site.
• No dredging activities shall be conducted in the sand trap area (adjacent to Hollywood Beach) during the shorebird/seabird nesting season (March 1 – September 30).
• Prior to vehicles and equipment entering Hollywood Beach a qualified WSP monitor will survey the area. At all times a qualified WSP monitor will walk ahead of the vehicle(s) and equipment to assure that all WSPs are out of harm's way before the vehicle(s) or equipment can proceed on Hollywood Beach. Vehicles and equipment access to Hollywood Beach will be limited to safety signage installation, repairs, and removal.
• Prior to vehicles and/or heavy equipment operation on Silver Strand Beach or Port Hueneme Naval Base SWEF Beach a qualified WSP monitor will survey the beach, the monitor will remain on site while operations involving vehicles and/or heavy equipment is occurring to ensure impacts to WSP are avoided, unless the Corps biologist in coordination with the USFWS has determined there is no risk to WSP. If WSP are present the Corps Biologist will walk in front of the vehicles and/or equipment, ensuring the path taken by vehicles/equipment is one that avoids impacts to the WSP.
• If dredge material placement activities take place on Silver Strand and Hueneme Beaches during the nesting season (March 1 through September 30), measures described in the Biological Monitoring Contingency Plan (Appendix F) will be implemented.

8. Training shall be provided to the Contractor personnel to review and ensure full understanding of all project environmental protection requirements. Training shall include, but not limited to, methods of detecting and avoiding pollution, identification and avoidance measures for endangered species and marine mammals, and *Caulerpa taxifolia* identification and notification requirements.

Proposed Dune Restoration

The Corps has analyzed the current best available scientific data, new biological survey data, updated coastal geomorphology data and topographic impact data specific for Hollywood Beach. To offset potential impacts to WSP designated critical habitat for the FY 2023 dredge cycle and future dredge cycles within the same impact area (Figure 1), the Corps proposes to restore 13.47 acres (1:1 impact restoration ratio) of foredune habitat within 10 miles of the project area or other area as agreed to with USFWS. The Corps will commit to manage this area for a period of 5 years. Management activities would include strategic fencing or other measures intended to protect any nesting or foraging activities that may occur in this area without significantly impacting authorized recreational beach use, as well as installation and maintenance of native dune vegetation. The purpose of the restoration site is to provide comparable habitat function and value for the threatened WSP to offset the temporary and recurring loss of beach that would occur whenever the sand trap is excavated. The final site selection is yet to be determined. Details of the restoration plan are in development with USFWS, Ventura County and other stakeholders.

Avoidance and minimization measures would be implemented for any restoration construction work that could take place during WSP and CLT breeding seasons, as described below.

During implementation:

1. If vehicles are required to drive on Hollywood beach, a biological monitor will be present to clear the path of any vehicles by walking ahead and verifying no birds are present. If birds are present monitor will signal and stop vehicles.

2. If birds do not move out of vehicle traffic path, the biological monitor will attempt to guide vehicles on an alternate path to avoid grounding birds, walking ahead of vehicle to ensure the path is cleared, maintaining a minimum 50-yard buffer.

3.3 Action Area

The Action Area includes the Channel Islands Harbor federal dredge template and Hollywood Beach, including potential impact area immediately adjacent to the dredge template due to slope failure of the dredge cut boundaries, and the potential restoration area. The potential impact area is 200 feet on each side of sand trap area D. This 200-foot buffer is the coastal engineering projection of potential impacts due to the increased dredge quantity, comprising 10 acres. (Figures 1 and 2). The receiver beach of the dredged material is Hueneme Beach, a southern downcoast beach and adjacent to Point Mugu. The additional quantity of sand dredged will be reciprocally placed onto Hueneme Beach.

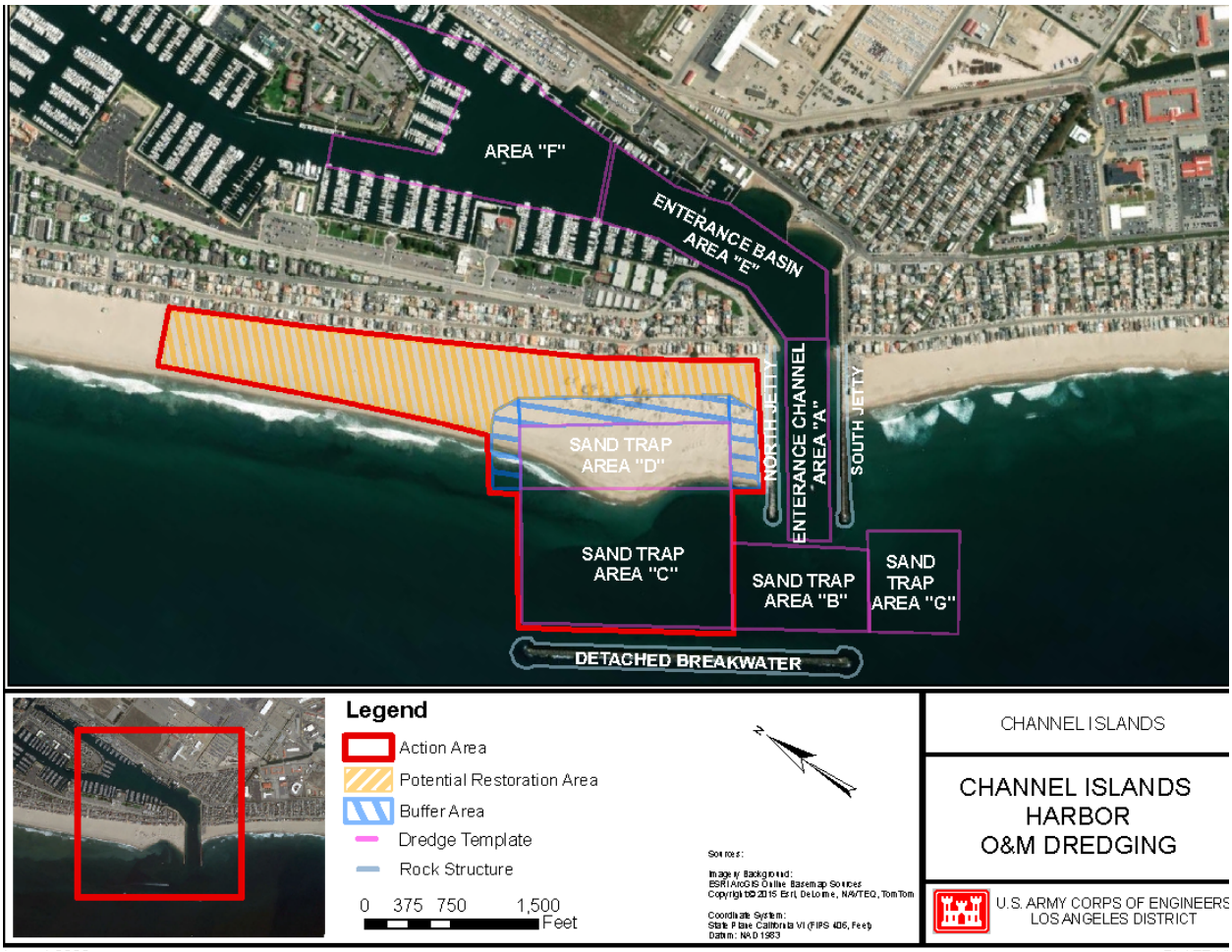


**Figure 1.** Action Area. Blue hatched area indicates area of potential slope failure due to projected dredging activity.

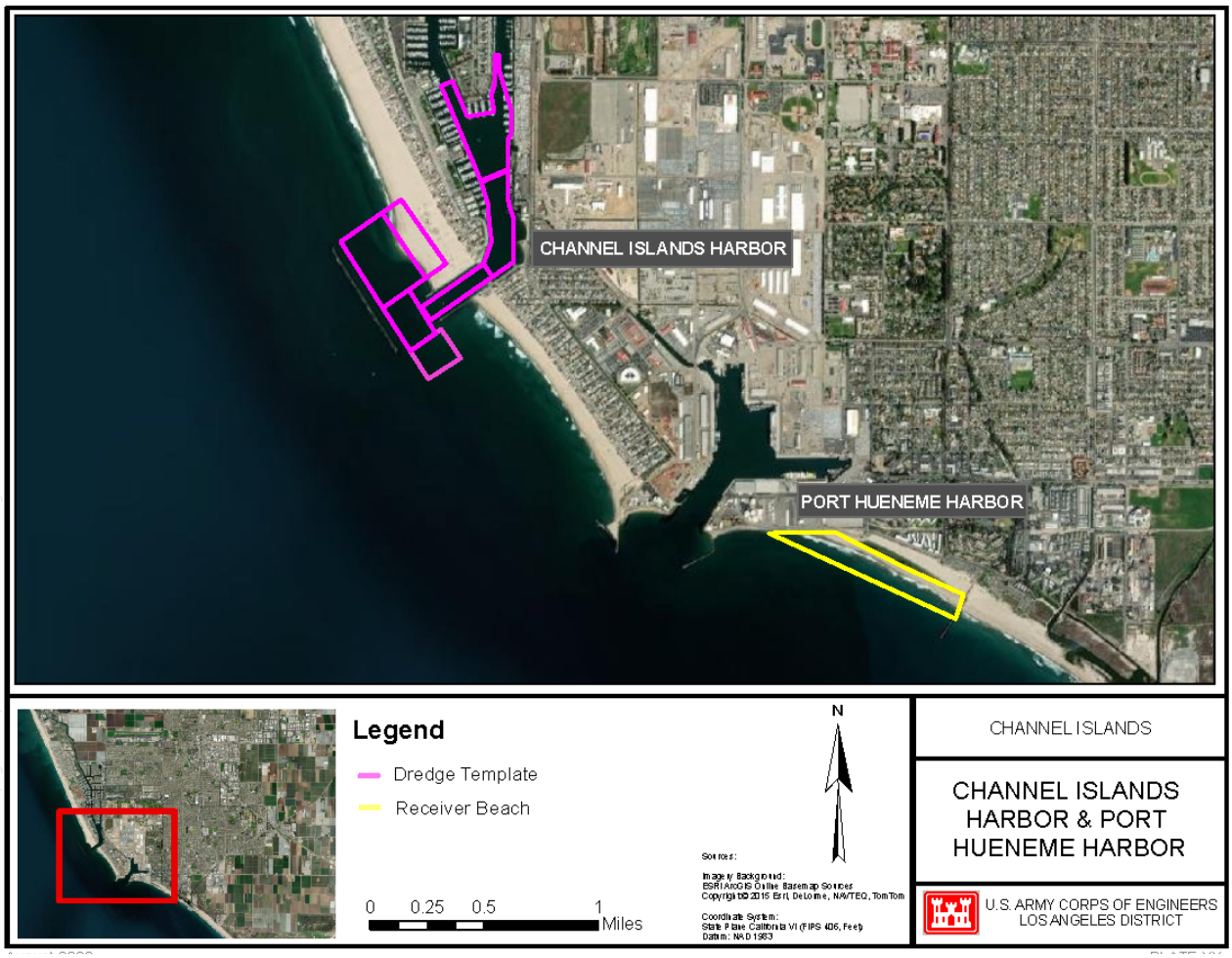


**Figure 2.** Channel Islands Harbor with detached breakwater depicted in upper left, Port Hueneme and Hueneme beach in image center illustrating proximity between dredge area and receiver beach.

## 4.0 Environmental Baseline and Status of ESA-Protected Resources

### 4.1 Environmental Baseline

Channel Islands Harbor is located in the city of Oxnard, Ventura County, California. Dredging for the Channel Islands Harbor began in the mid-1950s. The harbor was completed in 1963. Harbor structural features consist of a 2,300-foot-long offshore breakwater, entrance jetties, and an entrance channel leading to the harbor interior. The entrance channel is 32,000 feet in length and varies in width from 300 feet near the entrance basin to 600 feet within the harbor. The entrance channel (Area A) and Sand Trap Area G is authorized to a depth of -20 feet mean lower low water (MLLW). The Entrance Basin (Area E) and is authorized to a depth of -20 feet MLLW. Inner Basin (Area F) is authorized to a depth of -10 feet MLLW.

The offshore breakwater and jetties form a sand trap, and the entrance channel basin collects littoral drift as it moves downcoast. The sand trap is located on the north side of the Channel Islands Harbor approach and is divided into three areas (Figure 1); Areas B, C, & D. Area B is 775 feet in length and 450 feet in width. Area C is 1,650 feet in length and 1,150 feet in width. Area D is 1,650 feet in length and 460 feet in width. The traps were designed to be maintained at a depth of –10.7 m (-35 ft) MLLW.

Maintenance dredging of the Federal navigation channels and sand trap is conducted routinely at Channel Islands Harbor. The purpose of dredging is to maintain channel configurations, restore and assure safe navigability within the harbors, sustain current recreational opportunities, and provide materials for shoreline protection and beach replenishment (Corps, 2006). In 2018, the Corps issued a Final EA and finding of no significant impact (FONSI) for the selected action for the current 6-year cycle (2018-2024) at Channel Islands Harbor.

The dredging action described in the 2018 EA consisted of dredging the entrance channel, sand traps, entrance basin, and inner basin (see Figure 1). The required dredging is planned to be accomplished in three biennial dredging cycles (at years 1, 3, and 5). Each dredging cycle may remove up to 2.0 million cubic yards (cy) of material from the Channel Islands dredge template. Dredge quantities for each dredge cycle are dependent on availability of funding and the quantity of material available within the dredge template. To avoid potential direct impacts on protected federal trust resources, no dredging activity shall be conducted in the sand trap area, adjacent to Hollywood Beach, from March 1 through September 30.

By the end of each two-year dredge cycle, sand has typically built up in the sand trap extending the existing beach, sand buildup has narrowed the channel into Channel Islands Harbor, and the down coast beaches have lost sand. The northern end of Hueneme Beach erodes completely back to the revetment fronting city property. The dredging cycle is maintained at two years to provide the maximum benefit with minimum environmental impacts. Dredging also conducted during winter months for the same reason (specifically to avoid impacts to nesting CLT, WSP, and to spawning California grunion).

Figure 3 illustrates the dynamic nature of beachfront in the sand trap both within and between dredge cycles. Sand builds up in the off-dredge years according to littoral and cross shore deposition (yellow dashed line) and is subsequently dredged out the following year. The amount dredged out is dependent on quantity of available sand and the amount of funding designated for that particular year's dredge cycle.

Project authorization mandates a majority of dredge material placement on Hueneme Beach to fulfill established commitments for shore protection. Placement at Silver Strand Beach may also occur on an as-needed basis to offset periodic erosion problems, approximately 250,000 cubic yards of this material may be placed at Silver Strand Beach to offset current erosion problems.

Additional information can be found in the 2018 EA and FONSI.

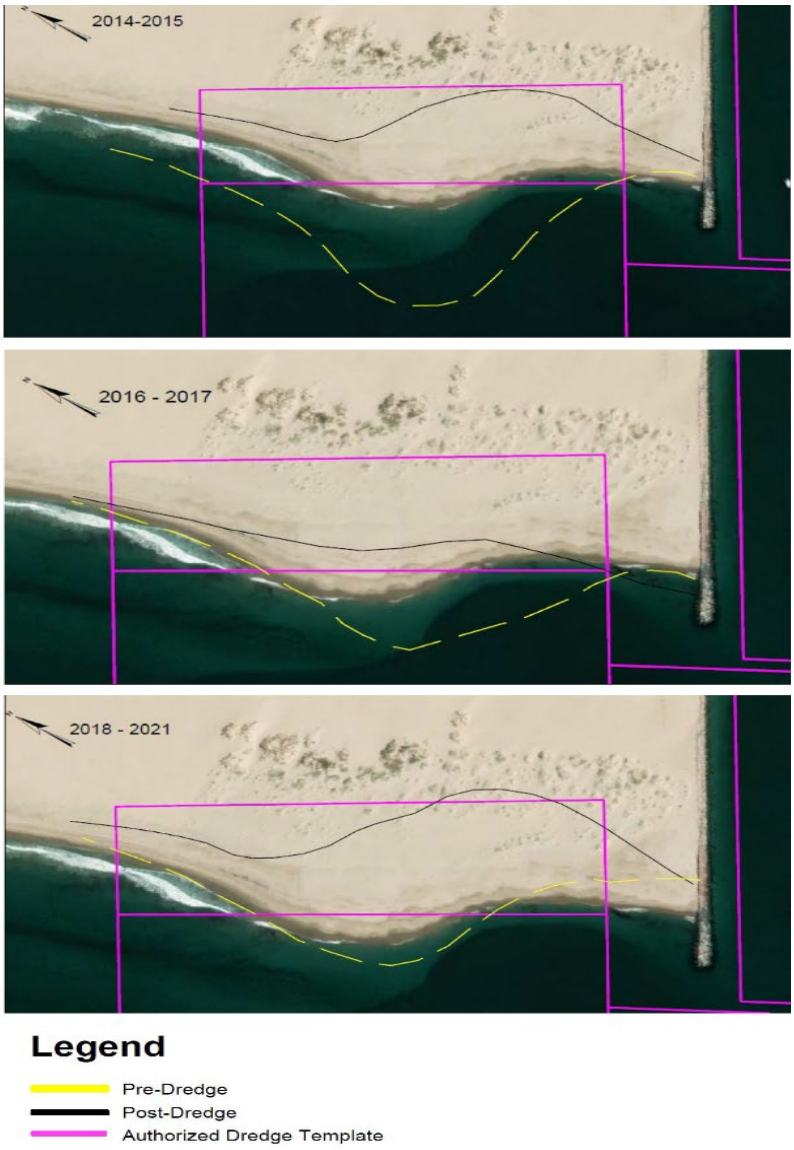


**Figure 3.** Aerial images of sand trap accretion and erosion including slope failure and sloughing over the last three dredge cycles. Authorized dredge template (in purple) is overlaid to illustrate the extent of beachfront buildup and retreat. Data compiled by Corps staff, 2022.

## 4.2 Species Overview for CLT and Status in the Action Area

The CLT, which is one of three subspecies of least tern in the United States, was listed as endangered in 1970 (35 FR 16047). No critical habitat has been designated for this species, and a recovery plan was finalized in 1980 (Service 1980). The following description of the CLT's basic ecology was compiled from the final recovery plan.

The CLT breeds along the Pacific Coast from San Francisco Bay to San Jose del Cabo, Baja California, Mexico. Large nesting colonies are discontinuous along the California coast and generally are spread out along beaches at the mouths of larger estuaries. Approximately 32 active nesting locations exist from San Francisco Bay south to the Mexican border. There are eight active nesting locations in Santa Barbara and Ventura counties. Although the subspecies is considered a colonial nester, some observations of single pairs nesting have been made at some

of these locations. The Santa Margarita River mouth in San Diego County now hosts the largest number of birds among all locations.

The CLT breeding season typically begins in April. Most commonly, two eggs are laid in the first part of May and hatching occurs in early June. Fledging of chicks usually occurs by late June. A second wave of nesting often occurs from early June to late July which is usually instigated by the failure of the first nest. Parents and fledglings remain close to the breeding site before beginning their migration southward, usually no later than mid-September. Their wintering localities are not well known, although some banded birds have been observed in Colima, Mexico. CLT appear to have strong nesting site fidelity and most return to their natal breeding beach year after year. Mass relocations have been documented when a breeding site has been destroyed or heavy predation has occurred.

For nesting, the CLT require areas that are relatively flat, open, sandy beaches, in proximity to foraging habitat, and have relative seclusion from disturbance and predation. CLT have been known to nest on artificial surfaces, such as airfields, landfills, and vacant parking lots. During the nesting season, the CLT feed on small fish captured either in ponds, bays and estuaries, or immediately offshore. Prey items include northern anchovy (*Engraulis mordax*), topsmelt (*Atherinops affinis*), California grunion (*Leuresthes tenuis*), and killifish (*Fundulus parvipinnis*). Both the male and female select a suitable site to begin scraping their nest if it is located on sand. If no sand is available in their nesting location, the birds will select a natural depression in the ground, such as a boot or tire depression in dried mud. After the eggs are laid, the nest is sometimes lined with shell fragments and small pebbles. Eggs are incubated mostly by the female for 20 to 25 days.

The decline of the CLT has been attributed primarily to destruction of breeding and foraging habitat, and human disturbances at nesting locations. Their decline was a gradual process as European settlers began establishing along the California coast. The Pacific Coast Highway, constructed in the early 1900s, is thought to have contributed substantially to the species' decline as the highway paved over many nesting locations, and promoted development and recreation along the coast. At the time of listing, a census revealed only 600 pairs of breeding CLT in the entire state, but recovery efforts instituted after the time of listing have helped raise levels of breeding birds. Statewide surveys conducted in 1995 counted 2,598 pairs (Caffrey 1995). Dramatic fluctuations in the number of breeding pairs after listing have been attributed to severe El Niño Southern Oscillations, which affect the birds' food supply.

CLT continue to utilize Hollywood Beach and the component sand traps. CLT demonstrate site fidelity to previous nesting areas and have reoccupied the sand trap in off-dredge years when the sand trap beach has built up (Figure 4). In dredge years when the sand trap beachfront retreated and previous nesting sites are not present, CLT move to other areas where nesting pairs experience increased predation. CLT nesting and subsequent fledging success has decreased according to survey data obtained by Debra Barringer (Barringer, 2021).

**Figure 4.** CLT nest sites on Hollywood Beach from 2013-2020.

4.3 Species Overview of WSP and Status in the Action Area

The Pacific coast population of the WSP was federally listed as threatened on March 5, 1993 (58 FR 12864) A draft recovery plan for the species has been published (Service 2001). The final rule listing the WSP as threatened describes its biology and reasons for its decline. The WSP forages for invertebrates in intertidal zones, the wrack line, dry sandy areas above the high tide line, salt pannes, and the edges of salt marshes. The Pacific coast population nests near tidal waters along the mainland coast and offshore islands from southern Washington to southern Baja California, Mexico. Most nesting occurs on unvegetated to moderately vegetated, dune-backed beaches and sand spits. Other less common nesting habitats include salt pannes, dredge spoils, and salt pond levees. Individuals are commonly faithful to nest sites.

For the WSP, nesting and chick rearing generally occur between March 1 and September 30. Both males and females incubate the eggs, which take about 27 days to hatch. The chicks are precocial (capable of a high degree of independence from birth), feeding on their own within hours of hatching. However, they are unable to fly until approximately four weeks old. Females generally desert males and broods by the sixth day, and thereafter the chicks are typically accompanied by only males. Females obtain new mates and initiate new nests while males rear the broods.

WSP may remain at breeding sites or migrate to other locations during the non-breeding season, with most wintering south of Bodega Bay, California. The California population comprises at least 90 percent of the listed Pacific Coast population (Gary Page, Point Reyes Bird Observatory, pers. comm. 2001). The most important breeding areas for the listed population are San Francisco Bay, Monterey Bay, Morro Spit and Atascadero State Beach, Vandenberg Air Force Base, and Navy Base Ventura County (formerly Point Mugu Naval Air Station). These areas are particularly important because they are able to support 80 to100 or more breeding adults (G. Page pers. comm. 2001).

The WSP bred at 53 coastal locations in California prior to 1970. Between 1970 and 1981, the WSP stopped breeding in parts of San Diego, Ventura, and Santa Barbara counties, most of Orange County, and all of Los Angeles County (Page and Stenzel 1981). By 1991, 78 percent of the remaining breeding population in coastal California nested at only 8 sites: San Francisco Bay, Monterey Bay, Morro Bay, Callendar-Mussel Rock dunes area, Point Sal to Point Conception area (Vandenberg Air Force Base), Oxnard lowlands, Santa Rosa Island, and San Nicolas Island (Page et al. 1991). The WSP had abandoned all historic breeding sites in Santa Barbara County south of Point Conception (Page and Stenzel 1981), presumably due to disturbance or habitat destruction (Lafferty 2000a). However, following the protection of a wintering population of WSP, nesting has recently been recorded at Coal Oil Point (Lafferty et. al. 2003). In 1991, the estimated breeding population of WSP in coastal California was 1,371. However, by 2000, this number had dropped to 976. The estimated breeding population in 2002 was 1387 (Page et al. 1991, Page 2000, 2002).

The Pacific coast population of WSP has experienced widespread loss of nesting habitat and reduced reproductive success at many nesting locations due to shoreline stabilization and urban development. The habitats preferred by this species are subject to erosion and accretion, making them highly susceptible to degradation by construction of seawalls, breakwaters, jetties and other developments that interfere with the natural coastal processes. The encroachment of European beachgrass (*Ammophila arenaria*) has also led to habitat loss. Human activities such as walking, jogging, unleashed pets, horseback riding, and off-road vehicles can destroy the WSP's cryptic nests and chicks. Indirect impacts from these activities include disturbance of WSP adults to the extent that they abandon nests or interference with incubation to the point that eggs become buried by sand or fail to hatch because of exposure to cold or heat (Warriner et al. 1986). WSP do not usually abandon their nests because of wind without another compounding factor such as human disturbance (G. Page, pers. comm. 2000).

Human activities can also interfere with foraging activities by disrupting the ability of adults and chicks to get to the wet beach to feed and return to the dunes or their nest (Burger 1993). Chicks can also become separated from their parents as a result of human disturbance of broods. Such disturbance could cause or contribute to chick mortality by interfering with essential chick rearing behaviors or by causing intolerable stresses directly to the chicks (Cairns and McLaren 1980). For example, separation of chicks and their parent can lead to lethal exposure to wind and cold temperatures or disturbance that interferes with foraging could result in the starvation of WSP chicks. In some instances, disturbance associated with these types of recreational activities is expected to temporarily flush WSPs and not affect the birds in such a substantial manner. In other cases, such disturbance could interfere with the metabolism and thermoregulation of WSP chicks and migrating or wintering adults such that they starve or egg production is impaired during the subsequent nesting season (Cairns 1982).

Predator density is an important factor affecting the quality of WSP nesting habitat (Stenzel et al. 1994). Predation can result in the loss of adults, chicks, or eggs; separation of chicks from adults, which can lead to chick mortality, can also be caused by predators. Predation by both native and non-native species limits WSP reproductive success at many Pacific coast sites. Non-native predators include eastern red foxes (*Vulpes vulpes regalis*), domestic and feral dogs (*Canis familiaris*), and Virginia opossums (*Didelphis marsupialis*). Coyotes (*Canis latrans*), American crows (*Corvus brachyrhynchos*), common ravens (*Corvus corax*), American kestrels (*Falco sparverius*), loggerhead shrikes (*Lanius ludovicianus*), and several gull species (*Larus* spp.) are native predators of the WSP.

Within the Action Area, WSP are known to winter and nest in the Channel Islands Harbor area. Outside of the Action Area, WSP have also historically nested and wintered on adjacent Hollywood Beach. Portions of Hollywood Beach are designated as critical habitat (see Section 4.4), and contain the supporting physical and biological features (PBFs) essential to WSP conservation. The historical dredging activity of the sand trap affects the critical habitat according to quantity dredged, prevailing cross-shore sediment transport and whether the sand trap has been dredged in a given year of the dredge cycle (Figure 3, Sand trap accretion/erosion historical data over last 6-year dredging cycle).

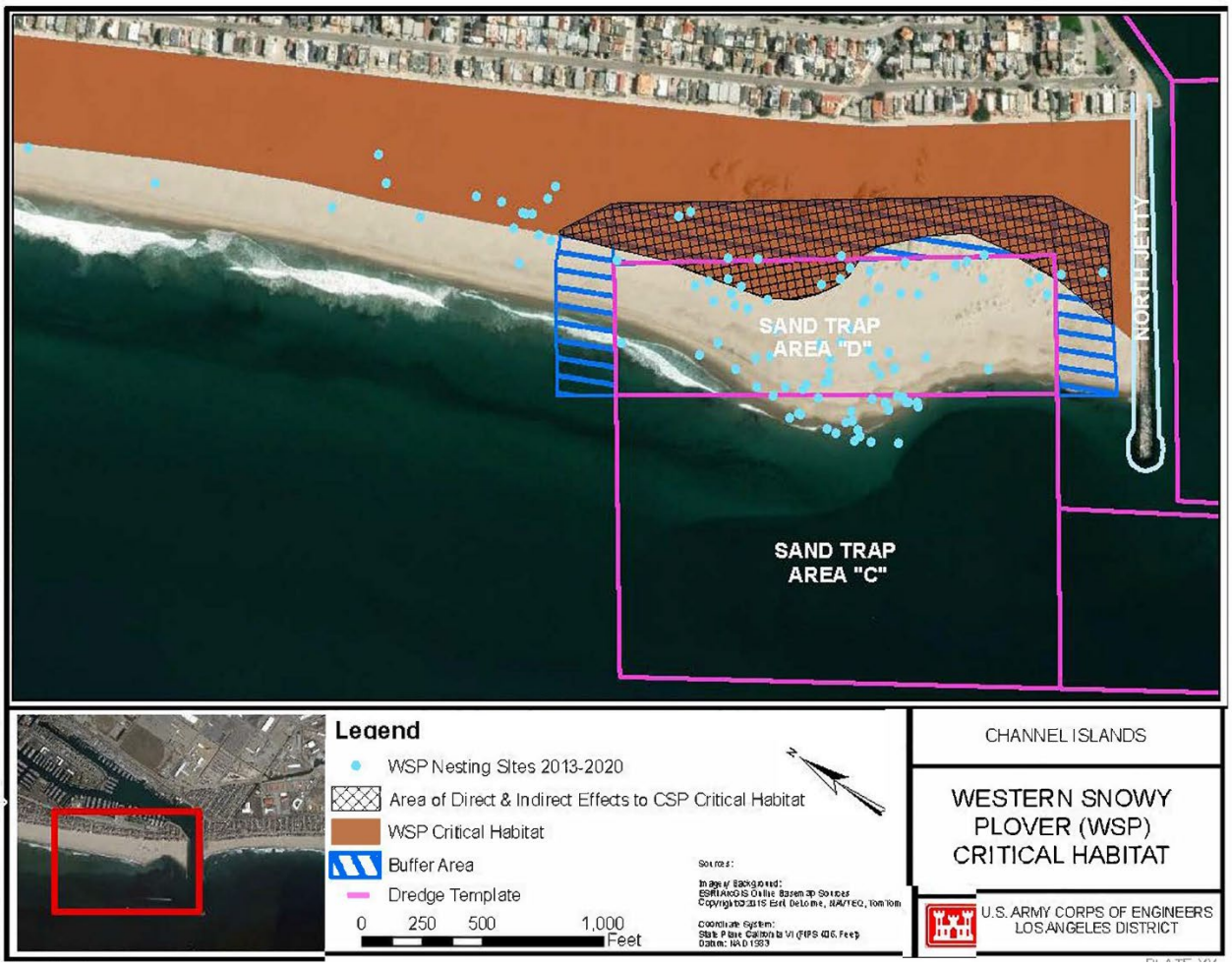


**Figure 5**. Map illustrating the overlap of the dredge impact area with WSP critical habitat and known WSP nest sites from 2013-2020.

4.4 WSP Critical Habitat

Critical habitat for WSP was first designated in December 1999 (64 FR 68508). That rule was remanded and partially vacated by the U.S. District Court for the District of Oregon on July 2, 2003. The USFWS published a revised rule designating critical habitat on September 29, 2005 (70 FR 56970), and later expanded in July 2012 (77 FR 36727). Hollywood Beach is included in critical habitat unit CA 38 (Oxnard Lowlands), and extends into the Action Area. Range wide, 24,526 acres are designated as critical habitat, with 16, 337 acres of that number within the State of California. The critical habitat unit CA 38, which encompasses the Action Area, consists of 672 acres. The projected impact to critical habitat from the Proposed Action equals 13.47 acres, or about 2% of the critical habitat unit. The physical and biological features (PBFs) identified as essential to the conservation of the species include:

- Sandy beaches, dune systems immediately inland of an active beach face, salt flats, mud flats, seasonally exposed gravel bars, artificial salt ponds and adjoining levees, and dredge spoil sites with:
    1. Area that are below heavily vegetated areas or developed areas and above the daily high tides;

2. Shoreline habitat areas for feeding, with no or spares vegetation, that are between the annual low tide or low-water flow and annual high tide or high-water flow, subject to inundation but not constantly under water, that support small invertebrates, such as crabs, worms, flies, beetles, spiders, sand hoppers, clams and ostracods, that are essential food sources;
3. Surf- or water-deposited organic debris, such as seaweed (including kelp and eelgrass) or driftwood located on open substrates that supports and attracts small invertebrates described in PBF2 for food, and provides cover or shelter from predators and weather, and assists in avoidance of detection (crypsis) for nests, chicks, and incubating adults; and
4. Minimal disturbance from the presence of humans, pets, vehicles, or human-attracted predators, which provide relatively undisturbed areas for individual and population growth and for normal behavior.

Of the 13.47 acres that lie within the critical habitat unit, PBF numbers 2 and 3 are present: open shoreline habitat suitable for foraging and presence of organic debris such as surf wrack and other invertebrates. PBF 1 is present on a cyclical basis, dependent on dredge cycle year. People and pets regularly transit this area of the beach, along with vehicle traffic, disincentivizing WSP from occupying this area.

Nesting and wintering WSP surveys have been conducted historically by Debra Barringer in the Channel Islands Harbor area, and has made observations in yearly reports as to the project area population level impacts of biennial dredging. Per Debra Barringer's most recent WSP report (Barringer, 2021):

> *"Prior to and during the winters of 2013 and 2014 decreased available funding reduced the dredging efforts and an unusually large amount of sand collected, forming an extra wide dune field and beach. In those two years, unprecedented increases in WSP nests (29 nests for 2013, 300% increase over average) and CLT nests (209 nests in 2013, 2,000% increase over average) were initiated. Most eggs hatched as there were virtually no predators observed during 2013. With low depredation, fledgling recruitment was high for both species but difficult to verify with no banding. Dredging occurred fall-winter of 2014, the beach lost a majority of the low foredune habitat where most of the nests occurred, and an anticipated drop of adult presence and nesting activity for both species resulted during the 2015 breeding season and has returned to more typical low numbers since. The native vegetation and foredunes have been very slow to regrow since then and continue to be removed during dredging."*

Further she adds *"Other impacts I've noticed is that following dredge years when the historically-chosen nest habitat in front of the dunes is narrowed, both species tend to place their nests further north away from the dunes. This reduces chick survival to fledging success due to less cover and food resources available on the flattened portion of the beach. Nests away from the dunes/cover are much more vulnerable to depredation and disturbances by people and dogs."* (email communication, 2021).

## 5.0 Effects Determinations

5.1 Effects to CLT and WSP

*Direct Effects*

CLT are not expected to be directly affected by dredging activities because they are typically absent from California breeding sites between September and March.

The WSP, however, is known to be present in the Action Area outside of the breeding season and therefore some direct effects may occur. While disturbance to wintering WSPs would not be directly lethal, direct impacts resulting from beach loss may have additional indirect effects on reproduction and survivorship (Lafferty 2000b). Lafferty (2000b) describes WSP' typical reaction to disturbance, which illustrates the energy expenditures involved. When beach use is high, WSPs will suspend feeding and remain motionless in the roosting area. If the disturbance continues, roosting plovers become alert, begin to walk away, and supplant each other from the depressions where they sit. They may elevate their wings or bob as a sign of distress and may eventually run or take flight. If put into flight, flocks wheel back and forth for several minutes in tight low altitude formations. After landing, they remain nervous and will take wing with little prompting (Lafferty 2000b). Although activities covered by this Proposed Action would not result in the complete removal or continual, long-term disturbance to other areas of wintering habitat, the WSP's instinctive reaction to disturbance may adversely affect their ability to effectively forage and maintain enough fat reserves to successfully reproduce during the following breeding season.

Similar effects as those described by Lafferty are expected to WSP as a result of the increased quantity of dredging. While these effects already occur as part of ongoing dredge activities and are not new, the increased dredge volume is expected to prolong the duration of these effects. Any WSPs present during implementation of the Proposed Action (to include both dredging and placement activities) are expected to move out of the impact area to forage on nearby beaches.

*Indirect Effects*

As described in Section 4.1, ongoing dredging activities have resulted in a cyclic pattern of increases and decreases in beach size (see Figure 3), and this cyclical pattern influences the distribution of WSP and CLT nests (Figures 6 and 7). Both CLT and WSP exhibit high nest fidelity, tend to return to the same nest sites year after year, and have attempted to breed in the Action Area in the past. Impacts associated with ongoing dredging typically include the temporary displacement of individuals from previously used nest sites, which may force some CLT and WSP returning to Hollywood Beach during the breeding season to search for nesting areas elsewhere. This disrupts their normal breeding behavior and causes birds to suspend feeding and/or expend energy in flight and movement (Lafferty 2006).

**Figure 6.** California least tern nesting sites surveyed between 2013 to 2020. Purple lines indicatedredge template, including sand trap. (Barringer, 2020)

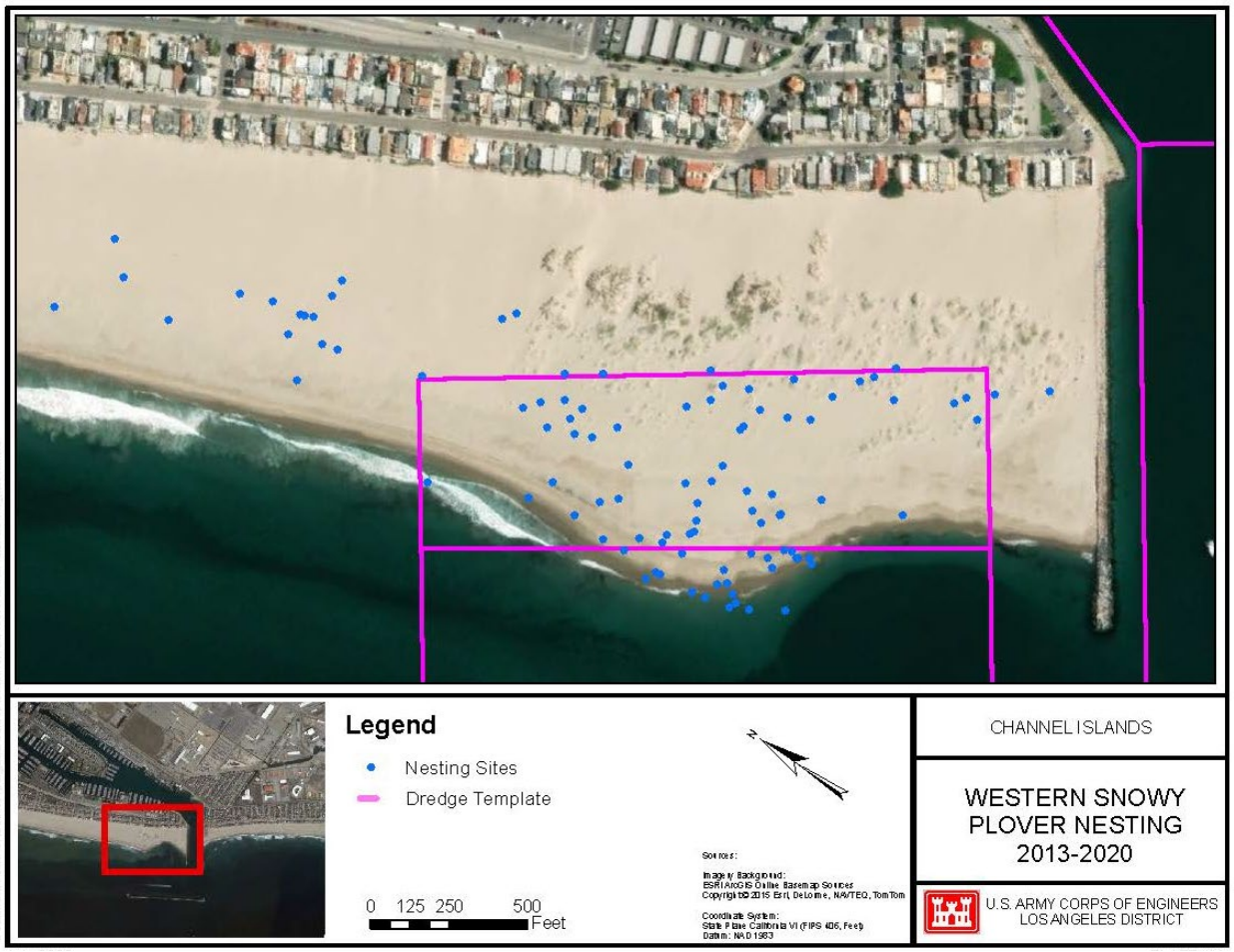


**Figure 7.** Western snowy plover nesting sites surveyed between 2013 to 2020. Purple lines indicate dredge template, including sand trap. (Barringer, 2020)

The effects of historic dredging activities on WSP and CLT nesting have been predominantly limited to Sand Trap Area D. However, due to the proposed 500,000 cy increase in dredge quantity, the impacts associated with dredging may expand as shown in Figure 1. While the ongoing cyclical impacts to WSP and CLT are expected to remain similar in nature, the increase in dredge quantities is expected to result in a concurrent increase in temporary impacts to CLT and WSP nesting activities and wintering WSP foraging and roosting activties, and a likely temporary displacement of additional individuals beyond those potentially displaced by ongoing dredge activities.

Lafferty (2006) suggests that the impacts of disturbance to birds most likely results in cumulative effects on reproduction and survivorship. Migrating shorebirds, such as CLT and WSP, must manage long flight distances and conditions between their wintering and breeding areas. They are already physiologically stressed when they arrive at their breeding areas from having to budget their major resources for flight (particularly fat, protein, and water) to migrate successfully. Impacts of disturbance at their breeding areas may not allow the birds to rest and recover sufficiently when they finally arrive. For example, Guglielmo et al. (2001) found that migrating western sandpipers frequently do not gain mass in the first days after arrival because they must expend more energy locating good feeding areas (energy-rich and safe) or obtaining feeding territories. Thus, birds that forage slowly or ineffectively may not build the requisite fat reserves

that are especially important to stressed or depleted migrants who must rest and feed (Lafferty 2001).

Lafferty (2001) studied the piping plover (which is ecologically similar to the WSP) and found that reproductive success is lower in areas with high human disturbance. In areas where people were absent, piping plovers spent 90 percent of their active time feeding compared with less than 50 percent in areas where people were common. In other words, the presence of people on the beach engaging in typical activities caused birds to expend energy in movement, flight, or vigilance, leading to reduced foraging time and further depletion of fat reserves. In a study on the effects of beach recreation to WSP, Lafferty (2006) found that reduction in disturbance encouraged WSPs to attempt to breed and that protection from disturbance would improve a habitat's suitability for breeding. Consequently, WSPs and CLTs may be injured when they are forced to abandon suitable breeding habitat and look for more isolated locations to breed and nest because of human disturbance.

The CLT and WSP also utilize the down coast beaches that are expected to be nourished during each dredging cycle. Sand dredged from the sand trap area placed at Hueneme Beach provides sand into a littoral cell that extends down coast to Naval Base Ventura County (NBVC). These down coast beaches, particularly Ormond Beach, are used as nesting sites by CLT and WSP. While the increased dredge quantity may result in increased impacts adjacent to the dredge site, the increase quantity of sand placed on down coast beaches may potentially increase the quantity of viable habitat for CLT and WSP at down coast locations.

Overall, based on the effects described above, the Corps has determined that the Proposed Action may affect, and is likely to adversely affect, both the CLT and WSP.

5.2 Effects to WSP Critical Habitat

The proposed action would temporarily render approximately 14 out of 672 acres in unit CA 38 of WSP critical habitat unusable by the species by periodically removing the PBFs. The dredging of the sand trap area would remove habitat that includes surf-cast kelp, sparsely vegetated foredunes, an interdunal flat, a washover area, and an intertidal flats. In off-dredge years, the impacts described above are not realized as the sand trap accretes and builds beachfront. In addition, the off-dredge years see a return of PBFs that were previously removed during dredging. The additional dredge quantity of 500,000 cubic yards on top of the historical 2,000,000 cubic yards is expected to exacerbate these impacts but not introduce any new impacts.

Based on the analysis described above, the Corps has determined that the Proposed Action may affect, likely to adversely affect WSP designated critical habitat.

5.3 Cumulative Effects

Cumulative effects include the effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the Action Area.

Although the County of Ventura Harbor District conducts year-round beach grooming operations on portions of Hollywood Beach, they avoid beach grooming within the Action Area. However, recreational activities continue at Hollywood Beach. According to Lafferty (2001), shorebird abundance in Ventura County is low on beaches with high human use, presumably because disturbance causes birds to seek more isolated locations. People and dogs disturb birds if they approach too closely or too quickly. Pet activity, in particular, reduces shorebird abundance and

those birds that remain must spend more energy on vigilance and escape at the expense of foraging and rest (Lafferty 2001). Furthermore, recreational disturbance during the breeding season can expose nests to predation and unfavorable weather.

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Lafferty (2000b)

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Lafftery (2006)

Page et al. 1991

Page and Stenzel 1981

Service 2001

Stenzel et al. 1994

Warriner et al. 1986

**United States Department of the Interior**
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Ecological Services
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IN REPLY REFER TO:
08EVEN00-2022-0085983-S7

December 15, 2022

Maricris Lee
Deputy Chief, Planning Division
Department of the Army
U.S. Army Corps of Engineers, Los Angeles District
915 Wilshire Boulevard, Suite 1109
Los Angeles, California 90017-3409

Subject: Biological Opinion on the Channel Islands/Port Hueneme Harbors Maintenance Dredging Increased Quantity Project, Ventura County, California

Dear Maricris Lee:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the U.S. Army Corps of Engineers' (Corps) proposed Project, pursuant to section 404 of the Clean Water Act, of the Channel Islands/Port Hueneme Harbors Maintenance Dredging Increased Quantity Project (project) on the federally endangered California least tern (*Sterna antillarum browni*) and the federally threatened western snowy plover (*Charadrius nivosus nivosus*) and its critical habitat, in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 et seq.). We received your August 24, 2022, request for formal consultation on August 24, 2022.

On July 5, 2022, the U.S. District Court of the Northern District Court of California vacated the 2019 regulations implementing section 7 of the Endangered Species Act. On September 21, 2022, the Ninth Circuit Court of Appeals granted a request to stay the U.S. District Court of Northern California's July 5, 2022, order that vacated the 2019 Act regulations. As a result, the 2019 regulations are again in effect, and the Service has relied upon the 2019 regulations in rendering this biological opinion. However, because the outcome of the legal challenges to the regulations is still unknown, we considered whether our substantive analyses and conclusions in this consultation would have been different if the pre-2019 regulations were applied. Our analysis included the prior definition of "effects of the action," among other prior terms and provisions. We considered all the "direct and indirect effects" and the "interrelated and interdependent activities" when determining the "effects of the action." As a result, we determined the substantive analysis and conclusions would have been the same, irrespective of which regulations applied.

We have based this biological opinion on information that accompanied your August 24, 2022, request for consultation, including the biological assessment (Corps 2022), and previous documents in our files (Corps 2018a, 2018b; Service 2006a, 2012a, 2018)

**Consultation History**

On October 18, 2004, the Corps initiated formal consultation on maintenance dredging of the sand trap at Hollywood Beach because surveys conducted in the previous spring and summer found 51 pairs of California least tern and 5 pairs of western snowy plover had used the sand trap area for breeding and nesting. The Service issued a biological opinion (1-8-05-F-1) on October 21, 2004, that pertained only to dredging operations for the 2004/2005 cycle.

The Corps initiated formal consultation on April 14, 2006, for the next 5-year maintenance dredging cycle, 2006-2011. The Service issued a biological opinion on September 20, 2006 (1-8-06-F-22).

The Corps initiated formal consultation on July 30, 2012, for the next 6-year maintenance dredging cycle, 2012-2018. On September 10, 2012, the Service extended the time period covered by the 2006 biological opinion for this 6-year cycle.

The Corps initiated formal consultation on August 16, 2018, for the next 6-year maintenance dredging cycle, 2018-2024. On August 23, 2018, the Service issued an amendment to the 2006 biological opinion, as extended in 2012, that extended coverage for this 6-year cycle and included revised avoidance and minimization measures from the 2018 Environmental Assessment (Corps 2018a) and the implementation of a Biological Monitoring Contingency Plan should work need to be extended beyond March 1st in any given year due to minor delays from equipment failure or late-winter storms.

## BIOLOGICAL OPINION

### DESCRIPTION OF THE PROPOSED ACTION

Maintenance dredging of the Federal navigation channels and sand trap is conducted routinely at Channel Islands Harbor. The purpose of dredging is to maintain channel configurations, restore and assure safe navigability within the harbors, sustain current recreational opportunities, and provide materials for shoreline protection and beach replenishment.

In this proposed project, the Corps plan to use the existing project ([Service 2006, Service 2018] incorporated by reference) and authorized equipment and extend the duration and magnitude of the impact by removing an additional 0.5 million cubic yards of sand from the action area (Figure 1). This will be done by using a dredge and pipeline to remove 0.5 million cubic yards

from the dredge template and place the sand on Hueneme Beach in winter 2023. The dredging action consists of dredging the entrance channel, sand traps, entrance basin, and inner basin (Figure 1). This proposed action will increase the sand placed on Hueneme Beach and other downcoast beaches, and avoid sand being lost to the adjacent submarine canyon. The action would occur once and would occur over a period of 4 weeks.

Measures Intended to Avoid, Minimize or Offset Effects of the Proposed Action

The following measures are included as part of the proposed action in order to avoid, minimize, or offset potential impacts. Measures 1-8 below are carried forward from the Environmental Assessment (Corps 2018a):

1) The Contractor will keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters.
2) The Contractor will implement a Water Quality Monitoring Plan at the dredge and beach placement sites.
3) The dredge contractor will be required to have in place a Spill Prevention and Cleanup Plan that includes measures to prevent spills and to cleanup any spills that could occur.
4) All dredging and fill activities will remain within the boundaries specified in the plans. There will be no dumping of fill or material outside of the project area or within any adjacent aquatic community. This includes the restriction on placement in the nearshore area to depths greater than -10 feet mean lower low water.
5) The Contractor will keep construction activities under surveillance, management, and control to minimize interference with, disturbance to, and damage of fish and wildlife.
6) Dredging may begin as early as October 1. Should dredging extend past March 1 the following measures will be implemented:
    a) The Corps will coordinate with concerned federal and state resource agencies concerning possible impacts to threatened or endangered species;
    b) Beach placement will be limited to a diked, single-point placement site to minimize turbidity and grunion smothering;
7) The following avoidance and minimization measures will be implemented to ameliorate potential impacts from dredging and placement activities in the proposed action area:
    a) The limits of the dredging and placement activities will be clearly marked to prevent heavy equipment from entering areas beyond the smallest footprint needed to complete the project;
    b) Vehicles and all dredging activities will remain within the defined activity area and use only designated access points and staging areas;
    c) The work area will be kept clean to avoid attracting predators. All food and trash will be disposed of in closed containers and removed from the project site;
    d) No pets will be allowed on the construction site;
    e) No dredging activities will be conducted in the sand trap area (adjacent to Hollywood Beach) during the shorebird/seabird nesting season (March 1 – September 30);

f) At all times a qualified snowy plover monitor will walk ahead of the vehicle(s) and equipment to assure that all snowy plovers are out of harm's way before the vehicle(s) or equipment can proceed. Qualified monitors will be those individuals who attend the on-site plover training that will be provided by the Ventura Port District and the Corps;
g) If dredge material placement activities take place on Silver Strand and Hueneme Beaches during the nesting season (March 1 through September 30), measures described in the Biological Monitoring Contingency Plan (Appendix F) will be implemented;

8) Training will be provided to the Contractor personnel to review and ensure full understanding of all project environmental protection requirements. Training will include, but not limited to, methods of detecting and avoiding pollution, identification and avoidance measures for endangered species and notification requirements.

Proposed Dune Restoration

To offset potential impacts to western snowy plover designated critical habitat, the Corps proposes to restore 13.47 acres (1:1 impact restoration ratio) of foredune habitat adjacent to the action area as agreed to with the Service. The restoration effort will include beach grass (*Ammophilla* spp.) control to zero density, recontouring of sand dunes to approximate natural dune contours using heavy equipment, restoration of native beach species using plants or seeds, and manual removal of non-native plant species. The Corps will manage this area for a period of 5 years. Management activities will include installation and maintenance of native dune vegetation, manual removal of non-native plant species, strategic fencing, predator exclosures for shorebird protection, and other measures intended to protect any nesting or foraging activities that may occur in this area without significantly impacting authorized recreational beach use. The purpose of the restoration site is to provide comparable habitat function and value for the western snowy plover to offset the temporary and recurring loss of beach that would occur whenever the Corps excavates “sand trap D”. At a minimum, weekly monitoring for California least tern and western snowy plover will occur during the proposed action and for 5 years post - dune restoration completion to verify the restoration site is fulfilling the purpose as stated above. Annual metrics monitoring of the dune restoration will occur for 5 years post - dune restoration completion to verify the restoration site will remain functional habitat for the intended species.

The final site selection and management strategy have not been completed by the Corps. Details of the restoration plan are in development with the Service, Ventura County and other stakeholders.

Avoidance and minimization measures will be implemented for any restoration construction work taking place during California least tern and western snowy plover breeding seasons, as described below.

During implementation:

1) If vehicles are required to drive on Hollywood Beach, a biological monitor will be present to clear the path of any vehicles by walking ahead and verifying no birds are present. If birds are present the monitor will signal and stop vehicles.
2) If birds do not move out of vehicle traffic path, the biological monitor will attempt to guide vehicles on an alternate path to avoid grounding birds and walk ahead of vehicle to ensure the path is cleared while maintaining a minimum 50-yard buffer.

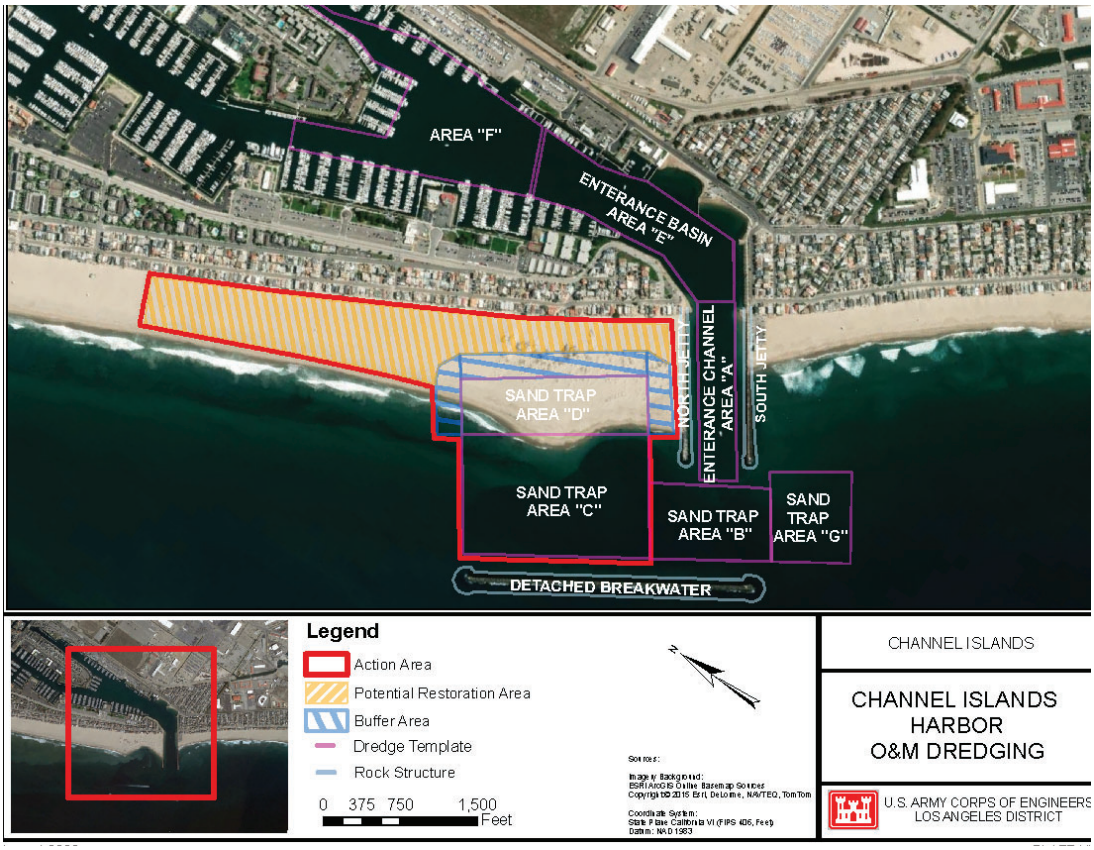


Figure 1. Map of action area, Hollywood Beach, California. Blue hatched area indicates area of potential slope failure due to projected dredging activity (Corps 2022).

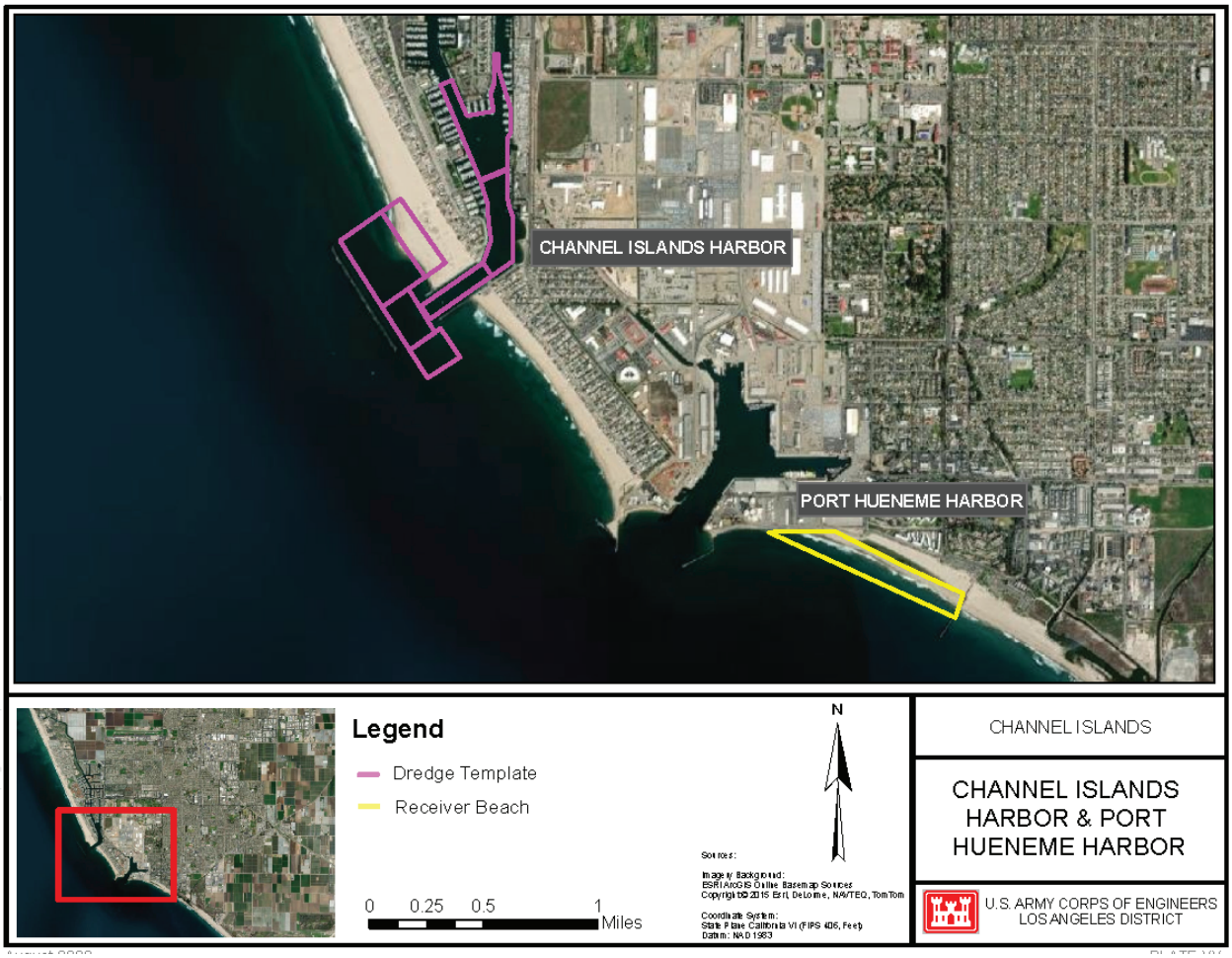


Figure 2. Channel Islands Harbor, California, with detached breakwater depicted in upper left, Port Hueneme and Hueneme beach in image center illustrating proximity between dredge area and receiver beach (Corps 2022).

## ANALYTICAL FRAMEWORK FOR THE JEOPARDY AND ADVERSE MODIFICATION DETERMINATIONS

### Jeopardy Determination

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. “Jeopardize the continued existence of” means “to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species” (50 CFR 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the current rangewide condition of the California least tern and western snowy plover, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the California least tern and western snowy plover in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the California least tern and western snowy plover; (3) the Effects of the Action, which determines all consequences to the California least tern and western snowy plover caused by the proposed action that are reasonably certain to occur in the action area; and (4) the Cumulative Effects, which evaluates the effects of future, non-Federal activities, that are reasonably certain to occur in the action area, on the California least tern and western snowy plover.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the current status of the California least tern and western snowy plover, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to reduce appreciably the likelihood of both the survival and recovery of the California least tern and western snowy plover in the wild by reducing the reproduction, numbers, and distribution of that species.

**Adverse Modification Determination**

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to destroy or to adversely modify designated critical habitat. Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.

The destruction or adverse modification analysis in this biological opinion relies on four components: (1) the Status of Critical Habitat, which describes the rangewide condition of the critical habitat for the western snowy plover; (2) the Environmental Baseline, which evaluates the condition of the critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the Effects of the Action, which are all consequences to critical habitat caused by the proposed action that are reasonably certain to occur in the action area; and (4) Cumulative Effects, which evaluate the effects of future non-Federal activities in the action area that are reasonably certain to occur.

For the section 7(a)(2) determination regarding destruction or adverse modification, the Service begins by evaluating the effects of the proposed Federal action and the cumulative effects. The Service then examines those effects against the condition of all critical habitat described in the listing designation to determine if the proposed action’s effects are likely to appreciably diminish the value of critical habitat as a whole for the conservation of the species.

Maricris Lee

STATUS OF THE SPECIES AND CRITICAL HABITAT

## California Least Tern

### Legal Status

The Service listed the California least tern as endangered on June 2, 1970 (Service 1970). We issued a revised recovery plan for the species in 1985 (Service 1985) and 5-year status reviews in 2006 and 2020 (Service 2006, 2020). The Service has not designated critical habitat for the species.

### Natural History

#### Foraging Behavior

California least terns forage in nearshore oceans, harbors, marina channels, tidal estuarine channels, and sheltered shallow bays (Atwood and Kelly 1984, pp. 35–36). Adults forage mostly within 2 miles of breeding colonies, and at many sites foraging is primarily in nearshore ocean waters less than 60 feet deep (Service 1985, p. 18). They feed on small fish that they catch by plunging into the water from flight. In a study of fish dropped by California least tern at 10 nesting areas, researchers found 49 species of fish, all individuals less than 1 year old. Northern anchovy (*Engraulis mordax*) and silverside species (Atherinidae) represented 67 percent of the total sample (Atwood and Kelly 1984, p. 38).

#### Breeding

California least terns are migratory colonial nesters, usually arriving in breeding areas by late April and departing in August (Massey 1974, pp. 6, 43). They exhibit a high degree of nest site fidelity from year to year. Individuals often return to breed where they previously bred successfully or to their natal sites (i.e., where they hatched) significantly more than one would predict if birds nested randomly (Atwood and Massey 1988, pp. 391–393). After the initial nesting period that begins on their arrival in April, a second wave of nesting may occur from mid-June to early August. These are mainly re-nests after initial failures and second-year birds nesting for the first time (Massey and Atwood 1981, p. 596).

Nesting California least terns usually occupy a sand-shell beach relatively free of plant growth (Massey 1974, p. 5). The nest is typically a shallow, round depression, constructed by a bird sitting and kicking its feet backwards while rotating its body. This may occur several times before the bird lays an egg (Massey 1974, pp. 10–11; Wolk 1974, p. 52). California least terns may use “sideways building” after scrape construction, which consists of the sitting bird reaching

out with its bill to pick up additional nest material, such as small shells and shell fragments, and depositing them into the nest (Wolk 1974, p. 53).

Early in the breeding season, California least terns display night roosting behavior. Prior to incubation, they will sleep at night at varying distances from the nesting sites. Once incubation begins, birds roost at night on the nest. California least terns use roosting sites away from breeding colonies prior to egg laying, apparently for predator avoidance. By not sleeping within the colony until they lay eggs, they may delay nocturnal predators discovering the colony by 2 to 3 weeks (Service 1985, p. 7).

California least terns begin incubation after laying the first egg. Both parents participate in incubation, which lasts 20 to 25 days (Massey 1974, pp. 15–16). Clutch size ranges from one to three eggs, with two eggs being most common (Massey 1974, p. 13; Ehrlich et al. 1988, p. 186).

California least tern chicks are semi-precocial (capable of a high degree of independent activity from birth) and parents can feed small fish to chicks within hours of hatching (Massey 1974, p. 17; Ehrlich et al. 1988, p. 18). Chicks will begin leaving the nest in1 to 2 days (Massey 1974, p. 17) and fledge at approximately 20 days. Juveniles and adults will fish, loaf, preen, and roost together for several weeks after fledging; adults will continue to feed juveniles during this period (Massey 1974, p. 20).

Wintering

California least terns leave nesting areas by August to spend winter months along the west coast of Baja California, the west coast of Mexico, and farther south, possibly from the Gulf of California to Guatemala (AOU 1957, p. 239; Service 1985, p. 17; Thompson et al. 1997, Distribution, Migration, and Habitat).

**Rangewide Status**

The historical breeding range of the California least tern extends along the Pacific coast from central California (Moss Landing) to southern Baja California (San Jose del Cabo). Observers documented potentially vagrant birds farther north in Alameda County, California (Grinnell and Miller 1944, p. 175; AOU 1957, p. 239). Since 1970, records of nesting sites extend from San Francisco Bay to Bahia de San Quintin, Baja California. The nesting range in California has been discontinuous, with most birds nesting in southern California from Santa Barbara County south through San Diego County (Service 1985, p. 3).

In 1969 and 1970, Craig (1971, pp. 1, 5) conducted breeding surveys in San Mateo, Orange, and San Diego Counties. Craig estimated 300 pairs at 15 sites in the 3 counties and made recommendations to prevent the extirpation of the California least tern in California, principally

to protect existing sites from human disturbance and create new sites in areas protected from disturbance and development (Craig 1971, entire). In 1980, 1981, 1982, and 1983, the California least tern breeding population in California was approximately 890 to 1,215; 963 to 1,171; 1,015 to 1,245; and 1,180 to 1,299 pairs, respectively (Service 1985, p. 21). Several studies attributed fluctuations in the number of breeding pairs and productivity to the El Niño Southern Oscillation, which results in limited food availability (Massey et al. 1992, pp. 982–983; Caffrey 1995, p. 12; Robinette et al. 2015, pp. 5, 10, 21–52). The effects on California least terns after a severe El Niño event may last several years (Massey et al. 1992, pp. 976, 978, 982).

Surveys have become more standardized and frequent since the 1990s (Sin 2021, p. 5). Sin reported 4,097 to 5,598 breeding pairs across 45 nesting sites in California over the 2017 breeding season (Sin 2021, p. 3). Six sites contained most of the breeding activity in California during the 2017 season: Camp Pendleton, Naval Base Coronado, Batiquitos, Point Mugu, Huntington, and Alameda Point (Sin 2021, p. 3), a trend consistently observed in previous years (Frost 2016, p. 12; 2017, p. 11). These 6 sites represented 75 percent of the state nest total and contributed 65 percent of California's fledgling production. The California Department of Fish and Wildlife (CDFW) provides annual reports of nesting California least terns in California; reports include numbers of breeding pairs, nesting sites, and fledglings to breeding pair ratios (Table 1).

**Table 1.** Numbers of California least tern breeding pairs and nesting sites across California; data compiled from CDFW reports (Craig, 1971, p. 1; Bender 1974a, p. 1, b, p. 1; Johnston and Obst 1992, pp. 3, 6; Obst and Johnston 1992, pp. 3, 5; Caffrey 1993, p. 2, 1994, p. 2, 1995, p. 3, 1997, p. 3, 1998, p. 3; Keane 1998, p. 3, 2000, p. 3, 2001, p. 5; Patton 2002, p. 3; Marschalek 2005, p. 3, 2006, p. 3, 2007, p. 3, 2008, p. 3, 2009, p. 3, 2010, p. 3, 2011, p. 3, 2012, p. 3; Frost 2013, p. 3, 2015, p. 3, 2016, p. 3, 2017, p. 3; Sin 2021, p. 3).

| *Year* | *Approximate Number of Breeding Pairs* | *Number of Nesting Sites* |
|---|---|---|
| *2017* | 4,097–5,598 | 45 |
| *2016* | 3,989–4,661 | 42 |
| *2015* | 4,202–5,295 | 41 |
| *2014* | 4,232–5,786 | 41 |
| *2012* | 4,293–6,421 | 41 |
| *2011* | 4,826–6,108 | 40 |
| *2010* | 6,437–6,699 | 41 |
| *2009* | 7,130–7,352 | 41 |
| *2008* | 8,223–8,226 | 36 |
| *2007* | 6,744–6,989 | 35 |
| *2006* | 7,006–7,293 | 31 |
| *2005* | 6,865–7,341 | 28 |
| *2004* | 6,354–6,805 | 32 |
| *2000* | 4,521–4,790 | 37 |
| *1999* | 3,451–3,674 | 36 |
| *1998* | 4,141–4,182 | 30 |
| *1997* | 4,017 | 38 |
| *1996* | 3,330–3,392 | 35 |
| *1995* | 2,585–2,611 | 37 |
| *1994* | 2,792 | 36 |
| *1993* | 2,400 | 35 |
| *1992* | 2,106 | 38 |
| *1991* | 1,830 | 26 |
| *1990* | 1,706 | 28 |
| *1974* | 582 | 20 |
| *1973* | 624 | 19 |
| *1969–1970* | 300 | 15 |

## Recovery and Threats

The primary goals outlined in the 1985 recovery plan are to prevent extinction and return the California least tern population to a stable, non-endangered status. We state the Service may consider reclassification to threatened status if 1,200 breeding pairs in California occur in 15 secure management areas with a 3-year mean reproduction rate of 1.0 (one fledgling per breeding pair) (Service 1985, p. 26). We also state the Service may consider delisting if the

population reaches 1,200 breeding pairs distributed in at least 20 of 23 coastal management areas with the following provisions:

1) Sufficient habitat to support at least one viable colony (consisting of a minimum of 20 breeding pairs with a 5-year mean reproductive rate of at least 1.0 young fledged per year, per breeding pair) at each of the 20 coastal management areas managed to conserve California least terns (which must include San Francisco Bay, Mission Bay, and San Diego Bay); and
2) Assured land ownership and management objectives for future habitat management for the benefit of California least terns, and assessment of the security and status of Baja California colonies for incorporation into recovery objectives (Service 1985, pp. 25–26).

The breeding population of California least terns currently exceeds Objective 1. The estimated number of California least tern breeding pairs has increased from approximately 624 pairs in 1973 to a peak of approximately 7,100 pairs in 2009. The number of breeding pairs has dropped in the past few years from the peak to estimates of 3,989 pairs in 2016 and 4,097 pairs in 2017. In the 2006 5-year Review, we acknowledged the species had far exceeded this population objective (Service 2006, p. 3).

Objective 2 does not identify explicitly specific threats to alleviate but rather is a proxy for whether there is a reduction in threats to reproduction and fecundity. In the 2006 5-year review, we concluded that based on the population data at that time, the Service could likely consider the species recovered without meeting this goal (Service 2006, p. 5), as the sharp growth in pairs had occurred while estimated fledgling rates were below 1.0 fledglings per pair. Objective 2 utilizes this same definition of viability for secure nesting site requirements, though it is unclear from the recovery criteria if sites must maintain this level of viability for 3 or 5 years (Service 1985, pp. 25–26).

Overall, progress is being made toward satisfying the recovery criteria. However, as we concluded in the 2006 5-year review and based on recent data, we should revise the recovery plan and update it to provide threats-based recovery criteria and address the other shortcomings of the recovery plan. Areas of the plan that need updating include inclusion of Mexico populations of California least terns, further analysis of the fledgling per pair ratio, and future impacts from a changing climate, such as seal level rise (Service 2020, p. 62).

In the five-factor analysis in our 2020 5-year status review, we found that rising sea levels as a result of climate change (Factor A) may in the future pose a substantial threat to nesting habitat of the California least tern; that predation (Factor C) continues to threaten the California least tern (this threat is reduced, though not eliminated, by predator management conducted at the majority of active colonies, and predator management is confounded when the predator is a protected species); that food availability (Factor E) poses a threat to California least terns though

its impact varies from year to year with an uncertain overall magnitude; and that cumulative impacts of food availability, predation, and destruction of nesting habitat together pose a substantial threat to the persistence of the California least tern, although management at a majority of the U.S. nesting sites helps to reduce the impact of these combined threats. Though there are few data available on nesting areas in Mexico, lack of legal protection and conservation measures result in a higher degree of threats attributable for nesting California least terns than in the United States (Service 2020, p. 69).

While the California least tern has met the population size recommended in the recovery plan for downlisting, the population has been recently declining and exhibiting poor reproductive success, and multiple ongoing threats continue to impact the species. Primary threats include ongoing habitat loss and degradation attributed to perpetual human disturbance, urban development, introduced beachgrass and expanding predator populations. Therefore, we determined that current information does not support reclassifying the California least tern at this time. Additional information on threats, management techniques, and current population models should be obtained before reassessing the taxon again in the future (Service 2020, p. 70).

**Western Snowy Plover**

**Legal Status**

The Service listed the Pacific coast population of the western snowy plover as threatened on March 5, 1993 (58 FR 12864). We designated critical habitat in 1999 (64 FR 68508 68544) and redesignated it in 2005 (70 FR 56970 57119). In 2012, we issued a revised critical habitat designation which included a change in taxonomic nomenclature (Service 2012b, 77 FR 36727 36869). We completed a 5-year status review in 2006 and 2019 (Service 2006c, 2019), and issued a recovery plan in August 2007 (Service 2007).

**Natural History**

The western snowy plover is a small shorebird in the family Charadriidae, a subspecies of the snowy plover (*Charadrius nivosus*). It is pale gray-brown above and white below, with a white collar on the hind neck and dark patches on the lateral breast, forehead, and behind the eyes. The bill and legs are black.

<u>Foraging Behavior</u>

Western snowy plovers are primarily visual foragers, using the run-stop-peck method of feeding typical of most plover species. They forage on invertebrates in the wet sand and amongst surf-cast kelp within the intertidal zone, in dry sand areas above the high tide, on saltpans, on spoil

sites, and along the edges of salt marshes, salt ponds, and lagoons. They sometimes probe for prey in the sand and pick insects from low-growing plants (Service 2007, pp. 17–18).

Breeding

The Pacific coast population of the western snowy plover breeds primarily on coastal beaches from southern Washington to southern Baja California, Mexico. The main coastal habitats for nesting include sand spits, dune-backed beaches, beaches at creek and river mouths, and saltpans at lagoons and estuaries (Wilson 1980, p. 23; Page and Stenzel 1981, p. 12). Western snowy plovers nest less commonly on bluff-backed beaches, dredged material disposal sites, salt pond levees, dry salt ponds, and gravel river bars (Wilson 1980, p. 9; Page and Stenzel 1981, pp. 12, 26; Tuttle et al. 1997, pp. 1–3; Powell et al. 2002, pp. 156, 158, 164).

Their nests consist of a shallow scrape or depression, sometimes lined with beach debris (e.g., small pebbles, shell fragments, plant debris, and mud chips). As incubation progresses, western snowy plovers may add to and increase the nest lining. Driftwood, kelp, and dune plants provide cover for chicks that crouch near objects to hide from predators. Because invertebrates often occur near debris, driftwood and kelp are also important for harboring western snowy plover food sources (Page et al. 2009a, Breeding).

Along the west coast of the United States, the nesting season of the western snowy plover extends from early March through late September. The breeding season may be 2 to 4 weeks earlier in southern California than in Oregon and Washington. Fledging (reaching flying age) of late-season broods may extend into the third week of September throughout the breeding range (Service 2007, p. 11).

The approximate periods required for western snowy plover nesting events are: 3 days to more than a month for scrape construction (in conjunction with courtship and mating), usually 4 to 5 days for egg laying, and incubation averaging 28.4 days in the early season (before May 8) to 26.9 days in the late season (Warriner et al. 1986, pp. 23–24). The usual clutch size is three eggs with a range from two to six (Page et al. 2009a, Breeding). Both sexes incubate the eggs, with the female tending to incubate during the day and the male at night (Warriner et al. 1986, pp. 24–25). Adult western snowy plovers frequently will attempt to lure people and predators from hatching eggs and chicks with alarm calls and distraction displays.

Western snowy plover chicks are precocial, leaving the nest with their parents within hours after hatching (Service 2007, p. 14). They are not able to fly for approximately 1 month after hatching; fledging requires 29 to 33 days (Warriner et al. 1986, p. 26). Broods rarely remain in the nesting area until fledging (Warriner et al. 1986, p. 28; Lauten et al. 2010, p. 10). Casler et al. (1993, pp. 6, 11–12) reported broods would generally remain within a 1-mile radius of their nesting area; however, in some cases would travel as far as 4 miles.

Wintering

In winter, western snowy plovers are found on many of the beaches used for nesting, as well as beaches where they do not nest. They also occur in man-made salt ponds and on estuarine sand and mud flats. In California, the majority of wintering western snowy plovers concentrate on sand spits and dune-backed beaches. Some also occur on urban and bluff-backed beaches, which they rarely use for nesting (Page and Stenzel 1981, p. 12; Page et al. 1986, p. 148). South of San Mateo County, California, wintering western snowy plovers also use pocket beaches at the mouths of creeks and rivers on otherwise rocky (Page et al. 1986, p. 148). Western snowy plovers forage in loose flocks. Roosting western snowy plovers will sit in depressions in the sand made by footprints and vehicle tracks, or in the lee of kelp, driftwood, or low dunes in wide areas of beaches (Page et al. 2009b, Behavior). Sitting behind debris or in depressions provides some shelter from the wind and may make the birds more difficult for predators to detect.

**Rangewide Status**

Historical records indicate that nesting western snowy plovers were once more widely distributed and abundant in coastal Washington, Oregon, and California (Service 2007, p. 21). In Washington, western snowy plovers formerly nested at five coastal locations (Washington Department of Fish and Wildlife 1995, p. 14) and at over 20 sites on the coast of Oregon (Service 2007, p. 24). In California, by the late 1970s, nesting western snowy plovers were absent from 33 of 53 locations with breeding records prior to 1970 (Page and Stenzel 1981, p. 27).

The first quantitative data on the abundance of western snowy plovers along the California coast came from window surveys conducted during the 1977 to 1980 breeding seasons by Point Reyes Bird Observatory (Page and Stenzel 1981, p. 1). Observers recorded an estimated 1,593 adult western snowy plovers during these pioneering surveys. The results of the surveys suggested that the western snowy plover had disappeared from significant parts of its coastal California breeding range by 1980 (Service 2007, p. 27).

Breeding season and winter window survey data from 2005 to 2017 includes approximately 250 sites in Washington, Oregon, and California, with the majority of the sites located in California. In California, 1,807 western snowy plovers were counted during the 2016 breeding window survey, and 3,8021 western snowy plovers were counted during the 2016 to 2017 winter window survey (Service 2016, 2017). Across the Pacific coast range, the 2016 breeding window survey estimated 2,284 western snowy plovers, and the 2016 to 2017 winter window survey estimated 4,214 western snowy plovers in Washington, Oregon, and California (Service 2016, 2017). These numbers demonstrate that a large percentage of all western snowy plovers in the Pacific coast range were counted in California during both winter and breeding window surveys.

1 This number likely includes wintering inland birds that are not part of the listed Pacific coast population.

Table 2. Pacific Coast western snowy plover breeding window survey results, in descending order 2019 to 2005, for each recovery unit (RUl through RU6) and the U.S. Pacific coast (excludes the Baja California peninsula). All counts are breeding age adults and are uncorrected (raw). Recovery Units are RU1: Washington and Oregon; RU2: Northern California; RU3: San Francisco Bay; RU4: Monterey Bay area; RU5: San Luis Obispo area; RU6: San Diego area (Service 2019, p. 3).

| *Year* | *RU1-* | *RU2* | *RU3* | *RU4* | *RU5* | *RU-6* | *TOTAL (U.S. Pacific Coast)* |
|---|---|---|---|---|---|---|---|
| *2019* | 479 | 41 | 190 | 303 | 807 | 397 | 2,217 |
| *2018* | 402 | 52 | 235 | 361 | 874 | 451 | 2,375 |
| *2017* | 342 | 56 | 246 | 369 | 856 | 464 | 2,333 |
| *2016* | 477 | 46 | 202 | 366 | 820 | 373 | 2,284 |
| *2015* | 340 | 38 | 195 | 348 | 963 | 376 | 2,260 |
| *2014* | 269 | 27 | 178 | 374 | 822 | 346 | 2,016 |
| *2013* | 260 | 23 | 202 | 261 | 754 | 326 | 1,826 |
| *2012* | 234 | 21 | 147 | 324 | 771 | 358 | 1,855 |
| *2011* | 202 | 28 | 249 | 311 | 796 | 331 | 1,917 |
| *2010* | 196 | 19 | 275 | 298 | 686 | 311 | 1,785 |
| *2009* | 182 | 15 | 147 | 279 | 707 | 257 | 1,587 |
| *2008* | 147 | 18 | 133 | 257 | 717 | 269 | 1,541 |
| *2007* | 175 | 26 | 207 | 270 | 676 | 183 | 1,537 |
| *2006* | 158 | 45 | 102 | 357 | 917 | 298 | 1,877 |
| *2005* | 137 | 41 | 124 | 337 | 969 | 209 | 1,817 |

## Critical Habitat

The phrases “primary constituent elements” (PCEs) and “physical and biological features” (PBFs) are synonymous. Critical habitat rules published before February 11, 2016, used the term PCE, while critical habitat rules published after that date use the term PBF. In cases where a critical habitat rule numbers PCEs specifically (e.g., PCE-1, PCE 1), we will use the terms as defined in the critical habitat designation to avoid confusion.

The current critical habitat designation (77 FR 36727) includes 60 units totaling 24,527 acres in Washington, Oregon, and California. The primary constituent elements (PCEs) of critical habitat (77 FR 367474) for the western snowy plover include sandy beaches, dune systems immediately inland of an active beach face, salt flats, mud flats, seasonally exposed gravel bars, artificial salt ponds and adjoining levees, and dredge spoil sites, with:

1) Areas that are below heavily vegetated areas or developed areas and above the daily high tides;
2) Shoreline habitat areas for feeding, with no or very sparse vegetation, that are between the annual low tide or low water flow and annual high tide or high water flow, subject to inundation but not constantly under water, that support small invertebrates, such as crabs, worms, flies, beetles, spiders, sand hoppers, clams, and ostracods, that are essential food sources;
3) Surf- or water-deposited organic debris, such as seaweed (including kelp and eelgrass) or driftwood located on open substrates that supports and attracts small invertebrates described in PCE 2 for food, and provides cover or shelter from predators and weather, and assists in avoidance of detection (crypsis) for nests, chicks, and incubating adults; and
4) Minimal disturbance from the presence of humans, pets, vehicles, or human-attracted predators, which provide relatively undisturbed areas for individual and population growth and or normal behavior.

**Recovery and Threats**

The primary objective of the recovery plan (Service 2007, p. vi) is to remove the Pacific coast population of the western snowy plover from the list of endangered and threatened wildlife and plants by:

1) Increasing population numbers distributed across the range of the Pacific coast population of the western snowy plover;
2) Conducting intensive ongoing management for the species and its habitat and developing mechanisms to ensure management in perpetuity; and
3) Monitoring western snowy plover populations and threats to determine success of recovery actions and refine management actions.

Delisting criteria for the Pacific coast population of the western snowy plover are outlined below (Service 2007, p. vii):

1) An average of 3,000 breeding adults has been maintained for 10 years, distributed among 6 recovery units as follows: Washington and Oregon, 250 breeding adults; Del Norte to Mendocino Counties, California, 150 breeding adults; San Francisco Bay, California, 500 breeding adults; Sonoma to Monterey Counties, California, 400 breeding adults; San Luis

Obispo to Ventura Counties, California, 1,200 breeding adults; and Los Angeles to San Diego Counties, California, 500 breeding adults. This criterion also includes implementing monitoring of site-specific threats, incorporation of management activities into management plans to ameliorate or eliminate those threats, completion of research necessary to modify management and monitoring actions, and development of a post-delisting monitoring plan.

2) A yearly average productivity of at least one (1.0) fledged chick per male has been maintained in each recovery unit in the last 5 years prior to delisting.
3) Mechanisms have been developed and implemented to assure long-term protection and management of breeding, wintering, and migration areas to maintain the subpopulation sizes and average productivity specified in Criteria 1 and 2. These mechanisms include establishment of recovery unit working groups, development and implementation of participation plans, development and implementation of management plans for Federal and State lands, protection and management of private lands, and public outreach and education.

Our current estimate (2,217 breeding adults) remains below the population size of 3,000 birds listed as a recovery objective in the recovery plan (Service 2007), although some local population sizes have surpassed recovery objectives for some areas (e.g., Monterey Bay, Oregon-Washington). Yearly average productivity (Criterion 2; number of fledglings/per male) are not compiled annually for the entire U.S. Pacific coast; however, the best available information indicates that the yearly average productivity has not been met (Service 2019, p. 6).

Threats to the western snowy plover include widespread habitat loss and degradation attributed to human disturbance, urban development, introduced beachgrass, and expanding predator populations. Efforts to improve habitat at current and historical breeding beaches, and efforts to reduce the impacts of human recreation and predation on nesting plovers, have improved plover numbers. Active vegetation and predator management and habitat restoration should be continued. Because of active management efforts, including increased monitoring, use of predator exclosures at some sites, predator management, and expanded beach closures, western snowy plover population numbers have increased at some locations. However, despite active vegetation and predator management, ongoing and projected changes in sea level and climate is expected to affect coastal habitat suitability, nest survival, overwinter survivorship, and quality of nesting and roosting habitats (Service 2019, p. 7).

**Western Snowy Plover Critical Habitat**

The final rule for western snowy plover critical habitat describes the physical and biological attributes that are essential to the conservation of the species, activities that could adversely affect critical habitat areas, and the specific areas designated as critical habitat. Hollywood

Beach is included in critical habitat unit CA 19 (Oxnard Lowlands), subunit CA 19A (Mandalay Beach to Santa Clara River) and extends into the proposed action area of this project (Figure 1).

The primary constituent elements of critical habitat for the western snowy plover have been defined as those habitat components that are essential for the primary biological needs of foraging, nesting, rearing of young, roosting, and dispersal, or the capacity to develop those habitat components. The constituent elements are found in areas that support or have the potential to support intertidal beaches, associated dune systems, and estuaries. Important components of the beach/dune/estuarine ecosystem include surf-cast kelp, sparsely vegetated foredunes, interdunal flats, spits, washover areas, blowouts, intertidal flats, salt flats, and flat rocky outcrops. Several of these components (sparse vegetation, salt flats) are mimicked in artificial habitat types used less commonly by western snowy plovers (i.e., dredge spoil sites, salt ponds, and adjoining levees). The suitability of areas containing the features listed above is also contingent upon isolation from human disturbance and predation. These attributes are considered essential to the conservation of the coastal population of the western snowy plover (70 FR 56970).

ENVIRONMENTAL BASELINE

The implementing regulations for section 7(a)(2) (50 CFR 402.02) define the environmental baseline as "the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline."

**Action Area**

The implementing regulations for section 7(a)(2) of the Act (50 CFR 402.02) define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. The action area for this biological opinion is the Channel Islands Harbor federal dredge template, Hollywood Beach, including potential impact area immediately adjacent to the dredge template due to slope failure of the dredge cut boundaries, the potential restoration area and Hueneme Beach. The entire action area encompasses approximately 60 acres and will depend on the amount of submerged emerged material accepted by the receiver area. Of that, 60 acres, the action may impact 26.94 acres of habitat used by listed species. The potential impact area is 200 feet on each side of sand trap area D (Figure 1). This

200-foot buffer is the coastal engineering projection of potential impacts due to the increased dredge quantity, comprising 10 acres. (Figures 1 and 2). The receiver beach of the dredged material is Hueneme Beach, a southern downcoast beach and adjacent to Point Mugu. The beach is constructed during bi-annual dredge cycles. Listed species and habitat are not known to occur in that area. The additional quantity of sand dredged will be reciprocally placed onto Hueneme Beach (Figure 2).

Hollywood Beach is located in the city of Oxnard and is adjacent to Channel Islands Harbor. Harbor structural features consist of a detached breakwater, entrance jetties, and an entrance channel leading to the harbor interior. The offshore detached breakwater and entrance jetties form a sand trap. A series of sand dunes ranging from 2 to 7 feet tall are located on northeast border of the sand trap. The sand dunes, the harbor jetty, and the shoreline leave the sand trap area relatively isolated from human activity compared to the rest of the beach. This makes the sand trap area proposed for dredging an ideal breeding location for the California least tern and western snowy plover.

Approximately 13.47 acres of the sand trap area at Hollywood Beach lie within unit CA-19A of western snowy plover designated critical habitat (70 FR 56970).

**Habitat Characteristics of the Action Area**

The action area includes open water and sandy beaches, and dune systems immediately inland of an active beach face with areas that are below heavily vegetated areas or developed areas and above the daily high tides. There is shoreline habitat for feeding, with no or very sparse vegetation, that are between the annual low tide or low-water flow, subject to inundation but not constantly under water, that supports small invertebrates, such as crabs, worms, flies, beetles, spiders, sand hoppers, clams, and ostracods, that are essential food sources. Surf- or water-deposited organic debris, such as seaweed or driftwood are routinely located on open substrates that supports and attracts small invertebrates for food, and provides cover or shelter from predators and weather, and assists in avoidance of detection for nests, chicks, and incubating adults.

Beach grass (*Ammophila breviligulata*) is present in the restoration site. This species provides high cover for predators and its presence may increase predation risk to shorebirds.

**Existing Conditions in the Action Area**

Maintenance dredging is routinely conducted within the dredge template at Channel Island Harbor (Figure 1). The required dredging is accomplished in biennial dredging cycles. Each dredging cycle has removed up to 2.0 million cubic yards of material from the Channel Islands Harbor dredge template. To avoid potential direct impacts on protected federal trust resources,

no dredging activity is conducted in the sand trap area, adjacent to Hollywood Beach, from March 1 through September 30.

By the end of each two-year dredge cycle, sand builds up in the sand trap extending the existing beach, sand buildup has narrowed the channel into Channel Islands Harbor, and the down coast beaches have lost sand. The northern end of Hueneme Beach erodes back to the revetment fronting city property. The dredging cycle is maintained at two years to provide the maximum benefit with minimum environmental impacts.

Figure 3 illustrates the dynamic nature of beachfront in the sand trap both within and between dredge cycles. Sand builds up in the off-dredge years according to littoral and cross shore deposition (yellow dashed line) and is subsequently dredged out the following year. The amount dredged out is dependent on quantity of available sand and the amount of funding designated for that year's dredge cycle.

Humans frequently recreate on the beach surrounding the action area and sometimes dogs are present. The primary constituent elements for the western snowy plover within the project area include the presence of surf-cast kelp, sparsely vegetated foredunes, interdunal flats, spits, washover areas, and intertidal flats. Currently, much of unit CA-19A is subject to beach grooming conducted by the County of Ventura Harbor District, which removes surf-cast kelp, vegetation, and re-contours foredunes on a periodic basis. Additionally, this unit is subject to disturbance from human recreational use on a regular basis. According to information provided in the critical habitat designation (70 FR 56970), the role of this unit in the conservation of the western snowy plover consists of providing wintering and nesting habitat.

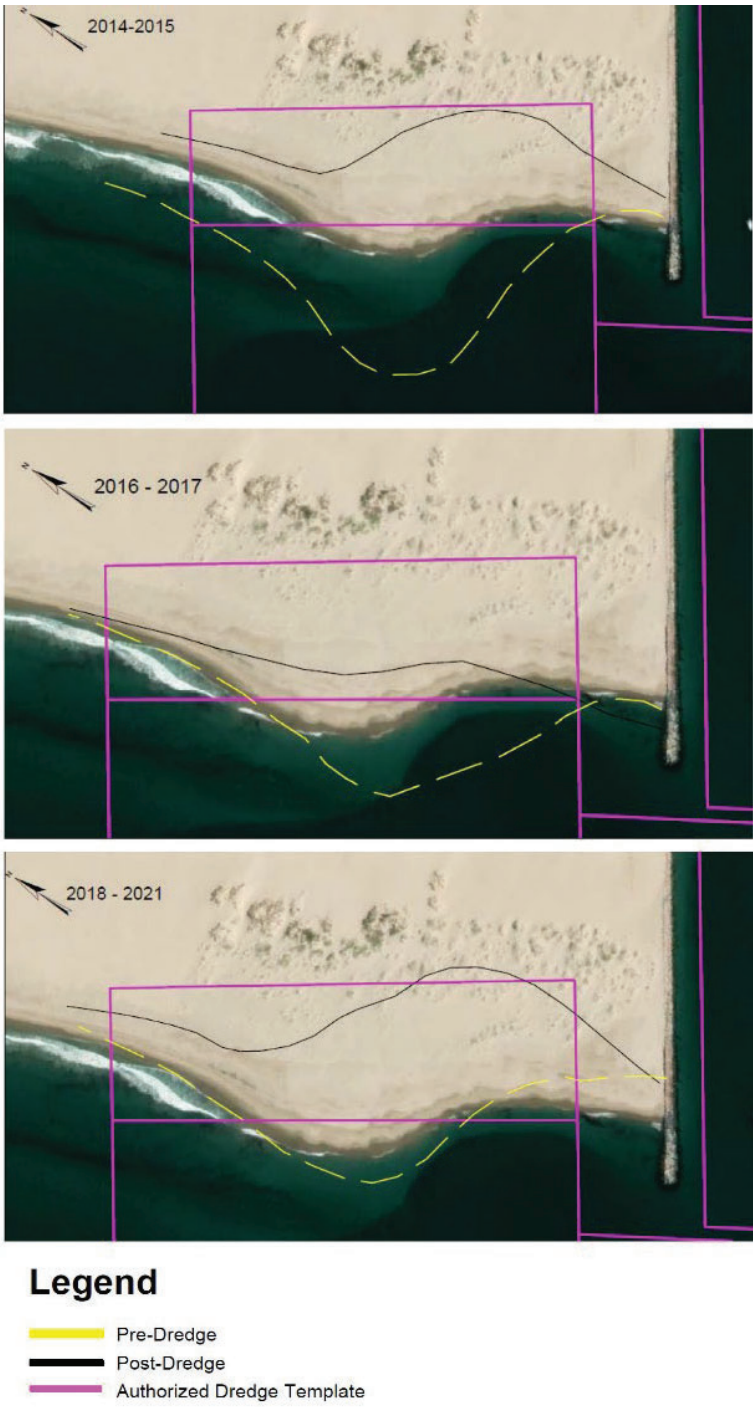


Figure 3. Aerial images of sand trap accretion and erosion including slope failure and sloughing over the last three dredge cycles, Hollywood Beach, California. Authorized dredge template is overlaid to illustrate the extent of beachfront buildup and retreat (Corps 2022).

**Condition (Status) of the Species in the Action Area**

California least tern

California least tern utilize Hollywood Beach and the component sand traps. California least tern demonstrate site fidelity to previous nesting areas and have reoccupied the sand trap in off-dredge years when the sand trap beach has built up (Figure 4). Specifically, the last years that least terns attempted to nest at Hollywood beach were 2013 and 2014, when dredging did not occur, and the sand trap beach was much larger than in dredge years. In 2013 and 2014, 209 and 120 nests were initiated, and 31 and 29 fledglings were observed in each respective year (Barringer 2013,2014). Since dredging resumed in 2015, terns have not been known to nest at Hollywood beach. Use of the site has continued but nesting has not occurred (Barringer 2021).

Recovery

The action area is identified in the recovery plan, is designated breeding habitat, and terns have historically bred on Hollywood Beach. Nests were typically discovered next to or within the action area when Corps did not dredge in the previous winter, which is inclusive of the only preferred habitat on the beach (i.e. native plants; Figure 4). Degradation of the habitat and the potential losses of nesting habitat may impede the recovery of the California least tern. The lack of nesting behavior on Hollywood Beach since 2014 is evidence of the potential impact of this project on recovery.

Western snowy plover

Weekly surveys conducted since 2003 indicate the area provides important migrating, nesting, foraging, resting and winter roosting western snowy plover habitat (Barringer 2021). Western snowy plovers are regularly observed in within and surrounding the action area (Figures 5 and 6). The number of nests initiated at Hollywood Beach was 3 to 4 times greater in 2013 and 2014 (27-30 nests) when the dredging had not occurred for 2 and 3 years respectively, and when the sand trap beach was much larger than in dredge years. When dredging resumed in 2015 nesting attempts declined (5-10 nests; Figure 7).

Recovery

The action area is in western snowy plover Recovery Unit 5 of the recovery plan and is designated breeding and over-wintering habitat. Western snowy plovers have attempted to breed on Hollywood Beach each year between 2003-2022 (Barringer 2021, p. 10, Hartley and Barringer 2022, p. 6). Nests are typically discovered next to or within the action area, which is inclusive of the only preferred habitat on the beach (i.e. native plants; Figures 5 and 6). Recent data show that an increasing number of birds are attempting to nest to the west of the action area

on unvegetated beach that lack food resources (Barringer 2021 p. 10). This may be due to reoccurring disturbances occurring next to or within the action area.

Monitoring data indicate that the area may provide important connectivity habitat between northern and southern populations of western snowy plover in October - March. Banded birds sighted in and around the action area during winter surveys primarily originated from Monterey County, Humboldt County, and Oregon state (Barringer 2021, p. 9). The continuous/repeating degradation of the habitat and the potential losses of wintering and nesting habitat may impact the recovery of the western snowy plover.

Figure 4. California least tern nest sites 2013-2021 on Hollywood Beach, California (Barringer 2020).

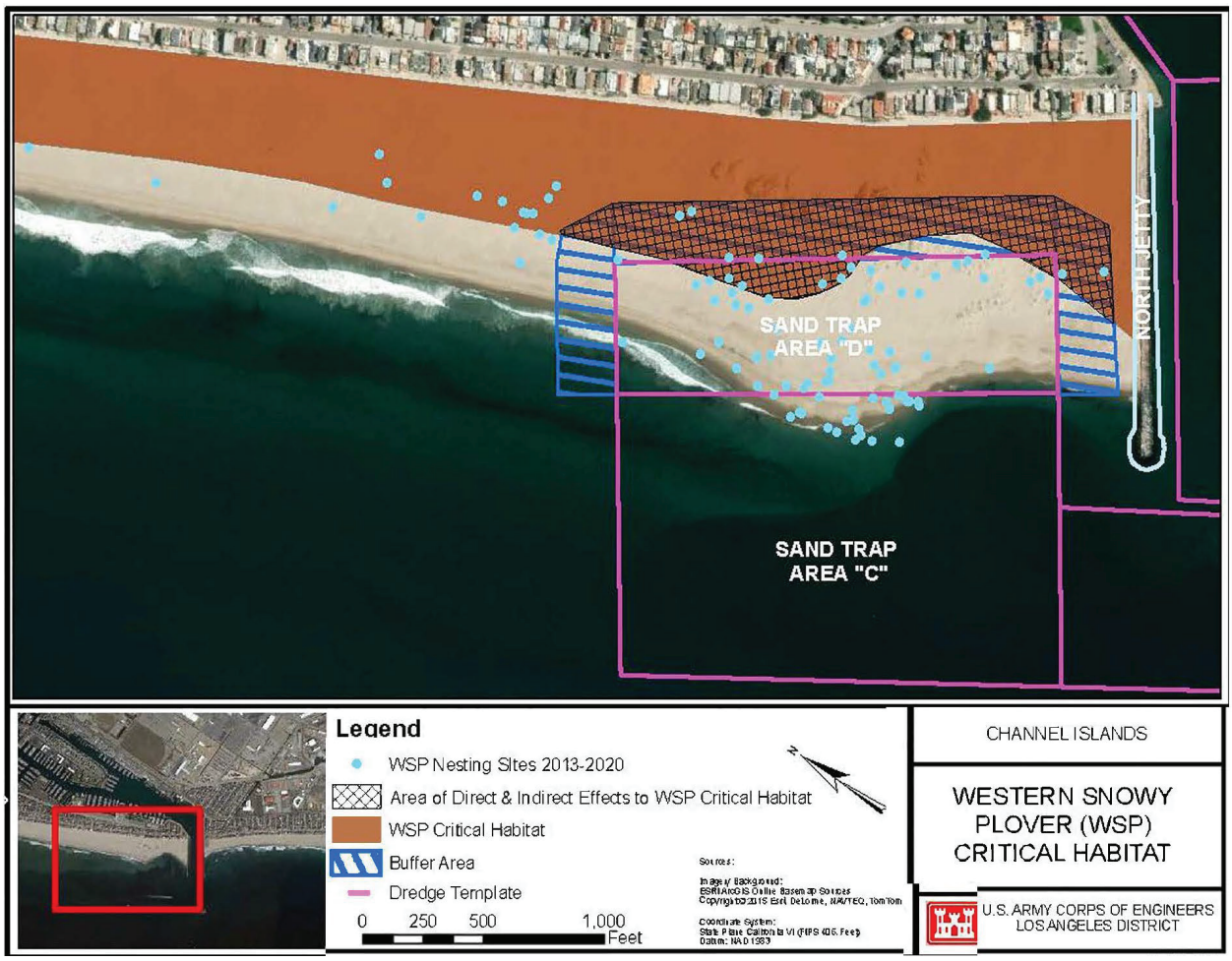


Figure 5. Map illustrating the overlap of the dredge impact area with western snowy plover critical habitat and western snowy plover nest sites from 2013-2020, Hollywood Beach, California.

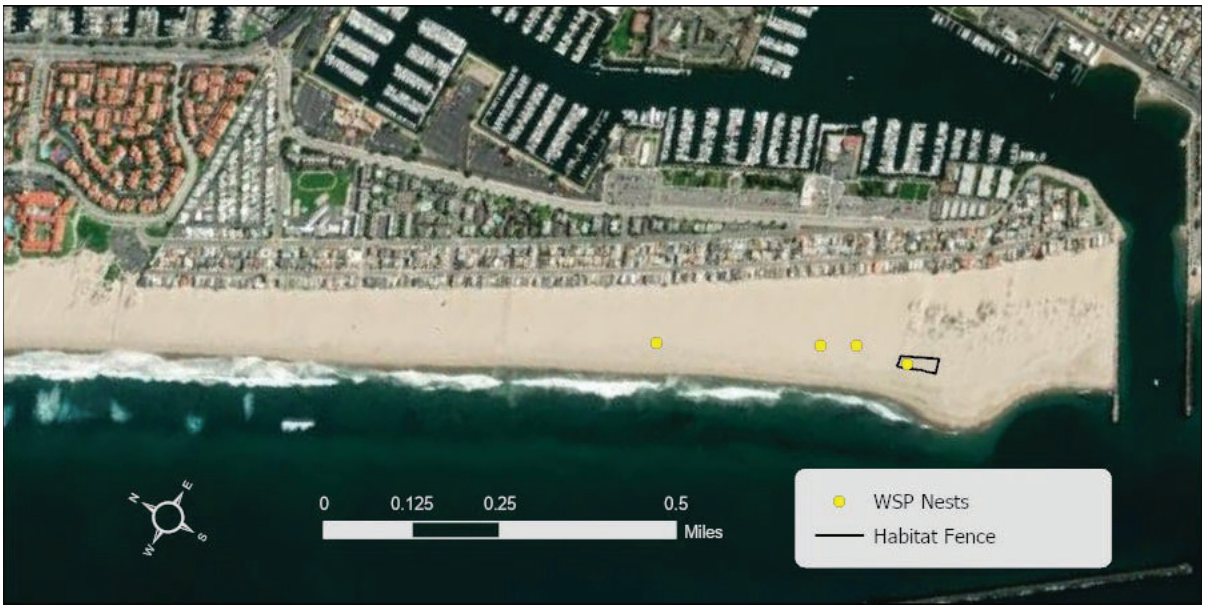


Figure 6. Map illustrating western snowy plover nest sites detected May-June 2022, Hollywood Beach, California (Hartley and Barringer 2022).

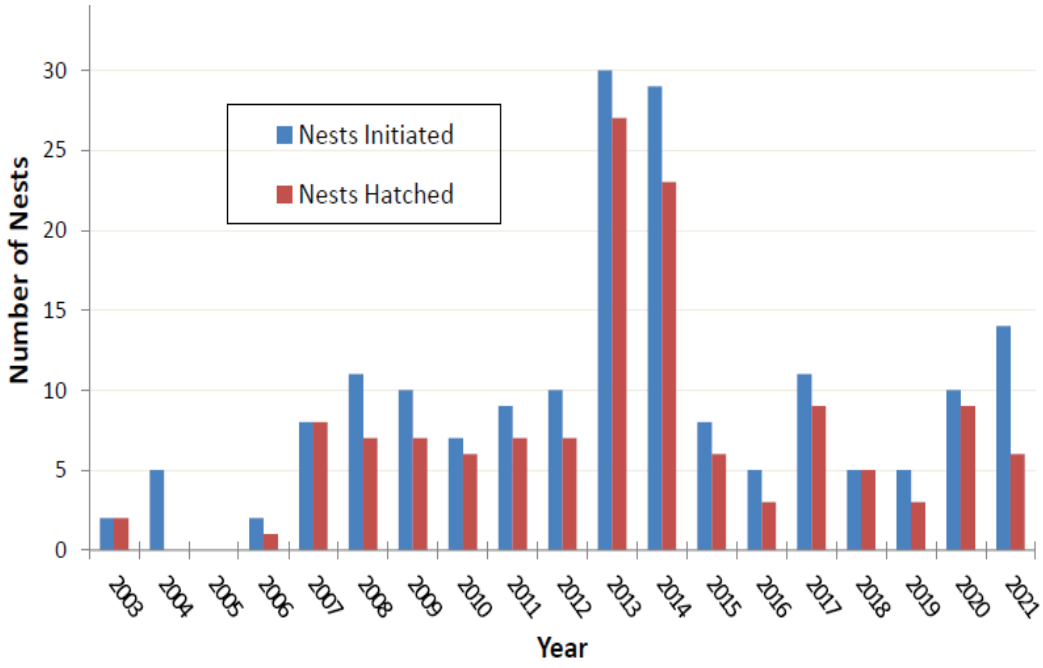


Figure 7. Hollywood Beach, California western snowy plover nest attempts and success 2003-2021 (Barringer 2021).

**Condition (Status) of Critical Habitat in the Action Area**

Portions of Hollywood Beach are designated as western snowy plover critical habitat and contain the supporting physical and biological features (PBFs) essential to western snowy plover conservation. The historical dredging activity affects critical habitat function, such that habitat quality varies depending on quantity of material dredged, prevailing cross-shore sediment transport and whether the sand trap has been dredged during the dredge cycle (Figure 3).

EFFECTS OF THE ACTION

The implementing regulations for section 7(a)(2) define effects of the action as "all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action" (50 CFR 402.02).

In conducting this analysis, we have considered factors such as previous consultations, Federal Register rules, National Environmental Policy Act documents, published scientific studies and literature, professional expertise of Service personnel, in determining whether effects are reasonably certain to occur. We have also determined that certain consequences are not caused by the proposed action, such as the increase or spread of disease, poaching, or collecting, because they are so remote in time, or geographically remote, or separated by a lengthy causal chain, so as to make those consequences not reasonably certain to occur.

**Effects of the Proposed Action on the California Least Tern**

<u>Effects in September through February</u>

California least terns are not expected to be in the action area while project activities are taking place because they are typically absent from California breeding sites between September and February.

<u>Beach Disturbance Effects</u>

The increased dredge quantity removed in this project may result in increased loss of potential breeding and roosting habitat for California least tern when they return to breeding sites in March. Specifically, additional material taken from Sand trap "D" may reduce the size of the beach more than is typically done in bi-annual dredge cycles (Figure 3).

The species exhibits high nest site fidelity and have attempted to breed in the action area in the past (Figure 4). The action area and immediate surrounding area contains the only native vegetation on Hollywood Beach and is historically the preferred nesting area. Disturbance of this area, including potential slope failure outside of the action area and resulting disturbance to native vegetation and cover, may increase predation risk, likelihood that adults choose to nest, quality of nesting sites, nest outcome and/or chick survival. If birds choose not to nest, the reproductive potential for the species in that area will be zero for that year. If adults choose to nest near the action area and outside of the area impacted by slope failures, it will place them closer to either the beach grass or the jetty. Both areas are more likely to conceal predators and increase predation risk to eggs, chick and adults could increase. This would reduce the number of California least terns in the region.

**Effects of the Proposed Action on the Western Snowy Plover**

Effects in September through February

Disturbances of the open water and beach in the action area may impact foraging and resting behaviors of western snowy plover. Disturbed foraging or resting plovers could deplete energy otherwise used to improve biological fitness (Lafferty 2001, p. 323). When beach use is high, western snowy plovers will suspend feeding and remain motionless in the roosting area. If the disturbance continues, roosting plovers become alert, begin to walk away, and supplant each other from the depressions where they sit. They may elevate their wings or bob as a sign of distress and may eventually run or take flight. If put to flight, flocks' wheel back and forth for several minutes in tight low altitude formations. After landing, they remain nervous and will take wing with little prompting (Lafferty 2001, pp. 319-322). The western snowy plover's reaction to disturbance may reduce their ability to effectively forage and maintain enough fat reserves to successfully reproduce and cause them to expend additional energy on actions besides foraging/survival.

The proposed activities such as material dredging and dune restoration may reduce reproductive success because other studies show that shorebirds may experience reduced reproductive success when disturbances increase. Lafferty (2001) studied the piping plover (which is ecologically similar to the western snowy plover) and found reduced reproductive success in areas with high human disturbance because of reduced foraging efficiency and the depletion of fat reserves (Flemming et al. 1988, p. 329). In areas where people were absent, piping plovers spent 90 percent of their active time feeding. In areas where people were common, the birds spent less than 50 percent of their active time feeding (Burger 1994). Thus, the presence of people engaging in typical activities resulted in birds expending energy in movement, flight, or vigilance, leading to reduced foraging time and depletion of energy reserves. Further, Lafferty et al. (2006; p. 2223) found that disturbance reduction increased breeding attempts in western snowy plovers. Similar effects are expected to occur in western snowy plovers because of the

increased duration of dredging activity and the proposed dune restoration effort. While these effects already occur as part of ongoing dredge activities and are not new, the increased dredge volume is expected to prolong the duration of effects, and thus increase the impacts to individual birds. Further, the proposed dune restoration would necessitate frequent presence of people at the site and a period of heavy equipment use. Any western snowy plovers present during implementation of the proposed action (including dredging, placement activities and dune restoration) are expected to display the energy intensive behaviors described above. It is also possible that western snowy plovers may be injured or killed as a result of heavy equipment used in the proposed dune restoration effort although the use of monitors at the site is intended to reduce that risk.

During the September to February period, the dredging activity will remove sand, depleting the beach and thus depleting and altering the potential foraging area for the species. While this is unlikely to reduce food availability, as the wrack will occur on the beach regardless of the dredging, there may be some effect on western snowy plover behavior as a result of this loss of beach.

March to August Effects

The increased dredge quantity removed in this project, would result in more beach removed, which would result in temporary increased loss of potential breeding habitat for western snowy plover when they return to breeding sites in March. Specifically, additional material taken from sand trap "D" may reduce the size of the beach more than is typically done in bi-annual dredge cycles (Figure 3). When dredging concludes, material from northern beaches will be naturally moved by the tides, will fill sand trap "D" over time and reconstitute the beach.

Migrating western snowy plover must endure long flight distances and conditions between their wintering and breeding areas and are physiologically stressed when they arrive at their breeding areas. Disturbances at breeding areas from the construction vehicles and workers may not allow birds to rest and recover sufficiently to complete their reproductive cycle. For example, Guglielmo et al. (2001) found that migrating western sandpipers (*Calidris mauri*) frequently do not gain mass in the first days after arrival at breeding areas because they expend significant energy locating feeding areas that are safe and resource-rich. Birds that forage slowly or ineffectively may not build the requisite fat reserves that are critical to migrants with depleted survival and reproductive capabilities (Flemming et al. 1988, p. 329). Lafferty (2006, p. 2223) found that disturbance protection improves breeding habitat suitability, so conversely, the disturbances in the action area will likely degrade breeding habitat suitability.

The species exhibits high nest site fidelity (Patton and Edwards 1996) and have attempted to breed in the action area in the past (Figures 5 and 6). The action area and immediate surrounding area contains the only native vegetation on Hollywood Beach and is historically the preferred

nesting area. Disturbance of this area could include potential slope failure because of increased dredging, which may occur outside of the action area (Figure 1). The resulting disturbance to native vegetation may decrease food availability, the quality of the nesting site, nest outcome and/or chick survival. Alternatively, birds may choose to nest further from native vegetation to avoid high density nesting conspecifics in historical nesting areas, but may unintentionally place nests too far from the food sources required by chicks (i.e. insects found in native vegetation). Nests placed to avoid the action area could lead to increased chick mortality due to reduce food availability near to the nest, energy expenditures in locating food away from the nest, and risk of trampling by people when traveling from the nest to food (Barringer 2021).

**Effects on Recovery**

California Least Tern

The California least tern recovery plan (Service 1985) states that habitat loss and disturbances on California beaches is the largest threat to the species. To reach recovery, suitable habitat of sufficient size must be available for nesting purposes; foraging, roosting and wintering habitat must be preserved and properly managed. Recovery actions proposed in the action area will include actions that would reduce disturbances to nesting habitat such as symbolic fencing, increased suitable nesting and foraging habitat area such as the proposed dune restoration effort, and reduced predation on adults and chicks such as the use of predator exclosures around nests.

The proposed dredging action will physically reduce the area of available habitat for nesting and foraging, increasing competition for high-quality nesting sites at Hollywood Beach. Depleting nesting areas tend to reduce the species' chances of recovery.

Western Snowy Plover

The western snowy plover recovery plan (Service 2007) states that habitat degradation caused by human disturbances and expanding predator populations have resulted in a decline in active nesting areas and in the size of the breeding and wintering populations. To reach recovery, populations must reach an average of 3,000 breeding adults for 10 years, a yearly average productivity of at least one fledged chick per male has been maintained in each recovery unit in the last 5 years, and mechanisms have been developed and implemented to assure long-term protection and management of breeding, wintering, and migration areas to maintain the subpopulation sizes and average productivity described above. Recovery actions proposed in the action area will include actions that would reduce disturbances to nesting habitat such as symbolic fencing, increased suitable nesting and foraging habitat area such as the proposed dune restoration effort, and reduced predation on adults and chicks such as the use of predator exclosures around nests.

The proposed action increases will physically reduce the area of available habitat for winter nesting, foraging, and resting. This will increase competition for high-quality nesting sites at Hollywood Beach and may reduce nesting and fledging success and thus population size. Depleting these critical resources will tend to reduce the species' chances of recovery.

**Effects of the Proposed Action on Critical Habitat of Western Snowy Plover**

The proposed action will temporarily render approximately up to 13.47 out of 672 acres in unit CA 38 of western snowy plover critical habitat unusable by the species by removing the PBFs. The additional dredging of the sand trap area will remove additional habitat that includes surf-cast kelp, sparsely vegetated foredunes, an interdunal flat, a washover area, and intertidal flats. In off-dredge years, the sand trap accretes and builds beachfront and a PBFs that were previously removed during dredging return to the action area. The additional dredge quantity of 500,000 cubic yards on top of the historical 2,000,000 cubic yards is expected to increase the damage to critical habitat above what is usually observed in dredge years. This damage may be more extensive in scale and impact native plants not typically impacted by dredging. The native plants may not recover to their historic status before dredging occurs again, which may degrade the historic damage and recovery cycle established at the site.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. We do not consider future Federal actions that are unrelated to the proposed action in this section because they require separate consultation pursuant to section 7 of the Act.

Recreational activities are likely to frequently occur in the action area. The presence of humans and canines can have negative impacts on shorebird abundance likely because those birds that remain must spend more energy on vigilance and escape at the expense of foraging and rest (Lafferty 2001, p. 319). These recreational activities are likely to decrease shorebird abundance and nesting success either directly (via crushing or death of birds or eggs) or indirectly (via disturbance).

CONCLUSION

The regulatory definition of "to jeopardize the continued existence of the species" focuses on assessing the effects of the proposed action on the reproduction, numbers, and distribution, and their effect on the survival and recovery of the species being considered in the biological opinion. For that reason, we have used those aspects of the California least tern and western snowy plover statuses as the basis to assess the overall effect of the proposed action on the species.

**California Least Tern**

Reproduction

Though adverse effects are likely, we anticipate project-related adverse effects to nesting California least terns would be minimal and temporary, with pre-project conditions returning in 2024 or 2025. We expect that the proposed action would not appreciably reduce the reproductive capacity of the California least tern in Ventura County or rangewide.

Numbers

The proposed activities have a potential to contribute to the loss of individual California least tern eggs, chicks, or adults during the breeding season; however, based on results of past reporting, this loss would represent a very small portion of California least tern numbers over time. The California least tern population in the action area accounts for a small percentage of nesting adults in the range. We expect that the proposed action would not appreciably reduce the numbers of California least terns rangewide.

Distribution

This project will not appreciably change breeding area locations. There will be no change in distribution of the species as a result of this action.

Recovery

Though Hollywood Beach has not achieved its recovery goals, and has not recorded breeding terns in recent years, the rangewide numbers of California least terns have exceeded recovery goals of 1.0 fledgling per breeding pair for an overall population increase.

We expect this action may preclude successful breeding within the action area in 2023. However, consequences of the proposed action would not appreciably interfere with recovery goals or overall recovery of the California least tern because the species has not nested in the area in recent years under existing conditions.

After reviewing the current status of the California least tern, the environmental baseline for the action area, the effects of the proposed increased dredging quantity and the cumulative effects, it is the Service's biological opinion that the increased dredging quantity as proposed, is not likely to jeopardize the continued existence of the California least tern because:

1) The project would have a locally moderate, but rangewide minimal effect on reproduction of the species but would not appreciably reduce reproduction of the species

rangewide.
2) The project would cause a low decrease in the number of individuals.
3) The project would not reduce the species' distribution rangewide.
4) The project would not cause any effects that would preclude our ability to recover the species.

**Western Snowy Plover**

Reproduction

Though adverse effects are likely, we anticipate project-related adverse effects to nesting western snowy plovers would be temporary and moderate, with pre-project conditions returning 2024 or 2025. We expect that the proposed action would not appreciably reduce the reproductive capacity of the western snowy plover in Ventura County or rangewide.

Numbers

The proposed activities have a potential to contribute to the loss of individual western snowy plover eggs, chicks, or adults during the breeding season, but it is unknown how the reduction in wintering and breeding habitat will impact individual survival. When workers are present on the beach, the birds might flush more often, and this could lead to a reduction in fitness via increase in energy expenditure. However, we anticipate project-related adverse effects would be temporary and consequences to western snowy plovers due to the proposed action will be small relative to other impacts experienced in the region due to predation and disturbance.

RU5 comprises nearly 40 percent of breeding western snowy plovers rangewide, and we expect these sites within RU5 will continue to be managed and monitored. We expect that effects of the proposed action would not appreciably reduce the numbers of western snowy plovers rangewide.

Distribution

We expect that effects of the proposed action may have a low and temporary effect on the distribution of western snowy plovers, and therefore the proposed action would not appreciably reduce the distribution of western snowy plovers rangewide.

Recovery

Hollywood Beach represents a small portion of expected breeding pairs in the RU5 region (Service 2007). A reduction of successfully fledged chicks in this area, and reduced fitness in adult birds as a consequence of the proposed action, if temporary, would not appreciably interfere with recovery goals or overall recovery of the western snowy plover.

After reviewing the current status of the western snowy plover, the environmental baseline for the action area, the effects of the proposed increased dredging quantity and the cumulative effects, it is the Service's biological opinion that the increased dredging quantity as proposed, is not likely to jeopardize the continued existence of the western snowy plover because:

1) The project would have a locally moderate, but rangewide low effect on reproduction of the species but would not appreciably reduce reproduction of the species rangewide.
2) The project would cause a low decrease in the number of individuals.
3) The project would not reduce the species' distribution rangewide.
4) The project would not cause any effects that would preclude our ability to recover the species.

**Western Snowy Plover Critical Habitat**

The regulatory definition of "adverse modification" focuses on assessing if the proposed action will result in alterations that appreciably reduce the value of critical habitat for the conservation of a listed species. This includes assessing the impacts of the proposed action on the physical or biological features essential to the conservation of a listed species or assessing if those alterations preclude or significantly delay development of such features. For that reason, we have used those aspects of the western snowy plover critical habitat status as the basis to assess the overall effect of the proposed action on the critical habitat.

The proposed action will reduce the quality and quantity of the various physical and biological features (surf-cast kelp, sparsely vegetated foredunes, interdunal flats, spits, washover areas, and intertidal flats) required by western snowy plover within 13.47 acres of designated critical habitat. The reductions will likely be temporary, because 1) the open water disturbance is a single occurrence; and 2) sand tends to backfill the Sand Trap D area where beach, habitat and invertebrate prey currently occur. However, data pictured in Figure 3 pictures how the beach recovers after the historical dredging of 2,000,000 cubic yards. The additional dredge quantity of 500,000 cubic yards on top of the historical dredging may increase the damage to critical habitat, the time to recover PBFs in the critical habitat, and the likelihood of complete recovery of PBFs in the action area.

After reviewing the current status of the critical habitat of western snowy plover, the environmental baseline of critical habitat for the action area, the effects of the proposed increased dredge on critical habitat, and the cumulative effects, it is the Service's biological opinion that dredging increased quantity as proposed, is not likely to result in the destruction or adverse modification of critical habitat of the western snowy plover because:

1. The project would have a moderate effect on the various physical and biological features on Hollywood Beach, which are areas below heavily vegetated areas above the daily high

tides that include essential food sources and nesting beach habitat and native plant and invertebrate food resources.

2. The project would have a low effect on the conservation value and function of critical habitat, due to the likely recovery of the nesting habitat and shoreline habitat areas for feeding with no or very sparse vegetation that are between the annual low tide or low water flow and annual high tide or high water flow.

## INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened wildlife species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm in the definition of "take" in the Act means an act which actually kills or injures wildlife. Such [an] act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR 17.3). Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

### AMOUNT OR EXTENT OF TAKE

We anticipate that some California least terns and western snowy plovers could be taken as a result of the proposed action. We expect the incidental take to be in the form of harm or kill.

We cannot quantify the precise number of California least terns and western snowy plovers that may be taken as a result of the action that the Corps has proposed because California least terns and western snowy plovers move over time; for example, animals may have entered or departed the action area since the time of pre-construction surveys. Other individuals may not be detected due to their cryptic nature, small size, and low mobility. In addition, finding a dead or injured California least tern or western snowy plover, particularly a chick once mobile, would be difficult or unlikely. The protective measures proposed by Corps are likely to prevent mortality or injury of most individuals. However, the activities are more likely to disturb and move the animals out of the action area where they cannot be detected by monitors.

Consequently, we are unable to reasonably anticipate the actual number of California least terns and western snowy plovers that would be taken by the proposed action; however, we must provide a level at which formal consultation would have to be reinitiated. The Environmental Baseline and Effects Analysis sections of this biological opinion indicate that adverse effects to California least terns and western snowy plovers would likely be low given the nature of the

proposed activities, and we, therefore, anticipate that take of California least terns and western snowy plovers would also be low. We also recognize that for every California least tern or western snowy plover found dead or injured, other individuals may be killed or injured that are not detected, so when we determine an appropriate take level we are anticipating that the actual take would be higher and we set the number below that level.

Therefore, if three California least tern of any life stage (egg, chick, or adult), or if three western snowy plovers of any life stage (egg, chick, or adult) are found dead or wounded, the Corps must contact our office immediately to reinitiate formal consultation. Project activities that are likely to cause additional take should cease as the exemption provided pursuant to section 7(o)(2) may lapse and any further take could be a violation of section 4(d) or 9.

REASONABLE AND PRUDENT MEASURES

The measure described below is non-discretionary, and must be undertaken by the Corps as appropriate, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the term and condition of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Corps must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR 402.14(i)(3)].

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize the impacts of the incidental take of California least tern and western snowy plover:

> The 13.47-acre dune restoration activities will be timely and benefit the California least tern and western snowy plover.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Corps must comply with the following term and condition, which implements the reasonable and prudent measure described above and outline reporting and monitoring requirements. This term and condition is non-discretionary.

> The Corps will present a draft site selection and habitat restoration plan to the Service within 1 year of the project start date. Within 1 year of the Service’s acceptance and signature on the final plan, the Corps will complete the restoration of the selected area.

REPORTING REQUIREMENTS

Pursuant to 50 CFR 402.14(i)(3), the Corps must report the progress of the action and its impact on the species to the Service as specified in this incidental take statement.

The Corps must submit a final project report to the Service's Ventura Fish and Wildlife Office via electronic mail within 90 days following completion of the proposed project. The report should be sent to fw8venturasection7@fws.gov and must describe all activities that were conducted under this biological opinion, including activities and conservation measures that were described in the proposed action and required under the term and condition, and discuss any problems that were encountered in implementing conservation measures or term and condition and any other pertinent information. The report must also include the number of California least terns and western snowy plovers observed, and the number killed or injured during project activities, if any, and the dates and times of capture, mortality, or injury.

Additionally, the Corps must submit monitoring reports at the end of the California least tern and western snowy plover breeding seasons by October 30 of 2023 and 2024, and for 5 years post-dune restoration completion. The reports will contain weekly observed abundance estimates, mortality occurrences, nest location (latitude and longitude) and nest fate during the breeding season (March – August), and a map of exclusion fencing and predator fencing placed during nesting season for California least tern and western snowy plover. Annual monitoring reports of the dune restoration will include species of non-native plants removed each year and their approximate area pre-removal, a description of observed native plant mortality and actions taken to optimize native plant coverage for use by California least tern and western snowy plover.

DISPOSITION OF DEAD OR INJURED SPECIMENS

As part of this incidental take statement and pursuant to 50 CFR 402.14(i)(1)(v), upon locating a dead or injured California least tern or western snowy plover, initial notification within 3 working days of its finding must be made by telephone and in writing to the Ventura Fish and Wildlife Office (805-644-1766). The report must include the date, time, location of the carcass, a photograph, cause of death or injury, if known, and any other pertinent information.

The Corps must take care in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state. The Corps must transport injured animals to a qualified veterinarian. Should any treated California least tern and western snowy plover survive, the Corps must contact the Service regarding the final disposition of the animal(s).

The remains of California least terns or western snowy plovers must be placed with educational or research institutions holding the appropriate State and Federal permits, such as

the Western Foundation of Vertebrate Zoology (Contact: Linnea S. Hall,Ph.D., Executive Director, Western Foundation of Vertebrate Zoology, 439 Calle San Pablo Camarillo, CA 93012, (805) 388-9944) or Santa Barbara Natural History Museum (Contact: PaulCollins, Santa Barbara Natural History Museum, Vertebrate Zoology Department, 2559 Puesta Del Sol, Santa Barbara, California 93460, (805) 682-4711, extension 321).

REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in the request. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, the exemption issued pursuant to section 7(o)(2) may have lapsed and any further take could be a violation of section 4(d) or 9. Consequently, we recommend that any operations causing such take cease pending reinitiation.

If you have any questions about this biological opinion, please contact Christina Boser of my staff at 805-677-3342, or by electronic mail at Christina_Boser@fws.gov.

Sincerely,

STEPHEN HENRY Digitally signed by STEPHEN HENRY
Date: 2022.12.15 11:49:15 -08'00'

Stephen P. Henry
Field Supervisor

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| | |
|---|---|
| **From:** | Cisneros, Daniel |
| **To:** | Martinez-Takeshita, Natalie M CIV USARMY CESPL (USA); Dellith, Chris; Boser, Christina L |
| **Subject:** | [Non-DoD Source] Re: [EXTERNAL] Channel Islands/Port Hueneme Harbors Maintenance Dredging Project BO [08EVEN00-2022-0085983-S7] |
| **Date:** | Tuesday, November 5, 2024 1:30:31 PM |
| **Attachments:** | Outlook-2nwzzetz.png |

Hi Natalie,

Thank you for reaching out. I confirm that the Ventura Fish and Wildlife Service office coordinated with the Corps on the Channel Islands/Port Hueneme Harbors Maintenance Dredging Project (project). Our coordination, as discussed on June 14, 2024, identified that the changes to the project description for the project remain consistent with our original analysis and do not alter our conclusion for activities related to the federally endangered California least tern (*Sterna antillarum browni*) and the federally threatened western snowy plover (*Charadrius nivosus nivosus*) along with its critical habitat.

Please let me know if you need any further documentation or if there's anything else we can assist with.

Best regards,

Daniel

L. Daniel Cisneros
Fish & Wildlife Biologist
U.S. Fish & Wildlife Service, Ventura Field Office
2493 Portola Road, Suite B
Ventura, CA 93003
805-677-3369 (x53369)
(he/him)

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**From:** Martinez-Takeshita, Natalie M CIV USARMY CESPL (USA) <Natalie.M.Martinez-Takeshita@usace.army.mil>
**Sent:** Monday, November 4, 2024 6:41 PM
**To:** Dellith, Chris <chris_dellith@fws.gov>; Boser, Christina L <christina_boser@fws.gov>; Cisneros, Daniel <daniel_cisneros@fws.gov>
**Subject:** [EXTERNAL] Channel Islands/Port Hueneme Harbors Maintenance Dredging Project BO [08EVEN00-2022-0085983-S7]

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Hi Christie, Chris, and Daniel,

I hope you are all doing well. I apologize for not sending this email right away after our last meeting a few months ago! I know this is a little backwards since we already completed our consultation, but LA District has set a new procedure for our projects where they would like us to have an email for our records documenting that we did indeed coordinate the project and the ESA species and DCH present in the project area with USFWS. Can you please confirm that the Corps coordinated with the Ventura USFWS office regarding the Channel Islands/Port Hueneme Harbors Maintenance Dredging Project and determined in coordination with the Ventura USFWS office that the ESA listed species and DCH present within the project area were the federally endangered California least tern (*Sterna antillarum browni*) and the federally threatened western snowy plover (*Charadrius nivosus nivosus*) and its critical habitat.

Thank you,
Natalie Martinez-Takeshita
Biologist
Ecosystems Planning Section, Planning Division
Los Angeles District US Army Corps of Engineers
Office: (213) 452-3306
Natalie.M.Martinez-Takeshita@usace.army.mil

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**From:** Diel, Christopher <christopher_diel@fws.gov>
**Sent:** Friday, June 14, 2024 12:52 PM
**To:** Martinez-Takeshita, Natalie M CIV USARMY CESPL (USA) <Natalie.M.Martinez-Takeshita@usace.army.mil>
**Cc:** Boser, Christina L <christina_boser@fws.gov>; Cisneros, Daniel <daniel_cisneros@fws.gov>
**Subject:** Fw: [Non-DoD Source] RE: [EXTERNAL] Channel Islands/Port Hueneme Harbors Maintenance Dredging Project BO [08EVEN00-2022-0085983-S7]

Hi Natalie,

Thank you for sending the requested changes to your project description and conservation measures for 2022-0085983-S7. We have evaluated your recommendations and concluded that the changes are consistent with our analysis. Therefore, these changes do not alter our conclusion and we incorporate these changes to your project description and file this email with our records.

If you have any questions about this matter, feel free to contact Daniel Cisneros (cc'd) and use project number 2022-0085983-S7 for inquires related to this consultation.

Sincerely,

Christopher J. Diel
Assistant Field Supervisor

U.S. Fish & Wildlife Service, Ventura Field Office
2493 Portola Road, Suite B
Ventura, CA 93003
805/677-3366
(he/they)

Please note: The best way to reach me is through email or Chat me on Teams!

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**From:** Martinez-Takeshita, Natalie M CIV USARMY CESPL (USA) <Natalie.M.Martinez-Takeshita@usace.army.mil>
**Sent:** Monday, June 10, 2024 3:01 PM
**To:** Boser, Christina L <christina_boser@fws.gov>; Cisneros, Daniel <daniel_cisneros@fws.gov>
**Cc:** Diel, Christopher <christopher_diel@fws.gov>
**Subject:** RE: [Non-DoD Source] RE: [EXTERNAL] Channel Islands/Port Hueneme Harbors Maintenance Dredging Project BO [08EVEN00-2022-0085983-S7]

This looks perfect, thank you!

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**From:** Boser, Christina L <christina_boser@fws.gov>
**Sent:** Monday, June 10, 2024 2:43 PM
**To:** Martinez-Takeshita, Natalie M CIV USARMY CESPL (USA) <Natalie.M.Martinez-Takeshita@usace.army.mil>; Cisneros, Daniel <daniel_cisneros@fws.gov>
**Cc:** Diel, Christopher <christopher_diel@fws.gov>
**Subject:** [Non-DoD Source] RE: [EXTERNAL] Channel Islands/Port Hueneme Harbors Maintenance Dredging Project BO [08EVEN00-2022-0085983-S7]

Hi Natalie,

Thank you for sending.
Daniel's on vacation right now but I know you want to get moving on this so I've taken a quick look. I'm going to suggest a couple of changes to language. This is just what we would do to language in a project description when we're reviewing your BA and make the changes so that it's consistent with how we write BOs. Please let me know if that looks good to you and then I'll send it to Chris for his review.

Christie

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**From:** Martinez-Takeshita, Natalie M CIV USARMY CESPL (USA) <Natalie.M.Martinez-Takeshita@usace.army.mil>
**Sent:** Wednesday, May 29, 2024 5:40 PM
**To:** Boser, Christina L <christina_boser@fws.gov>; Cisneros, Daniel <daniel_cisneros@fws.gov>
**Subject:** [EXTERNAL] Channel Islands/Port Hueneme Harbors Maintenance Dredging Project BO [08EVEN00-2022-0085983-S7]

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Good Afternoon Christie and Daniel,

Formal consultation pursuant to Section 7 of the Endangered Species Act of 1973, as amended, was completed with the US Fish and Wildlife Service December 15, 2022, Biological Opinion (BO) [08EVEN00-2022-0085983-S7]. The Corps is modifying the project description to provide more clarity. The project description is modified as follows to include the following statement: *The Channel Islands/Port Hueneme Harbors Maintenance Dredging Project includes the biennial dredging cycles from 2024 to 2029, this includes a maximum biennial volume from the Channel Islands Harbor dredge template of 2.5 million cubic yards. To avoid potential impacts to protected resources, no construction/dredging activities (i.e. equipment mobilization, dredging, equipment demobilization) will be conducted within the Channel Islands Harbor and adjacent beaches (Silver Strand and Hollywood Beach), from March 1 through September 30. Biennial dredging and beach placement will occur between October 1 and February 28 to accommodate sensitive environmental windows (western snowy plover nesting season – March 1 – September 15; California least tern nesting season – April 1 to September 15; California grunion – March 1 to August 31).*

The project remains consistent with the existing analysis in the BO [08EVEN00-2022-0085983-S7] and associated Biological Assessment (USACE 2022).

Additionally, the Corps requests the existing Measures 1-8 of "Measures Intended to Avoid, Minimize or Offset Effects of the Proposed Action" found on pages 3 and 4 of the BO are replaced with the following measures from the Biological Assessment (USACE 2022), as these measures are more protective of the species.
1. The Contractor will keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters.
2. The Contractor will implement a Water Quality Monitoring Plan during dredge operations.
3. The Contractor will be required to have in place a Spill Prevention and Cleanup Plan that includes measures to prevent spills and to cleanup any spills that could occur.
4. All dredging and fill activities will remain within the boundaries specified in the plans. There will be no dumping of fill or material outside of the project area or within any adjacent aquatic community.
5. The Contractor will keep construction activities under surveillance, management, and control to minimize interference with, disturbance to, and damage of fish and wildlife.
6. The following avoidance and minimization measures will be implemented to ameliorate potential impacts from dredging and placement activities in the proposed Action Area:

    1. The limits of the dredging and placement activities will be clearly marked to prevent heavy equipment from entering areas beyond the smallest footprint needed to complete the project;
    2. Vehicles and all dredging activities will remain within the defined activity area and use only designated access points and staging areas;
    3. The work area will be kept clean to avoid attracting predators and all food and trash will be disposed of in closed containers and removed from the project site;
    4. No pets will be allowed on the construction site;

5. No dredging activities will be conducted in the sand trap area (adjacent to Hollywood Beach) during the shorebird/seabird nesting season (March 1 – September 30);
6. Prior to vehicles and equipment entering Hollywood Beach a qualified WSP monitor will survey the area. At all times a qualified WSP monitor will walk ahead of the vehicle(s) and equipment to assure that all WSPs are out of harm's way before the vehicle(s) or equipment can proceed on Hollywood Beach. Vehicles and equipment access to Hollywood Beach will be limited to safety signage and fencing installation, repairs, and removal;
7. Prior to vehicles and/or heavy equipment operation on Silver Strand Beach or Port Hueneme Naval Base SWEF Beach a qualified WSP monitor will survey the beach, the monitor will remain on site while operations involving vehicles and/or heavy equipment is occurring to ensure impacts to WSP are avoided, unless the Corps biologist in coordination with the USFWS has determined there is no risk to WSP. If WSP are present the Corps Biologist will walk in front of the vehicles and/or equipment, ensuring the path taken by vehicles/equipment is one that avoids impacts to the WSP.

7. Training will be provided to the Contractor personnel to review and ensure full understanding of all project environmental protection requirements. Training will include, but not limited to, methods of detecting and avoiding pollution, identification and avoidance measures for endangered species and marine mammals, and *Caulerpa* species identification and notification requirements.

Natalie Martinez-Takeshita
Biologist
Ecosystems Planning Section, Planning Division
Los Angeles District US Army Corps of Engineers
Office: (213) 452-3306
Natalie.M.Martinez-Takeshita@usace.army.mil

# APPENDIX E
# AIR QUALITY EMISSIONS CALCULATIONS

CORPS EXCEL SPREADSHEET CONSTRUCTION EMISSIONS CALCULATIONS

**CHANNEL ISLANDS HARBOR DREDGE TEMPLATE AREAS A B C D E & G OPERATIONS AND MAINTENANCE DREDGING HYDRAULIC PIPELINE DREDGING EQUIPMENT LIST, EMISSION FACTORS, AND ESTIMATED AIR EMISSIONS**

| | | | | mate (Approx) Engine Rated Horsepower (HP) | Approx. Engine Load Factor | | | Emission Rates | | | | | | | | | | | Notes | | Emission Rates for a Single Engine | | | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | Units | Engine Count | Kilowatt (KW) | (Hp) | Factor | | | Units | PM10 | PM2.5 | NOX | SO2 | CO | NO2 | ROG (VOC) | CO2 | CH4 | N2O | CO2e | | | Units | PM10 | PM2.5 | NOX | SOX | CO | ROG (VOC) | CO2 | CH4 | N2O | CO2e | |
| Hydraulic Dredge Main Engine | 1 | 4 | Not Applicable (NA) | 2883 | 0.45 | | | lb/hr | 0.458 | 0.408 | 16.237 | 0.016 | 3.289 | 4.9631 | 0.682 | 1706.847 | 0.069 | 0.014 | 1712.704 | 1 | | g/bhp-hr | 0.16 | 0.143 | 5.678 | 0.006 | 1.15 | 0.238 | 596.868 | 0.024 | 0.005 | 598.9 | 1 |
| Hydraulic Dredge Auxiliary Engine | 1 | 4 | Not Applicable (NA) | 410 | 0.75 | | | lb/hr | 0.7 | 0.063 | 2.193 | 0.003 | 0.55 | 0.82995 | 0.06 | 285.215 | 0.012 | 0.002 | 286.193 | 1 | | g/bhp-hr | 0.15 | 0.13 | 4.59 | 0.006 | 1.15 | 0.13 | 596.87 | 0.02 | 0 | 598.9 | 1 |
| Anchor Tender Support Boat Main Engine | 1 | 1 | Not Applicable (NA) | 1167 | 0.5 | | | lb/hr | 0.621 | 0.553 | 10.79 | 0.007 | 3.17 | 4.78353 | 0.907 | 760.559 | 0.031 | 0.006 | 763.169 | 1 | | g/bhp-hr | 0.482 | 0.429 | 8.385 | 0.006 | 2.464 | 0.705 | 591.045 | 0.024 | 0.005 | 593.1 | 1 |
| Anchor Tender Support Boat Auxiliary Engine | 1 | 1 | Not Applicable (NA) | 86 | 0.31 | | | lb/hr | 0.039 | 0.035 | 0.465 | 0.001 | 0.982 | 1.48184 | 0.064 | 34.782 | 0.001 | 0 | 34.901 | 1 | | g/bhp-hr | 0.67 | 0.6 | 7.9 | 0.006 | 4.17 | 1.09 | 591.04 | 0.02 | 0 | 593.1 | 1 |
| Pipe Tender Support Boat Main Engine | 1 | 1 | Not Applicable (NA) | 384 | 0.38 | | | lb/hr | 0.14 | 0.124 | 3.487 | 0.002 | 0.792 | 1.19513 | 0.274 | 189.982 | 0.008 | 0.002 | 190.634 | 1, 1b | | g/bhp-hr | 0.434 | 0.387 | 10.849 | 0.006 | 2.464 | 0.853 | 591.045 | 0.024 | 0.005 | 593.1 | 1, 1b |
| Pipe Tender Support Boat Auxiliary Engine | 1 | 1 | Not Applicable (NA) | 83 | 0.32 | | | lb/hr | 0.086 | 0.077 | 1.618 | 0.001 | 0.673 | 1.01556 | 0.224 | 69.404 | 0.003 | 0.001 | 69.642 | 1, 1b | | g/bhp-hr | 0.73 | 0.66 | 13.78 | 0.006 | 5.74 | 1.91 | 591.04 | 0.02 | 0 | 593.1 | 1, 1b |
| Crew Boat (Work Boat) Main Engine | 1 | 1 | Not Applicable (NA) | 384 | 0.38 | | | lb/hr | 0.072 | 0.065 | 2.115 | 0.002 | 1.685 | 2.54267 | 0.255 | 213.66 | 0.009 | 0.002 | 214.393 | 1 | | g/bhp-hr | 0.2 | 0.178 | 5.852 | 0.006 | 4.663 | 0.705 | 591.045 | 0.024 | 0.005 | 593.1 | 1 |
| Crew Boat (Work Boat) Auxiliary Engine | 1 | 1 | Not Applicable (NA) | 83 | 0.32 | | | lb/hr | 0.066 | 0.059 | 1.422 | 0.001 | 0.581 | 0.87673 | 0.134 | 106.364 | 0.004 | 0.002 | 106.729 | 1 | | g/bhp-hr | 0.37 | 0.33 | 7.9 | 0.006 | 3.23 | 0.75 | 591.04 | 0.02 | 0 | 593.1 | 1 |
| Tug Boat Main Engine | 2 | 1 | Not Applicable (NA) | 1167 | 0.5 | | | lb/hr | 0.621 | 0.553 | 10.79 | 0.007 | 3.17 | 4.78353 | 0.907 | 760.559 | 0.031 | 0.006 | 763.169 | 1 | | g/bhp-hr | 0.482 | 0.429 | 8.385 | 0.006 | 2.464 | 0.705 | 591.045 | 0.024 | 0.005 | 593.1 | 1 |
| Tug Boat Auxiliary Engine | 2 | 1 | Not Applicable (NA) | 86 | 0.31 | | | lb/hr | 0.039 | 0.035 | 0.465 | 0.001 | 0.982 | 1.48184 | 0.064 | 34.782 | 0.001 | 0 | 34.901 | 1 | | g/bhp-hr | 0.67 | 0.6 | 7.9 | 0.006 | 4.17 | 1.09 | 591.04 | 0.02 | 0 | 593.1 | 1 |
| Dozers | 5 | 1 | (NA) | 367 | 0.4 | | | | | | | | | | | | | | | 4, 7 | | | | | | | | | | | | |
| Loaders | 3 | 1 | (NA) | 84 | 0.37 | | | | | | | | | | | | | | | 4, 7 | | | | | | | | | | | | 4, 7,8 |

| **DAILY EMISSIONS (LBS/DAY)** | | | | | Load | Hours per | HP-HR per Day w/ LF | Kw-HR per Day w/ LF | PM10 | PM2.5 | NOX | SOX | CO | NO2 | ROG (VOC) | CO2 | CH4 | N2O | CO2e | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | Units | Engine Count | (kW) | (Hp) | Factor | Day | | | | | | | | | | | | | | |
| Hydraulic Dredge Main Engine | 1 | 4 | Not Applicable (NA) | 2883 | 0.45 | 24 | 5189.4 | | 5.247 | 4.674 | 186.009 | 0.183 | 37.678 | 56.8554 | 7.813 | 19553.006 | 0.790 | 0.160 | 19620.102 | 1,2, 5 |
| Hydraulic Dredge Auxiliary Engine | 1 | 4 | Not Applicable (NA) | 410 | 0.75 | 24 | 1230 | | 1.901 | 0.171 | 5.955 | 0.008 | 1.493 | 2.25351 | 0.163 | 774.425 | 0.033 | 0.005 | 777.080 | 1,2, 5 |
| Anchor Tender Support Boat Main Engine | 1 | 1 | Not Applicable (NA) | 1167 | 0.5 | 6 | 145.875 | | 0.200 | 0.178 | 3.475 | 0.002 | 1.021 | 1.54039 | 0.292 | 244.915 | 0.010 | 0.002 | 245.756 | 1,2, 6 |
| Anchor Tender Support Boat Auxiliary Engine | 1 | 1 | Not Applicable (NA) | 86 | 0.31 | 6 | 6.665 | | 0.001 | 0.001 | 0.007 | 0.000 | 0.014 | 0.0218 | 0.001 | 0.512 | 0.000 | 0.000 | 0.513 | 1,2, 6 |
| Pipe Tender Support Boat Main Engine | 1 | 1 | Not Applicable (NA) | 384 | 0.38 | 6 | 36.48 | | 0.011 | 0.010 | 0.281 | 0.000 | 0.064 | 0.09624 | 0.022 | 15.299 | 0.001 | 0.000 | 15.352 | 1,2, 6 |
| Pipe Tender Support Boat Auxiliary Engine | 1 | 1 | Not Applicable (NA) | 83 | 0.32 | 6 | 6.64 | | 0.001 | 0.001 | 0.024 | 0.000 | 0.009 | 0.01345 | 0.003 | 1.017 | 0.000 | 0.000 | 1.021 | 1,2,6 |
| Crew Boat (Work Boat) Main Engine | 1 | 1 | Not Applicable (NA) | 384 | 0.38 | 6 | 36.48 | | 0.050 | 0.045 | 0.869 | 0.000 | 0.042 | 0.06336 | 0.073 | 61.248 | 0.002 | 0.000 | 61.458 | 1,2,6 |
| Crew Boat (Work Boat) Auxiliary Engine | 1 | 1 | Not Applicable (NA) | 83 | 0.32 | 6 | 6.64 | | 0.001 | 0.001 | 0.021 | 0.000 | 0.000 | 0.013 | 0.002 | 1.559 | 0.000 | 0.000 | 1.564 | 1,2,6 |
| Tug Boat Main Engine | 2 | 1 | Not Applicable (NA) | 1167 | 0.5 | 6 | 291.75 | | 0.800 | 0.712 | 13.898 | 0.009 | 4.083 | 6.16157 | 1.168 | 979.660 | 0.040 | 0.008 | 983.022 | 1,2, 6 |
| Tug Boat Auxiliary Engine | 2 | 1 | Not Applicable (NA) | 86 | 0.31 | 6 | 13.33 | | 0.002 | 0.002 | 0.027 | 0.000 | 0.058 | 0.08721 | 0.004 | 2.047 | 0.000 | 0.000 | 2.054 | 1,2, 6 |
| Dozers | 5 | 1 | Not Applicable (NA) | 367 | 0.4 | 2 | 61.1667 | | 0.719 | 0.663 | 16.313 | 0.025 | 14.250 | 21.503 | 1.681 | 2425.000 | 0.100 | 0.025 | 2433.750 | 4,7 |
| Loaders | 3 | 1 | (NA) | 84 | 0.37 | 2 | 7.77 | | 0.431 | 0.398 | 9.788 | 0.015 | 8.550 | 12.902 | 1.009 | 1455.000 | 0.060 | 0.015 | 1460.250 | 4, 7 |
| **Daily Emissions w/ diesel dredge equipment (lbs/day)** | | | | | | | | | **8.521** | **6.238** | **215.362** | **0.221** | **61.208** | **92.375** | **11.130** | **23217.457** | **0.943** | **0.197** | **23297.749** | |

| **ANNUAL EMISSIONS (TONS/YEAR)** | | | | | | Load | Hours per | HP-HR per Day w/ LF | Kw-HR per Day w/ LF | PM10 | PM2.5 | NOX | SOX | CO | NO2 | ROG (VOC) | CO2 | CH4 | N2O | CO2e | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | Days/Year | Units | Engine Count | (Hp) | Factor | Day | | | | | | | | | | | | | | | |
| Hydraulic Dredge Main Engine | 150 | 1 | 4 | | | | | | | 0.3571 | 0.3181 | 12.659 | 0.0125 | 2.5643 | 3.86947 | 0.53172 | 1330.73999 | 0.0538 | 0.0109 | 1335.3064 | 1,3, 5, 8 |
| Hydraulic Dredge Auxiliary Engine | 150 | 1 | 4 | | | | | | | 0.1294 | 0.0116 | 0.4053 | 0.0006 | 0.1016 | 0.15337 | 0.01109 | 52.7058644 | 0.0022 | 0.0004 | 52.886592 | 1,3, 5,8 |
| Anchor Tender Support Boat Main Engine | 150 | 1 | 1 | | | | | | | 0.0136 | 0.0121 | 0.2365 | 0.0002 | 0.0695 | 0.10484 | 0.01988 | 16.668 | 0.0007 | 0.0001 | 16.725652 | 1,3, 6,8 |
| Anchor Tender Support Boat Auxiliary Engine | 150 | 1 | 1 | | | | | | | 4E-05 | 4E-05 | 0.0005 | 1E-06 | 0.001 | 0.00148 | 6.4E-05 | 0.035 | 1E-06 | 0 | 0.0349478 | 1,3, 6, 8 |
| Pipe Tender Support Boat Main Engine | 150 | 1 | 1 | | | | | | | 0.0008 | 0.0007 | 0.0191 | 1E-05 | 0.0043 | 0.00655 | 0.0015 | 1.041 | 4E-05 | 1E-05 | 1.0448084 | 1,3, 6, 8 |
| Pipe Tender Support Boat Auxiliary Engine | 150 | 1 | 1 | | | | | | | 9E-05 | 8E-05 | 0.0016 | 1E-06 | 0.0006 | 0.00092 | 0.00022 | 0.069 | 3E-06 | 1E-06 | 0.0694738 | 1,3,6, 8 |
| Crew Boat (Work Boat) Main Engine | 150 | 1 | 1 | | | | | | | 0.0034 | 0.003 | 0.0591 | 4E-07 | 0.0029 | 0.00431 | 0.00497 | 4.168 | 0.0002 | 3E-05 | 4.1827029 | 1,3, 6, 8 |
| Crew Boat (Work Boat) Auxiliary Engine | 150 | 1 | 1 | | | | | | | 7E-05 | 6E-05 | 0.0014 | 1E-06 | 0 | 0 | 0.00013 | 0.106 | 4E-06 | 2E-06 | 0.1064712 | 1,3, 6, 8 |
| Tug Boat Main Engine | 150 | 2 | 1 | | | | | | | 0.0544 | 0.0485 | 0.9459 | 0.0006 | 0.2779 | 0.41934 | 0.07951 | 66.674 | 0.0027 | 0.0005 | 66.902608 | 1,3, 6, 8 |
| Tug Boat Auxiliary Engine | 150 | 2 | 1 | | | | | | | 0.0002 | 0.0001 | 0.0019 | 4E-06 | 0.0039 | 0.00594 | 0.00026 | 0.139 | 4E-06 | 0 | 0.1397911 | 1,3, 6, 8 |
| Dozers | 150 | 5 | 1 | | | | | | | 0.031 | 0.025 | 0.625 | 0.006 | 0.544 | 0.821 | 0.063 | 83.063 | 0.006 | 0.006 | 83.313 | 4, 7, 8 |
| Loaders | 150 | 3 | 1 | | | | | | | 0.019 | 0.015 | 0.375 | 0.004 | 0.326 | 0.492 | 0.038 | 49.838 | 0.004 | 0.004 | 49.988 | 4, 7, 8 |
| **Annual Emissions w/ diesel dredge equipment (ton/year)** | | | | | | | | | | **0.554** | **0.395** | **13.951** | **0.022** | **3.545** | **5.350** | **0.682** | **1460.775** | **0.063** | **0.020** | **1465.736** | 9 |
| **Applicable General Conformity Rates (tons/year)** | | | | | | | | | | **NA** | **NA** | **50** | **NA** | **NA** | **NA** | **50** | | | | | |

Notes:
1. Vessel/Engine Information, Engine Rated Power [Horsepower (hp)]; Engine Load Factor; Emissions Rates (lb/hr) accessed from Sacramento Metropolitan Air Quality Management District (SMAQMD) Harbor craft (HC), Dredge and Barge Emission Factor Calculator [2017, 2023].
2. conversion factor pounds-grams: 453 grams/lb.
3. 1 metric ton = 2204 lbs
4. Land Based Construction Equipment: Five dozers and 3 loaders. Estimated air emissions based on CalEEMod 2022.1.1.21
5. One (1) USCAE hydraulic pipeline dredge daily operation estimated 24 hours a day. Hydraulic pipeline dredge has four main engines and four auxiliary engines.
6. One (1) anchor tender boat, one (1) pipe tender boat, one (1) crew boat, and two (2) tug boats, each piece of equipment daily operation estimated 6 hours a day
7. Land Based Vehicle and Construction Equipment: Five dozers and 3 loaders, each piece of equipment estimated to operate approximately 2 hours a day, and estimated air emissions based on CalEEMod 2022.1.1.21 . Construction equipment: 5 dozers and 3 loaders typically spread sand on the beach placement area approximately 2 hours a day for each dozer and loader per day. Dozer and loader emissions were calculated using CalEEMod 2022.1.1.21.
8. Proposed Dredging Project Duration is approximately 150 days once every two years (biennnial).
9. Estimated air emissions would typically be the similar during the years when dredging occurs once every two years (bieenial).

**CHANNEL ISLANDS HARBOR CLAMSHELL AREA A DREDGING EQUIPMENT LIST, EMISSION FACTORS, AND ESTIMATED AIR EMISSIONS**

| | Equipment | | | mate (Approx) Engine Rated Horsepower (HP) | Approx. Engine Load Factor | | Emission Rates | | | | | | | | | | | Notes | | Emission Rates for a Single Engine | | | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | Units | Engine Count | Kilowatt (KW) | (Hp) | Factor | | | Units | PM10 | PM2.5 | NOx | SOX | CO | NO2 | ROG | CO2 | CH4 | N2O | CO2e | | | Units | PM10 | PM2.5 | NOX | SOX | CO | ROG | CO2 | CH4 | N2O | CO2e | |
| Clamshell Dredge Main Engine | 1 | 2 | Not Applicable (NA) | 2883 | 0.45 | | | lb/hr | 0.458 | 0.408 | 16.237 | 0.016 | 3.289 | 4.9631 | 0.682 | 1706.847 | 0.069 | 0.014 | 1712.704 | 1 | | g/bhp-hr | 0.16 | 0.143 | 5.678 | 0.006 | 1.15 | 0.238 | 596.868 | 0.024 | 0.005 | 598.9 | 1 |
| Clamshell Dredge Auxiliary Engine | 1 | 2 | Not Applicable (NA) | 410 | 0.75 | | | lb/hr | 0.27 | 0.241 | 9.671 | 0.008 | 1.551 | 2.34046 | 0.542 | 805.118 | 0.033 | 0.007 | 807.881 | 1 | | g/bhp-hr | 0.2 | 0.18 | 7.17 | 0.006 | 1.15 | 0.4 | 596.87 | 0.02 | 0 | 598.9 | 1 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Scow Barge Main Engine | 1 | 2 | Not Applicable (NA) | 2883 | 0.45 | | | lb/hr | 0.458 | 0.408 | 16.237 | 0.016 | 3.289 | 4.9631 | 0.682 | 1706.847 | 0.069 | 0.014 | 1712.704 | 1 | | g/bhp-hr | 0.16 | 0.143 | 5.678 | 0.006 | 1.15 | 0.238 | 596.868 | 0.024 | 0.005 | 598.9 | 1 |
| Scow Barge Auxiliary Engine | 1 | 2 | Not Applicable (NA) | 410 | 0.75 | | | lb/hr | 0.27 | 0.241 | 9.671 | 0.008 | 1.551 | 2.34046 | 0.542 | 805.118 | 0.033 | 0.007 | 807.881 | 1 | | g/bhp-hr | 0.2 | 0.18 | 7.17 | 0.006 | 1.15 | 0.4 | 596.87 | 0.02 | 0 | 598.9 | 1 |
| Tug Boats Main Engine | 2 | 1 | Not Applicable (NA) | 1167 | 0.5 | | | lb/hr | 0.621 | 0.553 | 10.79 | 0.007 | 3.17 | 4.78353 | 0.907 | 760.559 | 0.031 | 0.006 | 763.169 | 1 | | g/bhp-hr | 0.482 | 0.429 | 8.385 | 0.006 | 2.464 | 0.705 | 591.045 | 0.024 | 0.005 | 593.1 | 1 |
| Tug Boats Auxiliary Engine | 2 | 1 | Not Applicable (NA) | 86 | 0.31 | | | lb/hr | 0.157 | 0.141 | 1.86 | 0.001 | 0.982 | 1.48184 | 0.256 | 139.127 | 0.006 | 0.001 | 139.605 | 1 | | g/bhp-hr | 0.67 | 0.6 | 7.9 | 0.006 | 4.17 | 1.09 | 591.04 | 0.02 | 0 | 593.1 | 1 |
| Crew Boat (Crew and Supply Boat) Main Engine | 1 | 1 | Not Applicable (NA) | 384 | 0.38 | | | lb/hr | 0.14 | 0.124 | 3.487 | 0.002 | 0.792 | 1.19513 | 0.274 | 189.982 | 0.008 | 0.002 | 190.634 | 1 | | g/bhp-hr | 0.434 | 0.387 | 10.849 | 0.006 | 2.464 | 0.853 | 591.045 | 0.024 | 0.005 | 593.1 | 1 |
| Crew Boat (Crew and Supply Boat) Auxiliary Engine | 1 | 1 | Not Applicable (NA) | 83 | 0.32 | | | lb/hr | 0.086 | 0.077 | 1.618 | 0.001 | 0.673 | 1.01556 | 0.224 | 69.404 | 0.003 | 0.001 | 69.642 | 1 | | g/bhp-hr | 0.73 | 0.66 | 13.78 | 0.006 | 5.74 | 1.91 | 591.04 | 0.02 | 0 | 593.1 | 1 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |

| **DAILY EMISSIONS (LBS/DAY)** | | | | | Load | Hours per | HP-HR per | Kw-HR per | PM10 | PM2.5 | NOx | SOX | CO | NO2 | ROG | CO2 | CH4 | N2O | CO2e | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | Units | Engine Count | (kW) | (Hp) | Factor | Day | Day w/ LF | Day w/ LF | | | | | | | | | | | | |
| Clamshell Dredge Main Engine | 1 | 2 | Not Applicable (NA) | 2883 | 0.45 | 24 | 2594.7 | | 2.623 | 2.337 | 93.003 | 0.092 | 18.839 | 28.4277 | 3.906 | 9776.503 | 0.395 | 0.080 | 9810.051 | 1,2, 4 |
| Clamshell Dredge Auxiliary Engine | 1 | 2 | Not Applicable (NA) | 410 | 0.75 | 24 | 615 | | 0.367 | 0.327 | 13.130 | 0.011 | 2.106 | 3.17744 | 0.736 | 1093.041 | 0.045 | 0.010 | 1096.792 | 1,2, 4 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Shifting Dredge Barge (Scows) Main Engine | 1 | 2 | Not Applicable (NA) | 2883 | 0.45 | 6 | 648.675 | | 0.656 | 0.584 | 23.251 | 0.023 | 4.710 | 7.10693 | 0.977 | 2444.126 | 0.099 | 0.020 | 2452.513 | 1,2,5 |
| Shifting Dredge Barge (Scows) Auxiliary Engine | 1 | 2 | Not Applicable (NA) | 410 | 0.75 | 6 | 153.75 | | 0.092 | 0.082 | 3.282 | 0.003 | 0.526 | 0.79436 | 0.184 | 273.260 | 0.011 | 0.002 | 274.198 | 1,2, 5 |
| Tug Boat Main Engine | 2 | 1 | Not Applicable (NA) | 1167 | 0.5 | 6 | 291.75 | | 0.800 | 0.712 | 13.898 | 0.009 | 4.083 | 6.16157 | 1.168 | 979.660 | 0.040 | 0.008 | 983.022 | 1,2,5 |
| Tug Boat Auxiliary Engine | 2 | 1 | Not Applicable (NA) | 86 | 0.31 | 6 | 13.33 | | 0.009 | 0.008 | 0.109 | 0.000 | 0.058 | 0.08721 | 0.015 | 8.188 | 0.000 | 0.000 | 8.216 | 1,2, 5 |
| Crew Boat (Crew and Supply Boat) Main Engine | 1 | 1 | Not Applicable (NA) | 384 | 0.38 | 6 | 36.48 | | 0.011 | 0.010 | 0.281 | 0.000 | 0.064 | 0.09624 | 0.022 | 15.299 | 0.001 | 0.000 | 15.352 | 1,2,5 |
| Crew Boat (Crew and Supply Boat) Auxiliary Engine | 1 | 1 | Not Applicable (NA) | 83 | 0.32 | 6 | 6.64 | | 0.001 | 0.001 | 0.024 | 0.000 | 0.010 | 0.01489 | 0.003 | 1.017 | 0.000 | 0.000 | 1.021 | 1,2,5 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| **Daily Emissions w/ diesel dredge equipment (lbs/day)** | | | | | | | | | **4.149** | **3.696** | **133.749** | **0.125** | **27.660** | **41.738** | **6.380** | **13277.896** | **0.538** | **0.109** | **13323.460** | |

| **ANNUAL (2024) EMISSIONS (TONS/YEAR)** | | | | | Load | Hours per | HP-HR per | Kw-HR per | PM10 | PM2.5 | NOx | SOX | CO | NO2 | ROG | CO2 | CH4 | N2O | CO2e | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | Days/Year | Units | Engine Count | (Hp) | Factor | Day | Day w/ LF | Day w/ LF | | | | | | | | | | | | |
| Clamshell Dredge Main Engine | 150 | 1 | 2 | | | | | | 0.1785 | 0.159 | 6.3296 | 0.0062 | 1.28213 | 1.93474 | 0.26586 | 665.369994 | 0.0269 | 0.0055 | 667.65319 | 1,3, 4, 6 |
| Clamshell Dredge Auxiliary Engine | 150 | 1 | 2 | | | | | | 0.0249 | 0.0223 | 0.8936 | 0.0007 | 0.14331 | 0.21625 | 0.05008 | 74.3902672 | 0.003 | 0.0006 | 74.645559 | 1,3, 4,6 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Shifting Dredge Barge (Scows) Main Engine | 150 | 1 | 2 | | | | | | 0.0446 | 0.0398 | 1.5824 | 0.0016 | 0.32053 | 0.48368 | 0.06646 | 166.342 | 0.0067 | 0.0014 | 166.9133 | 1,3, 5,6 |
| Shifting Dredge Barge (Scows) Auxiliary Engine | 150 | 1 | 2 | | | | | | 0.0062 | 0.0056 | 0.2234 | 0.0002 | 0.03583 | 0.05406 | 0.01252 | 18.598 | 0.0008 | 0.0002 | 18.66139 | 1,3, 5,6 |
| Tug Boat Main Engine | 150 | 2 | 1 | | | | | | 0.0544 | 0.0485 | 0.9459 | 0.0006 | 0.2779 | 0.41934 | 0.07951 | 66.674 | 0.0027 | 0.0005 | 66.902608 | 1,3, 5,6 |
| Tug Boat Auxiliary Engine | 150 | 2 | 1 | | | | | | 0.0006 | 0.0006 | 0.0074 | 4E-06 | 0.00393 | 0.00594 | 0.00103 | 0.557 | 2E-05 | 4E-06 | 0.5591684 | 1,3, 5,6 |
| Crew Boat (Crew and Supply Boat) Main Engine | 150 | 1 | 1 | | | | | | 0.0008 | 0.0007 | 0.0191 | 1E-05 | 0.00434 | 0.00655 | 0.0015 | 1.041 | 4E-05 | 1E-05 | 1.0448084 | 1,3, 5,6 |
| Crew Boat (Crew and Supply Boat) Auxiliary Engine | 150 | 1 | 1 | | | | | | 9E-05 | 8E-05 | 0.0016 | 1E-06 | 0.00067 | 0.00101 | 0.00022 | 0.069 | 3E-06 | 1E-06 | 0.0694738 | 1,3,5, 6 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| **Annual Emissions w/ diesel dredge equipment (ton/year )** | | | | | | | | | **0.282** | **0.252** | **9.103** | **0.009** | **1.882** | **2.841** | **0.434** | **903.668** | **0.037** | **0.007** | **906.769** | 7 |
| | | | | | | | | | | | | | | | | | | | | |
| **Applicable General Conformity Rates (tons/year)** | | | | | | | | | **NA** | **NA** | **50** | **NA** | **NA** | **NA** | **50** | | | | | |

Notes:
1. Vessel/Engine Information, Engine Rated Power [Horsepower (hp)]; Engine Load Factor; Emissions Rates (lb/hr) accessed from Sacramento Metropolitan Air Quality Management District (SMAQMD) Harbor craft, Dredge and Barge Emission Factor Calculator [2017, 2023]
2. conversion factor pounds-grams: 453 grams/lb.
3. 1 metric ton = 2204 lbs
4. One (1) Clamshell dredge daily operation estimated 24 hours a day. A Clamshell dredge typically has 2 main engines and 2 auxiliary engines.
5. One (1) scow barge, two (2) tug boat, and one (1) crew boat, each piece of equipment daily operation estimated 6 hours a day
6. Proposed Dredging Project Duration is approximately 150 days once every two years (biennial).
7. Estimated air emissions would be typically similar during the years when dredging occurs once every two years (biennial).

**PORT HUENEME HARBOR DREDGE TEMPLATE OPERATIONS AND MAINTENANCE DREDGING HYDRAULIC PIPELINE DREDGING EQUIPMENT LIST, EMISSION FACTORS, AND ESTIMATED AIR EMISSIONS**

| | Equipment | | | mate (Approx) Engine Rated Horsepower (HP) | Approx. Engine Load Factor | | Emission Rates | | | | | | | | | | | Notes | | Emission Rates for a Single Engine | | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | Units | Engine Count | Kilowatt (KW) | (Hp) | Factor | | Units | PM10 | PM2.5 | NOX | SO2 | CO | NO2 | ROG (VOC) | CO2 | CH4 | N2O | CO2e | | | Units | PM10 | PM2.5 | NOX | SOX | CO | ROG (VOC) | CO2 | CH4 | N2O | CO2e | |
| Hydraulic Dredge Main Engine | 1 | 4 | Not Applicable (NA) | 2883 | 0.45 | | lb/hr | 0.458 | 0.408 | 16.237 | 0.016 | 3.289 | 4.9631 | 0.682 | 1706.847 | 0.069 | 0.014 | 1712.704 | 1 | | g/bhp-hr | 0.16 | 0.143 | 5.678 | 0.006 | 1.15 | 0.238 | 596.868 | 0.024 | 0.005 | 598.9 | 1 |
| Hydraulic Dredge Auxiliary Engine | 1 | 4 | Not Applicable (NA) | 410 | 0.75 | | lb/hr | 0.7 | 0.063 | 2.193 | 0.003 | 0.55 | 0.82995 | 0.06 | 285.215 | 0.012 | 0.002 | 286.193 | 1 | | g/bhp-hr | 0.15 | 0.13 | 4.59 | 0.006 | 1.15 | 0.13 | 596.87 | 0.02 | 0 | 598.9 | 1 |
| Anchor Tender Support Boat Main Engine | 1 | 1 | Not Applicable (NA) | 1167 | 0.5 | | lb/hr | 0.621 | 0.553 | 10.79 | 0.007 | 3.17 | 4.78353 | 0.907 | 760.559 | 0.031 | 0.006 | 763.169 | 1 | | g/bhp-hr | 0.482 | 0.429 | 8.385 | 0.006 | 2.464 | 0.705 | 591.045 | 0.024 | 0.005 | 593.1 | 1 |
| Anchor Tender Support Boat Auxiliary Engine | 1 | 1 | Not Applicable (NA) | 86 | 0.31 | | lb/hr | 0.039 | 0.035 | 0.465 | 0.001 | 0.982 | 1.48184 | 0.064 | 34.782 | 0.001 | 0 | 34.901 | 1 | | g/bhp-hr | 0.67 | 0.6 | 7.9 | 0.006 | 4.17 | 1.09 | 591.04 | 0.02 | 0 | 593.1 | 1 |
| Pipe Tender Support Boat Main Engine | 1 | 1 | Not Applicable (NA) | 384 | 0.38 | | lb/hr | 0.14 | 0.124 | 3.487 | 0.002 | 0.792 | 1.19513 | 0.274 | 189.982 | 0.008 | 0.002 | 190.634 | 1, 1b | | g/bhp-hr | 0.434 | 0.387 | 10.849 | 0.006 | 2.464 | 0.853 | 591.045 | 0.024 | 0.005 | 593.1 | 1, 1b |
| Pipe Tender Support Boat Auxiliary Engine | 1 | 1 | Not Applicable (NA) | 83 | 0.32 | | lb/hr | 0.086 | 0.077 | 1.618 | 0.001 | 0.673 | 1.01556 | 0.224 | 69.404 | 0.003 | 0.001 | 69.642 | 1, 1b | | g/bhp-hr | 0.73 | 0.66 | 13.78 | 0.006 | 5.74 | 1.91 | 591.04 | 0.02 | 0 | 593.1 | 1, 1b |
| Crew Boat (Work Boat) Main Engine | 1 | 1 | Not Applicable (NA) | 384 | 0.38 | | lb/hr | 0.072 | 0.065 | 2.115 | 0.002 | 1.685 | 2.54267 | 0.255 | 213.66 | 0.009 | 0.002 | 214.393 | 1 | | g/bhp-hr | 0.2 | 0.178 | 5.852 | 0.006 | 4.663 | 0.705 | 591.045 | 0.024 | 0.005 | 593.1 | 1 |
| Crew Boat (Work Boat) Auxiliary Engine | 1 | 1 | Not Applicable (NA) | 83 | 0.32 | | lb/hr | 0.066 | 0.059 | 1.422 | 0.001 | 0.581 | 0.87673 | 0.134 | 106.364 | 0.004 | 0.002 | 106.729 | 1 | | g/bhp-hr | 0.37 | 0.33 | 7.9 | 0.006 | 3.23 | 0.75 | 591.04 | 0.02 | 0 | 593.1 | 1 |
| Tug Boat Main Engine | 2 | 1 | Not Applicable (NA) | 1167 | 0.5 | | lb/hr | 0.621 | 0.553 | 10.79 | 0.007 | 3.17 | 4.78353 | 0.907 | 760.559 | 0.031 | 0.006 | 763.169 | 1 | | g/bhp-hr | 0.482 | 0.429 | 8.385 | 0.006 | 2.464 | 0.705 | 591.045 | 0.024 | 0.005 | 593.1 | 1 |
| Tug Boat Auxiliary Engine | 2 | 1 | Not Applicable (NA) | 86 | 0.31 | | lb/hr | 0.039 | 0.035 | 0.465 | 0.001 | 0.982 | 1.48184 | 0.064 | 34.782 | 0.001 | 0 | 34.901 | 1 | | g/bhp-hr | 0.67 | 0.6 | 7.9 | 0.006 | 4.17 | 1.09 | 591.04 | 0.02 | 0 | 593.1 | 1 |
| Dozers | 5 | 1 | (NA) | 367 | 0.4 | | | | | | | | | | | | | | 4, 7 | | | | | | | | | | | | |
| Loaders | 3 | 1 | (NA) | 84 | 0.37 | | | | | | | | | | | | | | 4, 7 | | | | | | | | | | | | 4, 7,8 |

| **DAILY EMISSIONS (LBS/DAY)** | | | | | Load | Hours per | HP-HR per Day w/ LF | Kw-HR per Day w/ LF | PM10 | PM2.5 | NOX | SOX | CO | NO2 | ROG (VOC) | CO2 | CH4 | N2O | CO2e | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | Units | Engine Count | (kW) | (Hp) | Factor | Day | | | | | | | | | | | | | | |
| Hydraulic Dredge Main Engine | 1 | 4 | Not Applicable (NA) | 2883 | 0.45 | 24 | 5189.4 | | 5.247 | 4.674 | 186.009 | 0.183 | 37.678 | 56.8554 | 7.813 | 19553.006 | 0.790 | 0.160 | 19620.102 | 1,2, 5 |
| Hydraulic Dredge Auxiliary Engine | 1 | 4 | Not Applicable (NA) | 410 | 0.75 | 24 | 1230 | | 1.901 | 0.171 | 5.955 | 0.008 | 1.493 | 2.25351 | 0.163 | 774.425 | 0.033 | 0.005 | 777.080 | 1,2, 5 |
| Anchor Tender Support Boat Main Engine | 1 | 1 | Not Applicable (NA) | 1167 | 0.5 | 6 | 145.875 | | 0.200 | 0.178 | 3.475 | 0.002 | 1.021 | 1.54039 | 0.292 | 244.915 | 0.010 | 0.002 | 245.756 | 1,2, 6 |
| Anchor Tender Support Boat Auxiliary Engine | 1 | 1 | Not Applicable (NA) | 86 | 0.31 | 6 | 6.665 | | 0.001 | 0.001 | 0.007 | 0.000 | 0.014 | 0.0218 | 0.001 | 0.512 | 0.000 | 0.000 | 0.513 | 1,2, 6 |
| Pipe Tender Support Boat Main Engine | 1 | 1 | Not Applicable (NA) | 384 | 0.38 | 6 | 36.48 | | 0.011 | 0.010 | 0.281 | 0.000 | 0.064 | 0.09624 | 0.022 | 15.299 | 0.001 | 0.000 | 15.352 | 1,2, 6 |
| Pipe Tender Support Boat Auxiliary Engine | 1 | 1 | Not Applicable (NA) | 83 | 0.32 | 6 | 6.64 | | 0.001 | 0.001 | 0.024 | 0.000 | 0.009 | 0.01345 | 0.003 | 1.017 | 0.000 | 0.000 | 1.021 | 1,2,6 |
| Crew Boat (Work Boat) Main Engine | 1 | 1 | Not Applicable (NA) | 384 | 0.38 | 6 | 36.48 | | 0.050 | 0.045 | 0.869 | 0.000 | 0.042 | 0.06336 | 0.073 | 61.248 | 0.002 | 0.000 | 61.458 | 1,2,6 |
| Crew Boat (Work Boat) Auxiliary Engine | 1 | 1 | Not Applicable (NA) | 83 | 0.32 | 6 | 6.64 | | 0.001 | 0.001 | 0.021 | 0.000 | 0.000 | 0.013 | 0.002 | 1.559 | 0.000 | 0.000 | 1.564 | 1,2,6 |
| Tug Boat Main Engine | 2 | 1 | Not Applicable (NA) | 1167 | 0.5 | 6 | 291.75 | | 0.800 | 0.712 | 13.898 | 0.009 | 4.083 | 6.16157 | 1.168 | 979.660 | 0.040 | 0.008 | 983.022 | 1,2, 6 |
| Tug Boat Auxiliary Engine | 2 | 1 | Not Applicable (NA) | 86 | 0.31 | 6 | 13.33 | | 0.002 | 0.002 | 0.027 | 0.000 | 0.058 | 0.08721 | 0.004 | 2.047 | 0.000 | 0.000 | 2.054 | 1,2, 6 |
| Dozers | 5 | 1 | Not Applicable (NA) | 367 | 0.4 | 2 | 61.1667 | | 0.719 | 0.663 | 16.313 | 0.025 | 14.250 | 21.503 | 1.681 | 2425.000 | 0.100 | 0.025 | 2433.750 | 4,7 |
| Loaders | 3 | 1 | (NA) | 84 | 0.37 | 2 | 7.77 | | 0.431 | 0.398 | 9.788 | 0.015 | 8.550 | 12.902 | 1.009 | 1455.000 | 0.060 | 0.015 | 1460.250 | 4, 7 |
| **Daily Emissions w/ diesel dredge equipment (lbs/day)** | | | | | | | | | **0.843** | **0.617** | **21.299** | **0.022** | **6.054** | **9.136** | **1.101** | **2296.232** | **0.093** | **0.019** | **2304.173** | |

| **ANNUAL EMISSIONS (TONS/YEAR)** | | | | | Load | Hours per | HP-HR per Day w/ LF | Kw-HR per Day w/ LF | PM10 | PM2.5 | NOX | SOX | CO | NO2 | ROG (VOC) | CO2 | CH4 | N2O | CO2e | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | Days/Year | Units | Engine Count | (Hp) | Factor | Day | | | | | | | | | | | | | | |
| Hydraulic Dredge Main Engine | 150 | 1 | 4 | | | | | | 0.3571 | 0.3181 | 12.659 | 0.0125 | 2.5643 | 3.86947 | 0.53172 | 1330.73999 | 0.0538 | 0.0109 | 1335.3064 | 1,3, 5, 8 |
| Hydraulic Dredge Auxiliary Engine | 150 | 1 | 4 | | | | | | 0.1294 | 0.0116 | 0.4053 | 0.0006 | 0.1016 | 0.15337 | 0.01109 | 52.7058644 | 0.0022 | 0.0004 | 52.886592 | 1,3, 5,8 |
| Anchor Tender Support Boat Main Engine | 150 | 1 | 1 | | | | | | 0.0136 | 0.0121 | 0.2365 | 0.0002 | 0.0695 | 0.10484 | 0.01988 | 16.668 | 0.0007 | 0.0001 | 16.725652 | 1,3, 6,8 |
| Anchor Tender Support Boat Auxiliary Engine | 150 | 1 | 1 | | | | | | 4E-05 | 4E-05 | 0.0005 | 1E-06 | 0.001 | 0.00148 | 6.4E-05 | 0.035 | 1E-06 | 0 | 0.0349478 | 1,3, 6, 8 |
| Pipe Tender Support Boat Main Engine | 150 | 1 | 1 | | | | | | 0.0008 | 0.0007 | 0.0191 | 1E-05 | 0.0043 | 0.00655 | 0.0015 | 1.041 | 4E-05 | 1E-05 | 1.0448084 | 1,3, 6, 8 |
| Pipe Tender Support Boat Auxiliary Engine | 150 | 1 | 1 | | | | | | 9E-05 | 8E-05 | 0.0016 | 1E-06 | 0.0006 | 0.00092 | 0.00022 | 0.069 | 3E-06 | 1E-06 | 0.0694738 | 1, 3,6, 8 |
| Crew Boat (Work Boat) Main Engine | 150 | 1 | 1 | | | | | | 0.0034 | 0.003 | 0.0591 | 4E-07 | 0.0029 | 0.00431 | 0.00497 | 4.168 | 0.0002 | 3E-05 | 4.1827029 | 1,3, 6, 8 |
| Crew Boat (Work Boat) Auxiliary Engine | 150 | 1 | 1 | | | | | | 7E-05 | 6E-05 | 0.0014 | 1E-06 | 0 | 0 | 0.00013 | 0.106 | 4E-06 | 2E-06 | 0.1064712 | 1,3, 6, 8 |
| Tug Boat Main Engine | 150 | 2 | 1 | | | | | | 0.0544 | 0.0485 | 0.9459 | 0.0006 | 0.2779 | 0.41934 | 0.07951 | 66.674 | 0.0027 | 0.0005 | 66.902608 | 1,3, 6, 8 |
| Tug Boat Auxiliary Engine | 150 | 2 | 1 | | | | | | 0.0002 | 0.0001 | 0.0019 | 4E-06 | 0.0039 | 0.00594 | 0.00026 | 0.139 | 4E-06 | 0 | 0.1397911 | 1,3, 6, 8 |
| Dozers | 150 | 5 | 1 | | | | | | 0.031 | 0.025 | 0.625 | 0.006 | 0.544 | 0.821 | 0.063 | 83.063 | 0.006 | 0.006 | 83.313 | 4, 7, 8 |
| Dozers | 150 | 3 | 1 | | | | | | 0.019 | 0.015 | 0.375 | 0.004 | 0.326 | 0.492 | 0.038 | 49.838 | 0.004 | 0.004 | 49.988 | 4, 7, 8 |
| **Annual Emissions w/ diesel dredge equipment (ton/year)** | | | | | | | | | **0.055** | **0.039** | **1.380** | **0.002** | **0.351** | **0.529** | **0.067** | **144.472** | **0.006** | **0.002** | **144.963** | 9 |
| **Applicable General Conformity Rates (tons/year)** | | | | | | | | | **NA** | **NA** | **50** | **NA** | **NA** | **NA** | **50** | | | | | |

Notes:
1. Vessel/Engine Information, Engine Rated Power [Horsepower (hp)]; Engine Load Factor; Emissions Rates (lb/hr) accessed from Sacramento Metropolitan Air Quality Management District (SMAQMD) Harbor craft (HC), Dredge and Barge Emission Factor Calculator [2017, 2023].
2. conversion factor pounds-grams: 453 grams/lb.
3. 1 metric ton = 2204 lbs
4. Land Based Construction Equipment: Five dozers and 3 loaders. Estimated air emissions based on CalEEMod 2022.1.1.21
5. One (1) USCAE hydraulic pipeline dredge daily operation estimated 24 hours a day. Hydraulic pipeline dredge has four main engines and four auxiliary engines.
6. One (1) anchor tender boat, one (1) pipe tender boat, one (1) crew boat, and two (2) tug boats, each piece of equipment daily operation estimated 6 hours a day
7. Land Based Vehicle and Construction Equipment: Five dozers and 3 loaders, each piece of equipment estimated to operate approximately 2 hours a day, and estimated air emissions based on CalEEMod 2022.1.1.21 . Construction equipment: 5 dozers and 3 loaders typically spread sand on the beach placement area approximately 2 hours a day for each dozer and loader per day. Dozer and loader emissions were calculated using CalEEMod 2022.1.1.21.
8. Proposed Dredging Project Duration is approximately 150 days once every two years (biennnial).
9. Estimated air emissions would typically be the similar during the years when dredging occurs once every two years (bieenial).

**PORT HUENEME HARBOR DREDGE TEMPLATE CLAMSHELL DREDGING EQUIPMENT LIST, EMISSION FACTORS, AND ESTIMATED AIR EMISSIONS**

| | Equipment | | | Estimate (Approx) Engine Rated Horsepower (HP) | Approx. Engine Load Factor | | Emission Rates | | | | | | | | | | | Notes | | Emission Rates for a Single Engine | | | | | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | Units | Engine Count | Kilowatt (KW) | (Hp) | Factor | | | Units | PM10 | PM2.5 | NOx | SOX | CO | NO2 | ROG | CO2 | CH4 | N2O | CO2e | | | Units | PM10 | PM2.5 | NOX | SOX | CO | ROG | CO2 | CH4 | N2O | CO2e | |
| Clamshell Dredge Main Engine | 1 | 2 | Not Applicable (NA) | 2883 | 0.45 | | | lb/hr | 0.458 | 0.408 | 16.237 | 0.016 | 3.289 | 4.9631 | 0.682 | 1706.847 | 0.069 | 0.014 | 1712.704 | 1 | | g/bhp-hr | 0.16 | 0.143 | 5.678 | 0.006 | 1.15 | 0.238 | 596.868 | 0.024 | 0.005 | 598.9 | 1 |
| Clamshell Dredge Auxiliary Engine | 1 | 2 | Not Applicable (NA) | 410 | 0.75 | | | lb/hr | 0.27 | 0.241 | 9.671 | 0.008 | 1.551 | 2.34046 | 0.542 | 805.118 | 0.033 | 0.007 | 807.881 | 1 | | g/bhp-hr | 0.2 | 0.18 | 7.17 | 0.006 | 1.15 | 0.4 | 596.87 | 0.02 | 0 | 598.9 | 1 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Scow Barge Main Engine | 1 | 2 | Not Applicable (NA) | 2883 | 0.45 | | | lb/hr | 0.458 | 0.408 | 16.237 | 0.016 | 3.289 | 4.9631 | 0.682 | 1706.847 | 0.069 | 0.014 | 1712.704 | 1 | | g/bhp-hr | 0.16 | 0.143 | 5.678 | 0.006 | 1.15 | 0.238 | 596.868 | 0.024 | 0.005 | 598.9 | 1 |
| Scow Barge Auxiliary Engine | 1 | 2 | Not Applicable (NA) | 410 | 0.75 | | | lb/hr | 0.27 | 0.241 | 9.671 | 0.008 | 1.551 | 2.34046 | 0.542 | 805.118 | 0.033 | 0.007 | 807.881 | 1 | | g/bhp-hr | 0.2 | 0.18 | 7.17 | 0.006 | 1.15 | 0.4 | 596.87 | 0.02 | 0 | 598.9 | 1 |
| Tug Boats Main Engine | 2 | 1 | Not Applicable (NA) | 1167 | 0.5 | | | lb/hr | 0.621 | 0.553 | 10.79 | 0.007 | 3.17 | 4.78353 | 0.907 | 760.559 | 0.031 | 0.006 | 763.169 | 1 | | g/bhp-hr | 0.482 | 0.429 | 8.385 | 0.006 | 2.464 | 0.705 | 591.045 | 0.024 | 0.005 | 593.1 | 1 |
| Tug Boats Auxiliary Engine | 2 | 1 | Not Applicable (NA) | 86 | 0.31 | | | lb/hr | 0.157 | 0.141 | 1.86 | 0.001 | 0.982 | 1.48184 | 0.256 | 139.127 | 0.006 | 0.001 | 139.605 | 1 | | g/bhp-hr | 0.67 | 0.6 | 7.9 | 0.006 | 4.17 | 1.09 | 591.04 | 0.02 | 0 | 593.1 | 1 |
| Crew Boat (Crew and Supply Boat) Main Engine | 1 | 1 | Not Applicable (NA) | 384 | 0.38 | | | lb/hr | 0.14 | 0.124 | 3.487 | 0.002 | 0.792 | 1.19513 | 0.274 | 189.982 | 0.008 | 0.002 | 190.634 | 1 | | g/bhp-hr | 0.434 | 0.387 | 10.849 | 0.006 | 2.464 | 0.853 | 591.045 | 0.024 | 0.005 | 593.1 | 1 |
| Crew Boat (Crew and Supply Boat) Auxiliary Engine | 1 | 1 | Not Applicable (NA) | 83 | 0.32 | | | lb/hr | 0.086 | 0.077 | 1.618 | 0.001 | 0.673 | 1.01556 | 0.224 | 69.404 | 0.003 | 0.001 | 69.642 | 1 | | g/bhp-hr | 0.73 | 0.66 | 13.78 | 0.006 | 5.74 | 1.91 | 591.04 | 0.02 | 0 | 593.1 | 1 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |

| **DAILY EMISSIONS (LBS/DAY)** | | | | | Load | Hours per | HP-HR per | Kw-HR per | PM10 | PM2.5 | NOx | SOX | CO | NO2 | ROG | CO2 | CH4 | N2O | CO2e | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | Units | Engine Count | (kW) | (Hp) | Factor | Day | Day w/ LF | Day w/ LF | | | | | | | | | | | | |
| Clamshell Dredge Main Engine | 1 | 2 | Not Applicable (NA) | 2883 | 0.45 | 24 | 2594.7 | | 2.623 | 2.337 | 93.003 | 0.092 | 18.839 | 28.4277 | 3.906 | 9776.503 | 0.395 | 0.080 | 9810.051 | 1,2, 4 |
| Clamshell Dredge Auxiliary Engine | 1 | 2 | Not Applicable (NA) | 410 | 0.75 | 24 | 615 | | 0.367 | 0.327 | 13.130 | 0.011 | 2.106 | 3.17744 | 0.736 | 1093.041 | 0.045 | 0.010 | 1096.792 | 1,2, 4 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Shifting Dredge Barge (Scows) Main Engine | 1 | 2 | Not Applicable (NA) | 2883 | 0.45 | 6 | 648.675 | | 0.656 | 0.584 | 23.251 | 0.023 | 4.710 | 7.10693 | 0.977 | 2444.126 | 0.099 | 0.020 | 2452.513 | 1,2,5 |
| Shifting Dredge Barge (Scows) Auxiliary Engine | 1 | 2 | Not Applicable (NA) | 410 | 0.75 | 6 | 153.75 | | 0.092 | 0.082 | 3.282 | 0.003 | 0.526 | 0.79436 | 0.184 | 273.260 | 0.011 | 0.002 | 274.198 | 1,2, 5 |
| Tug Boat Main Engine | 2 | 1 | Not Applicable (NA) | 1167 | 0.5 | 6 | 291.75 | | 0.800 | 0.712 | 13.898 | 0.009 | 4.083 | 6.16157 | 1.168 | 979.660 | 0.040 | 0.008 | 983.022 | 1,2,5 |
| Tug Boat Auxiliary Engine | 2 | 1 | Not Applicable (NA) | 86 | 0.31 | 6 | 13.33 | | 0.009 | 0.008 | 0.109 | 0.000 | 0.058 | 0.08721 | 0.015 | 8.188 | 0.000 | 0.000 | 8.216 | 1,2, 5 |
| Crew Boat (Crew and Supply Boat) Main Engine | 1 | 1 | Not Applicable (NA) | 384 | 0.38 | 6 | 36.48 | | 0.011 | 0.010 | 0.281 | 0.000 | 0.064 | 0.09624 | 0.022 | 15.299 | 0.001 | 0.000 | 15.352 | 1,2,5 |
| Crew Boat (Crew and Supply Boat) Auxiliary Engine | 1 | 1 | Not Applicable (NA) | 83 | 0.32 | 6 | 6.64 | | 0.001 | 0.001 | 0.024 | 0.000 | 0.010 | 0.01489 | 0.003 | 1.017 | 0.000 | 0.000 | 1.021 | 1,2,5 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| **Daily Emissions w/ diesel dredge equipment (lbs/day)** | | | | | | | | | **0.410** | **0.366** | **13.228** | **0.012** | **2.736** | **4.128** | **0.631** | **1313.199** | **0.053** | **0.011** | **1317.705** | |

| **ANNUAL (2024) EMISSIONS (TONS/YEAR)** | | | | | Load | Hours per | HP-HR per | Kw-HR per | PM10 | PM2.5 | NOx | SOX | CO | NO2 | ROG | CO2 | CH4 | N2O | CO2e | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | Days/Year | Units | Engine Count | (Hp) | Factor | Day | Day w/ LF | Day w/ LF | | | | | | | | | | | | |
| Clamshell Dredge Main Engine | 150 | 1 | 2 | | | | | | 0.1785 | 0.159 | 6.3296 | 0.0062 | 1.28213 | 1.93474 | 0.26586 | 665.369994 | 0.0269 | 0.0055 | 667.65319 | 1,3, 4, 6 |
| Clamshell Dredge Auxiliary Engine | 150 | 1 | 2 | | | | | | 0.0249 | 0.0223 | 0.8936 | 0.0007 | 0.14331 | 0.21625 | 0.05008 | 74.3902672 | 0.003 | 0.0006 | 74.645559 | 1,3, 4,6 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Shifting Dredge Barge (Scows) Main Engine | 150 | 1 | 2 | | | | | | 0.0446 | 0.0398 | 1.5824 | 0.0016 | 0.32053 | 0.48368 | 0.06646 | 166.342 | 0.0067 | 0.0014 | 166.9133 | 1,3, 5,6 |
| Shifting Dredge Barge (Scows) Auxiliary Engine | 150 | 1 | 2 | | | | | | 0.0062 | 0.0056 | 0.2234 | 0.0002 | 0.03583 | 0.05406 | 0.01252 | 18.598 | 0.0008 | 0.0002 | 18.66139 | 1,3, 5,6 |
| Tug Boat Main Engine | 150 | 2 | 1 | | | | | | 0.0544 | 0.0485 | 0.9459 | 0.0006 | 0.2779 | 0.41934 | 0.07951 | 66.674 | 0.0027 | 0.0005 | 66.902608 | 1,3, 5,6 |
| Tug Boat Auxiliary Engine | 150 | 2 | 1 | | | | | | 0.0006 | 0.0006 | 0.0074 | 4E-06 | 0.00393 | 0.00594 | 0.00103 | 0.557 | 2E-05 | 4E-06 | 0.5591684 | 1,3, 5,6 |
| Crew Boat (Crew and Supply Boat) Main Engine | 150 | 1 | 1 | | | | | | 0.0008 | 0.0007 | 0.0191 | 1E-05 | 0.00434 | 0.00655 | 0.0015 | 1.041 | 4E-05 | 1E-05 | 1.0448084 | 1,3, 5,6 |
| Crew Boat (Crew and Supply Boat) Auxiliary Engine | 150 | 1 | 1 | | | | | | 9E-05 | 8E-05 | 0.0016 | 1E-06 | 0.00067 | 0.00101 | 0.00022 | 0.069 | 3E-06 | 1E-06 | 0.0694738 | 1,3,5, 6 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| **Annual Emissions w/ diesel dredge equipment (ton/year )** | | | | | | | | | **0.028** | **0.025** | **0.900** | **0.001** | **0.186** | **0.281** | **0.043** | **89.374** | **0.004** | **0.001** | **89.680** | 7 |
| | | | | | | | | | | | | | | | | | | | | |
| **Applicable General Conformity Rates (tons/year)** | | | | | | | | | **NA** | **NA** | **50** | **NA** | **NA** | **NA** | **50** | | | | | |

Notes:
1. Vessel/Engine Information, Engine Rated Power [Horsepower (hp)]; Engine Load Factor; Emissions Rates (lb/hr) accessed from Sacramento Metropolitan Air Quality Management District (SMAQMD) Harbor craft, Dredge and Barge Emission Factor Calculator [2017, 2023]
2. conversion factor pounds-grams: 453 grams/lb.
3. 1 metric ton = 2204 lbs
4. One (1) Clamshell dredge daily operation estimated 24 hours a day. A Clamshell dredge typically has 2 main engines and 2 auxiliary engines.
5. One (1) scow barge, two (2) tug boat, and one (1) crew boat, each piece of equipment daily operation estimated 6 hours a day
6. Proposed Dredging Project Duration is approximately 150 days once every two years (biennial).
7. Estimated air emissions would be typically similar during the years when dredging occurs once every two years (biennial).

# SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT
# EMISSION FACTORS

# SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Instructions

**Introduction:** This tool estimates emission rates for harbor craft engines based on California Air Resources Board emission estimation databases.

**How to start using this tool:**

1. Review the Instructions tab
2. Enter data in the Inputs tab
3. View final results in the MainEngineEmissRates and AuxEngineEmissRates tabs

**Tab Descriptions:**

- Instructions: The current tab with brief description of all tabs and calculator functions.
- Input: This is the only tab that requires user input. Not all fields in this tab are required for the calculations to be completed. Different colors are used to indicate which fields are required and which are optional. *If using this tool for environmental planning purposes, the engine model year, engine rated power, vessel number and location for Main Engine Inputs and Auxiliary Engine Inputs are optional since during the planning phase of a project the User is not expected to know this information. If this tool is being used for calculating emissions for construction mitigation purposes, the User must provide ALL Main Engine Inputs and Auxiliary Engine Inputs. The engine model year, engine rated power, vessel number and location information is expected to be accessible for the construction phase of a project.*
- MainEngineEmissRates: This tab contains final results (emission rates and emission factors) for the main engine(s) of each vessel specified in the "A2. Main Engine" input table in the "Inputs" tab.
- AuxEngineEmissRates: This tab contains final results (emission rates and emission factors) for each auxiliary engine specified in the "A3. Auxiliary Engine" input table in the "Inputs" tab.
- VesselDesc: This tab includes brief descriptions of harbor craft vessel types.
- Documentation: This tab documents calculator version information.
- Calculations: Contains all emission factor and emission rate calculations. The "MainEngineEmissRates" and "AuxEngineEmissRates" tabs reference cells in this tab.
- CARB_EFs: Contains reference emission factors.
- CARB_Defaults: Contains default information such as useful life, load factors, average usage, rated horsepower, and model year.

## SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Input Data Page

**INSTRUCTIONS:**

1. Enter inputs into tables A1, A2, A3, and A4 below. Required inputs must be entered to estimate emission rates, optional inputs should be entered if available.
2. After entering inputs, review status and error messages (cell E14); make changes as necessary until this cell is green indicating that inputs are ready.
3. Results may be reviewed in "MainEngineEmissRates" and "AuxEngineEmissRates" tabs, both colored yellow.

### Inputs and Status

| | |
|---|---|
| **Inputs color legend** | Required Input |
| | Optional Input |
| **Status and error messages** | OK. Default values will be applied to blank model year and HP |

### A1. Inventory Calendar year

| | |
|---|---|
| **Inventory Calendar Year** | 2024 |

### A4. Project Information

| **Inputs** | |
|---|---|
| Date (mm/dd/yyyy): | 1/18/2024 |
| Project Name: | Channel Islands Harbor Dredge Areas A B C D E & G Maint. Dredge- Hydraulic Pipeline Dredge |
| Project Location: | Oxnard, Ventura County, California |
| Contact Person: | Kirk Brus |
| Company Name: | Department of the Army, U.S Army Corps of Engineers |
| Mailing Address: | 915 Wilshire Blvd, Room 1109, Los Angeles California |
| Phone Number: | 213 452-3876 |
| Email Address: | Kirk.C.Brus@usace.army.mil |

### A2. Main Engine Inputs

| **Required Inputs** | | | **Optional Inputs** | | | |
|---|---|---|---|---|---|---|
| **Vessel Name** | **Vessel Type** | **No. of Engines** | **Engine Model Year** | **Engine Rated Power (hp)** | **Vessel Number** | **Home Port** |
| Hydraulic Dredge | Dredge | 4 | | | | |
| Anchor Tender Support Boat | Work Boats | 1 | | | | |
| Pipe Tender Support Boat | Work Boats | 1 | | | | |
| Crew Boat | Crew and Supply | 1 | | | | |
| Tug Boats | Tug Boats | 2 | | | | |

### A3. Auxiliary Engine Inputs

| **Required Inputs** | | | **Optional Inputs** | |
|---|---|---|---|---|
| **Vessel Name** | **Auxiliary Engine Type** | **No. of Engines** | **Engine Model Year** | **Engine Rated Power (hp)** |
| Hydraulic Dredge | Dredger | 4 | | |
| Anchor Tender Support Boat | Work Boats Generator | 1 | | |
| Pipe Tender Support Boat | Work Boats Generator | 1 | | |
| Crew Boat | Crew and Supply Generator | 1 | | |
| Tug Boats | Tug Boats Generator | 2 | | |

**SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Main Engine Emission Rates**

**Calendar Year:** 2024 **Number of Entries:** 5

| Vessel/Engine Information | | | | | | | | Emission Rates (lb/hr; estimates for each row are totals over the number of engines listed in column J for that row) | | | | | | | | | | Emission Rates for a Single Engine (g/bhp-hr) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Name | Vessel Number | Home Port | Vessel Type | Engine Model Year | Engine Rated Power (hp) | Engine Load Factor | Number of engines | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
| Hydraulic Dred | | | Dredge | 2007 | 2883 | 0.45 | 4 | 1.681 | 1.497 | 59.176 | 2.009 | 13.154 | 0.064 | 6827.386 | 0.277 | 0.055 | 6850.816 | 0.147 | 0.131 | 5.173 | 0.176 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 598.9 |
| Anchor Tender | | | Work Boats | 2007 | 364 | 0.45 | 1 | 0.072 | 0.065 | 2.115 | 0.255 | 1.685 | 0.002 | 213.660 | 0.009 | 0.002 | 214.393 | 0.200 | 0.178 | 5.852 | 0.705 | 4.663 | 0.006 | 591.045 | 0.024 | 0.005 | 593.1 |
| Pipe Tender Su | | | Work Boats | 2007 | 364 | 0.45 | 1 | 0.072 | 0.065 | 2.115 | 0.255 | 1.685 | 0.002 | 213.660 | 0.009 | 0.002 | 214.393 | 0.200 | 0.178 | 5.852 | 0.705 | 4.663 | 0.006 | 591.045 | 0.024 | 0.005 | 593.1 |
| Crew Boat | | | Crew and Supply | 1996 | 384 | 0.38 | 1 | 0.155 | 0.138 | 3.555 | 0.274 | 0.792 | 0.002 | 189.982 | 0.008 | 0.002 | 190.634 | 0.482 | 0.429 | 11.059 | 0.853 | 2.464 | 0.006 | 591.045 | 0.024 | 0.005 | 593.1 |
| Tug Boats | | | Tug Boats | 2003 | 1167 | 0.50 | 2 | 1.241 | 1.105 | 21.580 | 1.814 | 6.341 | 0.014 | 1521.118 | 0.062 | 0.012 | 1526.338 | 0.482 | 0.429 | 8.385 | 0.705 | 2.464 | 0.006 | 591.045 | 0.024 | 0.005 | 593.1 |

**SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Auxiliary Engine Emission Rates**

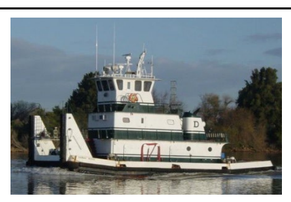
**Calendar Year:** 2024 **Number of Entries:** 5

| Vessel/Engine Information | | | | | | | | | Emission Rates (lb/hr; estimates for each row are totals over the number of engines listed in column K for that row) | | | | | | | | | | Emission Rates for a Single Engine (g/bhp-hr) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Name | Vessel Number | Home Port | Vessel Type | Auxiliary Engine Type | Engine Model Year | Engine Rated Power (hp) | Engine Load Factor | Number of Engines | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
| Hydraulic Dred | | | Dredge | Dredger | 2008 | 425 | 0.51 | 4 | 0.281 | 0.250 | 8.770 | 0.240 | 2.198 | 0.011 | 1140.858 | 0.046 | 0.009 | 1144.774 | 0.15 | 0.13 | 4.59 | 0.13 | 1.15 | 0.006 | 596.87 | 0.02 | 0.00 | 598.9 |
| Anchor Tender | | | Work Boats | Work Boats Generator | 2001 | 190 | 0.43 | 1 | 0.066 | 0.059 | 1.422 | 0.134 | 0.581 | 0.001 | 106.364 | 0.004 | 0.001 | 106.729 | 0.37 | 0.33 | 7.90 | 0.75 | 3.23 | 0.006 | 591.04 | 0.02 | 0.00 | 593.1 |
| Pipe Tender Su | | | Work Boats | Work Boats Generator | 2001 | 190 | 0.43 | 1 | 0.066 | 0.059 | 1.422 | 0.134 | 0.581 | 0.001 | 106.364 | 0.004 | 0.001 | 106.729 | 0.37 | 0.33 | 7.90 | 0.75 | 3.23 | 0.006 | 591.04 | 0.02 | 0.00 | 593.1 |
| Crew Boat | | | Crew and Supply | Crew and Supply Generator | 1996 | 83 | 0.32 | 1 | 0.043 | 0.039 | 0.809 | 0.112 | 0.337 | 0.000 | 34.702 | 0.001 | 0.000 | 34.821 | 0.73 | 0.66 | 13.78 | 1.91 | 5.74 | 0.006 | 591.04 | 0.02 | 0.00 | 593.1 |
| Tug Boats | | | Tug Boats | Tug Boats Generator | 2001 | 86 | 0.31 | 2 | 0.079 | 0.071 | 0.930 | 0.128 | 0.491 | 0.001 | 69.564 | 0.003 | 0.001 | 69.802 | 0.67 | 0.60 | 7.90 | 1.09 | 4.17 | 0.006 | 591.04 | 0.02 | 0.00 | 593.1 |

# SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Brief Vessel Descriptions

**Reference Sources for Vessel Descriptions and Pictures Below:**


1. South Coast Air Quality Management District, 2015, Draft Technology Assessment: Commercial Harbor Craft, http://www.arb.ca.gov/msprog/tech/techreport/draft_chc_technology_assessment.pdf
2. California Air Resources Board, 2004, Statewide Commercial Harbor Craft Survey: Final Report, https://www.arb.ca.gov/ports/marinevess/harborcraft/documents/hcsurveyrep0304.pdf
3. San Francisco Bay Crossings, Dutra in the Delta, http://www.baycrossings.com/dispnews.php?id=2538
4. Dutra Group Inc, Fleet http://www.dutragroup.com/equipment-aggregates-dredging-marine-construction.html?id=39


| Vessel Descriptions (Pictures and Descriptions Sourced from SCAQMD and CARB Reports) | | |
|---|---|---|
| Barges | | Cargo barges carry liquid, bulk, and containerized cargo within and between harbors. Work barges may carry construction materials or equipment. |
| Commercial Fishing | | Vessels used in the search and collection of fish for the purpose of sale at market |
| Charter Fishing | | Vessels available for hire by the general public and used for the search and collection of fish for the purpose of personal consumption |
| Crew and Supply | | Vessels used for carrying personnel and supplies to and from offshore and in-harbor locations |
| Dredges | | Special purpose barges used to construct and maintain channels, berths, docks, breakwaters and other facilities in harbors and ports |
| Ferries | | Vessels used for public use in the transportation of persons or property |
| Pilot Vessels | | Vessels used to guide ocean-going vessels into and out of a port or harbor |
| Tug Boats | | Vessels used for the towing and pushing of ships or other floating structures such as barges |
| Tow Boats / Push Boats |  | Vessels used to tow barges and pontoons. The hull of these vessels is usually rectangular in plan and has little freeboard. |
| Work Boats | | Vessels used to perform duties such as fire/rescue, law enforcement, hydrographic surveys, spill/response research, training, and construction |
| Others | | Vessels used in various commercial operations that do not fit into any other category such as vessels used to dispose of cremated remains |

# SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Documentation

**Version 1.0**

1. User provides vessel type; the following inputs for main engines: model year, horsepower, engine count; the following inputs for auxiliary engines: engine type, model year, horsepower, engine count. If engine horsepower or model year are not provided an average estimate from the CARB source calculators will be used to develop emission rates.
2. Calculator looks up zero-hour emission factors, deterioration factors, load factor, and useful life.
3. Calculator calculates emission rates (lb/hr) and emission factors (g/bhp-hr).
4. Additional documentation available in June (2017) Ramboll Environ Memorandum

**SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Emission Factor Calculations**

## Main Engine Emission Factor Calculator

**Calendar Year:** 2024 **Number of Entries:** 5

| Vessel/Engine Information | | | | | | | | | | | | Activity | | | Zero-Hour Emission Factors (g/hp-hr) | | | | | Deterioration Factors (g/hp - hr) | | | | | Emission Rates (g/bhp-hr) | | | | | | | | | Emission Rates (g/hr) | | | | | | | | | Fuel Correction Factor | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Name | Vessel Type | Engine Type | Engine Category | Engine Model Year | MdlYr Group | Engine HP | HP Category | FCF HP Category | Engine Load Factor | BSFC (g/hp-hr) | No. of engines | Annual Hours | Age | Useful life | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | NOx | PM | ROG | MY Bin |
| Hydraulic Dredge | Dredge | Main | C1 | 2007 | 2007 | 2,883 | 10 | 4 | 0.45 | 185.97 | 4 | 1,776 | 17 | 17 | 0.110 | 0.101 | 4.510 | 0.169 | 0.920 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.147 | 0.131 | 5.173 | 0.176 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 762.5 | 679.0 | 26,841.8 | 911.3 | 5,966.8 | 28.9 | 3,096,847.8 | 125.6 | 25.1 | 0.95 | 0.80 | 0.72 | 1996 |
| Anchor Tender Support Bo | Work Boats | Main | A1 | 2007 | 2007 | 364 | 5 | 4 | 0.45 | 184.16 | 1 | 1,250 | 17 | 17 | 0.150 | 0.138 | 5.102 | 0.680 | 3.730 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.200 | 0.178 | 5.852 | 0.705 | 4.663 | 0.006 | 591.045 | 0.024 | 0.005 | 32.9 | 29.3 | 959.5 | 115.6 | 764.5 | 0.9 | 96,914.4 | 3.9 | 0.8 | 0.95 | 0.80 | 0.72 | 1996 |
| Pipe Tender Support Boat | Work Boats | Main | A1 | 2007 | 2007 | 364 | 5 | 4 | 0.45 | 184.16 | 1 | 1,250 | 17 | 17 | 0.150 | 0.138 | 5.102 | 0.680 | 3.730 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.200 | 0.178 | 5.852 | 0.705 | 4.663 | 0.006 | 591.045 | 0.024 | 0.005 | 32.9 | 29.3 | 959.5 | 115.6 | 764.5 | 0.9 | 96,914.4 | 3.9 | 0.8 | 0.95 | 0.80 | 0.72 | 1996 |
| Crew Boat | Crew and Supply | Main | B1 | 1996 | 1996 | 384 | 5 | 4 | 0.38 | 184.16 | 1 | 788 | 28 | 28 | 0.361 | 0.332 | 9.641 | 0.823 | 1.971 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.482 | 0.429 | 11.059 | 0.853 | 2.464 | 0.006 | 591.045 | 0.024 | 0.005 | 70.3 | 62.6 | 1,612.3 | 124.4 | 359.2 | 0.8 | 86,174.5 | 3.5 | 0.7 | 0.95 | 0.80 | 0.72 | 1996 |
| Tug Boats | Tug Boats | Main | A1 | 2003 | 2003 | 1,167 | 7 | 4 | 0.50 | 184.16 | 2 | 1,250 | 21 | 21 | 0.361 | 0.332 | 7.310 | 0.680 | 1.971 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.482 | 0.429 | 8.385 | 0.705 | 2.464 | 0.006 | 591.045 | 0.024 | 0.005 | 563.0 | 501.4 | 9,788.6 | 823.0 | 2,876.1 | 6.4 | 689,966.7 | 28.0 | 5.6 | 0.9 | 0.8 | 0.7 | 1996 |

## Auxiliary Engine Emission Factor Calculator

**Calendar Year:** 2024 **Number of Entries:** 5

| Vessel/Engine Information | | | | | | | | | | | | Activity | | | Zero-Hour Emission Factors (g/hp-hr) | | | | | Deterioration Factors (g/hp - hr) | | | | | Emission Rates (g/bhp-hr) | | | | | | | | | Emission Rates (g/hr) | | | | | | | | | Fuel Correction Factor | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Name | Vessel Type | Engine Type | Engine Category | Engine Model Year | MdlYr Group | Engine HP | HP Category | FCF HP Category | Engine Load Factor | BSFC (g/hp-hr) | No. of engines | Annual Hours | Age | Useful life | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | NOx | PM | ROG | MY Bin |
| Hydraulic Dredge | Dredger | Aux | C2 | 2008 | 2008 | 425 | 7 | 4 | 0.51 | 185.97 | 4 | 360 | 16 | 16 | 0.110 | 0.101 | 4.000 | 0.121 | 0.920 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.147 | 0.131 | 4.588 | 0.125 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 127.4 | 113.5 | 3,978.1 | 108.8 | 997.1 | 4.8 | 517,484.3 | 21.0 | 4.2 | 0.9 | 0.8 | 0.7 | 1996 |
| Anchor Tender Support Bo | Work Boats Generator | Aux | A2 | 2001 | 2001 | 190 | 4 | 4 | 0.43 | 184.16 | 1 | 1,633 | 23 | 23 | 0.319 | 0.294 | 7.310 | 0.809 | 2.781 | 0.44 | 0.40 | 0.14 | 0.28 | 0.16 | 0.368 | 0.330 | 7.900 | 0.746 | 3.226 | 0.006 | 591.045 | 0.024 | 0.005 | 30.0 | 26.9 | 644.9 | 60.9 | 263.3 | 0.5 | 48,246.0 | 2.0 | 0.4 | 0.9 | 0.8 | 0.7 | 1996 |
| Pipe Tender Support Boat | Work Boats Generator | Aux | A2 | 2001 | 2001 | 190 | 4 | 4 | 0.43 | 184.16 | 1 | 1,633 | 23 | 23 | 0.319 | 0.294 | 7.310 | 0.809 | 2.781 | 0.44 | 0.40 | 0.14 | 0.28 | 0.16 | 0.368 | 0.330 | 7.900 | 0.746 | 3.226 | 0.006 | 591.045 | 0.024 | 0.005 | 30.0 | 26.9 | 644.9 | 60.9 | 263.3 | 0.5 | 48,246.0 | 2.0 | 0.4 | 0.9 | 0.8 | 0.7 | 1996 |
| Crew Boat | Crew and Supply Generat | Aux | B2 | 1996 | 1996 | 83 | 2 | 2 | 0.32 | 184.16 | 1 | 3,036 | 28 | 28 | 0.706 | 0.649 | 13.000 | 2.073 | 4.944 | 0.44 | 0.40 | 0.14 | 0.28 | 0.16 | 0.732 | 0.657 | 13.783 | 1.911 | 5.735 | 0.006 | 591.045 | 0.024 | 0.005 | 19.5 | 17.5 | 367.1 | 50.9 | 152.7 | 0.1 | 15,740.6 | 0.6 | 0.1 | 0.9 | 0.7 | 0.7 | 1960 |
| Tug Boats | Tug Boats Generator | Aux | A2 | 2001 | 2001 | 86 | 2 | 2 | 0.31 | 184.16 | 2 | 1,633 | 23 | 23 | 0.580 | 0.533 | 7.310 | 1.178 | 3.595 | 0.44 | 0.40 | 0.14 | 0.28 | 0.16 | 0.668 | 0.599 | 7.900 | 1.086 | 4.170 | 0.006 | 591.045 | 0.024 | 0.005 | 35.6 | 32.0 | 421.8 | 58.0 | 222.6 | 0.3 | 31,553.5 | 1.3 | 0.3 | 0.9 | 0.8 | 0.7 | 1998 |

**SMAQMD #borcraft #doe and #pe Emission #dtor #culator CARB #ission #dtors Inputs**

Data sources:

https://www.arb.ca.gov/msei/california-harbor-craft-emissions-inventory-database-10072011.mdb

https://www.arb.ca.gov/msei/california-crew-supply-emissions-inventory-database-10072011.mdb

https://www.arb.ca.gov/msei/california-barge-dredge-emissions-inventory-database-10072011.mdb

| CRAFVP | Engine #Deprcy | HP #Deprcy | Model #Dr | Zero-Hour #Motion Factor (g/bhp-hr) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | ROG | CO | NOx | PM10 | PM2.5 | SOTC |
| A1_1_1047 | A1 | 1 | 1047 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1048 | A1 | 1 | 1048 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1049 | A1 | 1 | 1049 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1050 | A1 | 1 | 1050 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1051 | A1 | 1 | 1051 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1052 | A1 | 1 | 1052 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1053 | A1 | 1 | 1053 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1054 | A1 | 1 | 1054 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1055 | A1 | 1 | 1055 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1056 | A1 | 1 | 1056 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1057 | A1 | 1 | 1057 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1058 | A1 | 1 | 1058 | 1.8 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1059 | A1 | 1 | 1059 | 1.8 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2030 | A1 | 1 | 2030 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2031 | A1 | 1 | 2031 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2032 | A1 | 1 | 2032 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2033 | A1 | 1 | 2033 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2034 | A1 | 1 | 2034 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2035 | A1 | 1 | 2035 | 1.8 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2036 | A1 | 1 | 2036 | 1.8 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2037 | A1 | 1 | 2037 | 1.8 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2038 | A1 | 1 | 2038 | 1.8 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2039 | A1 | 1 | 2039 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2010 | A1 | 1 | 2010 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2011 | A1 | 1 | 2011 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2012 | A1 | 1 | 2012 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2013 | A1 | 1 | 2013 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2014 | A1 | 1 | 2014 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2015 | A1 | 1 | 2015 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2016 | A1 | 1 | 2016 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2017 | A1 | 1 | 2017 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2018 | A1 | 1 | 2018 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2019 | A1 | 1 | 2019 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2020 | A1 | 1 | 2020 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_1060 | A1 | 1 | 1060 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1061 | A1 | 1 | 1061 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1062 | A1 | 1 | 1062 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1063 | A1 | 1 | 1063 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1064 | A1 | 1 | 1064 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1065 | A1 | 1 | 1065 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1066 | A1 | 1 | 1066 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1067 | A1 | 2 | 1067 | 0.99 | 2.5477 | 10.925 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_1068 | A1 | 2 | 1068 | 0.99 | 2.5477 | 10.925 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_1069 | A1 | 2 | 1069 | 0.99 | 2.5477 | 10.925 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2000 | A1 | 2 | 2000 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2001 | A1 | 2 | 2001 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2002 | A1 | 2 | 2002 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2003 | A1 | 2 | 2003 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2004 | A1 | 2 | 2004 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2005 | A1 | 2 | 2005 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2006 | A1 | 2 | 2006 | 0.99 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2007 | A1 | 2 | 2007 | 0.99 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2008 | A1 | 2 | 2008 | 0.99 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2009 | A1 | 2 | 2009 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2010 | A1 | 2 | 2010 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2011 | A1 | 2 | 2011 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2012 | A1 | 2 | 2012 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2013 | A1 | 2 | 2013 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2014 | A1 | 2 | 2014 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2015 | A1 | 2 | 2015 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2016 | A1 | 2 | 2016 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2017 | A1 | 2 | 2017 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2018 | A1 | 2 | 2018 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2019 | A1 | 2 | 2019 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2020 | A1 | 2 | 2020 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_1070 | A1 | 3 | 1070 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1071 | A1 | 3 | 1071 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1072 | A1 | 3 | 1072 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1073 | A1 | 3 | 1073 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1074 | A1 | 3 | 1074 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1075 | A1 | 3 | 1075 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1076 | A1 | 3 | 1076 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1077 | A1 | 3 | 1077 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1078 | A1 | 3 | 1078 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1079 | A1 | 3 | 1079 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1080 | A1 | 3 | 1080 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1081 | A1 | 3 | 1081 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1082 | A1 | 3 | 1082 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1083 | A1 | 3 | 1083 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1084 | A1 | 3 | 1084 | 0.94 | 3.139 | 13.56 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1085 | A1 | 3 | 1085 | 0.94 | 3.139 | 13.56 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1086 | A1 | 3 | 1086 | 0.94 | 3.139 | 13.56 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1087 | A1 | 3 | 1087 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1088 | A1 | 3 | 1088 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1089 | A1 | 3 | 1089 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1090 | A1 | 3 | 1090 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1091 | A1 | 3 | 1091 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1092 | A1 | 3 | 1092 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1093 | A1 | 3 | 1093 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1094 | A1 | 3 | 1094 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1095 | A1 | 3 | 1095 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1096 | A1 | 3 | 1096 | 0.68 | 1.971 | 9.6406 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_1097 | A1 | 3 | 1097 | 0.68 | 1.971 | 9.6406 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_1098 | A1 | 3 | 1098 | 0.68 | 1.971 | 9.6406 | 0.361 | 0.332 | 18A:1585010 |
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| A1_1_2000 | A1 | 3 | 2000 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2001 | A1 | 3 | 2001 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2002 | A1 | 3 | 2002 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2003 | A1 | 3 | 2003 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2004 | A1 | 3 | 2004 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2005 | A1 | 3 | 2005 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2006 | A1 | 3 | 2006 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2007 | A1 | 3 | 2007 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2008 | A1 | 3 | 2008 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2009 | A1 | 3 | 2009 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2010 | A1 | 3 | 2010 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2011 | A1 | 3 | 2011 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2012 | A1 | 3 | 2012 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2013 | A1 | 3 | 2013 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2014 | A1 | 3 | 2014 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2015 | A1 | 3 | 2015 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2016 | A1 | 3 | 2016 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2017 | A1 | 3 | 2017 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2018 | A1 | 3 | 2018 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2019 | A1 | 3 | 2019 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2020 | A1 | 3 | 2020 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_1100 | A1 | 4 | 1100 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1101 | A1 | 4 | 1101 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1102 | A1 | 4 | 1102 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1103 | A1 | 4 | 1103 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1104 | A1 | 4 | 1104 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1105 | A1 | 4 | 1105 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1106 | A1 | 4 | 1106 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1107 | A1 | 4 | 1107 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1108 | A1 | 4 | 1108 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1109 | A1 | 4 | 1109 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1110 | A1 | 4 | 1110 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1111 | A1 | 4 | 1111 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1112 | A1 | 4 | 1112 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1113 | A1 | 4 | 1113 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1114 | A1 | 4 | 1114 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1115 | A1 | 4 | 1115 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1116 | A1 | 4 | 1116 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1117 | A1 | 4 | 1117 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1118 | A1 | 4 | 1118 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1119 | A1 | 4 | 1119 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1120 | A1 | 4 | 1120 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1121 | A1 | 4 | 1121 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1122 | A1 | 4 | 1122 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1123 | A1 | 4 | 1123 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1124 | A1 | 4 | 1124 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1125 | A1 | 4 | 1125 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1126 | A1 | 4 | 1126 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1127 | A1 | 4 | 1127 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1128 | A1 | 4 | 1128 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1129 | A1 | 4 | 1129 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1130 | A1 | 4 | 1130 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1131 | A1 | 4 | 1131 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1132 | A1 | 4 | 1132 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1133 | A1 | 4 | 1133 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1134 | A1 | 4 | 1134 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1135 | A1 | 4 | 1135 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1136 | A1 | 4 | 1136 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1137 | A1 | 4 | 1137 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1138 | A1 | 4 | 1138 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1139 | A1 | 4 | 1139 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1140 | A1 | 4 | 1140 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1141 | A1 | 4 | 1141 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1142 | A1 | 4 | 1142 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1143 | A1 | 4 | 1143 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1144 | A1 | 4 | 1144 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1145 | A1 | 4 | 1145 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1146 | A1 | 4 | 1146 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1147 | A1 | 4 | 1147 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1148 | A1 | 4 | 1148 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1149 | A1 | 4 | 1149 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1150 | A1 | 4 | 1150 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1151 | A1 | 4 | 1151 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1152 | A1 | 4 | 1152 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1153 | A1 | 4 | 1153 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1154 | A1 | 4 | 1154 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1155 | A1 | 4 | 1155 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1156 | A1 | 4 | 1156 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1157 | A1 | 4 | 1157 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1158 | A1 | 4 | 1158 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1159 | A1 | 4 | 1159 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1160 | A1 | 4 | 1160 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1161 | A1 | 4 | 1161 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1162 | A1 | 4 | 1162 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1163 | A1 | 4 | 1163 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1164 | A1 | 4 | 1164 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1165 | A1 | 4 | 1165 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1166 | A1 | 4 | 1166 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1167 | A1 | 4 | 1167 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1168 | A1 | 4 | 1168 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1169 | A1 | 4 | 1169 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1170 | A1 | 4 | 1170 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1171 | A1 | 4 | 1171 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1172 | A1 | 4 | 1172 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1173 | A1 | 4 | 1173 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1174 | A1 | 4 | 1174 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1175 | A1 | 4 | 1175 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1176 | A1 | 4 | 1176 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1177 | A1 | 4 | 1177 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1178 | A1 | 4 | 1178 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1179 | A1 | 4 | 1179 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1180 | A1 | 4 | 1180 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1181 | A1 | 4 | 1181 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1182 | A1 | 4 | 1182 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
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| A1_1_1184 | A1 | 4 | 1184 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
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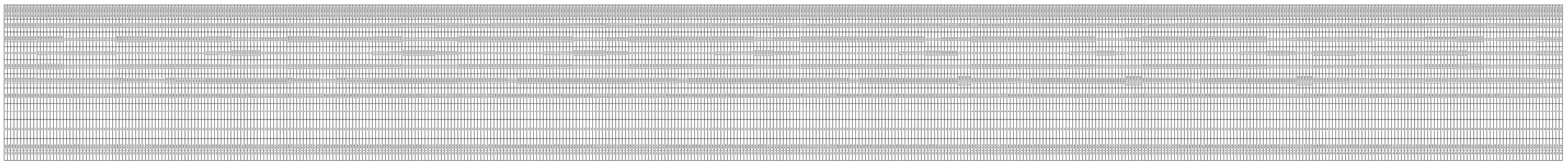
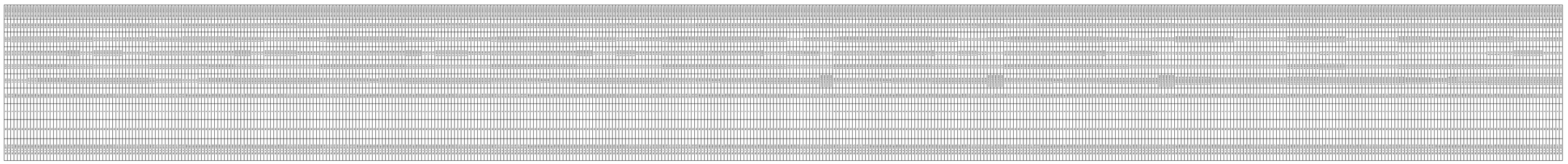
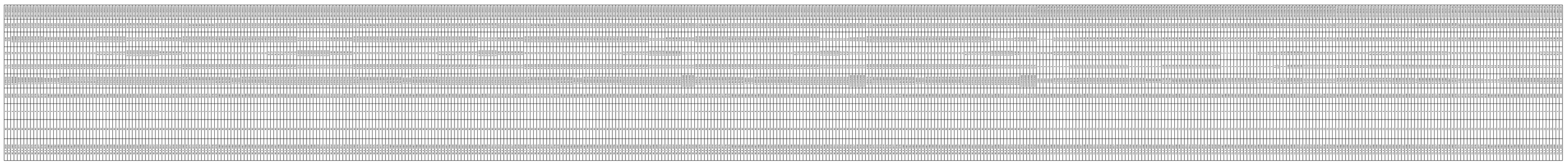
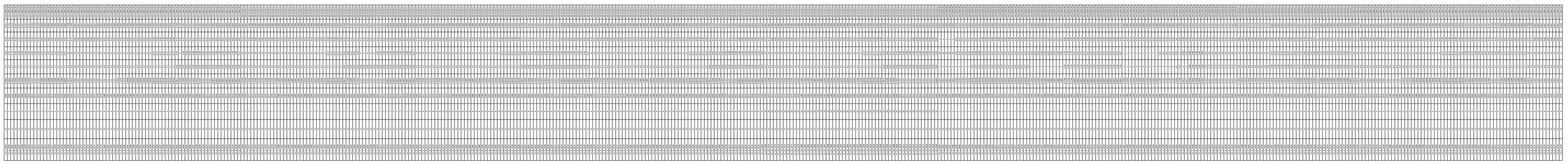
| A1_1_1189 | A1 | 4 | 1189 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1190 | A1 | 4 | 1190 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1191 | A1 | 4 | 1191 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1192 | A1 | 4 | 1192 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1193 | A1 | 4 | 1193 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1194 | A1 | 4 | 1194 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1195 | A1 | 4 | 1195 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1196 | A1 | 4 | 1196 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1197 | A1 | 4 | 1197 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1198 | A1 | 4 | 1198 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1199 | A1 | 4 | 1199 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2000 | A1 | 4 | 2000 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2001 | A1 | 4 | 2001 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2002 | A1 | 4 | 2002 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2003 | A1 | 4 | 2003 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2004 | A1 | 4 | 2004 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2005 | A1 | 4 | 2005 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2006 | A1 | 4 | 2006 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2007 | A1 | 4 | 2007 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2008 | A1 | 4 | 2008 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2009 | A1 | 4 | 2009 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2010 | A1 | 4 | 2010 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2011 | A1 | 4 | 2011 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2012 | A1 | 4 | 2012 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2013 | A1 | 4 | 2013 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2014 | A1 | 4 | 2014 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2015 | A1 | 4 | 2015 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2016 | A1 | 4 | 2016 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2017 | A1 | 4 | 2017 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2018 | A1 | 4 | 2018 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2019 | A1 | 4 | 2019 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2020 | A1 | 4 | 2020 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |

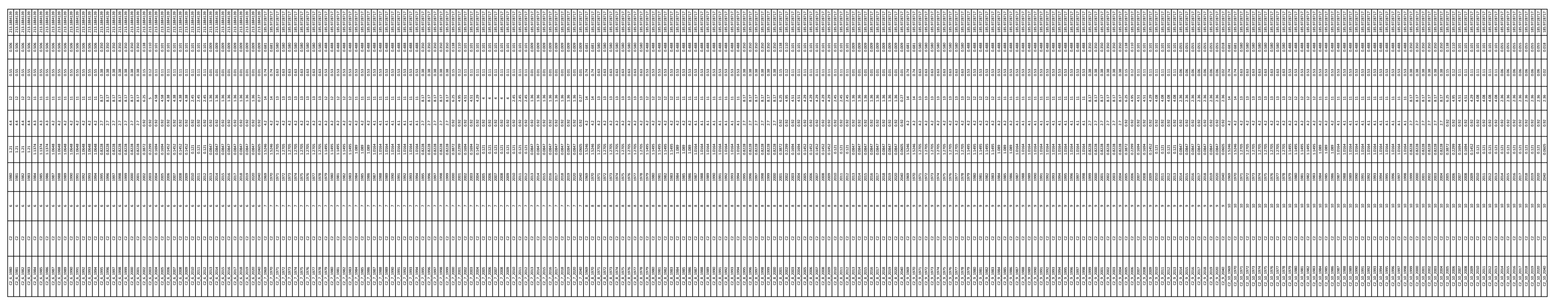
| CRAFVP | Engine #Deprcy | HP #Deprcy | Deterioration Factor (g/bhp-hr) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ROG | HC | CO | NOx | PM | PM2.5 |
| A1_1_1 | A1 | 1 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_2 | A1 | 2 | 0.28 | 0.28 | 0.16 | 0.14 | 0.44 | 0.4408 |
| A1_1_3 | A1 | 3 | 0.28 | 0.28 | 0.16 | 0.14 | 0.44 | 0.4408 |
| A1_1_4 | A1 | 4 | 0.28 | 0.28 | 0.16 | 0.14 | 0.44 | 0.4408 |
| A1_1_5 | A1 | 5 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_6 | A1 | 6 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_7 | A1 | 7 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_8 | A1 | 8 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_9 | A1 | 9 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A2_1_1 |











## SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - CARB Defaults

Data sources for all tables below except GHG Parameters:

https://www.arb.ca.gov/msei/california_harbor_craft_emissions_inventory_database_10072011.mdb
https://www.arb.ca.gov/msei/california_crew_supply_emissions_inventory_database_10072011.mdb
https://www.arb.ca.gov/msei/california_barge_dredge_emissions_inventory_database_10072011.mdb

**HP Category**

| Vessel Type ID | HP Category ID | Min HP | Max HP |
|---|---|---|---|
| A/B | 1 | 25 | 50 |
| A/B | 2 | 51 | 120 |
| A/B | 3 | 121 | 175 |
| A/B | 4 | 176 | 250 |
| A/B | 5 | 251 | 500 |
| A/B | 6 | 501 | 750 |
| A/B | 7 | 751 | 1900 |
| A/B | 8 | 1901 | 3300 |
| A/B | 9 | 3301 | 5000 |
| C | 1 | 0 | 15 |
| C | 2 | 16 | 25 |
| C | 3 | 26 | 50 |
| C | 4 | 51 | 120 |
| C | 5 | 121 | 175 |
| C | 6 | 176 | 250 |
| C | 7 | 251 | 500 |
| C | 8 | 501 | 750 |
| C | 9 | 751 | 1000 |
| C | 10 | 1001 | 9999 |

**Engine Category**

| Combined Vessel Type and Engine Type ID | Engine Type | Description |
|---|---|---|
| A1 | Main | Harbor Craft main engine |
| A2 | Aux | Harbor Craft auxiliary engine |
| B1 | Main | Crew and Supply Vessel main engine |
| B2 | Aux | Crew and Supply Vessel auxiliary engine |
| C1 | Main | Barge and Dredge main engine |
| C2 | Aux | Barge and Dredge auxiliary engine |
| **Combined Vessel Type and Engine Type ID** | **Engine Type** | **Description** |
| C1 | Main | Barge |
| C1 | Main | Dredge |
| A1 | Main | Ferries |
| B1 | Main | Crew and Supply |
| A1 | Main | Pilot Vessels |
| A1 | Main | Tug Boats |
| A1 | Main | Tow Boats / Push Boats |
| A1 | Main | Work Boats |
| A1 | Main | Others |
| A1 | Main | Commercial Fishing |
| A1 | Main | Charter Fishing |
| A2 | Aux | Commercial Fishing Generator |
| A2 | Aux | Charter Fishing Generator |
| A2 | Aux | Ferries Generator |
| B2 | Aux | Crew and Supply Generator |
| A2 | Aux | Pilot Vessels Generator |
| A2 | Aux | Tug Boats Generator |
| A2 | Aux | Tow Boats / Push Boats Generator |
| A2 | Aux | Work Boats Generator |
| A2 | Aux | Others Generator |
| C2 | Aux | Compressor |
| C2 | Aux | Crane |
| C2 | Aux | Deck_door_engine |
| C2 | Aux | Dredger |
| C2 | Aux | Barge/Dredge Generator |
| C2 | Aux | Hoist_swing_winch |
| C2 | Aux | Other |
| C2 | Aux | Pump |

**GHG Parameters**

| GHG Type | GHG Emitted per Unit Activity (g/gal) | Global Warming Potential |
|---|---|---|
| CO2 | 10206 | 1 |
| CH4 | 0.414 | 25 |
| N2O | 0.0828 | 298 |

| | | |
|---|---|---|
| **Fuel Density** | 3180 | g/gal |

**Vessel Default Parameters**

| Combined Vessel Type and Engine Type ID | Vessel_Type | Load Factor | Useful Life | Average Annual Hours | Average HP |
|---|---|---|---|---|---|
| A1 | Commercial Fishing | 0.27 | 21 | 1250 | 192 |
| A1 | Charter Fishing | 0.52 | 16 | 1622 | 373 |
| A1 | Ferries | 0.42 | 20 | 1843 | 392 |
| B1 | Crew and Supply | 0.38 | 28 | 788 | 384 |
| A1 | Pilot Vessels | 0.51 | 19 | 1031 | 547 |
| A1 | Tug Boats | 0.5 | 21 | 2274 | 1167 |
| A1 | Tow Boats / Push Boats | 0.68 | 26 | 1993 | 331 |
| A1 | Work Boats | 0.45 | 17 | 675 | 364 |
| A1 | Others | 0.52 | 23 | 779 | 192 |
| A2 | Commercial Fishing Generator | 0.43 | 15 | 1633 | 30 |
| A2 | Charter Fishing Generator | 0.43 | 15 | 2077 | 30 |
| A2 | Ferries Generator | 0.43 | 20 | 1254 | 82 |
| B2 | Crew and Supply Generator | 0.32 | 28 | 3036 | 83 |
| A2 | Pilot Vessels Generator | 0.43 | 25 | 994 | 30 |
| A2 | Tug Boats Generator | 0.31 | 22.5 | 2486 | 86 |
| A2 | Tow Boats / Push Boats Generator | 0.43 | 25 | 2965 | 79 |
| A2 | Work Boats Generator | 0.43 | 23 | 750 | 190 |
| A2 | Others Generator | 0.43 | 22 | 805 | 29 |
| C2 | Compressor | 0.54 | 19.5 | 360 | 472 |
| C2 | Crane | 0.42 | 9 | 1050 | 349 |
| C2 | Deck_door_engine | 0.89 | 16 | 1400 | 86 |
| C2 | Dredger | 0.51 | 16 | 561 | 425 |
| C2 | Barge/Dredge Generator | 0.75 | 22.5 | 561 | 410 |
| C2 | Hoist_swing_winch | 0.31 | 27 | 82 | 216 |
| C2 | Other | 0.80 | 16 | 575 | 344 |
| C2 | Pump | 0.71 | 21 | 413 | 383 |
| C1 | Barge | 0.45 | 17 | 1776 | 2883 |
| C1 | Dredge | 0.45 | 17 | 1776 | 2883 |

| Calendar Year Range |
|---|
| 2015 |
| 2016 |
| 2017 |
| 2018 |
| 2019 |
| 2020 |
| 2021 |
| 2022 |
| 2023 |
| 2024 |
| 2025 |
| 2026 |
| 2027 |
| 2028 |
| 2029 |
| 2030 |
| 2031 |
| 2032 |
| 2033 |
| 2034 |
| 2035 |
| 2036 |
| 2037 |
| 2038 |
| 2039 |
| 2040 |
| 2041 |
| 2042 |
| 2043 |
| 2044 |
| 2045 |
| 2046 |
| 2047 |
| 2048 |
| 2049 |
| 2050 |

# SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Instructions

**Introduction:** This tool estimates emission rates for harbor craft engines based on California Air Resources Board emission estimation databases.

**How to start using this tool:**

1. Review the Instructions tab
2. Enter data in the Inputs tab
3. View final results in the MainEngineEmissRates and AuxEngineEmissRates tabs

**Tab Descriptions:**

- Instructions: The current tab with brief description of all tabs and calculator functions.
- Input: This is the only tab that requires user input. Not all fields in this tab are required for the calculations to be completed. Different colors are used to indicate which fields are required and which are optional. *If using this tool for environmental planning purposes, the engine model year, engine rated power, vessel number and location for Main Engine Inputs and Auxiliary Engine Inputs are optional since during the planning phase of a project the User is not expected to know this information. If this tool is being used for calculating emissions for construction mitigation purposes, the User must provide ALL Main Engine Inputs and Auxiliary Engine Inputs. The engine model year, engine rated power, vessel number and location information is expected to be accessible for the construction phase of a project.*
- MainEngineEmissRates: This tab contains final results (emission rates and emission factors) for the main engine(s) of each vessel specified in the "A2. Main Engine" input table in the "Inputs" tab.
- AuxEngineEmissRates: This tab contains final results (emission rates and emission factors) for each auxiliary engine specified in the "A3. Auxiliary Engine" input table in the "Inputs" tab.
- VesselDesc: This tab includes brief descriptions of harbor craft vessel types.
- Documentation: This tab documents calculator version information.
- Calculations: Contains all emission factor and emission rate calculations. The "MainEngineEmissRates" and "AuxEngineEmissRates" tabs reference cells in this tab.
- CARB_EFs: Contains reference emission factors.
- CARB_Defaults: Contains default information such as useful life, load factors, average usage, rated horsepower, and model year.

**SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Input Data Page**

**INSTRUCTIONS:**
1. Enter inputs into tables A1, A2, A3, and A4 below. Required inputs must be entered to estimate emission rates, optional inputs should be entered if available.
2. After entering inputs, review status and error messages (cell E14); make changes as necessary until this cell is green indicating that inputs are ready.
3. Results may be reviewed in "MainEngineEmissRates" and "AuxEngineEmissRates" tabs, both colored yellow.

## Inputs and Status

| Inputs color legend | Required Input |
|---|---|
| | Optional Input |
| Status and error messages | OK. Default values will be applied to blank model year and HP |

## A1. Inventory Calendar year

| Inventory Calendar Year | 2024 |
|---|---|

## A4. Project Information

| Inputs | |
|---|---|
| Date (mm/dd/yyyy): | 1/19/2024 |
| Project Name: | Channel Islands Harbor Area A Operations & Maintenance Dredging - Clamshell Dredge |
| Project Location: | Oxnard, Ventura County, California |
| Contact Person: | Kirk Brus |
| Company Name: | Department of the Army, U.S Army Corps of Engineers |
| Mailing Address: | 915 Wilshire Blvd, Room 1109, Los Angeles California |
| Phone Number: | 213 452-3876 |
| Email Address: | Kirk.C.Brus@usace.army.mil |

## A2. Main Engine Inputs

| Required Inputs | | | Optional Inputs | | | |
|---|---|---|---|---|---|---|
| Vessel Name | Vessel Type | No. of Engines | Engine Model Year | Engine Rated Power (hp) | Vessel Number | Home Port |
| Clamshell | Dredge | 2 | | | | |
| Scow Barge | Barge | 2 | | | | |
| Tug Boat | Tug Boats | 2 | | | | |
| Crew Boat | Crew and Supply | 1 | | | | |

## A3. Auxiliary Engine Inputs

| Required Inputs | | | Optional Inputs | |
|---|---|---|---|---|
| Vessel Name | Auxiliary Engine Type | No. of Engines | Engine Model Year | Engine Rated Power (hp) |
| Clamshell | Barge/Dredge Generator | 2 | | |
| Scow Barge | Barge/Dredge Generator | 2 | | |
| Tug Boat | Tug Boats Generator | 2 | | |
| Crew Boat | Crew and Supply Generator | 1 | | |

**SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Main Engine Emission Rates**

**Calendar Year:** 2024 **Number of Entries:** 4

| Vessel/Engine Information | | | | | | | | Emission Rates (lb/hr; estimates for each row are totals over the number of engines listed in column J for that row) | | | | | | | | | | Emission Rates for a Single Engine (g/bhp-hr) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Name | Vessel Number | Home Port | Vessel Type | Engine Model Year | Engine Rated Power (hp) | Engine Load Factor | Number of engines | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
| Clamshell | | | Dredge | 2007 | 2883 | 0.45 | 2 | 0.841 | 0.748 | 29.588 | 1.005 | 6.577 | 0.032 | 3413.693 | 0.138 | 0.028 | 3425.408 | 0.147 | 0.131 | 5.173 | 0.176 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 598.9 |
| Scow Barge | | | Barge | 2007 | 2883 | 0.45 | 2 | 0.841 | 0.748 | 29.588 | 1.005 | 6.577 | 0.032 | 3413.693 | 0.138 | 0.028 | 3425.408 | 0.147 | 0.131 | 5.173 | 0.176 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 598.9 |
| Tug Boat | | | Tug Boats | 2003 | 1167 | 0.50 | 2 | 1.241 | 1.105 | 21.580 | 1.814 | 6.341 | 0.014 | 1521.118 | 0.062 | 0.012 | 1526.338 | 0.482 | 0.429 | 8.385 | 0.705 | 2.464 | 0.006 | 591.045 | 0.024 | 0.005 | 593.1 |
| Crew Boat | | | Crew and Supply | 1996 | 384 | 0.38 | 1 | 0.155 | 0.138 | 3.555 | 0.274 | 0.792 | 0.002 | 189.982 | 0.008 | 0.002 | 190.634 | 0.482 | 0.429 | 11.059 | 0.853 | 2.464 | 0.006 | 591.045 | 0.024 | 0.005 | 593.1 |

**SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Auxiliary Engine Emission Rates**

**Calendar Year:** 2024 **Number of Entries:** 4

| Vessel/Engine Information | | | | | | | | | Emission Rates (lb/hr; estimates for each row are totals over the number of engines listed in column K for that row) | | | | | | | | | | Emission Rates for a Single Engine (g/bhp-hr) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Name | Vessel Number | Home Port | Vessel Type | Auxiliary Engine Type | Engine Model Year | Engine Rated Power (hp) | Engine Load Factor | Number of Engines | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
| Clamshell | | | Dredge | Barge/Dredge Generator | 2001 | 410 | 0.75 | 2 | 0.216 | 0.193 | 7.659 | 0.322 | 1.551 | 0.008 | 805.118 | 0.033 | 0.007 | 807.881 | 0.16 | 0.14 | 5.68 | 0.24 | 1.15 | 0.006 | 596.87 | 0.02 | 0.00 | 598.9 |
| Scow Barge | | | Barge | Barge/Dredge Generator | 2001 | 410 | 0.75 | 2 | 0.216 | 0.193 | 7.659 | 0.322 | 1.551 | 0.008 | 805.118 | 0.033 | 0.007 | 807.881 | 0.16 | 0.14 | 5.68 | 0.24 | 1.15 | 0.006 | 596.87 | 0.02 | 0.00 | 598.9 |
| Tug Boat | | | Tug Boats | Tug Boats Generator | 2001 | 86 | 0.31 | 2 | 0.079 | 0.071 | 0.930 | 0.128 | 0.491 | 0.001 | 69.564 | 0.003 | 0.001 | 69.802 | 0.67 | 0.60 | 7.90 | 1.09 | 4.17 | 0.006 | 591.04 | 0.02 | 0.00 | 593.1 |
| Crew Boat | | | Crew and Supply | Crew and Supply Generator | 1996 | 83 | 0.32 | 1 | 0.043 | 0.039 | 0.809 | 0.112 | 0.337 | 0.000 | 34.702 | 0.001 | 0.000 | 34.821 | 0.73 | 0.66 | 13.78 | 1.91 | 5.74 | 0.006 | 591.04 | 0.02 | 0.00 | 593.1 |

# SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Documentation

**Version 1.0**

1. User provides vessel type; the following inputs for main engines: model year, horsepower, engine count; the following inputs for auxiliary engines: engine type, model year, horsepower, engine count. If engine horsepower or model year are not provided an average estimate from the CARB source calculators will be used to develop emission rates.
2. Calculator looks up zero-hour emission factors, deterioration factors, load factor, and useful life.
3. Calculator calculates emission rates (lb/hr) and emission factors (g/bhp-hr).
4. Additional documentation available in June (2017) Ramboll Environ Memorandum

## SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Emission Factor Calculations

### Main Engine Emission Factor Calculator

**Calendar Year:** 2024 **Number of Entries:** 4

| Vessel/Engine Information | | | | | | | | | | | | Activity | | | Zero-Hour Emission Factors (g/hp-hr) | | | | | Deterioration Factors (g/hp - hr) | | | | | Emission Rates (g/bhp-hr) | | | | | | | | | Emission Rates (g/hr) | | | | | | | | | Fuel Correction Factor | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Name | Vessel Type | Engine Type | Engine Category | Engine Model Year | MdlYr Group | Engine HP | HP Category | FCF HP Category | Engine Load Factor | BSFC (g/hp-hr) | No. of engines | Annual Hours | Age | Useful life | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | NOx | PM | ROG | MY Bin |
| Clamshell | Dredge | Main | C1 | 2007 | 2007 | 2,883 | 10 | 4 | 0.45 | 185.97 | 2 | 1,776 | 17 | 17 | 0.110 | 0.101 | 4.510 | 0.169 | 0.920 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.147 | 0.131 | 5.173 | 0.176 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 381.3 | 339.5 | 13,420.9 | 455.6 | 2,983.4 | 14.5 | 1,548,423.9 | 62.8 | 12.6 | 0.95 | 0.80 | 0.72 | 1996 |
| Scow Barge | Barge | Main | C1 | 2007 | 2007 | 2,883 | 10 | 4 | 0.45 | 185.97 | 2 | 1,776 | 17 | 17 | 0.110 | 0.101 | 4.510 | 0.169 | 0.920 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.147 | 0.131 | 5.173 | 0.176 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 381.3 | 339.5 | 13,420.9 | 455.6 | 2,983.4 | 14.5 | 1,548,423.9 | 62.8 | 12.6 | 0.95 | 0.80 | 0.72 | 1996 |
| Tug Boat | Tug Boats | Main | A1 | 2003 | 2003 | 1,167 | 7 | 4 | 0.50 | 184.16 | 2 | 1,250 | 21 | 21 | 0.361 | 0.332 | 7.310 | 0.680 | 1.971 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.482 | 0.429 | 8.385 | 0.705 | 2.464 | 0.006 | 591.045 | 0.024 | 0.005 | 563.0 | 501.4 | 9,788.6 | 823.0 | 2,876.1 | 6.4 | 689,966.7 | 28.0 | 5.6 | 0.95 | 0.80 | 0.72 | 1996 |
| Crew Boat | Crew and Supply | Main | B1 | 1996 | 1996 | 384 | 5 | 4 | 0.38 | 184.16 | 1 | 788 | 28 | 28 | 0.361 | 0.332 | 9.641 | 0.823 | 1.971 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.482 | 0.429 | 11.059 | 0.853 | 2.464 | 0.006 | 591.045 | 0.024 | 0.005 | 70.3 | 62.6 | 1,612.3 | 124.4 | 359.2 | 0.8 | 86,174.5 | 3.5 | 0.7 | 0.95 | 0.80 | 0.72 | 1996 |

### Auxiliary Engine Emission Factor Calculator

**Calendar Year:** 2024 **Number of Entries:** 4

| Vessel/Engine Information | | | | | | | | | | | | Activity | | | Zero-Hour Emission Factors (g/hp-hr) | | | | | Deterioration Factors (g/hp - hr) | | | | | Emission Rates (g/bhp-hr) | | | | | | | | | Emission Rates (g/hr) | | | | | | | | | Fuel Correction Factor | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Name | Vessel Type | Engine Type | Engine Category | Engine Model Year | MdlYr Group | Engine HP | HP Category | FCF HP Category | Engine Load Factor | BSFC (g/hp-hr) | No. of engines | Annual Hours | Age | Useful life | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | NOx | PM | ROG | MY Bin |
| Clamshell | Barge/Dredge Generator | Aux | C2 | 2001 | 2001 | 410 | 7 | 4 | 0.75 | 185.97 | 2 | 360 | 23 | 23 | 0.120 | 0.110 | 4.950 | 0.230 | 0.920 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.160 | 0.143 | 5.678 | 0.238 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 98.1 | 87.3 | 3,474.1 | 145.8 | 703.6 | 3.4 | 365,195.1 | 14.8 | 3.0 | 0.9 | 0.8 | 0.7 | 1996 |
| Scow Barge | Barge/Dredge Generator | Aux | C2 | 2001 | 2001 | 410 | 7 | 4 | 0.75 | 185.97 | 2 | 360 | 23 | 23 | 0.120 | 0.110 | 4.950 | 0.230 | 0.920 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.160 | 0.143 | 5.678 | 0.238 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 98.1 | 87.3 | 3,474.1 | 145.8 | 703.6 | 3.4 | 365,195.1 | 14.8 | 3.0 | 0.9 | 0.8 | 0.7 | 1996 |
| Tug Boat | Tug Boats Generator | Aux | A2 | 2001 | 2001 | 86 | 2 | 2 | 0.31 | 184.16 | 2 | 1,633 | 23 | 23 | 0.580 | 0.533 | 7.310 | 1.178 | 3.595 | 0.44 | 0.40 | 0.14 | 0.28 | 0.16 | 0.668 | 0.599 | 7.900 | 1.086 | 4.170 | 0.006 | 591.045 | 0.024 | 0.005 | 35.6 | 32.0 | 421.8 | 58.0 | 222.6 | 0.3 | 31,553.5 | 1.3 | 0.3 | 0.9 | 0.8 | 0.7 | 1998 |
| Crew Boat | Crew and Supply Generat | Aux | B2 | 1996 | 1996 | 83 | 2 | 2 | 0.32 | 184.16 | 1 | 3,036 | 28 | 28 | 0.706 | 0.649 | 13.000 | 2.073 | 4.944 | 0.44 | 0.40 | 0.14 | 0.28 | 0.16 | 0.732 | 0.657 | 13.783 | 1.911 | 5.735 | 0.006 | 591.045 | 0.024 | 0.005 | 19.5 | 17.5 | 367.1 | 50.9 | 152.7 | 0.1 | 15,740.6 | 0.6 | 0.1 | 0.9 | 0.7 | 0.7 | 1960 |

**SMAQMD #borcraft #doe and #pe Emission #dtor #culator CARB #ission #dtors Inputs**

Data sources:

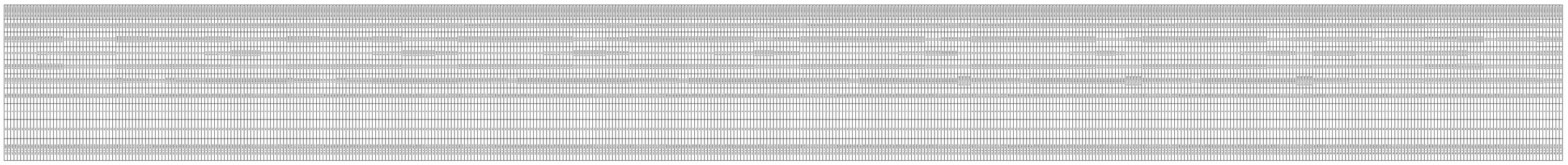
https://www.arb.ca.gov/msei/california-harbor-craft-emissions-inventory-database-10072011.mdb

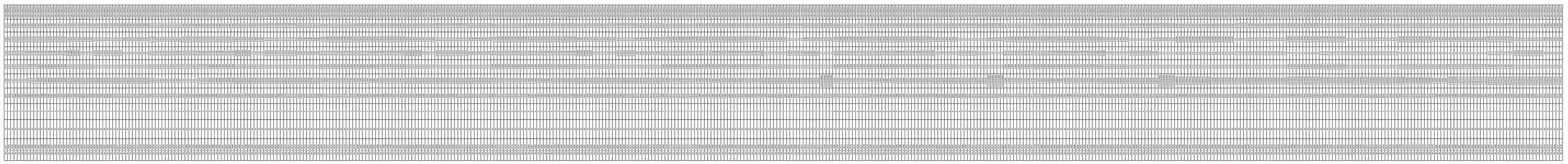
https://www.arb.ca.gov/msei/california-crew-supply-emissions-inventory-database-10072011.mdb

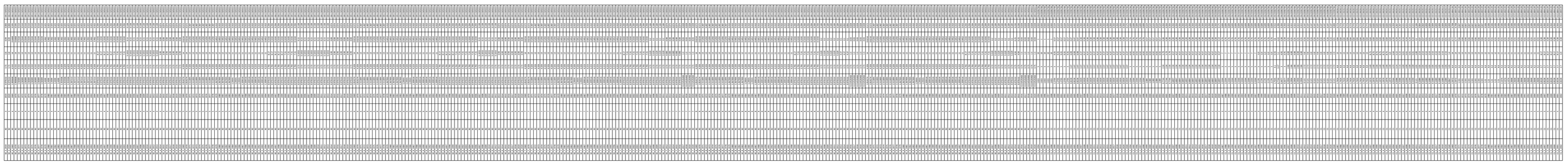
https://www.arb.ca.gov/msei/california-barge-dredge-emissions-inventory-database-10072011.mdb

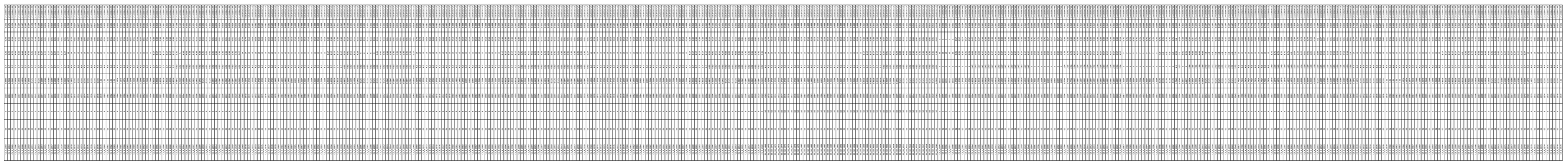
| CRAFVP | Engine #Deprcy | HP #Deprcy | Model #Dr | Zero-Hour #Motion Factor (g/bhp-hr) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | ROG | CO | NOx | PM10 | PM2.5 | SOTC |
| A1_1_1047 | A1 | 1 | 1047 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1048 | A1 | 1 | 1048 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1049 | A1 | 1 | 1049 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1050 | A1 | 1 | 1050 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1051 | A1 | 1 | 1051 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1052 | A1 | 1 | 1052 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1053 | A1 | 1 | 1053 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1054 | A1 | 1 | 1054 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1055 | A1 | 1 | 1055 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1056 | A1 | 1 | 1056 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1057 | A1 | 1 | 1057 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1058 | A1 | 1 | 1058 | 1.8 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1059 | A1 | 1 | 1059 | 1.8 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2030 | A1 | 1 | 2030 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2031 | A1 | 1 | 2031 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2032 | A1 | 1 | 2032 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2033 | A1 | 1 | 2033 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2034 | A1 | 1 | 2034 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2035 | A1 | 1 | 2035 | 1.8 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2036 | A1 | 1 | 2036 | 1.8 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2037 | A1 | 1 | 2037 | 1.8 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2038 | A1 | 1 | 2038 | 1.8 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2039 | A1 | 1 | 2039 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2010 | A1 | 1 | 2010 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2011 | A1 | 1 | 2011 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2012 | A1 | 1 | 2012 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2013 | A1 | 1 | 2013 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2014 | A1 | 1 | 2014 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2015 | A1 | 1 | 2015 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2016 | A1 | 1 | 2016 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2017 | A1 | 1 | 2017 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2018 | A1 | 1 | 2018 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2019 | A1 | 1 | 2019 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2020 | A1 | 1 | 2020 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_1060 | A1 | 1 | 1060 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1061 | A1 | 1 | 1061 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1062 | A1 | 1 | 1062 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1063 | A1 | 1 | 1063 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1064 | A1 | 1 | 1064 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1065 | A1 | 1 | 1065 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1066 | A1 | 1 | 1066 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1067 | A1 | 2 | 1067 | 0.99 | 2.5477 | 10.925 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_1068 | A1 | 2 | 1068 | 0.99 | 2.5477 | 10.925 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_1069 | A1 | 2 | 1069 | 0.99 | 2.5477 | 10.925 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2000 | A1 | 2 | 2000 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2001 | A1 | 2 | 2001 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2002 | A1 | 2 | 2002 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2003 | A1 | 2 | 2003 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2004 | A1 | 2 | 2004 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2005 | A1 | 2 | 2005 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2006 | A1 | 2 | 2006 | 0.99 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2007 | A1 | 2 | 2007 | 0.99 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2008 | A1 | 2 | 2008 | 0.99 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2009 | A1 | 2 | 2009 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2010 | A1 | 2 | 2010 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2011 | A1 | 2 | 2011 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2012 | A1 | 2 | 2012 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2013 | A1 | 2 | 2013 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2014 | A1 | 2 | 2014 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2015 | A1 | 2 | 2015 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2016 | A1 | 2 | 2016 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2017 | A1 | 2 | 2017 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2018 | A1 | 2 | 2018 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2019 | A1 | 2 | 2019 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2020 | A1 | 2 | 2020 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_1070 | A1 | 3 | 1070 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1071 | A1 | 3 | 1071 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1072 | A1 | 3 | 1072 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1073 | A1 | 3 | 1073 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1074 | A1 | 3 | 1074 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1075 | A1 | 3 | 1075 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1076 | A1 | 3 | 1076 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1077 | A1 | 3 | 1077 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1078 | A1 | 3 | 1078 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1079 | A1 | 3 | 1079 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1080 | A1 | 3 | 1080 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1081 | A1 | 3 | 1081 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1082 | A1 | 3 | 1082 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1083 | A1 | 3 | 1083 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1084 | A1 | 3 | 1084 | 0.94 | 3.139 | 13.56 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1085 | A1 | 3 | 1085 | 0.94 | 3.139 | 13.56 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1086 | A1 | 3 | 1086 | 0.94 | 3.139 | 13.56 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1087 | A1 | 3 | 1087 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1088 | A1 | 3 | 1088 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1089 | A1 | 3 | 1089 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1090 | A1 | 3 | 1090 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1091 | A1 | 3 | 1091 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1092 | A1 | 3 | 1092 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1093 | A1 | 3 | 1093 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1094 | A1 | 3 | 1094 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1095 | A1 | 3 | 1095 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1096 | A1 | 3 | 1096 | 0.68 | 1.971 | 9.6406 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_1097 | A1 | 3 | 1097 | 0.68 | 1.971 | 9.6406 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_1098 | A1 | 3 | 1098 | 0.68 | 1.971 | 9.6406 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_1099 | A1 | 3 | 1099 | 0.68 | 1.971 | 9.6406 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2000 | A1 | 3 | 2000 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2001 | A1 | 3 | 2001 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2002 | A1 | 3 | 2002 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2003 | A1 | 3 | 2003 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2004 | A1 | 3 | 2004 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2005 | A1 | 3 | 2005 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2006 | A1 | 3 | 2006 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2007 | A1 | 3 | 2007 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2008 | A1 | 3 | 2008 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2009 | A1 | 3 | 2009 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2010 | A1 | 3 | 2010 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2011 | A1 | 3 | 2011 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2012 | A1 | 3 | 2012 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2013 | A1 | 3 | 2013 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2014 | A1 | 3 | 2014 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2015 | A1 | 3 | 2015 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2016 | A1 | 3 | 2016 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2017 | A1 | 3 | 2017 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2018 | A1 | 3 | 2018 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2019 | A1 | 3 | 2019 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2020 | A1 | 3 | 2020 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_1100 | A1 | 4 | 1100 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1101 | A1 | 4 | 1101 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1102 | A1 | 4 | 1102 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1103 | A1 | 4 | 1103 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1104 | A1 | 4 | 1104 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1105 | A1 | 4 | 1105 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1106 | A1 | 4 | 1106 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1107 | A1 | 4 | 1107 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1108 | A1 | 4 | 1108 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1109 | A1 | 4 | 1109 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1110 | A1 | 4 | 1110 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1111 | A1 | 4 | 1111 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1112 | A1 | 4 | 1112 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1113 | A1 | 4 | 1113 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1114 | A1 | 4 | 1114 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1115 | A1 | 4 | 1115 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1116 | A1 | 4 | 1116 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1117 | A1 | 4 | 1117 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1118 | A1 | 4 | 1118 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1119 | A1 | 4 | 1119 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1120 | A1 | 4 | 1120 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1121 | A1 | 4 | 1121 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1122 | A1 | 4 | 1122 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1123 | A1 | 4 | 1123 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1124 | A1 | 4 | 1124 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1125 | A1 | 4 | 1125 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1126 | A1 | 4 | 1126 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1127 | A1 | 4 | 1127 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1128 | A1 | 4 | 1128 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1129 | A1 | 4 | 1129 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1130 | A1 | 4 | 1130 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1131 | A1 | 4 | 1131 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1132 | A1 | 4 | 1132 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1133 | A1 | 4 | 1133 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1134 | A1 | 4 | 1134 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1135 | A1 | 4 | 1135 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1136 | A1 | 4 | 1136 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1137 | A1 | 4 | 1137 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1138 | A1 | 4 | 1138 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1139 | A1 | 4 | 1139 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1140 | A1 | 4 | 1140 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1141 | A1 | 4 | 1141 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1142 | A1 | 4 | 1142 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1143 | A1 | 4 | 1143 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1144 | A1 | 4 | 1144 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1145 | A1 | 4 | 1145 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1146 | A1 | 4 | 1146 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1147 | A1 | 4 | 1147 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1148 | A1 | 4 | 1148 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1149 | A1 | 4 | 1149 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1150 | A1 | 4 | 1150 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1151 | A1 | 4 | 1151 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1152 | A1 | 4 | 1152 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1153 | A1 | 4 | 1153 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1154 | A1 | 4 | 1154 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1155 | A1 | 4 | 1155 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1156 | A1 | 4 | 1156 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1157 | A1 | 4 | 1157 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1158 | A1 | 4 | 1158 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1159 | A1 | 4 | 1159 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1160 | A1 | 4 | 1160 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1161 | A1 | 4 | 1161 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1162 | A1 | 4 | 1162 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1163 | A1 | 4 | 1163 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1164 | A1 | 4 | 1164 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1165 | A1 | 4 | 1165 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1166 | A1 | 4 | 1166 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1167 | A1 | 4 | 1167 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1168 | A1 | 4 | 1168 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1169 | A1 | 4 | 1169 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1170 | A1 | 4 | 1170 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1171 | A1 | 4 | 1171 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1172 | A1 | 4 | 1172 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1173 | A1 | 4 | 1173 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1174 | A1 | 4 | 1174 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1175 | A1 | 4 | 1175 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1176 | A1 | 4 | 1176 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1177 | A1 | 4 | 1177 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1178 | A1 | 4 | 1178 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1179 | A1 | 4 | 1179 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1180 | A1 | 4 | 1180 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1181 | A1 | 4 | 1181 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1182 | A1 | 4 | 1182 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1183 | A1 | 4 | 1183 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1184 | A1 | 4 | 1184 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1185 | A1 | 4 | 1185 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1186 | A1 | 4 | 1186 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1187 | A1 | 4 | 1187 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1188 | A1 | 4 | 1188 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1189 | A1 | 4 | 1189 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1190 | A1 | 4 | 1190 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1191 | A1 | 4 | 1191 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1192 | A1 | 4 | 1192 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1193 | A1 | 4 | 1193 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1194 | A1 | 4 | 1194 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1195 | A1 | 4 | 1195 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1196 | A1 | 4 | 1196 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1197 | A1 | 4 | 1197 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1198 | A1 | 4 | 1198 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1199 | A1 | 4 | 1199 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2000 | A1 | 4 | 2000 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2001 | A1 | 4 | 2001 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2002 | A1 | 4 | 2002 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2003 | A1 | 4 | 2003 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2004 | A1 | 4 | 2004 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2005 | A1 | 4 | 2005 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2006 | A1 | 4 | 2006 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2007 | A1 | 4 | 2007 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2008 | A1 | 4 | 2008 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2009 | A1 | 4 | 2009 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2010 | A1 | 4 | 2010 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2011 | A1 | 4 | 2011 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2012 | A1 | 4 | 2012 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2013 | A1 | 4 | 2013 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2014 | A1 | 4 | 2014 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2015 | A1 | 4 | 2015 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2016 | A1 | 4 | 2016 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2017 | A1 | 4 | 2017 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2018 | A1 | 4 | 2018 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2019 | A1 | 4 | 2019 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2020 | A1 | 4 | 2020 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |

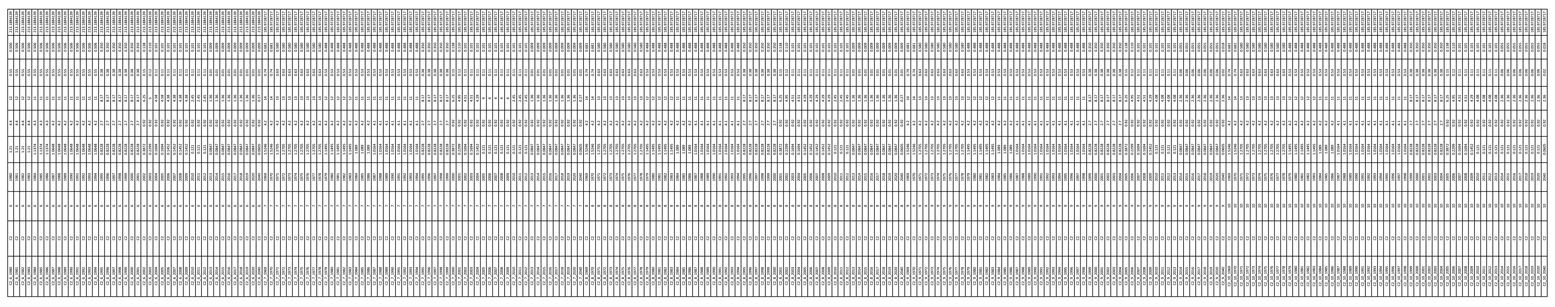
| CRAFVP | Engine #Deprcy | HP #Deprcy | Deterioration Factor (g/bhp-hr) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ROG | HC | CO | NOx | PM | PM2.5 |
| A1_1_1 | A1 | 1 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_2 | A1 | 2 | 0.28 | 0.28 | 0.16 | 0.14 | 0.44 | 0.4408 |
| A1_1_3 | A1 | 3 | 0.28 | 0.28 | 0.16 | 0.14 | 0.44 | 0.4408 |
| A1_1_4 | A1 | 4 | 0.28 | 0.28 | 0.16 | 0.14 | 0.44 | 0.4408 |
| A1_1_5 | A1 | 5 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_6 | A1 | 6 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_7 | A1 | 7 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_8 | A1 | 8 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_9 | A1 | 9 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A2_1_1 |











# SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - CARB Defaults

Data sources for all tables below except GHG Parameters:

https://www.arb.ca.gov/msei/california_harbor_craft_emissions_inventory_database_10072011.mdb

https://www.arb.ca.gov/msei/california_crew_supply_emissions_inventory_database_10072011.mdb

https://www.arb.ca.gov/msei/california_barge_dredge_emissions_inventory_database_10072011.mdb

**HP Category**

| Vessel Type ID | HP Category ID | Min HP | Max HP |
|---|---|---|---|
| A/B | 1 | 25 | 50 |
| A/B | 2 | 51 | 120 |
| A/B | 3 | 121 | 175 |
| A/B | 4 | 176 | 250 |
| A/B | 5 | 251 | 500 |
| A/B | 6 | 501 | 750 |
| A/B | 7 | 751 | 1900 |
| A/B | 8 | 1901 | 3300 |
| A/B | 9 | 3301 | 5000 |
| C | 1 | 0 | 15 |
| C | 2 | 16 | 25 |
| C | 3 | 26 | 50 |
| C | 4 | 51 | 120 |
| C | 5 | 121 | 175 |
| C | 6 | 176 | 250 |
| C | 7 | 251 | 500 |
| C | 8 | 501 | 750 |
| C | 9 | 751 | 1000 |
| C | 10 | 1001 | 9999 |

**Engine Category**

| Combined Vessel Type and Engine Type ID | Engine Type | Description |
|---|---|---|
| A1 | Main | Harbor Craft main engine |
| A2 | Aux | Harbor Craft auxiliary engine |
| B1 | Main | Crew and Supply Vessel main engine |
| B2 | Aux | Crew and Supply Vessel auxiliary engine |
| C1 | Main | Barge and Dredge main engine |
| C2 | Aux | Barge and Dredge auxiliary engine |

| Combined Vessel Type and Engine Type ID | Engine Type | Description |
|---|---|---|
| C1 | Main | Barge |
| C1 | Main | Dredge |
| A1 | Main | Ferries |
| B1 | Main | Crew and Supply |
| A1 | Main | Pilot Vessels |
| A1 | Main | Tug Boats |
| A1 | Main | Tow Boats / Push Boats |
| A1 | Main | Work Boats |
| A1 | Main | Others |
| A1 | Main | Commercial Fishing |
| A1 | Main | Charter Fishing |
| A2 | Aux | Commercial Fishing Generator |
| A2 | Aux | Charter Fishing Generator |
| A2 | Aux | Ferries Generator |
| B2 | Aux | Crew and Supply Generator |
| A2 | Aux | Pilot Vessels Generator |
| A2 | Aux | Tug Boats Generator |
| A2 | Aux | Tow Boats / Push Boats Generator |
| A2 | Aux | Work Boats Generator |
| A2 | Aux | Others Generator |
| C2 | Aux | Compressor |
| C2 | Aux | Crane |
| C2 | Aux | Deck_door_engine |
| C2 | Aux | Dredger |
| C2 | Aux | Barge/Dredge Generator |
| C2 | Aux | Hoist_swing_winch |
| C2 | Aux | Other |
| C2 | Aux | Pump |

**GHG Parameters**

| GHG Type | GHG Emitted per Unit Activity (g/gal) | Global Warming Potential |
|---|---|---|
| CO2 | 10206 | 1 |
| CH4 | 0.414 | 25 |
| N2O | 0.0828 | 298 |

| Fuel Density | 3180 | g/gal |
|---|---|---|

**Vessel Default Parameters**

| Combined Vessel Type and Engine Type ID | Vessel_Type | Load Factor | Useful Life | Average Annual Hours | Average HP |
|---|---|---|---|---|---|
| A1 | Commercial Fishing | 0.27 | 21 | 1250 | 192 |
| A1 | Charter Fishing | 0.52 | 16 | 1622 | 373 |
| A1 | Ferries | 0.42 | 20 | 1843 | 392 |
| B1 | Crew and Supply | 0.38 | 28 | 788 | 384 |
| A1 | Pilot Vessels | 0.51 | 19 | 1031 | 547 |
| A1 | Tug Boats | 0.5 | 21 | 2274 | 1167 |
| A1 | Tow Boats / Push Boats | 0.68 | 26 | 1993 | 331 |
| A1 | Work Boats | 0.45 | 17 | 675 | 364 |
| A1 | Others | 0.52 | 23 | 779 | 192 |
| A2 | Commercial Fishing Generator | 0.43 | 15 | 1633 | 30 |
| A2 | Charter Fishing Generator | 0.43 | 15 | 2077 | 30 |
| A2 | Ferries Generator | 0.43 | 20 | 1254 | 82 |
| B2 | Crew and Supply Generator | 0.32 | 28 | 3036 | 83 |
| A2 | Pilot Vessels Generator | 0.43 | 25 | 994 | 30 |
| A2 | Tug Boats Generator | 0.31 | 22.5 | 2486 | 86 |
| A2 | Tow Boats / Push Boats Generator | 0.43 | 25 | 2965 | 79 |
| A2 | Work Boats Generator | 0.43 | 23 | 750 | 190 |
| A2 | Others Generator | 0.43 | 22 | 805 | 29 |
| C2 | Compressor | 0.54 | 19.5 | 360 | 472 |
| C2 | Crane | 0.42 | 9 | 1050 | 349 |
| C2 | Deck_door_engine | 0.89 | 16 | 1400 | 86 |
| C2 | Dredger | 0.51 | 16 | 561 | 425 |
| C2 | Barge/Dredge Generator | 0.75 | 22.5 | 561 | 410 |
| C2 | Hoist_swing_winch | 0.31 | 27 | 82 | 216 |
| C2 | Other | 0.80 | 16 | 575 | 344 |
| C2 | Pump | 0.71 | 21 | 413 | 383 |
| C1 | Barge | 0.45 | 17 | 1776 | 2883 |
| C1 | Dredge | 0.45 | 17 | 1776 | 2883 |

| Calendar Year Range |
|---|
| 2015 |
| 2016 |
| 2017 |
| 2018 |
| 2019 |
| 2020 |
| 2021 |
| 2022 |
| 2023 |
| 2024 |
| 2025 |
| 2026 |
| 2027 |
| 2028 |
| 2029 |
| 2030 |
| 2031 |
| 2032 |
| 2033 |
| 2034 |
| 2035 |
| 2036 |
| 2037 |
| 2038 |
| 2039 |
| 2040 |
| 2041 |
| 2042 |
| 2043 |
| 2044 |
| 2045 |
| 2046 |
| 2047 |
| 2048 |
| 2049 |
| 2050 |

# SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Instructions

**Introduction:** This tool estimates emission rates for harbor craft engines based on California Air Resources Board emission estimation databases.

**How to start using this tool:**

1. Review the Instructions tab
2. Enter data in the Inputs tab
3. View final results in the MainEngineEmissRates and AuxEngineEmissRates tabs

**Tab Descriptions:**

- Instructions: The current tab with brief description of all tabs and calculator functions.
- Input: This is the only tab that requires user input. Not all fields in this tab are required for the calculations to be completed. Different colors are used to indicate which fields are required and which are optional. *If using this tool for environmental planning purposes, the engine model year, engine rated power, vessel number and location for Main Engine Inputs and Auxiliary Engine Inputs are optional since during the planning phase of a project the User is not expected to know this information. If this tool is being used for calculating emissions for construction mitigation purposes, the User must provide ALL Main Engine Inputs and Auxiliary Engine Inputs. The engine model year, engine rated power, vessel number and location information is expected to be accessible for the construction phase of a project.*
- MainEngineEmissRates: This tab contains final results (emission rates and emission factors) for the main engine(s) of each vessel specified in the "A2. Main Engine" input table in the "Inputs" tab.
- AuxEngineEmissRates: This tab contains final results (emission rates and emission factors) for each auxiliary engine specified in the "A3. Auxiliary Engine" input table in the "Inputs" tab.
- VesselDesc: This tab includes brief descriptions of harbor craft vessel types.
- Documentation: This tab documents calculator version information.
- Calculations: Contains all emission factor and emission rate calculations. The "MainEngineEmissRates" and "AuxEngineEmissRates" tabs reference cells in this tab.
- CARB_EFs: Contains reference emission factors.
- CARB_Defaults: Contains default information such as useful life, load factors, average usage, rated horsepower, and model year.

**SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Input Data Page**

**INSTRUCTIONS:**
1. Enter inputs into tables A1, A2, A3, and A4 below. Required inputs must be entered to estimate emission rates, optional inputs should be entered if available.
2. After entering inputs, review status and error messages (cell E14); make changes as necessary until this cell is green indicating that inputs are ready.
3. Results may be reviewed in "MainEngineEmissRates" and "AuxEngineEmissRates" tabs, both colored yellow.

## Inputs and Status

| Inputs color legend | Required Input |
|---|---|
| | Optional Input |
| Status and error messages | OK. Default values will be applied to blank model year and HP |

## A1. Inventory Calendar year

| Inventory Calendar Year | 2024 |
|---|---|

## A4. Project Information

| Inputs | |
|---|---|
| Date (mm/dd/yyyy): | 1/22/2024 |
| Project Name: | Port Hueneme Harbor Dredge Template Maintenance Dredging - Hydraulic Pipeline Dredge |
| Project Location: | Port Hueneme, Ventura County, California |
| Contact Person: | Kirk Brus |
| Company Name: | Department of the Army, U.S Army Corps of Engineers |
| Mailing Address: | 915 Wilshire Blvd, Room 1109, Los Angeles California |
| Phone Number: | 213 452-3876 |
| Email Address: | Kirk.C.Brus@usace.army.mil |

## A2. Main Engine Inputs

| Required Inputs | | | Optional Inputs | | | |
|---|---|---|---|---|---|---|
| Vessel Name | Vessel Type | No. of Engines | Engine Model Year | Engine Rated Power (hp) | Vessel Number | Home Port |
| Hydraulic Dredge | Dredge | 4 | | | | |
| Anchor Tender Support Boat | Work Boats | 1 | | | | |
| Pipe Tender Support Boat | Work Boats | 1 | | | | |
| Crew Boat | Crew and Supply | 1 | | | | |
| Tug Boats | Tug Boats | 2 | | | | |

## A3. Auxiliary Engine Inputs

| Required Inputs | | | Optional Inputs | |
|---|---|---|---|---|
| Vessel Name | Auxiliary Engine Type | No. of Engines | Engine Model Year | Engine Rated Power (hp) |
| Hydraulic Dredge | Dredger | 4 | | |
| Anchor Tender Support Boat | Work Boats Generator | 1 | | |
| Pipe Tender Support Boat | Work Boats Generator | 1 | | |
| Crew Boat | Crew and Supply Generator | 1 | | |
| Tug Boats | Tug Boats Generator | 2 | | |

**SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Main Engine Emission Rates**

**Calendar Year:** 2024 **Number of Entries:** 5

| Vessel/Engine Information | | | | | | | | Emission Rates (lb/hr; estimates for each row are totals over the number of engines listed in column J for that row) | | | | | | | | | | Emission Rates for a Single Engine (g/bhp-hr) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Name | Vessel Number | Home Port | Vessel Type | Engine Model Year | Engine Rated Power (hp) | Engine Load Factor | Number of engines | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
| Hydraulic Dred | | | Dredge | 2007 | 2883 | 0.45 | 4 | 1.681 | 1.497 | 59.176 | 2.009 | 13.154 | 0.064 | 6827.386 | 0.277 | 0.055 | 6850.816 | 0.147 | 0.131 | 5.173 | 0.176 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 598.9 |
| Anchor Tender | | | Work Boats | 2007 | 364 | 0.45 | 1 | 0.072 | 0.065 | 2.115 | 0.255 | 1.685 | 0.002 | 213.660 | 0.009 | 0.002 | 214.393 | 0.200 | 0.178 | 5.852 | 0.705 | 4.663 | 0.006 | 591.045 | 0.024 | 0.005 | 593.1 |
| Pipe Tender Su | | | Work Boats | 2007 | 364 | 0.45 | 1 | 0.072 | 0.065 | 2.115 | 0.255 | 1.685 | 0.002 | 213.660 | 0.009 | 0.002 | 214.393 | 0.200 | 0.178 | 5.852 | 0.705 | 4.663 | 0.006 | 591.045 | 0.024 | 0.005 | 593.1 |
| Crew Boat | | | Crew and Supply | 1996 | 384 | 0.38 | 1 | 0.155 | 0.138 | 3.555 | 0.274 | 0.792 | 0.002 | 189.982 | 0.008 | 0.002 | 190.634 | 0.482 | 0.429 | 11.059 | 0.853 | 2.464 | 0.006 | 591.045 | 0.024 | 0.005 | 593.1 |
| Tug Boats | | | Tug Boats | 2003 | 1167 | 0.50 | 2 | 1.241 | 1.105 | 21.580 | 1.814 | 6.341 | 0.014 | 1521.118 | 0.062 | 0.012 | 1526.338 | 0.482 | 0.429 | 8.385 | 0.705 | 2.464 | 0.006 | 591.045 | 0.024 | 0.005 | 593.1 |

**SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Auxiliary Engine Emission Rates**

**Calendar Year:** 2024 **Number of Entries:** 5

| Vessel/Engine Information | | | | | | | | | Emission Rates (lb/hr; estimates for each row are totals over the number of engines listed in column K for that row) | | | | | | | | | | Emission Rates for a Single Engine (g/bhp-hr) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Name | Vessel Number | Home Port | Vessel Type | Auxiliary Engine Type | Engine Model Year | Engine Rated Power (hp) | Engine Load Factor | Number of Engines | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
| Hydraulic Dred | | | Dredge | Dredger | 2008 | 425 | 0.51 | 4 | 0.281 | 0.250 | 8.770 | 0.240 | 2.198 | 0.011 | 1140.858 | 0.046 | 0.009 | 1144.774 | 0.15 | 0.13 | 4.59 | 0.13 | 1.15 | 0.006 | 596.87 | 0.02 | 0.00 | 598.9 |
| Anchor Tender | | | Work Boats | Work Boats Generator | 2001 | 190 | 0.43 | 1 | 0.066 | 0.059 | 1.422 | 0.134 | 0.581 | 0.001 | 106.364 | 0.004 | 0.001 | 106.729 | 0.37 | 0.33 | 7.90 | 0.75 | 3.23 | 0.006 | 591.04 | 0.02 | 0.00 | 593.1 |
| Pipe Tender Su | | | Work Boats | Work Boats Generator | 2001 | 190 | 0.43 | 1 | 0.066 | 0.059 | 1.422 | 0.134 | 0.581 | 0.001 | 106.364 | 0.004 | 0.001 | 106.729 | 0.37 | 0.33 | 7.90 | 0.75 | 3.23 | 0.006 | 591.04 | 0.02 | 0.00 | 593.1 |
| Crew Boat | | | Crew and Supply | Crew and Supply Generator | 1996 | 83 | 0.32 | 1 | 0.043 | 0.039 | 0.809 | 0.112 | 0.337 | 0.000 | 34.702 | 0.001 | 0.000 | 34.821 | 0.73 | 0.66 | 13.78 | 1.91 | 5.74 | 0.006 | 591.04 | 0.02 | 0.00 | 593.1 |
| Tug Boats | | | Tug Boats | Tug Boats Generator | 2001 | 86 | 0.31 | 2 | 0.079 | 0.071 | 0.930 | 0.128 | 0.491 | 0.001 | 69.564 | 0.003 | 0.001 | 69.802 | 0.67 | 0.60 | 7.90 | 1.09 | 4.17 | 0.006 | 591.04 | 0.02 | 0.00 | 593.1 |

# SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Documentation

**Version 1.0**

1. User provides vessel type; the following inputs for main engines: model year, horsepower, engine count; the following inputs for auxiliary engines: engine type, model year, horsepower, engine count. If engine horsepower or model year are not provided an average estimate from the CARB source calculators will be used to develop emission rates.
2. Calculator looks up zero-hour emission factors, deterioration factors, load factor, and useful life.
3. Calculator calculates emission rates (lb/hr) and emission factors (g/bhp-hr).
4. Additional documentation available in June (2017) Ramboll Environ Memorandum

**SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Emission Factor Calculations**

## Main Engine Emission Factor Calculator

**Calendar Year:** 2024 **Number of Entries:** 5

| Vessel/Engine Information | | | | | | | | | | | | Activity | | | Zero-Hour Emission Factors (g/hp-hr) | | | | | Deterioration Factors (g/hp - hr) | | | | | Emission Rates (g/bhp-hr) | | | | | | | | | Emission Rates (g/hr) | | | | | | | | | Fuel Correction Factor | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Name | Vessel Type | Engine Type | Engine Category | Engine Model Year | MdlYr Group | Engine HP | HP Category | FCF HP Category | Engine Load Factor | BSFC (g/hp-hr) | No. of engines | Annual Hours | Age | Useful life | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | NOx | PM | ROG | MY Bin |
| Hydraulic Dredge | Dredge | Main | C1 | 2007 | 2007 | 2,883 | 10 | 4 | 0.45 | 185.97 | 4 | 1,776 | 17 | 17 | 0.110 | 0.101 | 4.510 | 0.169 | 0.920 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.147 | 0.131 | 5.173 | 0.176 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 762.5 | 679.0 | 26,841.8 | 911.3 | 5,966.8 | 28.9 | 3,096,847.8 | 125.6 | 25.1 | 0.95 | 0.80 | 0.72 | 1996 |
| Anchor Tender Support Bo | Work Boats | Main | A1 | 2007 | 2007 | 364 | 5 | 4 | 0.45 | 184.16 | 1 | 1,250 | 17 | 17 | 0.150 | 0.138 | 5.102 | 0.680 | 3.730 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.200 | 0.178 | 5.852 | 0.705 | 4.663 | 0.006 | 591.045 | 0.024 | 0.005 | 32.9 | 29.3 | 959.5 | 115.6 | 764.5 | 0.9 | 96,914.4 | 3.9 | 0.8 | 0.95 | 0.80 | 0.72 | 1996 |
| Pipe Tender Support Boat | Work Boats | Main | A1 | 2007 | 2007 | 364 | 5 | 4 | 0.45 | 184.16 | 1 | 1,250 | 17 | 17 | 0.150 | 0.138 | 5.102 | 0.680 | 3.730 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.200 | 0.178 | 5.852 | 0.705 | 4.663 | 0.006 | 591.045 | 0.024 | 0.005 | 32.9 | 29.3 | 959.5 | 115.6 | 764.5 | 0.9 | 96,914.4 | 3.9 | 0.8 | 0.95 | 0.80 | 0.72 | 1996 |
| Crew Boat | Crew and Supply | Main | B1 | 1996 | 1996 | 384 | 5 | 4 | 0.38 | 184.16 | 1 | 788 | 28 | 28 | 0.361 | 0.332 | 9.641 | 0.823 | 1.971 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.482 | 0.429 | 11.059 | 0.853 | 2.464 | 0.006 | 591.045 | 0.024 | 0.005 | 70.3 | 62.6 | 1,612.3 | 124.4 | 359.2 | 0.8 | 86,174.5 | 3.5 | 0.7 | 0.95 | 0.80 | 0.72 | 1996 |
| Tug Boats | Tug Boats | Main | A1 | 2003 | 2003 | 1,167 | 7 | 4 | 0.50 | 184.16 | 2 | 1,250 | 21 | 21 | 0.361 | 0.332 | 7.310 | 0.680 | 1.971 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.482 | 0.429 | 8.385 | 0.705 | 2.464 | 0.006 | 591.045 | 0.024 | 0.005 | 563.0 | 501.4 | 9,788.6 | 823.0 | 2,876.1 | 6.4 | 689,966.7 | 28.0 | 5.6 | 0.9 | 0.8 | 0.7 | 1996 |

## Auxiliary Engine Emission Factor Calculator

**Calendar Year:** 2024 **Number of Entries:** 5

| Vessel/Engine Information | | | | | | | | | | | | Activity | | | Zero-Hour Emission Factors (g/hp-hr) | | | | | Deterioration Factors (g/hp - hr) | | | | | Emission Rates (g/bhp-hr) | | | | | | | | | Emission Rates (g/hr) | | | | | | | | | Fuel Correction Factor | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Name | Vessel Type | Engine Type | Engine Category | Engine Model Year | MdlYr Group | Engine HP | HP Category | FCF HP Category | Engine Load Factor | BSFC (g/hp-hr) | No. of engines | Annual Hours | Age | Useful life | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | NOx | PM | ROG | MY Bin |
| Hydraulic Dredge | Dredger | Aux | C2 | 2008 | 2008 | 425 | 7 | 4 | 0.51 | 185.97 | 4 | 360 | 16 | 16 | 0.110 | 0.101 | 4.000 | 0.121 | 0.920 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.147 | 0.131 | 4.588 | 0.125 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 127.4 | 113.5 | 3,978.1 | 108.8 | 997.1 | 4.8 | 517,484.3 | 21.0 | 4.2 | 0.9 | 0.8 | 0.7 | 1996 |
| Anchor Tender Support Bo | Work Boats Generator | Aux | A2 | 2001 | 2001 | 190 | 4 | 4 | 0.43 | 184.16 | 1 | 1,633 | 23 | 23 | 0.319 | 0.294 | 7.310 | 0.809 | 2.781 | 0.44 | 0.40 | 0.14 | 0.28 | 0.16 | 0.368 | 0.330 | 7.900 | 0.746 | 3.226 | 0.006 | 591.045 | 0.024 | 0.005 | 30.0 | 26.9 | 644.9 | 60.9 | 263.3 | 0.5 | 48,246.0 | 2.0 | 0.4 | 0.9 | 0.8 | 0.7 | 1996 |
| Pipe Tender Support Boat | Work Boats Generator | Aux | A2 | 2001 | 2001 | 190 | 4 | 4 | 0.43 | 184.16 | 1 | 1,633 | 23 | 23 | 0.319 | 0.294 | 7.310 | 0.809 | 2.781 | 0.44 | 0.40 | 0.14 | 0.28 | 0.16 | 0.368 | 0.330 | 7.900 | 0.746 | 3.226 | 0.006 | 591.045 | 0.024 | 0.005 | 30.0 | 26.9 | 644.9 | 60.9 | 263.3 | 0.5 | 48,246.0 | 2.0 | 0.4 | 0.9 | 0.8 | 0.7 | 1996 |
| Crew Boat | Crew and Supply Generat | Aux | B2 | 1996 | 1996 | 83 | 2 | 2 | 0.32 | 184.16 | 1 | 3,036 | 28 | 28 | 0.706 | 0.649 | 13.000 | 2.073 | 4.944 | 0.44 | 0.40 | 0.14 | 0.28 | 0.16 | 0.732 | 0.657 | 13.783 | 1.911 | 5.735 | 0.006 | 591.045 | 0.024 | 0.005 | 19.5 | 17.5 | 367.1 | 50.9 | 152.7 | 0.1 | 15,740.6 | 0.6 | 0.1 | 0.9 | 0.7 | 0.7 | 1960 |
| Tug Boats | Tug Boats Generator | Aux | A2 | 2001 | 2001 | 86 | 2 | 2 | 0.31 | 184.16 | 2 | 1,633 | 23 | 23 | 0.580 | 0.533 | 7.310 | 1.178 | 3.595 | 0.44 | 0.40 | 0.14 | 0.28 | 0.16 | 0.668 | 0.599 | 7.900 | 1.086 | 4.170 | 0.006 | 591.045 | 0.024 | 0.005 | 35.6 | 32.0 | 421.8 | 58.0 | 222.6 | 0.3 | 31,553.5 | 1.3 | 0.3 | 0.9 | 0.8 | 0.7 | 1998 |

**SMAQMD #borcraft #doe and #pe Emission #dtor #culator CARB #ission #dtors Inputs**

Data sources:

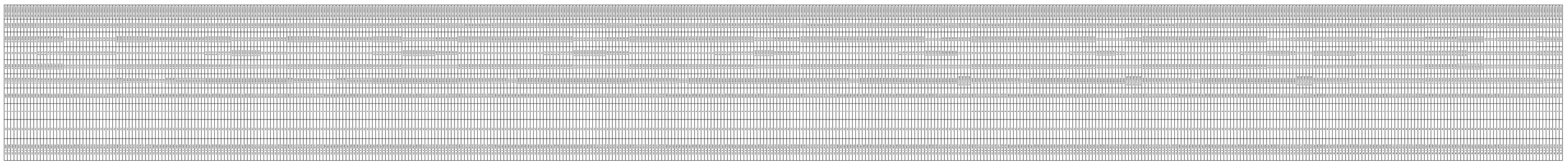
https://www.arb.ca.gov/msei/california-harbor-craft-emissions-inventory-database-10072011.mdb

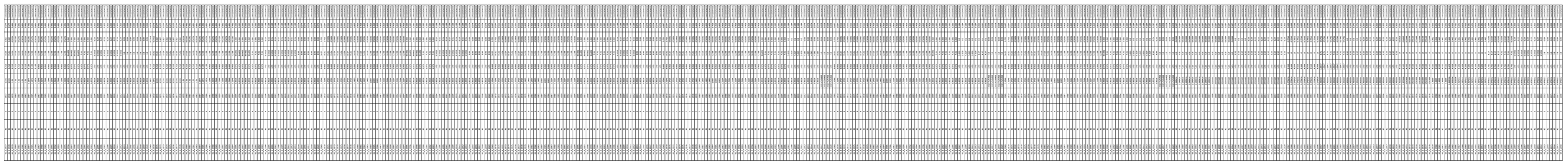
https://www.arb.ca.gov/msei/california-crew-supply-emissions-inventory-database-10072011.mdb

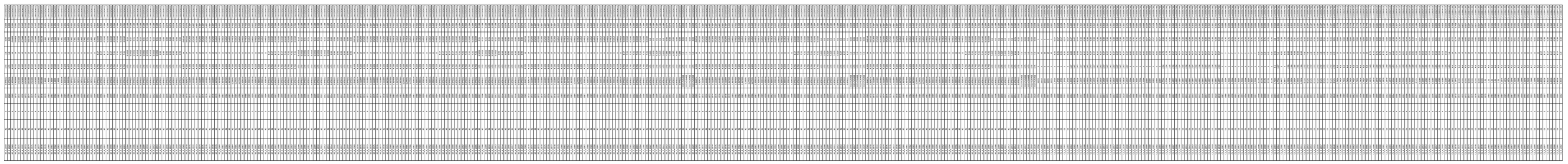
https://www.arb.ca.gov/msei/california-barge-dredge-emissions-inventory-database-10072011.mdb

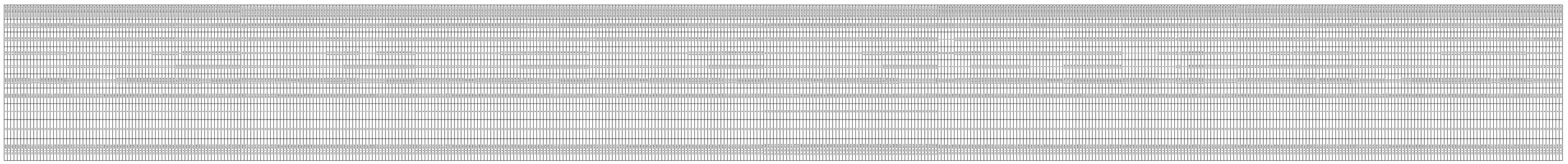
| CRAFVP | Engine #Deprcy | HP #Deprcy | Model #Dr | Zero-Hour #Motion Factor (g/bhp-hr) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | ROG | CO | NOx | PM10 | PM2.5 | SOTC |
| A1_1_1047 | A1 | 1 | 1047 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1048 | A1 | 1 | 1048 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1049 | A1 | 1 | 1049 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1050 | A1 | 1 | 1050 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1051 | A1 | 1 | 1051 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1052 | A1 | 1 | 1052 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1053 | A1 | 1 | 1053 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1054 | A1 | 1 | 1054 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1055 | A1 | 1 | 1055 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1056 | A1 | 1 | 1056 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1057 | A1 | 1 | 1057 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1058 | A1 | 1 | 1058 | 1.8 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1059 | A1 | 1 | 1059 | 1.8 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2030 | A1 | 1 | 2030 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2031 | A1 | 1 | 2031 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2032 | A1 | 1 | 2032 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2033 | A1 | 1 | 2033 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2034 | A1 | 1 | 2034 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2035 | A1 | 1 | 2035 | 1.8 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2036 | A1 | 1 | 2036 | 1.8 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2037 | A1 | 1 | 2037 | 1.8 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2038 | A1 | 1 | 2038 | 1.8 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2039 | A1 | 1 | 2039 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2010 | A1 | 1 | 2010 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2011 | A1 | 1 | 2011 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2012 | A1 | 1 | 2012 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2013 | A1 | 1 | 2013 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2014 | A1 | 1 | 2014 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2015 | A1 | 1 | 2015 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2016 | A1 | 1 | 2016 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2017 | A1 | 1 | 2017 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2018 | A1 | 1 | 2018 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2019 | A1 | 1 | 2019 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2020 | A1 | 1 | 2020 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_1060 | A1 | 1 | 1060 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1061 | A1 | 1 | 1061 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1062 | A1 | 1 | 1062 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1063 | A1 | 1 | 1063 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1064 | A1 | 1 | 1064 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1065 | A1 | 1 | 1065 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1066 | A1 | 1 | 1066 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1067 | A1 | 2 | 1067 | 0.99 | 2.5477 | 10.925 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_1068 | A1 | 2 | 1068 | 0.99 | 2.5477 | 10.925 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_1069 | A1 | 2 | 1069 | 0.99 | 2.5477 | 10.925 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2000 | A1 | 2 | 2000 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2001 | A1 | 2 | 2001 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2002 | A1 | 2 | 2002 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2003 | A1 | 2 | 2003 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2004 | A1 | 2 | 2004 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2005 | A1 | 2 | 2005 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2006 | A1 | 2 | 2006 | 0.99 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2007 | A1 | 2 | 2007 | 0.99 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2008 | A1 | 2 | 2008 | 0.99 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2009 | A1 | 2 | 2009 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2010 | A1 | 2 | 2010 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2011 | A1 | 2 | 2011 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2012 | A1 | 2 | 2012 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2013 | A1 | 2 | 2013 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2014 | A1 | 2 | 2014 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2015 | A1 | 2 | 2015 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2016 | A1 | 2 | 2016 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2017 | A1 | 2 | 2017 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2018 | A1 | 2 | 2018 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2019 | A1 | 2 | 2019 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2020 | A1 | 2 | 2020 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_1070 | A1 | 3 | 1070 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1071 | A1 | 3 | 1071 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1072 | A1 | 3 | 1072 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1073 | A1 | 3 | 1073 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1074 | A1 | 3 | 1074 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1075 | A1 | 3 | 1075 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1076 | A1 | 3 | 1076 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1077 | A1 | 3 | 1077 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1078 | A1 | 3 | 1078 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1079 | A1 | 3 | 1079 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1080 | A1 | 3 | 1080 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1081 | A1 | 3 | 1081 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1082 | A1 | 3 | 1082 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1083 | A1 | 3 | 1083 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1084 | A1 | 3 | 1084 | 0.94 | 3.139 | 13.56 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1085 | A1 | 3 | 1085 | 0.94 | 3.139 | 13.56 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1086 | A1 | 3 | 1086 | 0.94 | 3.139 | 13.56 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1087 | A1 | 3 | 1087 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1088 | A1 | 3 | 1088 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1089 | A1 | 3 | 1089 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1090 | A1 | 3 | 1090 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1091 | A1 | 3 | 1091 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1092 | A1 | 3 | 1092 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1093 | A1 | 3 | 1093 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1094 | A1 | 3 | 1094 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1095 | A1 | 3 | 1095 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1096 | A1 | 3 | 1096 | 0.68 | 1.971 | 9.6406 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_1097 | A1 | 3 | 1097 | 0.68 | 1.971 | 9.6406 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_1098 | A1 | 3 | 1098 | 0.68 | 1.971 | 9.6406 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_1099 | A1 | 3 | 1099 | 0.68 | 1.971 | 9.6406 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2000 | A1 | 3 | 2000 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2001 | A1 | 3 | 2001 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2002 | A1 | 3 | 2002 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2003 | A1 | 3 | 2003 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2004 | A1 | 3 | 2004 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2005 | A1 | 3 | 2005 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2006 | A1 | 3 | 2006 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2007 | A1 | 3 | 2007 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2008 | A1 | 3 | 2008 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2009 | A1 | 3 | 2009 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2010 | A1 | 3 | 2010 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2011 | A1 | 3 | 2011 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2012 | A1 | 3 | 2012 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2013 | A1 | 3 | 2013 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2014 | A1 | 3 | 2014 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2015 | A1 | 3 | 2015 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2016 | A1 | 3 | 2016 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2017 | A1 | 3 | 2017 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2018 | A1 | 3 | 2018 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2019 | A1 | 3 | 2019 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2020 | A1 | 3 | 2020 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_1100 | A1 | 4 | 1100 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1101 | A1 | 4 | 1101 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1102 | A1 | 4 | 1102 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1103 | A1 | 4 | 1103 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1104 | A1 | 4 | 1104 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1105 | A1 | 4 | 1105 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1106 | A1 | 4 | 1106 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1107 | A1 | 4 | 1107 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1108 | A1 | 4 | 1108 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1109 | A1 | 4 | 1109 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1110 | A1 | 4 | 1110 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1111 | A1 | 4 | 1111 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1112 | A1 | 4 | 1112 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1113 | A1 | 4 | 1113 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1114 | A1 | 4 | 1114 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1115 | A1 | 4 | 1115 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1116 | A1 | 4 | 1116 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1117 | A1 | 4 | 1117 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1118 | A1 | 4 | 1118 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1119 | A1 | 4 | 1119 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1120 | A1 | 4 | 1120 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1121 | A1 | 4 | 1121 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1122 | A1 | 4 | 1122 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1123 | A1 | 4 | 1123 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1124 | A1 | 4 | 1124 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1125 | A1 | 4 | 1125 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1126 | A1 | 4 | 1126 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1127 | A1 | 4 | 1127 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1128 | A1 | 4 | 1128 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1129 | A1 | 4 | 1129 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1130 | A1 | 4 | 1130 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1131 | A1 | 4 | 1131 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1132 | A1 | 4 | 1132 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1133 | A1 | 4 | 1133 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1134 | A1 | 4 | 1134 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1135 | A1 | 4 | 1135 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1136 | A1 | 4 | 1136 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1137 | A1 | 4 | 1137 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1138 | A1 | 4 | 1138 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1139 | A1 | 4 | 1139 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1140 | A1 | 4 | 1140 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1141 | A1 | 4 | 1141 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1142 | A1 | 4 | 1142 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1143 | A1 | 4 | 1143 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1144 | A1 | 4 | 1144 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1145 | A1 | 4 | 1145 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1146 | A1 | 4 | 1146 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1147 | A1 | 4 | 1147 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1148 | A1 | 4 | 1148 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1149 | A1 | 4 | 1149 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1150 | A1 | 4 | 1150 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1151 | A1 | 4 | 1151 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1152 | A1 | 4 | 1152 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1153 | A1 | 4 | 1153 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1154 | A1 | 4 | 1154 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1155 | A1 | 4 | 1155 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1156 | A1 | 4 | 1156 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1157 | A1 | 4 | 1157 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1158 | A1 | 4 | 1158 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1159 | A1 | 4 | 1159 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1160 | A1 | 4 | 1160 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1161 | A1 | 4 | 1161 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1162 | A1 | 4 | 1162 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1163 | A1 | 4 | 1163 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1164 | A1 | 4 | 1164 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1165 | A1 | 4 | 1165 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1166 | A1 | 4 | 1166 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1167 | A1 | 4 | 1167 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1168 | A1 | 4 | 1168 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1169 | A1 | 4 | 1169 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1170 | A1 | 4 | 1170 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1171 | A1 | 4 | 1171 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1172 | A1 | 4 | 1172 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1173 | A1 | 4 | 1173 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1174 | A1 | 4 | 1174 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1175 | A1 | 4 | 1175 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1176 | A1 | 4 | 1176 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1177 | A1 | 4 | 1177 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1178 | A1 | 4 | 1178 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1179 | A1 | 4 | 1179 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1180 | A1 | 4 | 1180 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1181 | A1 | 4 | 1181 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1182 | A1 | 4 | 1182 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1183 | A1 | 4 | 1183 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1184 | A1 | 4 | 1184 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1185 | A1 | 4 | 1185 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1186 | A1 | 4 | 1186 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1187 | A1 | 4 | 1187 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1188 | A1 | 4 | 1188 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1189 | A1 | 4 | 1189 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1190 | A1 | 4 | 1190 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1191 | A1 | 4 | 1191 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1192 | A1 | 4 | 1192 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1193 | A1 | 4 | 1193 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1194 | A1 | 4 | 1194 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1195 | A1 | 4 | 1195 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1196 | A1 | 4 | 1196 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1197 | A1 | 4 | 1197 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1198 | A1 | 4 | 1198 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1199 | A1 | 4 | 1199 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2000 | A1 | 4 | 2000 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2001 | A1 | 4 | 2001 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2002 | A1 | 4 | 2002 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2003 | A1 | 4 | 2003 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2004 | A1 | 4 | 2004 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2005 | A1 | 4 | 2005 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2006 | A1 | 4 | 2006 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2007 | A1 | 4 | 2007 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2008 | A1 | 4 | 2008 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2009 | A1 | 4 | 2009 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2010 | A1 | 4 | 2010 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2011 | A1 | 4 | 2011 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2012 | A1 | 4 | 2012 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2013 | A1 | 4 | 2013 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2014 | A1 | 4 | 2014 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2015 | A1 | 4 | 2015 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2016 | A1 | 4 | 2016 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2017 | A1 | 4 | 2017 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2018 | A1 | 4 | 2018 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2019 | A1 | 4 | 2019 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2020 | A1 | 4 | 2020 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |

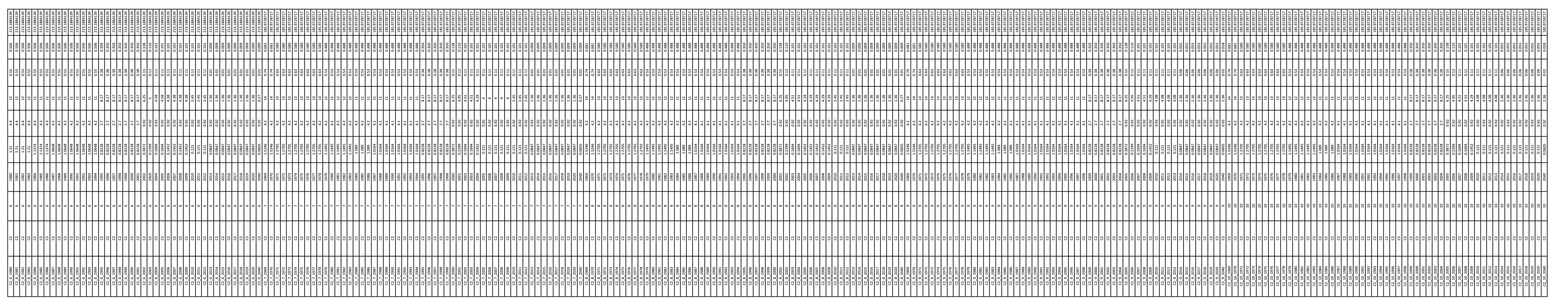
| CRAFVP | Engine #Deprcy | HP #Deprcy | Deterioration Factor (g/bhp-hr) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ROG | HC | CO | NOx | PM | PM2.5 |
| A1_1_1 | A1 | 1 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_2 | A1 | 2 | 0.28 | 0.28 | 0.16 | 0.14 | 0.44 | 0.4408 |
| A1_1_3 | A1 | 3 | 0.28 | 0.28 | 0.16 | 0.14 | 0.44 | 0.4408 |
| A1_1_4 | A1 | 4 | 0.28 | 0.28 | 0.16 | 0.14 | 0.44 | 0.4408 |
| A1_1_5 | A1 | 5 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_6 | A1 | 6 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_7 | A1 | 7 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_8 | A1 | 8 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_9 | A1 | 9 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A2_1_1 |











## SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - CARB Defaults

Data sources for all tables below except GHG Parameters:

https://www.arb.ca.gov/msei/california_harbor_craft_emissions_inventory_database_10072011.mdb
https://www.arb.ca.gov/msei/california_crew_supply_emissions_inventory_database_10072011.mdb
https://www.arb.ca.gov/msei/california_barge_dredge_emissions_inventory_database_10072011.mdb

**HP Category**

| Vessel Type ID | HP Category ID | Min HP | Max HP |
|---|---|---|---|
| A/B | 1 | 25 | 50 |
| A/B | 2 | 51 | 120 |
| A/B | 3 | 121 | 175 |
| A/B | 4 | 176 | 250 |
| A/B | 5 | 251 | 500 |
| A/B | 6 | 501 | 750 |
| A/B | 7 | 751 | 1900 |
| A/B | 8 | 1901 | 3300 |
| A/B | 9 | 3301 | 5000 |
| C | 1 | 0 | 15 |
| C | 2 | 16 | 25 |
| C | 3 | 26 | 50 |
| C | 4 | 51 | 120 |
| C | 5 | 121 | 175 |
| C | 6 | 176 | 250 |
| C | 7 | 251 | 500 |
| C | 8 | 501 | 750 |
| C | 9 | 751 | 1000 |
| C | 10 | 1001 | 9999 |

**Engine Category**

| Combined Vessel Type and Engine Type ID | Engine Type | Description |
|---|---|---|
| A1 | Main | Harbor Craft main engine |
| A2 | Aux | Harbor Craft auxiliary engine |
| B1 | Main | Crew and Supply Vessel main engine |
| B2 | Aux | Crew and Supply Vessel auxiliary engine |
| C1 | Main | Barge and Dredge main engine |
| C2 | Aux | Barge and Dredge auxiliary engine |
| **Combined Vessel Type and Engine Type ID** | **Engine Type** | **Description** |
| C1 | Main | Barge |
| C1 | Main | Dredge |
| A1 | Main | Ferries |
| B1 | Main | Crew and Supply |
| A1 | Main | Pilot Vessels |
| A1 | Main | Tug Boats |
| A1 | Main | Tow Boats / Push Boats |
| A1 | Main | Work Boats |
| A1 | Main | Others |
| A1 | Main | Commercial Fishing |
| A1 | Main | Charter Fishing |
| A2 | Aux | Commercial Fishing Generator |
| A2 | Aux | Charter Fishing Generator |
| A2 | Aux | Ferries Generator |
| B2 | Aux | Crew and Supply Generator |
| A2 | Aux | Pilot Vessels Generator |
| A2 | Aux | Tug Boats Generator |
| A2 | Aux | Tow Boats / Push Boats Generator |
| A2 | Aux | Work Boats Generator |
| A2 | Aux | Others Generator |
| C2 | Aux | Compressor |
| C2 | Aux | Crane |
| C2 | Aux | Deck_door_engine |
| C2 | Aux | Dredger |
| C2 | Aux | Barge/Dredge Generator |
| C2 | Aux | Hoist_swing_winch |
| C2 | Aux | Other |
| C2 | Aux | Pump |

**GHG Parameters**

| GHG Type | GHG Emitted per Unit Activity (g/gal) | Global Warming Potential |
|---|---|---|
| CO2 | 10206 | 1 |
| CH4 | 0.414 | 25 |
| N2O | 0.0828 | 298 |

| | | |
|---|---|---|
| **Fuel Density** | 3180 | g/gal |

**Vessel Default Parameters**

| Combined Vessel Type and Engine Type ID | Vessel_Type | Load Factor | Useful Life | Average Annual Hours | Average HP |
|---|---|---|---|---|---|
| A1 | Commercial Fishing | 0.27 | 21 | 1250 | 192 |
| A1 | Charter Fishing | 0.52 | 16 | 1622 | 373 |
| A1 | Ferries | 0.42 | 20 | 1843 | 392 |
| B1 | Crew and Supply | 0.38 | 28 | 788 | 384 |
| A1 | Pilot Vessels | 0.51 | 19 | 1031 | 547 |
| A1 | Tug Boats | 0.5 | 21 | 2274 | 1167 |
| A1 | Tow Boats / Push Boats | 0.68 | 26 | 1993 | 331 |
| A1 | Work Boats | 0.45 | 17 | 675 | 364 |
| A1 | Others | 0.52 | 23 | 779 | 192 |
| A2 | Commercial Fishing Generator | 0.43 | 15 | 1633 | 30 |
| A2 | Charter Fishing Generator | 0.43 | 15 | 2077 | 30 |
| A2 | Ferries Generator | 0.43 | 20 | 1254 | 82 |
| B2 | Crew and Supply Generator | 0.32 | 28 | 3036 | 83 |
| A2 | Pilot Vessels Generator | 0.43 | 25 | 994 | 30 |
| A2 | Tug Boats Generator | 0.31 | 22.5 | 2486 | 86 |
| A2 | Tow Boats / Push Boats Generator | 0.43 | 25 | 2965 | 79 |
| A2 | Work Boats Generator | 0.43 | 23 | 750 | 190 |
| A2 | Others Generator | 0.43 | 22 | 805 | 29 |
| C2 | Compressor | 0.54 | 19.5 | 360 | 472 |
| C2 | Crane | 0.42 | 9 | 1050 | 349 |
| C2 | Deck_door_engine | 0.89 | 16 | 1400 | 86 |
| C2 | Dredger | 0.51 | 16 | 561 | 425 |
| C2 | Barge/Dredge Generator | 0.75 | 22.5 | 561 | 410 |
| C2 | Hoist_swing_winch | 0.31 | 27 | 82 | 216 |
| C2 | Other | 0.80 | 16 | 575 | 344 |
| C2 | Pump | 0.71 | 21 | 413 | 383 |
| C1 | Barge | 0.45 | 17 | 1776 | 2883 |
| C1 | Dredge | 0.45 | 17 | 1776 | 2883 |

| Calendar Year Range |
|---|
| 2015 |
| 2016 |
| 2017 |
| 2018 |
| 2019 |
| 2020 |
| 2021 |
| 2022 |
| 2023 |
| 2024 |
| 2025 |
| 2026 |
| 2027 |
| 2028 |
| 2029 |
| 2030 |
| 2031 |
| 2032 |
| 2033 |
| 2034 |
| 2035 |
| 2036 |
| 2037 |
| 2038 |
| 2039 |
| 2040 |
| 2041 |
| 2042 |
| 2043 |
| 2044 |
| 2045 |
| 2046 |
| 2047 |
| 2048 |
| 2049 |
| 2050 |

# SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Instructions

**Introduction:** This tool estimates emission rates for harbor craft engines based on California Air Resources Board emission estimation databases.

**How to start using this tool:**

1. Review the Instructions tab
2. Enter data in the Inputs tab
3. View final results in the MainEngineEmissRates and AuxEngineEmissRates tabs

**Tab Descriptions:**

- Instructions: The current tab with brief description of all tabs and calculator functions.
- Input: This is the only tab that requires user input. Not all fields in this tab are required for the calculations to be completed. Different colors are used to indicate which fields are required and which are optional. *If using this tool for environmental planning purposes, the engine model year, engine rated power, vessel number and location for Main Engine Inputs and Auxiliary Engine Inputs are optional since during the planning phase of a project the User is not expected to know this information. If this tool is being used for calculating emissions for construction mitigation purposes, the User must provide ALL Main Engine Inputs and Auxiliary Engine Inputs. The engine model year, engine rated power, vessel number and location information is expected to be accessible for the construction phase of a project.*
- MainEngineEmissRates: This tab contains final results (emission rates and emission factors) for the main engine(s) of each vessel specified in the "A2. Main Engine" input table in the "Inputs" tab.
- AuxEngineEmissRates: This tab contains final results (emission rates and emission factors) for each auxiliary engine specified in the "A3. Auxiliary Engine" input table in the "Inputs" tab.
- VesselDesc: This tab includes brief descriptions of harbor craft vessel types.
- Documentation: This tab documents calculator version information.
- Calculations: Contains all emission factor and emission rate calculations. The "MainEngineEmissRates" and "AuxEngineEmissRates" tabs reference cells in this tab.
- CARB_EFs: Contains reference emission factors.
- CARB_Defaults: Contains default information such as useful life, load factors, average usage, rated horsepower, and model year.

**SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Input Data Page**

**INSTRUCTIONS:**
1. Enter inputs into tables A1, A2, A3, and A4 below. Required inputs must be entered to estimate emission rates, optional inputs should be entered if available.
2. After entering inputs, review status and error messages (cell E14); make changes as necessary until this cell is green indicating that inputs are ready.
3. Results may be reviewed in "MainEngineEmissRates" and "AuxEngineEmissRates" tabs, both colored yellow.

## Inputs and Status

| Inputs color legend | Required Input |
|---|---|
| | Optional Input |
| Status and error messages | OK. Default values will be applied to blank model year and HP |

## A1. Inventory Calendar year

| Inventory Calendar Year | 2024 |
|---|---|

## A4. Project Information

| Inputs | |
|---|---|
| Date (mm/dd/yyyy): | 1/22/2024 |
| Project Name: | Port Hueneme Harbor Dredge Template Maintenance Dredging - Clamshell Dredge |
| Project Location: | Port Hueneme, Ventura County, California |
| Contact Person: | Kirk Brus |
| Company Name: | Department of the Army, U.S Army Corps of Engineers |
| Mailing Address: | 915 Wilshire Blvd, Room 1109, Los Angeles California |
| Phone Number: | 213 452-3876 |
| Email Address: | Kirk.C.Brus@usace.army.mil |

## A2. Main Engine Inputs

| Required Inputs | | | Optional Inputs | | | |
|---|---|---|---|---|---|---|
| Vessel Name | Vessel Type | No. of Engines | Engine Model Year | Engine Rated Power (hp) | Vessel Number | Home Port |
| Clamshell | Dredge | 2 | | | | |
| Scow Barge | Barge | 2 | | | | |
| Tug Boat | Tug Boats | 2 | | | | |
| Crew Boat | Crew and Supply | 1 | | | | |

## A3. Auxiliary Engine Inputs

| Required Inputs | | | Optional Inputs | |
|---|---|---|---|---|
| Vessel Name | Auxiliary Engine Type | No. of Engines | Engine Model Year | Engine Rated Power (hp) |
| Clamshell | Barge/Dredge Generator | 2 | | |
| Scow Barge | Barge/Dredge Generator | 2 | | |
| Tug Boat | Tug Boats Generator | 2 | | |
| Crew Boat | Crew and Supply Generator | 1 | | |

**SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Main Engine Emission Rates**

**Calendar Year:** 2024 **Number of Entries:** 4

| Vessel/Engine Information | | | | | | | | Emission Rates (lb/hr; estimates for each row are totals over the number of engines listed in column J for that row) | | | | | | | | | | Emission Rates for a Single Engine (g/bhp-hr) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Name | Vessel Number | Home Port | Vessel Type | Engine Model Year | Engine Rated Power (hp) | Engine Load Factor | Number of engines | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
| Clamshell | | | Dredge | 2007 | 2883 | 0.45 | 2 | 0.841 | 0.748 | 29.588 | 1.005 | 6.577 | 0.032 | 3413.693 | 0.138 | 0.028 | 3425.408 | 0.147 | 0.131 | 5.173 | 0.176 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 598.9 |
| Scow Barge | | | Barge | 2007 | 2883 | 0.45 | 2 | 0.841 | 0.748 | 29.588 | 1.005 | 6.577 | 0.032 | 3413.693 | 0.138 | 0.028 | 3425.408 | 0.147 | 0.131 | 5.173 | 0.176 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 598.9 |
| Tug Boat | | | Tug Boats | 2003 | 1167 | 0.50 | 2 | 1.241 | 1.105 | 21.580 | 1.814 | 6.341 | 0.014 | 1521.118 | 0.062 | 0.012 | 1526.338 | 0.482 | 0.429 | 8.385 | 0.705 | 2.464 | 0.006 | 591.045 | 0.024 | 0.005 | 593.1 |
| Crew Boat | | | Crew and Supply | 1996 | 384 | 0.38 | 1 | 0.155 | 0.138 | 3.555 | 0.274 | 0.792 | 0.002 | 189.982 | 0.008 | 0.002 | 190.634 | 0.482 | 0.429 | 11.059 | 0.853 | 2.464 | 0.006 | 591.045 | 0.024 | 0.005 | 593.1 |

**SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Auxiliary Engine Emission Rates**

**Calendar Year:** 2024 **Number of Entries:** 4

| Vessel/Engine Information | | | | | | | | | Emission Rates (lb/hr; estimates for each row are totals over the number of engines listed in column K for that row) | | | | | | | | | | Emission Rates for a Single Engine (g/bhp-hr) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Name | Vessel Number | Home Port | Vessel Type | Auxiliary Engine Type | Engine Model Year | Engine Rated Power (hp) | Engine Load Factor | Number of Engines | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
| Clamshell | | | Dredge | Barge/Dredge Generator | 2001 | 410 | 0.75 | 2 | 0.216 | 0.193 | 7.659 | 0.322 | 1.551 | 0.008 | 805.118 | 0.033 | 0.007 | 807.881 | 0.16 | 0.14 | 5.68 | 0.24 | 1.15 | 0.006 | 596.87 | 0.02 | 0.00 | 598.9 |
| Scow Barge | | | Barge | Barge/Dredge Generator | 2001 | 410 | 0.75 | 2 | 0.216 | 0.193 | 7.659 | 0.322 | 1.551 | 0.008 | 805.118 | 0.033 | 0.007 | 807.881 | 0.16 | 0.14 | 5.68 | 0.24 | 1.15 | 0.006 | 596.87 | 0.02 | 0.00 | 598.9 |
| Tug Boat | | | Tug Boats | Tug Boats Generator | 2001 | 86 | 0.31 | 2 | 0.079 | 0.071 | 0.930 | 0.128 | 0.491 | 0.001 | 69.564 | 0.003 | 0.001 | 69.802 | 0.67 | 0.60 | 7.90 | 1.09 | 4.17 | 0.006 | 591.04 | 0.02 | 0.00 | 593.1 |
| Crew Boat | | | Crew and Supply | Crew and Supply Generator | 1996 | 83 | 0.32 | 1 | 0.043 | 0.039 | 0.809 | 0.112 | 0.337 | 0.000 | 34.702 | 0.001 | 0.000 | 34.821 | 0.73 | 0.66 | 13.78 | 1.91 | 5.74 | 0.006 | 591.04 | 0.02 | 0.00 | 593.1 |

# SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Documentation

**Version 1.0**

1. User provides vessel type; the following inputs for main engines: model year, horsepower, engine count; the following inputs for auxiliary engines: engine type, model year, horsepower, engine count. If engine horsepower or model year are not provided an average estimate from the CARB source calculators will be used to develop emission rates.
2. Calculator looks up zero-hour emission factors, deterioration factors, load factor, and useful life.
3. Calculator calculates emission rates (lb/hr) and emission factors (g/bhp-hr).
4. Additional documentation available in June (2017) Ramboll Environ Memorandum

## SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - Emission Factor Calculations

### Main Engine Emission Factor Calculator

**Calendar Year:** 2024 **Number of Entries:** 4

| Vessel/Engine Information | | | | | | | | | | | | Activity | | | Zero-Hour Emission Factors (g/hp-hr) | | | | | Deterioration Factors (g/hp - hr) | | | | | Emission Rates (g/bhp-hr) | | | | | | | | | Emission Rates (g/hr) | | | | | | | | | Fuel Correction Factor | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Name | Vessel Type | Engine Type | Engine Category | Engine Model Year | MdlYr Group | Engine HP | HP Category | FCF HP Category | Engine Load Factor | BSFC (g/hp-hr) | No. of engines | Annual Hours | Age | Useful life | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | NOx | PM | ROG | MY Bin |
| Clamshell | Dredge | Main | C1 | 2007 | 2007 | 2,883 | 10 | 4 | 0.45 | 185.97 | 2 | 1,776 | 17 | 17 | 0.110 | 0.101 | 4.510 | 0.169 | 0.920 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.147 | 0.131 | 5.173 | 0.176 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 381.3 | 339.5 | 13,420.9 | 455.6 | 2,983.4 | 14.5 | 1,548,423.9 | 62.8 | 12.6 | 0.95 | 0.80 | 0.72 | 1996 |
| Scow Barge | Barge | Main | C1 | 2007 | 2007 | 2,883 | 10 | 4 | 0.45 | 185.97 | 2 | 1,776 | 17 | 17 | 0.110 | 0.101 | 4.510 | 0.169 | 0.920 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.147 | 0.131 | 5.173 | 0.176 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 381.3 | 339.5 | 13,420.9 | 455.6 | 2,983.4 | 14.5 | 1,548,423.9 | 62.8 | 12.6 | 0.95 | 0.80 | 0.72 | 1996 |
| Tug Boat | Tug Boats | Main | A1 | 2003 | 2003 | 1,167 | 7 | 4 | 0.50 | 184.16 | 2 | 1,250 | 21 | 21 | 0.361 | 0.332 | 7.310 | 0.680 | 1.971 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.482 | 0.429 | 8.385 | 0.705 | 2.464 | 0.006 | 591.045 | 0.024 | 0.005 | 563.0 | 501.4 | 9,788.6 | 823.0 | 2,876.1 | 6.4 | 689,966.7 | 28.0 | 5.6 | 0.95 | 0.80 | 0.72 | 1996 |
| Crew Boat | Crew and Supply | Main | B1 | 1996 | 1996 | 384 | 5 | 4 | 0.38 | 184.16 | 1 | 788 | 28 | 28 | 0.361 | 0.332 | 9.641 | 0.823 | 1.971 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.482 | 0.429 | 11.059 | 0.853 | 2.464 | 0.006 | 591.045 | 0.024 | 0.005 | 70.3 | 62.6 | 1,612.3 | 124.4 | 359.2 | 0.8 | 86,174.5 | 3.5 | 0.7 | 0.95 | 0.80 | 0.72 | 1996 |

### Auxiliary Engine Emission Factor Calculator

**Calendar Year:** 2024 **Number of Entries:** 4

| Vessel/Engine Information | | | | | | | | | | | | Activity | | | Zero-Hour Emission Factors (g/hp-hr) | | | | | Deterioration Factors (g/hp - hr) | | | | | Emission Rates (g/bhp-hr) | | | | | | | | | Emission Rates (g/hr) | | | | | | | | | Fuel Correction Factor | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Name | Vessel Type | Engine Type | Engine Category | Engine Model Year | MdlYr Group | Engine HP | HP Category | FCF HP Category | Engine Load Factor | BSFC (g/hp-hr) | No. of engines | Annual Hours | Age | Useful life | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | $PM_{10}$ | $PM_{2.5}$ | NOx | ROG | CO | $SO_2$ | $CO_2$ | $CH_4$ | $N_2O$ | NOx | PM | ROG | MY Bin |
| Clamshell | Barge/Dredge Generator | Aux | C2 | 2001 | 2001 | 410 | 7 | 4 | 0.75 | 185.97 | 2 | 360 | 23 | 23 | 0.120 | 0.110 | 4.950 | 0.230 | 0.920 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.160 | 0.143 | 5.678 | 0.238 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 98.1 | 87.3 | 3,474.1 | 145.8 | 703.6 | 3.4 | 365,195.1 | 14.8 | 3.0 | 0.9 | 0.8 | 0.7 | 1996 |
| Scow Barge | Barge/Dredge Generator | Aux | C2 | 2001 | 2001 | 410 | 7 | 4 | 0.75 | 185.97 | 2 | 360 | 23 | 23 | 0.120 | 0.110 | 4.950 | 0.230 | 0.920 | 0.67 | 0.62 | 0.21 | 0.44 | 0.25 | 0.160 | 0.143 | 5.678 | 0.238 | 1.150 | 0.006 | 596.868 | 0.024 | 0.005 | 98.1 | 87.3 | 3,474.1 | 145.8 | 703.6 | 3.4 | 365,195.1 | 14.8 | 3.0 | 0.9 | 0.8 | 0.7 | 1996 |
| Tug Boat | Tug Boats Generator | Aux | A2 | 2001 | 2001 | 86 | 2 | 2 | 0.31 | 184.16 | 2 | 1,633 | 23 | 23 | 0.580 | 0.533 | 7.310 | 1.178 | 3.595 | 0.44 | 0.40 | 0.14 | 0.28 | 0.16 | 0.668 | 0.599 | 7.900 | 1.086 | 4.170 | 0.006 | 591.045 | 0.024 | 0.005 | 35.6 | 32.0 | 421.8 | 58.0 | 222.6 | 0.3 | 31,553.5 | 1.3 | 0.3 | 0.9 | 0.8 | 0.7 | 1998 |
| Crew Boat | Crew and Supply Generat | Aux | B2 | 1996 | 1996 | 83 | 2 | 2 | 0.32 | 184.16 | 1 | 3,036 | 28 | 28 | 0.706 | 0.649 | 13.000 | 2.073 | 4.944 | 0.44 | 0.40 | 0.14 | 0.28 | 0.16 | 0.732 | 0.657 | 13.783 | 1.911 | 5.735 | 0.006 | 591.045 | 0.024 | 0.005 | 19.5 | 17.5 | 367.1 | 50.9 | 152.7 | 0.1 | 15,740.6 | 0.6 | 0.1 | 0.9 | 0.7 | 0.7 | 1960 |

**SMAQMD #borcraft #doe and #pe Emission #dtor #culator CARB #ission #dtors Inputs**

Data sources:

https://www.arb.ca.gov/msei/california-harbor-craft-emissions-inventory-database-10072011.mdb

https://www.arb.ca.gov/msei/california-crew-supply-emissions-inventory-database-10072011.mdb

https://www.arb.ca.gov/msei/california-barge-dredge-emissions-inventory-database-10072011.mdb

| CRAFVP | Engine #Deprcy | HP #Deprcy | Model #Dr | Zero-Hour #Motion Factor (g/bhp-hr) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | ROG | CO | NOx | PM10 | PM2.5 | SOTC |
| A1_1_1047 | A1 | 1 | 1047 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1048 | A1 | 1 | 1048 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1049 | A1 | 1 | 1049 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1050 | A1 | 1 | 1050 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1051 | A1 | 1 | 1051 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1052 | A1 | 1 | 1052 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1053 | A1 | 1 | 1053 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1054 | A1 | 1 | 1054 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1055 | A1 | 1 | 1055 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1056 | A1 | 1 | 1056 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1057 | A1 | 1 | 1057 | 1.84 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1058 | A1 | 1 | 1058 | 1.8 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_1059 | A1 | 1 | 1059 | 1.8 | 3.65 | 8.142 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2030 | A1 | 1 | 2030 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2031 | A1 | 1 | 2031 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2032 | A1 | 1 | 2032 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2033 | A1 | 1 | 2033 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2034 | A1 | 1 | 2034 | 1.8 | 3.65 | 7.31 | 0.722 | 0.664 | 18A:1585010 |
| A1_1_2035 | A1 | 1 | 2035 | 1.8 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2036 | A1 | 1 | 2036 | 1.8 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2037 | A1 | 1 | 2037 | 1.8 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2038 | A1 | 1 | 2038 | 1.8 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2039 | A1 | 1 | 2039 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2010 | A1 | 1 | 2010 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2011 | A1 | 1 | 2011 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2012 | A1 | 1 | 2012 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2013 | A1 | 1 | 2013 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2014 | A1 | 1 | 2014 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2015 | A1 | 1 | 2015 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2016 | A1 | 1 | 2016 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2017 | A1 | 1 | 2017 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2018 | A1 | 1 | 2018 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2019 | A1 | 1 | 2019 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2020 | A1 | 1 | 2020 | 1.8 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_1060 | A1 | 1 | 1060 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1061 | A1 | 1 | 1061 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1062 | A1 | 1 | 1062 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1063 | A1 | 1 | 1063 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1064 | A1 | 1 | 1064 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1065 | A1 | 1 | 1065 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1066 | A1 | 1 | 1066 | 1.44 | 3.504 | 15.34 | 0.798 | 0.734 | 18A:1585010 |
| A1_1_1067 | A1 | 2 | 1067 | 0.99 | 2.5477 | 10.925 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_1068 | A1 | 2 | 1068 | 0.99 | 2.5477 | 10.925 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_1069 | A1 | 2 | 1069 | 0.99 | 2.5477 | 10.925 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2000 | A1 | 2 | 2000 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2001 | A1 | 2 | 2001 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2002 | A1 | 2 | 2002 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2003 | A1 | 2 | 2003 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2004 | A1 | 2 | 2004 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2005 | A1 | 2 | 2005 | 0.99 | 2.5477 | 7.31 | 0.6555 | 0.603 | 18A:1585010 |
| A1_1_2006 | A1 | 2 | 2006 | 0.99 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2007 | A1 | 2 | 2007 | 0.99 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2008 | A1 | 2 | 2008 | 0.99 | 3.73 | 5.32 | 0.3 | 0.276 | 18A:1585010 |
| A1_1_2009 | A1 | 2 | 2009 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2010 | A1 | 2 | 2010 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2011 | A1 | 2 | 2011 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2012 | A1 | 2 | 2012 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2013 | A1 | 2 | 2013 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2014 | A1 | 2 | 2014 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2015 | A1 | 2 | 2015 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2016 | A1 | 2 | 2016 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2017 | A1 | 2 | 2017 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2018 | A1 | 2 | 2018 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2019 | A1 | 2 | 2019 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_2020 | A1 | 2 | 2020 | 0.99 | 3.73 | 5.32 | 0.22 | 0.202 | 18A:1585010 |
| A1_1_1070 | A1 | 3 | 1070 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1071 | A1 | 3 | 1071 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1072 | A1 | 3 | 1072 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1073 | A1 | 3 | 1073 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1074 | A1 | 3 | 1074 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1075 | A1 | 3 | 1075 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1076 | A1 | 3 | 1076 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1077 | A1 | 3 | 1077 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1078 | A1 | 3 | 1078 | 1.1 | 3.212 | 15.34 | 0.627 | 0.577 | 18A:1585010 |
| A1_1_1079 | A1 | 3 | 1079 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1080 | A1 | 3 | 1080 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1081 | A1 | 3 | 1081 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1082 | A1 | 3 | 1082 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1083 | A1 | 3 | 1083 | 1 | 3.212 | 14.15 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1084 | A1 | 3 | 1084 | 0.94 | 3.139 | 13.56 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1085 | A1 | 3 | 1085 | 0.94 | 3.139 | 13.56 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1086 | A1 | 3 | 1086 | 0.94 | 3.139 | 13.56 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1087 | A1 | 3 | 1087 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1088 | A1 | 3 | 1088 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1089 | A1 | 3 | 1089 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1090 | A1 | 3 | 1090 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1091 | A1 | 3 | 1091 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1092 | A1 | 3 | 1092 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1093 | A1 | 3 | 1093 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1094 | A1 | 3 | 1094 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1095 | A1 | 3 | 1095 | 0.88 | 3.066 | 12.98 | 0.5225 | 0.481 | 18A:1585010 |
| A1_1_1096 | A1 | 3 | 1096 | 0.68 | 1.971 | 9.6406 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_1097 | A1 | 3 | 1097 | 0.68 | 1.971 | 9.6406 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_1098 | A1 | 3 | 1098 | 0.68 | 1.971 | 9.6406 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_1099 | A1 | 3 | 1099 | 0.68 | 1.971 | 9.6406 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2000 | A1 | 3 | 2000 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2001 | A1 | 3 | 2001 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2002 | A1 | 3 | 2002 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2003 | A1 | 3 | 2003 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2004 | A1 | 3 | 2004 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2005 | A1 | 3 | 2005 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2006 | A1 | 3 | 2006 | 0.68 | 1.971 | 7.31 | 0.361 | 0.332 | 18A:1585010 |
| A1_1_2007 | A1 | 3 | 2007 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2008 | A1 | 3 | 2008 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2009 | A1 | 3 | 2009 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2010 | A1 | 3 | 2010 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2011 | A1 | 3 | 2011 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2012 | A1 | 3 | 2012 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2013 | A1 | 3 | 2013 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2014 | A1 | 3 | 2014 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2015 | A1 | 3 | 2015 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2016 | A1 | 3 | 2016 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2017 | A1 | 3 | 2017 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2018 | A1 | 3 | 2018 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2019 | A1 | 3 | 2019 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_2020 | A1 | 3 | 2020 | 0.68 | 3.73 | 5.3203 | 0.15 | 0.138 | 18A:1585010 |
| A1_1_1100 | A1 | 4 | 1100 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1101 | A1 | 4 | 1101 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1102 | A1 | 4 | 1102 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1103 | A1 | 4 | 1103 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1104 | A1 | 4 | 1104 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1105 | A1 | 4 | 1105 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1106 | A1 | 4 | 1106 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1107 | A1 | 4 | 1107 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1108 | A1 | 4 | 1108 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1109 | A1 | 4 | 1109 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1110 | A1 | 4 | 1110 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1111 | A1 | 4 | 1111 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1112 | A1 | 4 | 1112 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1113 | A1 | 4 | 1113 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1114 | A1 | 4 | 1114 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1115 | A1 | 4 | 1115 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1116 | A1 | 4 | 1116 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1117 | A1 | 4 | 1117 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1118 | A1 | 4 | 1118 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1119 | A1 | 4 | 1119 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1120 | A1 | 4 | 1120 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1121 | A1 | 4 | 1121 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1122 | A1 | 4 | 1122 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1123 | A1 | 4 | 1123 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1124 | A1 | 4 | 1124 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1125 | A1 | 4 | 1125 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1126 | A1 | 4 | 1126 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1127 | A1 | 4 | 1127 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1128 | A1 | 4 | 1128 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1129 | A1 | 4 | 1129 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1130 | A1 | 4 | 1130 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1131 | A1 | 4 | 1131 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1132 | A1 | 4 | 1132 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1133 | A1 | 4 | 1133 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1134 | A1 | 4 | 1134 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1135 | A1 | 4 | 1135 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1136 | A1 | 4 | 1136 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1137 | A1 | 4 | 1137 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1138 | A1 | 4 | 1138 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1139 | A1 | 4 | 1139 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1140 | A1 | 4 | 1140 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1141 | A1 | 4 | 1141 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1142 | A1 | 4 | 1142 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1143 | A1 | 4 | 1143 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1144 | A1 | 4 | 1144 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1145 | A1 | 4 | 1145 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1146 | A1 | 4 | 1146 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1147 | A1 | 4 | 1147 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1148 | A1 | 4 | 1148 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1149 | A1 | 4 | 1149 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1150 | A1 | 4 | 1150 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1151 | A1 | 4 | 1151 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1152 | A1 | 4 | 1152 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1153 | A1 | 4 | 1153 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1154 | A1 | 4 | 1154 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1155 | A1 | 4 | 1155 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1156 | A1 | 4 | 1156 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1157 | A1 | 4 | 1157 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1158 | A1 | 4 | 1158 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1159 | A1 | 4 | 1159 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1160 | A1 | 4 | 1160 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1161 | A1 | 4 | 1161 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1162 | A1 | 4 | 1162 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1163 | A1 | 4 | 1163 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1164 | A1 | 4 | 1164 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1165 | A1 | 4 | 1165 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1166 | A1 | 4 | 1166 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1167 | A1 | 4 | 1167 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1168 | A1 | 4 | 1168 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1169 | A1 | 4 | 1169 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1170 | A1 | 4 | 1170 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1171 | A1 | 4 | 1171 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1172 | A1 | 4 | 1172 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1173 | A1 | 4 | 1173 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1174 | A1 | 4 | 1174 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1175 | A1 | 4 | 1175 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1176 | A1 | 4 | 1176 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
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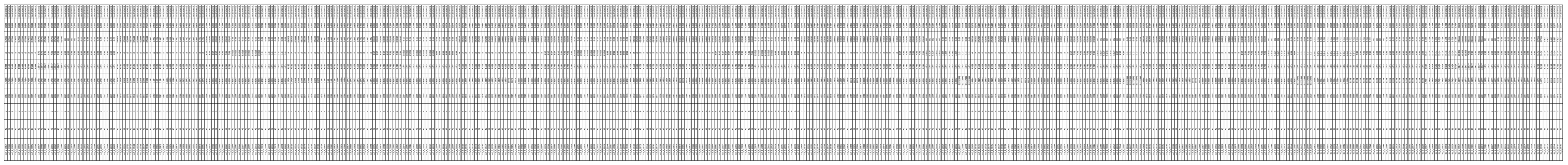
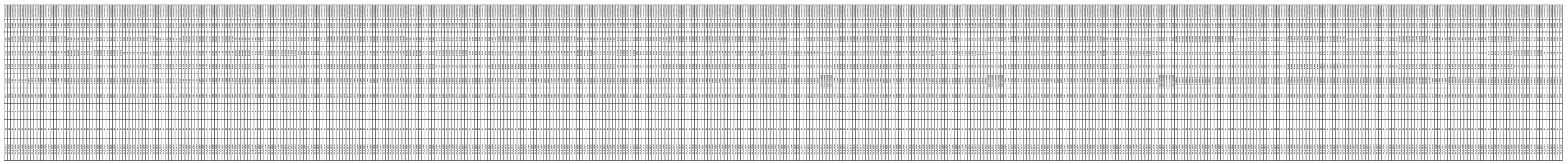
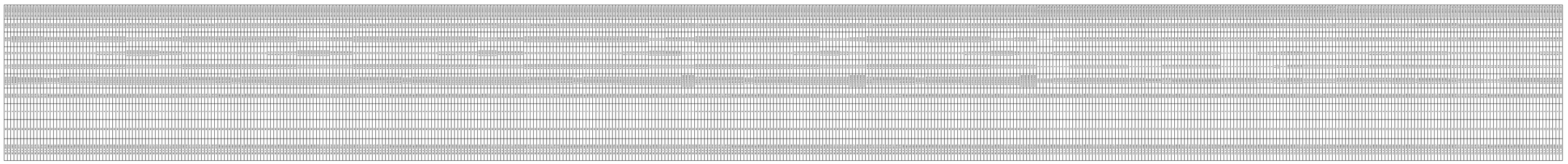
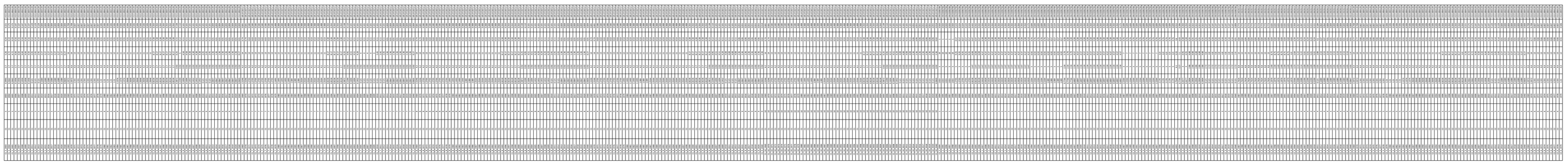
| A1_1_1180 | A1 | 4 | 1180 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1181 | A1 | 4 | 1181 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1182 | A1 | 4 | 1182 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1183 | A1 | 4 | 1183 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1184 | A1 | 4 | 1184 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1185 | A1 | 4 | 1185 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1186 | A1 | 4 | 1186 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1187 | A1 | 4 | 1187 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1188 | A1 | 4 | 1188 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1189 | A1 | 4 | 1189 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1190 | A1 | 4 | 1190 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1191 | A1 | 4 | 1191 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1192 | A1 | 4 | 1192 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1193 | A1 | 4 | 1193 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1194 | A1 | 4 | 1194 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1195 | A1 | 4 | 1195 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1196 | A1 | 4 | 1196 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1197 | A1 | 4 | 1197 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1198 | A1 | 4 | 1198 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_1199 | A1 | 4 | 1199 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2000 | A1 | 4 | 2000 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2001 | A1 | 4 | 2001 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2002 | A1 | 4 | 2002 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2003 | A1 | 4 | 2003 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2004 | A1 | 4 | 2004 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2005 | A1 | 4 | 2005 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2006 | A1 | 4 | 2006 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2007 | A1 | 4 | 2007 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2008 | A1 | 4 | 2008 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2009 | A1 | 4 | 2009 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2010 | A1 | 4 | 2010 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2011 | A1 | 4 | 2011 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2012 | A1 | 4 | 2012 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2013 | A1 | 4 | 2013 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2014 | A1 | 4 | 2014 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2015 | A1 | 4 | 2015 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2016 | A1 | 4 | 2016 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2017 | A1 | 4 | 2017 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2018 | A1 | 4 | 2018 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2019 | A1 | 4 | 2019 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |
| A1_1_2020 | A1 | 4 | 2020 | 1.32 | 3.212 | 16.52 | 0.7703 | 0.673 | 18A:1585010 |

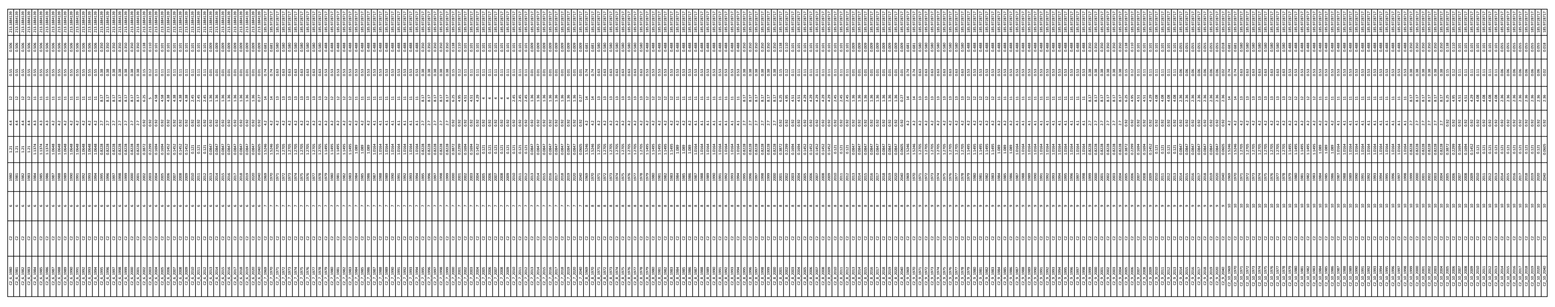
| CRAFVP | Engine #Deprcy | HP #Deprcy | Deterioration Factor (g/bhp-hr) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ROG | HC | CO | NOx | PM | PM2.5 |
| A1_1_1 | A1 | 1 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_2 | A1 | 2 | 0.28 | 0.28 | 0.16 | 0.14 | 0.44 | 0.4408 |
| A1_1_3 | A1 | 3 | 0.28 | 0.28 | 0.16 | 0.14 | 0.44 | 0.4408 |
| A1_1_4 | A1 | 4 | 0.28 | 0.28 | 0.16 | 0.14 | 0.44 | 0.4408 |
| A1_1_5 | A1 | 5 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_6 | A1 | 6 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_7 | A1 | 7 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_8 | A1 | 8 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A1_1_9 | A1 | 9 | 0.44 | 0.44 | 0.25 | 0.21 | 0.67 | 0.6164 |
| A2_1_1 |











# SMAQMD Harborcraft, Dredge and Barge Emission Factor Calculator - CARB Defaults

Data sources for all tables below except GHG Parameters:

https://www.arb.ca.gov/msei/california_harbor_craft_emissions_inventory_database_10072011.mdb

https://www.arb.ca.gov/msei/california_crew_supply_emissions_inventory_database_10072011.mdb

https://www.arb.ca.gov/msei/california_barge_dredge_emissions_inventory_database_10072011.mdb

**HP Category**

| Vessel Type ID | HP Category ID | Min HP | Max HP |
|---|---|---|---|
| A/B | 1 | 25 | 50 |
| A/B | 2 | 51 | 120 |
| A/B | 3 | 121 | 175 |
| A/B | 4 | 176 | 250 |
| A/B | 5 | 251 | 500 |
| A/B | 6 | 501 | 750 |
| A/B | 7 | 751 | 1900 |
| A/B | 8 | 1901 | 3300 |
| A/B | 9 | 3301 | 5000 |
| C | 1 | 0 | 15 |
| C | 2 | 16 | 25 |
| C | 3 | 26 | 50 |
| C | 4 | 51 | 120 |
| C | 5 | 121 | 175 |
| C | 6 | 176 | 250 |
| C | 7 | 251 | 500 |
| C | 8 | 501 | 750 |
| C | 9 | 751 | 1000 |
| C | 10 | 1001 | 9999 |

**Engine Category**

| Combined Vessel Type and Engine Type ID | Engine Type | Description |
|---|---|---|
| A1 | Main | Harbor Craft main engine |
| A2 | Aux | Harbor Craft auxiliary engine |
| B1 | Main | Crew and Supply Vessel main engine |
| B2 | Aux | Crew and Supply Vessel auxiliary engine |
| C1 | Main | Barge and Dredge main engine |
| C2 | Aux | Barge and Dredge auxiliary engine |

| Combined Vessel Type and Engine Type ID | Engine Type | Description |
|---|---|---|
| C1 | Main | Barge |
| C1 | Main | Dredge |
| A1 | Main | Ferries |
| B1 | Main | Crew and Supply |
| A1 | Main | Pilot Vessels |
| A1 | Main | Tug Boats |
| A1 | Main | Tow Boats / Push Boats |
| A1 | Main | Work Boats |
| A1 | Main | Others |
| A1 | Main | Commercial Fishing |
| A1 | Main | Charter Fishing |
| A2 | Aux | Commercial Fishing Generator |
| A2 | Aux | Charter Fishing Generator |
| A2 | Aux | Ferries Generator |
| B2 | Aux | Crew and Supply Generator |
| A2 | Aux | Pilot Vessels Generator |
| A2 | Aux | Tug Boats Generator |
| A2 | Aux | Tow Boats / Push Boats Generator |
| A2 | Aux | Work Boats Generator |
| A2 | Aux | Others Generator |
| C2 | Aux | Compressor |
| C2 | Aux | Crane |
| C2 | Aux | Deck_door_engine |
| C2 | Aux | Dredger |
| C2 | Aux | Barge/Dredge Generator |
| C2 | Aux | Hoist_swing_winch |
| C2 | Aux | Other |
| C2 | Aux | Pump |

**GHG Parameters**

| GHG Type | GHG Emitted per Unit Activity (g/gal) | Global Warming Potential |
|---|---|---|
| CO2 | 10206 | 1 |
| CH4 | 0.414 | 25 |
| N2O | 0.0828 | 298 |

| Fuel Density | 3180 | g/gal |
|---|---|---|

**Vessel Default Parameters**

| Combined Vessel Type and Engine Type ID | Vessel_Type | Load Factor | Useful Life | Average Annual Hours | Average HP |
|---|---|---|---|---|---|
| A1 | Commercial Fishing | 0.27 | 21 | 1250 | 192 |
| A1 | Charter Fishing | 0.52 | 16 | 1622 | 373 |
| A1 | Ferries | 0.42 | 20 | 1843 | 392 |
| B1 | Crew and Supply | 0.38 | 28 | 788 | 384 |
| A1 | Pilot Vessels | 0.51 | 19 | 1031 | 547 |
| A1 | Tug Boats | 0.5 | 21 | 2274 | 1167 |
| A1 | Tow Boats / Push Boats | 0.68 | 26 | 1993 | 331 |
| A1 | Work Boats | 0.45 | 17 | 675 | 364 |
| A1 | Others | 0.52 | 23 | 779 | 192 |
| A2 | Commercial Fishing Generator | 0.43 | 15 | 1633 | 30 |
| A2 | Charter Fishing Generator | 0.43 | 15 | 2077 | 30 |
| A2 | Ferries Generator | 0.43 | 20 | 1254 | 82 |
| B2 | Crew and Supply Generator | 0.32 | 28 | 3036 | 83 |
| A2 | Pilot Vessels Generator | 0.43 | 25 | 994 | 30 |
| A2 | Tug Boats Generator | 0.31 | 22.5 | 2486 | 86 |
| A2 | Tow Boats / Push Boats Generator | 0.43 | 25 | 2965 | 79 |
| A2 | Work Boats Generator | 0.43 | 23 | 750 | 190 |
| A2 | Others Generator | 0.43 | 22 | 805 | 29 |
| C2 | Compressor | 0.54 | 19.5 | 360 | 472 |
| C2 | Crane | 0.42 | 9 | 1050 | 349 |
| C2 | Deck_door_engine | 0.89 | 16 | 1400 | 86 |
| C2 | Dredger | 0.51 | 16 | 561 | 425 |
| C2 | Barge/Dredge Generator | 0.75 | 22.5 | 561 | 410 |
| C2 | Hoist_swing_winch | 0.31 | 27 | 82 | 216 |
| C2 | Other | 0.80 | 16 | 575 | 344 |
| C2 | Pump | 0.71 | 21 | 413 | 383 |
| C1 | Barge | 0.45 | 17 | 1776 | 2883 |
| C1 | Dredge | 0.45 | 17 | 1776 | 2883 |

| Calendar Year Range |
|---|
| 2015 |
| 2016 |
| 2017 |
| 2018 |
| 2019 |
| 2020 |
| 2021 |
| 2022 |
| 2023 |
| 2024 |
| 2025 |
| 2026 |
| 2027 |
| 2028 |
| 2029 |
| 2030 |
| 2031 |
| 2032 |
| 2033 |
| 2034 |
| 2035 |
| 2036 |
| 2037 |
| 2038 |
| 2039 |
| 2040 |
| 2041 |
| 2042 |
| 2043 |
| 2044 |
| 2045 |
| 2046 |
| 2047 |
| 2048 |
| 2049 |
| 2050 |

CalEEMod SUMMARY REPORT AND DETAILED REPORT

# Channel Islands Harbor and Port Hueneme Harbor federal operations and maintenance dredging project U.S. Army Corps of Engineers navigation program Summary Report

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# 1. Basic Project Information

## 1.1. Basic Project Information

| Data Field | Value |
|---|---|
| Project Name | Channel Islands Harbor and Port Hueneme Harbor federal operations and maintenance dredging project U.S. Army Corps of Engineers navigation program |
| Construction Start Date | 10/1/2024 |
| Operational Year | 2025 |
| Lead Agency | U.S. Army Corps of Engineers |
| Land Use Scale | Plan/community |
| Analysis Level for Defaults | County |
| Windspeed (m/s) | 3.20 |
| Precipitation (days) | 16.0 |
| Location | San Nicholas Ave, Oxnard, CA 93035, USA |
| County | Ventura |
| City | Unincorporated |
| Air District | Ventura County APCD |
| Air Basin | South Central Coast |
| TAZ | 3417 |
| EDFZ | 8 |
| Electric Utility | Southern California Edison |
| Gas Utility | Southern California Gas |
| App Version | 2022.1.1.21 |

## 1.2. Land Use Types

| Land Use Subtype | Size | Unit | Lot Acreage | Building Area (sq ft) | Landscape Area (sq ft) | Special Landscape Area (sq ft) | Population | Description |
|---|---|---|---|---|---|---|---|---|
| User Defined Industrial | 1.00 | User Defined Unit | 667 | 0.00 | 0.00 | — | — | — |

### 1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

## 2. Emissions Summary

### 2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Un/Mit. | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 1.68 | 1.41 | 13.9 | 12.0 | 0.02 | 0.62 | 0.00 | 0.62 | 0.57 | 0.00 | 0.57 | — | 1,940 | 1,940 | 0.08 | 0.02 | 0.00 | 1,947 |
| Average Daily (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.42 | 0.36 | 3.50 | 3.02 | < 0.005 | 0.16 | 0.00 | 0.16 | 0.14 | 0.00 | 0.14 | — | 489 | 489 | 0.02 | < 0.005 | 0.00 | 491 |
| Annual (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.08 | 0.06 | 0.64 | 0.55 | < 0.005 | 0.03 | 0.00 | 0.03 | 0.03 | 0.00 | 0.03 | — | 81.0 | 81.0 | < 0.005 | < 0.005 | 0.00 | 81.2 |

### 2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Un/Mit. | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

# 6. Climate Risk Detailed Report

## 6.2. Initial Climate Risk Scores

| Climate Hazard | Exposure Score | Sensitivity Score | Adaptive Capacity Score | Vulnerability Score |
|---|---|---|---|---|
| Temperature and Extreme Heat | N/A | N/A | N/A | N/A |
| Extreme Precipitation | N/A | N/A | N/A | N/A |
| Sea Level Rise | N/A | N/A | N/A | N/A |
| Wildfire | N/A | N/A | N/A | N/A |
| Flooding | N/A | N/A | N/A | N/A |
| Drought | N/A | N/A | N/A | N/A |
| Snowpack Reduction | N/A | N/A | N/A | N/A |
| Air Quality Degradation | N/A | N/A | N/A | N/A |

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

## 6.3. Adjusted Climate Risk Scores

| Climate Hazard | Exposure Score | Sensitivity Score | Adaptive Capacity Score | Vulnerability Score |
|---|---|---|---|---|
| Temperature and Extreme Heat | N/A | N/A | N/A | N/A |
| Extreme Precipitation | N/A | N/A | N/A | N/A |
| Sea Level Rise | N/A | N/A | N/A | N/A |
| Wildfire | N/A | N/A | N/A | N/A |
| Flooding | N/A | N/A | N/A | N/A |
| Drought | N/A | N/A | N/A | N/A |
| Snowpack Reduction | N/A | N/A | N/A | N/A |
| Air Quality Degradation | N/A | N/A | N/A | N/A |

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

# 7. Health and Equity Details

## 7.3. Overall Health & Equity Scores

| Metric | Result for Project Census Tract |
|---|---|
| CalEnviroScreen 4.0 Score for Project Location (a) | — |
| Healthy Places Index Score for Project Location (b) | 65.0 |
| Project Located in a Designated Disadvantaged Community (Senate Bill 535) | No |
| Project Located in a Low-Income Community (Assembly Bill 1550) | No |

| | |
|---|---|
| Project Located in a Community Air Protection Program Community (Assembly Bill 617) | No |

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

## 7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

# Channel Islands Harbor and Port Hueneme Harbor federal operations and maintenance dredging project U.S. Army Corps of Engineers navigation program Detailed Report

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3.3. Building Construction (2025) - Unmitigated

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4.1.1. Unmitigated

4.2. Energy

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4.3. Area Emissions by Source

4.3.1. Unmitigated

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4.4.1. Unmitigated

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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5.3.1. Unmitigated

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5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

# 1. Basic Project Information

## 1.1. Basic Project Information

| Data Field | Value |
|---|---|
| Project Name | Channel Islands Harbor and Port Hueneme Harbor federal operations and maintenance dredging project U.S. Army Corps of Engineers navigation program |
| Construction Start Date | 10/1/2024 |
| Operational Year | 2025 |
| Lead Agency | U.S. Army Corps of Engineers |
| Land Use Scale | Plan/community |
| Analysis Level for Defaults | County |
| Windspeed (m/s) | 3.20 |
| Precipitation (days) | 16.0 |
| Location | San Nicholas Ave, Oxnard, CA 93035, USA |
| County | Ventura |
| City | Unincorporated |
| Air District | Ventura County APCD |
| Air Basin | South Central Coast |
| TAZ | 3417 |
| EDFZ | 8 |
| Electric Utility | Southern California Edison |
| Gas Utility | Southern California Gas |
| App Version | 2022.1.1.21 |

## 1.2. Land Use Types

| Land Use Subtype | Size | Unit | Lot Acreage | Building Area (sq ft) | Landscape Area (sq ft) | Special Landscape Area (sq ft) | Population | Description |
|---|---|---|---|---|---|---|---|---|
| User Defined Industrial | 1.00 | User Defined Unit | 667 | 0.00 | 0.00 | — | — | — |

### 1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

# 2. Emissions Summary

### 2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Un/Mit. | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 1.68 | 1.41 | 13.9 | 12.0 | 0.02 | 0.62 | 0.00 | 0.62 | 0.57 | 0.00 | 0.57 | — | 1,940 | 1,940 | 0.08 | 0.02 | 0.00 | 1,947 |
| Average Daily (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.42 | 0.36 | 3.50 | 3.02 | < 0.005 | 0.16 | 0.00 | 0.16 | 0.14 | 0.00 | 0.14 | — | 489 | 489 | 0.02 | < 0.005 | 0.00 | 491 |
| Annual (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.08 | 0.06 | 0.64 | 0.55 | < 0.005 | 0.03 | 0.00 | 0.03 | 0.03 | 0.00 | 0.03 | — | 81.0 | 81.0 | < 0.005 | < 0.005 | 0.00 | 81.2 |

### 2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Year | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily - Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily - Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2024 | 1.68 | 1.41 | 13.9 | 12.0 | 0.02 | 0.62 | 0.00 | 0.62 | 0.57 | 0.00 | 0.57 | — | 1,940 | 1,940 | 0.08 | 0.02 | 0.00 | 1,947 |
| 2025 | 1.52 | 1.28 | 12.2 | 10.8 | 0.02 | 0.53 | 0.00 | 0.53 | 0.49 | 0.00 | 0.49 | — | 1,940 | 1,940 | 0.08 | 0.02 | 0.00 | 1,947 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2024 | 0.42 | 0.36 | 3.50 | 3.02 | < 0.005 | 0.16 | 0.00 | 0.16 | 0.14 | 0.00 | 0.14 | — | 489 | 489 | 0.02 | < 0.005 | 0.00 | 491 |
| 2025 | 0.25 | 0.21 | 1.97 | 1.75 | < 0.005 | 0.09 | 0.00 | 0.09 | 0.08 | 0.00 | 0.08 | — | 314 | 314 | 0.01 | < 0.005 | 0.00 | 315 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2024 | 0.08 | 0.06 | 0.64 | 0.55 | < 0.005 | 0.03 | 0.00 | 0.03 | 0.03 | 0.00 | 0.03 | — | 81.0 | 81.0 | < 0.005 | < 0.005 | 0.00 | 81.2 |
| 2025 | 0.04 | 0.04 | 0.36 | 0.32 | < 0.005 | 0.02 | 0.00 | 0.02 | 0.01 | 0.00 | 0.01 | — | 51.9 | 51.9 | < 0.005 | < 0.005 | 0.00 | 52.1 |

## 2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Un/Mit. | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unmit. | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Sector | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Mobile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Area | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Energy | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Water | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Waste | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Mobile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Area | — | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Energy | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Water | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Waste | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mobile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Area | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Energy | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Water | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Waste | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Mobile | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Area | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Energy | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Water | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Waste | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

# 3. Construction Emissions Details

## 3.1. Building Construction (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.68 | 1.41 | 13.9 | 12.0 | 0.02 | 0.62 | — | 0.62 | 0.57 | — | 0.57 | — | 1,940 | 1,940 | 0.08 | 0.02 | — | 1,947 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.42 | 0.36 | 3.50 | 3.02 | < 0.005 | 0.16 | — | 0.16 | 0.14 | — | 0.14 | — | 489 | 489 | 0.02 | < 0.005 | — | 491 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.08 | 0.06 | 0.64 | 0.55 | < 0.005 | 0.03 | — | 0.03 | 0.03 | — | 0.03 | — | 81.0 | 81.0 | < 0.005 | < 0.005 | — | 81.2 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.3. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.52 | 1.28 | 12.2 | 10.8 | 0.02 | 0.53 | — | 0.53 | 0.49 | — | 0.49 | — | 1,940 | 1,940 | 0.08 | 0.02 | — | 1,947 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.25 | 0.21 | 1.97 | 1.75 | < 0.005 | 0.09 | — | 0.09 | 0.08 | — | 0.08 | — | 314 | 314 | 0.01 | < 0.005 | — | 315 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.04 | 0.04 | 0.36 | 0.32 | < 0.005 | 0.02 | — | 0.02 | 0.01 | — | 0.01 | — | 51.9 | 51.9 | < 0.005 | < 0.005 | — | 52.1 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

# 4. Operations Emissions Details

## 4.1. Mobile Emissions by Land Use

### 4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| User Defined Industrial | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| User Defined Industrial | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| User Defined Industrial | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 4.2. Energy

### 4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| User Defined Industrial | — | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| User Defined Industrial | — | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| User Defined Industrial | — | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |

### 4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| User Defined Industrial | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| User Defined Industrial | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| User Defined Industrial | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |

## 4.3. Area Emissions by Source

### 4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Source | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Consumer Products | — | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Architectural Coatings | — | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Landscape Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Consumer Products | — | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Architectural Coatings | — | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Consum Products | — | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Architectural Coatings | — | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Landscape Equipment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |

## 4.4. Water Emissions by Land Use

### 4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| User Defined Industrial | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| User Defined Industrial | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| User Defined Industrial | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |

## 4.5. Waste Emissions by Land Use

### 4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| User Defined Industrial | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| User Defined Industrial | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| User Defined Industrial | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |

## 4.6. Refrigerant Emissions by Land Use

### 4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

## 4.7. Offroad Emissions By Equipment Type

### 4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipment Type | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

## 4.8. Stationary Emissions By Equipment Type

### 4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipment Type | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

## 4.9. User Defined Emissions By Equipment Type

### 4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipment Type | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

## 4.10. Soil Carbon Accumulation By Vegetation Type

### 4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Vegetation | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

### 4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

### 4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Species | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Avoided | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Avoided | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Avoided | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

# 5. Activity Data

## 5.1. Construction Schedule

| Phase Name | Phase Type | Start Date | End Date | Days Per Week | Work Days per Phase | Phase Description |
|---|---|---|---|---|---|---|
| Building Construction | Building Construction | 10/1/2024 | 2/28/2025 | 7.00 | 151 | — |

## 5.2. Off-Road Equipment

### 5.2.1. Unmitigated

| Phase Name | Equipment Type | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|---|---|---|---|---|---|---|---|
| Building Construction | Tractors/Loaders/Backhoes | Diesel | Average | 3.00 | 2.00 | 84.0 | 0.37 |
| Building Construction | Rubber Tired Dozers | Diesel | Average | 5.00 | 2.00 | 367 | 0.40 |

## 5.3. Construction Vehicles

### 5.3.1. Unmitigated

| Phase Name | Trip Type | One-Way Trips per Day | Miles per Trip | Vehicle Mix |
|---|---|---|---|---|
| Building Construction | — | — | — | — |
| Building Construction | Worker | 0.00 | 18.5 | LDA,LDT1,LDT2 |
| Building Construction | Vendor | 0.00 | 10.2 | HHDT,MHDT |
| Building Construction | Hauling | 0.00 | 20.0 | HHDT |
| Building Construction | Onsite truck | — | — | HHDT |

## 5.4. Vehicles

### 5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

## 5.5. Architectural Coatings

| Phase Name | Residential Interior Area Coated (sq ft) | Residential Exterior Area Coated (sq ft) | Non-Residential Interior Area Coated (sq ft) | Non-Residential Exterior Area Coated (sq ft) | Parking Area Coated (sq ft) |
|---|---|---|---|---|---|

## 5.6. Dust Mitigation

### 5.6.1. Construction Earthmoving Activities

| Phase Name | Material Imported (cy) | Material Exported (cy) | Acres Graded (acres) | Material Demolished (sq. ft.) | Acres Paved (acres) |
|---|---|---|---|---|---|

### 5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

## 5.7. Construction Paving

| Land Use | Area Paved (acres) | % Asphalt |
|---|---|---|
| User Defined Industrial | 0.00 | 0% |

## 5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

| Year | kWh per Year | CO2 | CH4 | N2O |
|---|---|---|---|---|
| 2024 | 0.00 | 532 | 0.03 | < 0.005 |
| 2025 | 0.00 | 532 | 0.03 | < 0.005 |

## 5.9. Operational Mobile Sources

### 5.9.1. Unmitigated

| Land Use Type | Trips/Weekday | Trips/Saturday | Trips/Sunday | Trips/Year | VMT/Weekday | VMT/Saturday | VMT/Sunday | VMT/Year |
|---|---|---|---|---|---|---|---|---|
| User Defined Industrial | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 5.10. Operational Area Sources

### 5.10.1. Hearths

#### 5.10.1.1. Unmitigated

### 5.10.2. Architectural Coatings

| Residential Interior Area Coated (sq ft) | Residential Exterior Area Coated (sq ft) | Non-Residential Interior Area Coated (sq ft) | Non-Residential Exterior Area Coated (sq ft) | Parking Area Coated (sq ft) |
|---|---|---|---|---|
| 0 | 0.00 | 0.00 | 0.00 | — |

### 5.10.3. Landscape Equipment

| Season | Unit | Value |
|---|---|---|
| Snow Days | day/yr | 0.00 |
| Summer Days | day/yr | 180 |

## 5.11. Operational Energy Consumption

### 5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

| Land Use | Electricity (kWh/yr) | CO2 | CH4 | N2O | Natural Gas (kBTU/yr) |
|---|---|---|---|---|---|
| User Defined Industrial | 0.00 | 532 | 0.0330 | 0.0040 | 0.00 |

## 5.12. Operational Water and Wastewater Consumption

### 5.12.1. Unmitigated

| Land Use | Indoor Water (gal/year) | Outdoor Water (gal/year) |
|---|---|---|
| User Defined Industrial | 0.00 | 0.00 |

## 5.13. Operational Waste Generation

### 5.13.1. Unmitigated

| Land Use | Waste (ton/year) | Cogeneration (kWh/year) |
|---|---|---|
| User Defined Industrial | 0.00 | — |

## 5.14. Operational Refrigeration and Air Conditioning Equipment

### 5.14.1. Unmitigated

| Land Use Type | Equipment Type | Refrigerant | GWP | Quantity (kg) | Operations Leak Rate | Service Leak Rate | Times Serviced |
|---|---|---|---|---|---|---|---|

## 5.15. Operational Off-Road Equipment

### 5.15.1. Unmitigated

| Equipment Type | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|---|---|---|---|---|---|---|

## 5.16. Stationary Sources

### 5.16.1. Emergency Generators and Fire Pumps

| Equipment Type | Fuel Type | Number per Day | Hours per Day | Hours per Year | Horsepower | Load Factor |
|---|---|---|---|---|---|---|

### 5.16.2. Process Boilers

| Equipment Type | Fuel Type | Number | Boiler Rating (MMBtu/hr) | Daily Heat Input (MMBtu/day) | Annual Heat Input (MMBtu/yr) |
|---|---|---|---|---|---|

## 5.17. User Defined

| Equipment Type | Fuel Type |
|---|---|

## 5.18. Vegetation

### 5.18.1. Land Use Change

#### 5.18.1.1. Unmitigated

| Vegetation Land Use Type | Vegetation Soil Type | Initial Acres | Final Acres |
|---|---|---|---|

### 5.18.1. Biomass Cover Type

#### 5.18.1.1. Unmitigated

| Biomass Cover Type | Initial Acres | Final Acres |
|---|---|---|

### 5.18.2. Sequestration

#### 5.18.2.1. Unmitigated

| Tree Type | Number | Electricity Saved (kWh/year) | Natural Gas Saved (btu/year) |
|---|---|---|---|

# 6. Climate Risk Detailed Report

## 6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

| Climate Hazard | Result for Project Location | Unit |
|---|---|---|
| Temperature and Extreme Heat | 10.3 | annual days of extreme heat |
| Extreme Precipitation | 4.65 | annual days with precipitation above 20 mm |

| | | |
|---|---|---|
| Sea Level Rise | — | meters of inundation depth |
| Wildfire | 9.96 | annual hectares burned |

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

## 6.2. Initial Climate Risk Scores

| Climate Hazard | Exposure Score | Sensitivity Score | Adaptive Capacity Score | Vulnerability Score |
|---|---|---|---|---|
| Temperature and Extreme Heat | N/A | N/A | N/A | N/A |
| Extreme Precipitation | N/A | N/A | N/A | N/A |
| Sea Level Rise | N/A | N/A | N/A | N/A |
| Wildfire | N/A | N/A | N/A | N/A |
| Flooding | N/A | N/A | N/A | N/A |
| Drought | N/A | N/A | N/A | N/A |
| Snowpack Reduction | N/A | N/A | N/A | N/A |
| Air Quality Degradation | N/A | N/A | N/A | N/A |

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

## 6.3. Adjusted Climate Risk Scores

| Climate Hazard | Exposure Score | Sensitivity Score | Adaptive Capacity Score | Vulnerability Score |
|---|---|---|---|---|
| Temperature and Extreme Heat | N/A | N/A | N/A | N/A |
| Extreme Precipitation | N/A | N/A | N/A | N/A |
| Sea Level Rise | N/A | N/A | N/A | N/A |
| Wildfire | N/A | N/A | N/A | N/A |
| Flooding | N/A | N/A | N/A | N/A |
| Drought | N/A | N/A | N/A | N/A |
| Snowpack Reduction | N/A | N/A | N/A | N/A |
| Air Quality Degradation | N/A | N/A | N/A | N/A |

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

### 6.4. Climate Risk Reduction Measures

# 7. Health and Equity Details

## 7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

| Indicator | Result for Project Census Tract |
|---|---|
| Exposure Indicators | — |
| AQ-Ozone | — |
| AQ-PM | — |
| AQ-DPM | — |
| Drinking Water | — |
| Lead Risk Housing | — |
| Pesticides | — |

| | |
|---|---|
| Toxic Releases | — |
| Traffic | — |
| Effect Indicators | — |
| CleanUp Sites | — |
| Groundwater | — |
| Haz Waste Facilities/Generators | — |
| Impaired Water Bodies | — |
| Solid Waste | — |
| Sensitive Population | — |
| Asthma | — |
| Cardio-vascular | — |
| Low Birth Weights | — |
| Socioeconomic Factor Indicators | — |
| Education | — |
| Housing | — |
| Linguistic | — |
| Poverty | — |
| Unemployment | — |

## 7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

| Indicator | Result for Project Census Tract |
|---|---|
| Economic | — |
| Above Poverty | 76.01693828 |
| Employed | 37.23854741 |
| Median HI | 65.41768254 |

| | |
|---|---|
| Education | — |
| Bachelor's or higher | 71.35891184 |
| High school enrollment | 100 |
| Preschool enrollment | 95.7141024 |
| Transportation | — |
| Auto Access | 78.96830489 |
| Active commuting | 23.7520852 |
| Social | — |
| 2-parent households | 19.35069935 |
| Voting | 65.16104196 |
| Neighborhood | — |
| Alcohol availability | 50.77633774 |
| Park access | 22.76401899 |
| Retail density | 61.91453869 |
| Supermarket access | 6.249197998 |
| Tree canopy | 8.533299115 |
| Housing | — |
| Homeownership | 31.77210317 |
| Housing habitability | 68.89516233 |
| Low-inc homeowner severe housing cost burden | 32.31104838 |
| Low-inc renter severe housing cost burden | 89.43924034 |
| Uncrowded housing | 96.93314513 |
| Health Outcomes | — |
| Insured adults | 63.35172591 |
| Arthritis | 50.5 |
| Asthma ER Admissions | 65.0 |
| High Blood Pressure | 25.9 |

| | |
|---|---|
| Cancer (excluding skin) | 21.2 |
| Asthma | 61.7 |
| Coronary Heart Disease | 57.7 |
| Chronic Obstructive Pulmonary Disease | 65.3 |
| Diagnosed Diabetes | 85.5 |
| Life Expectancy at Birth | 35.0 |
| Cognitively Disabled | 60.3 |
| Physically  Disabled | 17.3 |
| Heart Attack ER Admissions | 71.1 |
| Mental Health Not Good | 78.4 |
| Chronic Kidney Disease | 73.0 |
| Obesity | 70.2 |
| Pedestrian Injuries | 19.6 |
| Physical Health Not Good | 82.3 |
| Stroke | 75.8 |
| Health Risk Behaviors | — |
| Binge Drinking | 10.6 |
| Current Smoker | 80.3 |
| No Leisure Time for Physical Activity | 86.6 |
| Climate Change Exposures | — |
| Wildfire Risk | 0.0 |
| SLR Inundation Area | 12.1 |
| Children | 96.5 |
| Elderly | 27.8 |
| English Speaking | 85.3 |
| Foreign-born | 9.2 |
| Outdoor Workers | 17.4 |

| | |
|---|---|
| Climate Change Adaptive Capacity | — |
| Impervious Surface Cover | 27.5 |
| Traffic Density | 19.6 |
| Traffic Access | 23.0 |
| Other Indices | — |
| Hardship | 14.7 |
| Other Decision Support | — |
| 2016 Voting | 77.7 |

## 7.3. Overall Health & Equity Scores

| Metric | Result for Project Census Tract |
|---|---|
| CalEnviroScreen 4.0 Score for Project Location (a) | — |
| Healthy Places Index Score for Project Location (b) | 65.0 |
| Project Located in a Designated Disadvantaged Community (Senate Bill 535) | No |
| Project Located in a Low-Income Community (Assembly Bill 1550) | No |
| Project Located in a Community Air Protection Program Community (Assembly Bill 617) | No |

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

## 7.4. Health & Equity Measures

No Health & Equity Measures selected.

## 7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

## 7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

# 8. User Changes to Default Data

| Screen | Justification |
|---|---|
| Land Use | The NEPA scope of analysis (Action Area) directly encompasses approximately 289 acres and indirectly encompasses approximately 378 acres (transit corridor and 300-foot buffer around aquatic features) for a total of 667 acres. |
| Construction: Construction Phases | Biennial dredging and beach placement would occur between October 1 and February 28. The required dredging is planned to be accomplished in three biennial dredging cycles (at years 1, 3, and 5) over a six-year period (2024-2029). |
| Construction: Off-Road Equipment | 5 dozers and 3 loaders are land based construction equipment used for beach placement activities for hydraulic pipeline dredging. |

## GHG Proration for clamshell Dredge

| Hydraulic Dredge | | GHG | SC rate | social costs |
|---|---|---|---|---|
| | 2024 | 317 | $128 | $40,517 |
| | 2025 | 633 | $130 | $82,300 |
| | 2026 | 598 | $133 | $79,517 |
| | 2027 | 399 | $136 | $54,207 |
| | 2028 | 598 | $139 | $83,104 |
| | 2029 | 399 | $141 | $56,200 |

Acreage Proration (In 2024, Area G won't be dredged) so actual emissions are 96% of total.

| | | | | | |
|---|---|---|---|---|---|
| | | | Total Dredge Areas | | 289 |
| | | | | Area G | 10.8 |
| Total Dredge Area - Area G/Total Dredge Area | | | | | 0.96263 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | GHG |
| Emisions for total Dredge Area | | | | | 996.45 |
| Emissions for Total Dredge Area - Area G | | | | | 959.2124 |

Annual Proration 2024: Dredging will start in December 2024 and end February 2025

| | | | |
|---|---|---|---|
| | Total Dredge Months | | 3 |
| Dredge months 2024 (Dec) | | | 1 |
| Dredge Months 2025 (Jan, Feb) | | | 2 |
| | Annual Emissions 2024 | | 316.5401 |
| | Annual Emissions 2025 | | 633.0802 |

Annual Proration 2026: Dredging will start Oct. 2026 and end Feb 2025

| | | | |
|---|---|---|---|
| Total Dredge Months | ` | | 5 |
| Dredge months 2026 (Oct, Nov, Dec) | | | 3 |
| Dredge Months 2027 (Jan, Feb) | | | 2 |
| | Annual Emissions 2026 | | 597.87 |
| | Annual Emissions 2027 | | 398.58 |

Annual Proration 2028: Dredging will start Oct. 2028 and end Feb 2029

| | | | |
|---|---|---|---|
| Total Dredge Months | ` | | 5 |
| Dredge months 2028 (Oct, Nov, Dec) | | | 3 |
| Dredge Months 2029 (Jan, Feb) | | | 2 |
| | Annual Emissions 2026 | | 597.87 |
| | Annual Emissions 2027 | | 398.58 |

## GHG Proration for Hydraulic Dredge

| Hydraulic Dredge | | GHG | SC rate | social costs |
|---|---|---|---|---|
| | 2024 | 512 | $128 | $65,493 |
| | 2025 | 1023 | $130 | $133,034 |
| | 2026 | 966 | $133 | $128,534 |
| | 2027 | 644 | $136 | $87,622 |
| | 2028 | 966 | $139 | $134,332 |
| | 2029 | 644 | $141 | $90,843 |

Acreage Proration (In 2024, Area G won't be dredged) so actual emissions are 96% of total.

| | | | | | |
|---|---|---|---|---|---|
| | | | Total Dredge Areas | | 289 |
| | | | | Area G | 10.8 |
| Total Dredge Area - Area G/Total Dredge Area | | | | | 0.96263 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | GHG |
| Emisions for total Dredge Area | | | | | 1610.7 |
| Emissions for Total Dredge Area - Area G | | | | | 1550.508 |

Annual Proration 2024: Dredging will start in December 2024 and end February 2025

| | | | |
|---|---|---|---|
| | Total Dredge Months | | 3 |
| Dredge months 2024 (Dec) | | | 1 |
| Dredge Months 2025 (Jan, Feb) | | | 2 |
| | Annual Emissions 2024 | | 511.6676 |
| | Annual Emissions 2025 | | 1023.335 |

Annual Proration 2026: Dredging will start Oct. 2026 and end Feb 2025

| | | | |
|---|---|---|---|
| Total Dredge Months | ` | | 5 |
| Dredge months 2026 (Oct, Nov, Dec) | | | 3 |
| Dredge Months 2027 (Jan, Feb) | | | 2 |
| | Annual Emissions 2026 | | 966.42 |
| | Annual Emissions 2027 | | 644.28 |

Annual Proration 2028: Dredging will start Oct. 2028 and end Feb 2029

| | | | |
|---|---|---|---|
| Total Dredge Months | ` | | 5 |
| Dredge months 2028 (Oct, Nov, Dec) | | | 3 |
| Dredge Months 2029 (Jan, Feb) | | | 2 |
| | Annual Emissions 2026 | | 966.42 |
| | Annual Emissions 2027 | | 644.28 |

## AQ Proration for Hydraulic Dredge

| Hydraulic Dredge | VOC | Nox | VOC | Nox |
|---|---|---|---|---|
| 2024 | 0.24 | 4.87 | 0.237933 | 4.870165 |
| 2025 | 0.48 | 9.74 | 0.475866 | 9.740331 |
| 2026 | 0.45 | 9.20 | 0.4494 | 9.1986 |
| 2027 | 0.30 | 6.13 | 0.2996 | 6.1324 |
| 2028 | 0.45 | 9.20 | 0.4494 | 9.1986 |
| 2029 | 0.30 | 6.13 | 0.2996 | 6.1324 |

Acreage Proration (In 2024, Area G won't be dredged) so actual emissions are 96% of total.

| | | | | | |
|---|---|---|---|---|---|
| | | | Total Dredge Areas | | 289 |
| | | | | Area G | 10.8 |
| Total Dredge Area - Area G/Total Dredge Area | | | | | 0.96263 |

| | | | | | VOC | Nox |
|---|---|---|---|---|---|---|
| Emisions for total Dredge Area | | | | | 0.749 | 15.331 |
| Emissions for Total Dredge Area - Area G | | | | | 0.72101 | 14.75808 |

Annual Proration 2024: Dredging will start in December 2024 and end February 2025

| | | | | |
|---|---|---|---|---|
| | Total Dredge Months | | 3 | 3 |
| Dredge months 2024 (Dec) | | | 1 | 1 |
| Dredge Months 2025 (Jan, Feb) | | | 2 | 2 |
| | Annual Emissions 2024 | | 0.237933 | 4.870165 |
| | Annual Emissions 2025 | | 0.475866 | 9.740331 |

Annual Proration 2026: Dredging will start Oct. 2026 and end Feb 2025

| | | | | |
|---|---|---|---|---|
| Total Dredge Months | ` | | 5 | 5 |
| Dredge months 2026 (Oct, Nov, Dec) | | | 3 | 3 |
| Dredge Months 2027 (Jan, Feb) | | | 2 | 2 |
| | Annual Emissions 2026 | | 0.4494 | 9.1986 |
| | Annual Emissions 2027 | | 0.2996 | 6.1324 |

Annual Proration 2028: Dredging will start Oct. 2028 and end Feb 2029

| | | | | |
|---|---|---|---|---|
| Total Dredge Months | ` | | 5 | 5 |
| Dredge months 2028 (Oct, Nov, Dec) | | | 3 | 3 |
| Dredge Months 2029 (Jan, Feb) | | | 2 | 2 |
| | Annual Emissions 2026 | | 0.4494 | 9.1986 |
| | Annual Emissions 2027 | | 0.2996 | 6.1324 |

## AQ Proration for Clamshell Dredge

| Hydraulic Dredge | VOC | Nox | VOC | Nox |
|---|---|---|---|---|
| 2024 | 0.15 | 3.18 | 0.151528 | 3.18 |
| 2025 | 0.30 | 6.35 | 0.303055 | 6.35 |
| 2026 | 0.29 | 6.00 | 0.2862 | 6.00 |
| 2027 | 0.19 | 4.00 | 0.1908 | 4.00 |
| 2028 | 0.29 | 6.00 | 0.2862 | 6.00 |
| 2029 | 0.19 | 4.00 | 0.1908 | 4.00 |

Acreage Proration (In 2024, Area G won't be dredged) so actual emissions are 96% of total.

| | | | | | |
|---|---|---|---|---|---|
| | | | Total Dredge Areas | | 289 |
| | | | | Area G | 10.8 |
| Total Dredge Area - Area G/Total Dredge Area | | | | | 0.96263 |

| | | | | | VOC | Nox |
|---|---|---|---|---|---|---|
| Emisions for total Dredge Area | | | | | 0.477 | 10 |
| Emissions for Total Dredge Area - Area G | | | | | 0.459174 | 9.626298 |

Annual Proration 2024: Dredging will start in December 2024 and end February 2025

| | | | | |
|---|---|---|---|---|
| | Total Dredge Months | | 3 | 3 |
| Dredge months 2024 (Dec) | | | 1 | 1 |
| Dredge Months 2025 (Jan, Feb) | | | 2 | 2 |
| | Annual Emissions 2024 | | 0.151528 | 3.176678 |
| | Annual Emissions 2025 | | 0.303055 | 6.353356 |

Annual Proration 2026: Dredging will start Oct. 2026 and end Feb 2025

| | | | | |
|---|---|---|---|---|
| Total Dredge Months | ` | | 5 | 5 |
| Dredge months 2026 (Oct, Nov, Dec) | | | 3 | 3 |
| Dredge Months 2027 (Jan, Feb) | | | 2 | 2 |
| | Annual Emissions 2026 | | 0.2862 | 6 |
| | Annual Emissions 2027 | | 0.1908 | 4 |

Annual Proration 2028: Dredging will start Oct. 2028 and end Feb 2029

| | | | | |
|---|---|---|---|---|
| Total Dredge Months | ` | | 5 | 5 |
| Dredge months 2028 (Oct, Nov, Dec) | | | 3 | 3 |
| Dredge Months 2029 (Jan, Feb) | | | 2 | 2 |
| | Annual Emissions 2026 | | 0.2862 | 6 |
| | Annual Emissions 2027 | | 0.1908 | 4 |

# APPENDIX F

# CULTURAL RESOURCE CORRESPONDENCE

**DEPARTMENT OF THE ARMY**
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2711
LOS ANGELES, CALIFORNIA 90053-2325

September 22, 1994

REPLY TO
ATTENTION OF:
Office of the Chief
Environmental Resources Branch

Ms. Cherylin Widell
Acting State Historic Preservation Officer
Office of Historic Preservation
P.O. Box 942896
Sacramento, California 94296-0001

Dear Ms. Widell:

The Los Angeles District Corps of Engineers (COE), is proposing to engage in routine maintenance dredging and sediment disposal of Channel Islands and Port Hueneme Harbors in Ventura County. Channel Islands Harbor has been dredged every two years beginning in 1969, and Port Hueneme Harbor every fours years since 1975. All undertakings have been coordinated for compliance with Section 106 through your office. Coordination with your office most recently occurred in 1988 (COE 860715A: enclosure 1)) and again in 1990 (CoE 900320A: enclosure 2). In both cases you concurred that there were either no historic properties, or effects occurring in the area of potential effects (APE). The current project area overlaps substantially with these previously tested areas. The only area which has not been subjected to Section 106 evaluation, and which is the subject of this letter, is a portion of the sediment disposal area which lies nearshore off Hueneme Beach between the old Port Hueneme Lighthouse adjacent to the jetty, and the northwest boundary of Ormand Beach in Oxnard (enclosure 3). The proposed nearshore disposal area is located between the -10ft and -30ft MLLW depths. Some dredged material may also be disposed of at Silver Strand Beach, another routinely utilized area, which has been in use since 1984.

The proposed project is a six-year harbor maintenance program requiring the bi-annual removal of about 258,500 cubic yards of sediment per episode. Due to ecological restrictions, dredging must occur between October 1 and April 15 for each episode. The sediment will be deposited nearshore to enable wave action to distribute it on the beach, thereby renourishing Hueneme Beach.

The COE contracted Macfarlane Archaeological Consulting (MAC) to conduct a records and literature search and an updated remote sensing survey of the Hueneme Beach nearshore disposal area. The letter report prepared by MAC listed the remains of the Hueneme Pier, and a variety of shipwrecks originally reported

to have gone down in the vicinity of the APE prior to 1938 (enclosure 4). MAC's survey detected a debris field in the nearshore disposal area. MAC equated the debris with the pilings and remnants of the old Hueneme Pier which collapsed in 1938, and suggested that the debris field might require further archeological testing.

The COE, however, disagrees with MAC's recommendation. Our research shows that major storms hit the Southern California coastline in 1938 and 1939 (enclosures 5 and 6). These storms caused the collapse of the pier and created a great deal of seafloor turbulence. The beach profile (enclosure 7) shows that the seafloor level was very high in 1938 and then much lower in successive years, indicating the storms of 1938 and 1939 removed an extremely large amount of sediment from the ocean bottom. Undoubtedly with the amount of nearshore turbulence and disturbance, the location and integrity of pre-1939 shipwrecks and the historic pier would be heavily impaired. In fact, the MAC report documents their findings as a "debris field" rather than as any distinct entity; the debris field is a likely result of storm activity and subsequent ocean bottom movement. The COE believes that there is ample historical information on the Port Hueneme Pier that would far surpass the value of underwater investigations of its disturbed and maybe nonexistent remains.

Furthermore, in the unlikely event that any remains are still in place, the COE does not consider the temporary placement of sediment a significant impact. The sediment is placed so as to migrate shoreward and would not constitute a permanent burial of the area. In addition, the MAC report states that magnetic anomalies were the identifying factor for much of this debris field, a fact which indicates that some of the debris is already buried under a protective layer of sediment.

After considering all of the information available -- clearance of similar projects in the same location on two recent occasions, knowledge of two major destructive storms in 1938 and 1939, the fact that the reported anomalies constitute unidentifiable debris rather than a distinct entity, and the conclusion that the deposition of sediment would not constitute a significant impact in the event of any potential sites -- the COE has determined that the Channel Islands/Port Hueneme Harbors Maintenance Dredging project as planned will not involve National Register listed or eligible properties.

We request that you review the enclosed information. If you agree with this determination, we would appreciate your concurrence within thirty days, otherwise we will assume your concurrence. If you have any questions concerning this project or the determination, please contact Mr. Richard Perry, Project Archeologist, at (213) 894-6087.

Sincerely,

Charles F. Enson

for Carl F. Enson, P.E.
Chief, Construction-
Operations Division

Enclosures

CALIFORNIA — THE RESOURCES AGENCY

PETE WILSON, *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO 94296-0001
(916) 653-6624
FAX: (916) 653-9824

5 October 1994

Reply to: COE940926F

Col. R.L. Van Antwerp, District Engineer
US Army Corps of Engineers
ATTN: Carl Enson
Post Office Box 2711
LOS ANGELES CA 90053-2325

Subject: 13TH BIANNUAL HARBOR DREDGING, CHANNEL ISLANDS AND PORT HUENEME

Dear Col. Van Antwerp:

Thank you for requesting my review of the undertaking noted above and for including the documentation which justifies your determination.

I do not object to your determination that this undertaking will not affect historic properties. Accordingly, you have fulfilled federal agency responsibilities pursuant to 36 CFR 800, regulations implementing Section 106 of the National Historic Preservation Act. Please note that your agency may have additional responsibilities under 36 CFR 800 under any of the following circumstances;

1. If any person requests that the Advisory Council on Historic Preservation review your findings in accordance with 36 CFR 800.6(e);
2. If this undertaking changes in ways that could affect historic properties [36 CFR 800.5(c)];
3. If previously undocumented properties are discovered during the implementation of this undertaking or if a known historic property will be affected in an unanticipated manner [36 CFR 800.11];
4. If a property that was to be avoided has been inadvertently or otherwise affected [36 CFR 800.4(c);800.5];
5. If any condition of the undertaking, such as a delay in implementation or implementation in phases over time, may justify reconsideration of the current National Register status of properties within the undertaking's Area of

Thank you for considering historic properties during project planning. If you have any questions, please call staff archaeologist Nicholas Del Cioppo at (916) 653-9696.

Sincerely,

Ms. Cherilyn Widell
State Historic Preservation Officer

CESPL-PD-RN

**MEMORANDUM FOR RECORD** **MARCH 22, 2000**

**SUBJECT:** *COMPLIANCE WITH SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT FOR THE YEAR 2000 MULTI-YEAR MAINTENCE DREDGING PROJECT IN THE CHANNEL ISLAND AND PORT HUENEME HARBORS, VENTURA COUNTY, CALIFORNIA*

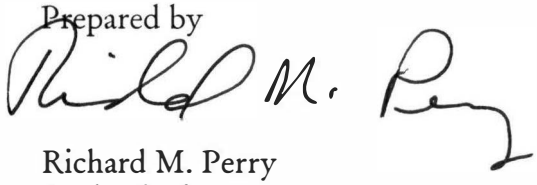
1. The implementing regulations for Section 106, 36 CFR 800 revised on May 18, 1999 contain a new section, 800.3(a)(1), that allows a Federal agency to proceed with a project without further consultation if the project does not have the potential to cause effects on historic properties. Compliance with Section 106 of the National Historic Preservation Act is completed without input from the State Historic Preservation Officer (SHPO). The Channel Islands/Port Hueneme Harbors Maintenance Dredging Project meets this criteria. This Memorandum for Record (MFR) explains the Corps of Engineers decision.

2. Both harbors have extensive histories for maintenance dredging and the attendant sediment disposal. Channel Islands Harbor has been dredged every two years since 1969. Port Hueneme Harbor has been dredged every four years beginning in 1975. Dredged materials have routinely been placed either on Silver Strand Beach or Hueneme Beach. Compliance with Section 106 has been conducted for these dredging episodes most in 1986, 1990, and most recently, 1994. The SHPO project numbers for these three episodes are: (1) 1986 - CoE 860715A; (2) 1990 - CoE 900320A, and (3) CoE 9400926F. Compliance in 1994 was conducted for a six-year project cycle. The current project is a six-year renewal of the last one.

3. New nearshore disposal areas were used for the last project. The two locations needed to be surveyed before they could be used. Macfarlane Archaeological Associates (MAC) conducted a negative survey of the two spots. One of these two locations may be used for this new project.

4. The new project meets the criteria for Section 106 compliance without SHPO consultation. Thirty years of dredging at Channel Island Harbor and twenty-five years at Port Hueneme Harbor have failed to impact any cultural resources. Additionally, beach disposal is generally used to replenish eroded beach sediments. There is no potential for cultural resources to be involved on these locations. The 1994 survey by MAC failed to identify any historic properties in the APE for the two new nearshore disposal locations.

Prepared by



Richard M. Perry
Archeologist
Ecosystem Planning System

Attachment: 1994 SHPO coordination letter

STATE OF CALIFORNIA – THE RESOURCES AGENCY GRAY DAVIS, *Governor*

**OFFICE OF HISTORIC PRESERVATION**
**DEPARTMENT OF PARKS AND RECREATION**
BOX 942896
AMENTO, CA 94296-0001
653-6624 Fax: (916) 653-9824
calshpo@mail2.quiknet.com

March 28, 2000

REPLY TO: COE940926F

Mr. Robert E. Koplin, P.E.
Chief Planning Division
Attn: Mr. Richard Perry (CESPL-PD-RN)
U.S. Army Corps of Engineers
P.O. Box 532711
LOS ANGELES CA 90355-2325

Re: East and West Jetty Repair Project and Harbor Deepening Project, Port of Hueneme Harbor, Port Hueneme, Ventura County.

Dear Mr. Koplin:

Thank you for submitting to our office your letters dated February 9, 2000 and February 22, 2000 and supporting documentation regarding a proposed project involving the repair of the east and west jetties at the entrance to the Port of Hueneme Harbor (PoHH) and the deepening of the harbor to provide anchorage for deeper draft vehicles. PoHH is located in the City of Port Hueneme, Ventura County. The proposed jetty repair project is designed to restore the 61-year old structures to their original configuration. Details of the proposed jetty repair project are contained in Enclosure 4 of the supporting documentation.

The Army Corps of Engineers (Corps) is seeking our comments on its determination of the eligibility of the east and west jetties at the entrance to the PoHH for inclusion on the National Register of Historic Places (NRHP) in accordance with 36 CFR 800, regulations effective June 17, 1999 implementing Section 106 of the National Historic Preservation Act. The Corps is also seeking our comments on its determination of the effects the proposed project will have on historic properties in accordance with 36 CFR 800. Our review of the submitted documentation leads to concur with the Corp's determination that the east and west jetties are not eligible for inclusion on the NRHP under any of the criteria established by 36 CFR 800. The jetties have no strong associations with significant historical events or persons, and are not examples of outstanding engineering design or function. We also concur with the Corp's determination that the aforementioned jetty repair and harbor deepening projects, as described, will have no effect on historic properties.

Thank you again for seeking our comments on your project. If you have any questions, please contact staff historian Clarence Caesar at (916) 653-8902.

Sincerely,

Daniel Abeyta, Acting
State Historic Preservation Officer

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS
915 WILSHIRE BOULEVARD, SUITE 930
LOS ANGELES, CALIFORNIA 90017

June 29, 2018

Planning Division

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, California 95816

Dear Ms. Polanco:

The U.S. Army Corps of Engineers, Los Angeles District (Corps), is initiating consultation with the State Historic Preservation Officer (SHPO), regarding a proposal to repair the Channel Islands Harbor Breakwater and Jetties. We are consulting with you in accordance with Title 36 Code of Federal Regulation Part 800 (36 C.F.R. 800), implementing Section 106 of the National Historic Preservation Act. At this time, the Corps is only consulting on the area of potential effects (APE) established for the undertaking. We will further consult regarding any potential effect of the project on cultural resources at a later date.

**Description of the Undertaking**

The Corps proposes to repair the two parallel entrance channel jetties and an offshore breakwater at the entrance to the Channel Island Harbor from damage caused by heavy surf and wave action. The work would restore the structures to original condition in order to maintain safe passage for vessels entering and exiting the harbor. Channel Islands Harbor is located near the City of Oxnard, Ventura County, California (see enclosed maps).

Repair work would consist of resetting existing armor stone as needed and placement of approximately 20,000 tons of new armor stone. The new stone would have a median stone size of 15-tons. Repairs would be conducted by a barge-mounted crane, barges carrying rock, tugboats, and other various small boats. Transport of stone would likely be by sea but may occur on land using dump trucks or other heavy equipment vehicles. The primary terrestrial (on shore) staging/storage area for construction equipment and supplies would be within the paved Kiddie Beach Park parking lot along South Victoria Avenue. An additional staging/storage area adjacent to the south jetty would likely be used to allow land-based equipment to perform the work on the south jetty. This additional staging area would be located either within the paved parking lot at Silver Strand Beach or an area of the heavily disturbed beach adjacent to the southwest side of the parking lot that was used during the 1995 breakwater repairs.

Channel Islands Harbor is an entirely manmade harbor that was mechanically dug out of the shoreline. Construction on the harbor began in 1958, and expansion continued into the 1970s. The stone breakwater and jetties were originally constructed in 1958-1960 to protect the newly created harbor. Major maintenance was last completed in 1996, which included repairs to the

north jetty and a small section of the detached breakwater to address damages from the 1982-1983 storm season and the 1994 Northridge earthquake. There is no documentation of repairs prior to this event.

**APE**

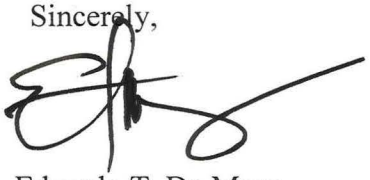
The repair work would be limited to the footprint of the existing stone structures. Staging would occur within the Kiddie Beach Park or Silver Strand Beach paved parking lots. If the local jurisdiction wants to keep the Silver Strand Beach parking lot open for public use, the staging could be moved to an area of the active and highly disturbed Silver Strand Beach adjacent to the southwest side of the parking lot that was used as a staging area during the 1996 breakwater repair. The Corps' area of potential effects is defined as the footprint of the breakwater (approximately 90' x 2,400') and jetties (approximately 70' x 1,250' each). Staging areas could be set up in the two existing paved public parking lots or on a 150' x 300' area of the Silver Strand beach. The vertical extent of the APE would be limited to incidental disturbance and would not extend deeper than 12 inches from the ground surface. Access to the project area will be by existing paved public roads and by sea.

**Finding**

At this time, the Corps is requesting your review and agreement with our definition of the APE. The Corps will consult regarding any potential effects of the project under a separate letter after tribal consultation is complete and the breakwater has been recorded. We appreciate your consideration of our request.

If you have specific questions, concerns, or want any clarification about this request, please contact Mr. Travis Bone at (602) 230-6969 or via e-mail at Travis.S.Bone@usace.army.mil.

Sincerely,



Eduardo T. De Mesa
Chief, Planning Division

Enclosure(s)

Channel Islands Harbor Breakwater/Jetty
Area of Potential Effect
Hollywood Beach
Oxnard Beach
Hollywood
by the Sea
Silver Strand
Pt Hueneme
NAVAL
OCEAN
BREAKWATER
DRIVE
Jetty
Jetty
Channel Islands Harbor Jetties
Kiddie Park
Staging Area
Silver Strand
Staging Area
Channel Islands
Harbor Breakwater
Project Locations
Miles
0 0.125 0.25 0.5
1:18,000
N
W
E
S
Copyright:© 2013 National Geographic Society, i-cubed

Channel Islands Harbor Breakwater/Jetty
Area of Potential Effect
Channel Islands Harbor Jetties
Kiddie Park
Staging Area
Silver Strand
Staging Area
Channel Islands
Harbor Breakwater
Project Locations
Miles
0 0.125 0.25 0.5
1:18,000
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**DEPARTMENT OF PARKS AND RECREATION**
**OFFICE OF HISTORIC PRESERVATION**
Lisa Ann L. Mangat, *Director*
Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

July 30, 2018

In reply refer to: COE_2018_0705_003

Mr. Eduardo T. De Mesa
Chief, Planning Division
U.S. Army Corps of Engineers
Los Angeles District
915 Wilshire Boulevard, Suite 930
Los Angeles, CA 90017

Subject: Section 106 Consultation for the Channel Islands Harbor Breakwater and Jetties Repair Project, Ventura County, California

Dear Mr. De Mesa:

The California State Historic Preservation Officer (SHPO) received a letter from the U.S. Army Corps of Engineers (COE) on July 05, 2018 initiating consultation on the proposed undertaking to repair the Channel Islands Harbor breakwater and jetties. The COE is consulting with the SHPO in order to comply with Section 106 of the National Historic Preservation Act of 1966 (as amended) and its implementing regulations at 36 CFR Part 800.

The COE is proposing to repair the two parallel entrance channel jetties and offshore breakwater at the entrance to the Channel Island Harbor from damage caused by heavy surf and wave action. Repair work would include resetting the existing armor stone and placement of new armor stone to restore the structures to their original condition. The COE has defined the Area of Potential Effects (APE) as the footprint of the breakwater and jetties as well as the proposed staging areas within the Kiddie Beach Park or Silver Strand Beach parking lots, or the highly disturbed portion of Silver Strand Beach adjacent to the parking lot. The vertical APE will not exceed 12 inches below existing ground surface.

The COE is currently requesting comments on their APE and will continue consultation on their historic property identification efforts and finding of effect. The APE appears to be appropriately defined pursuant to 36 CFR 800.4(a)(1) and the SHPO has no comments at this time.

I look forward to continuing consultation with the COE for this undertaking under 36 CFR Part 800. For more information or if you have any questions, please contact Koren Tippett, Archaeologist, at (916) 445-7017 or koren.tippett@parks.ca.gov.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS
915 WILSHIRE BOULEVARD, SUITE 930
LOS ANGELES, CALIFORNIA 90017-3849

October 19, 2018

Planning Division

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, California 95816

SUBJECT: Section 106 of the National Historic Preservation Act consultation for the Port of Hueneme Harbor Deepening

Dear Ms. Polanco:

The U.S. Army Corps of Engineers, Los Angeles District (Corps) proposes to deepen the Port of Hueneme Harbor, located near the City of Oxnard, Ventura County, California. We are consulting with you in accordance with Title 36 Code of Federal Regulation Part 800 (36 C.F.R. 800), implementing Section 106 of the National Historic Preservation Act. We are renewing consultation (COE940926F) to consider alterations in the proposed project and modifying our previous determination that no historic properties would be affected to a finding that there would be no adverse effect to historic properties.

**Description of the Undertaking**

The Port of Hueneme is the only deep-water harbor between Los Angeles and the San Francisco Bay area. The primary purposes of the proposed harbor improvement project are efficient accommodation of larger deep-draft vessels, increased cargo efficiency, and reduced overall transit costs. The project would also benefit Hueneme Beach, which has been subject to erosion since the harbor jetties were constructed in 1939-1940. Most of the dredged sediment would be used to nourish Hueneme Beach, either by placing it directly onto the beach or into the nearshore disposal area.

The current authorized depths of the harbor are -40 feet mean lower low water (MLLW) in the Approach Channel, -36 feet MLLW in the Entrance Channel, and -35 feet in the Turning Basin. The Recommended Plan (2a) proposes to deepen the Approach Channel to -44 feet MLLW, and the Entrance Channel, Turning Basin, and Channel A would be dredged to -40 feet MLLW. Due to the nature of imprecise nature of dredging, two additional feet of overdepth allowance are planned to ensure that the final functional depth meets the target. Thus, the total depth of ground disturbance under the Recommended Plan would be -46/-42 feet respectively. Approximately 390 kilo-cubic yards (kcy) of material would be dredged, with an estimated 363 kcy of sand placed onto Hueneme Beach, 7 kcy place into the nearshore disposal area, and 20 kcy disposed of on the existing Confined Aquatic Disposal (CAD) site located within the harbor. Some sediment may also be placed in a newly created trench within Channel A. The entire project would take approximately 4 months to complete and could begin as early as June 2019.

The other alternatives analyzed for this project vary only in the depth to which dredging would occur. Alternative 4 would dredge the deepest, with the Approach Channel being -46 feet MLLW, and the Entrance Channel and Turning Basin would be dredged to -43 feet MLLW. Considering a 2-foot

overdepth allowance, the deepest depth would be -48 feet MLLW in the Approach Channel in Alternative 4. The area of potential effects (APE) for this project is the Approach and Entrance Channels, the Turn Basin and Channel A within the harbor, the CAD Hueneme Beach, and the existing nearshore disposal area. The horizontal area of the APE would be the same for all alternatives, since they vary only in the vertical depth of dredging.

**Previous Consultation**

The Port of Hueneme is a man-made harbor that was initially constructed by local interests in 1939-1940. It was expanded after the U.S. military took control of the harbor in 1942. The harbor has been maintained and modified over the past decades to meet the needs of the Navy and the commercial Oxnard Harbor District. The Corps has conducted routine dredging of the harbor every four years since 1975. The Corps consulted on previous dredging in 1988 (COR860715A) and again in 1990 (COR900320A).

The Corps approved an Environmental Assessment (EA) in 1994 that added the nearshore disposal area to the available disposal options (e.g. placement on Silver Strand and Hueneme Beaches) and changed the dredging schedule to a two-year cycle. The Corps consulted with the State Historic Preservation Officer (SHPO) on this undertaking in a letter dated September 22, 1994 and proposed the undertaking would have no effect on historic properties. The SHPO did not object in her reply letter (COE940926F) dated October 5, 1994.

The Corps originally initiated consultation on the proposed Port of Hueneme Harbor deepening project in a letter to the SHPO dated February 22, 1999. In this letter, the Corps proposed to deepen the harbor to -14.5 meters MLLW. Other components of the proposed project included removal of the existing fender system, reinforcement of the sheet pile toe wall, and installation of a new timber fender system. This consultation also included removing an estimated 350 cut off pilings from the 1938 wharf that may have been left in below the mud line when the wharf was removed in the early 1970s. The APE defined for that project included the Approach and Entrance Channels, the Turn Basin and Channel A within the harbor, Hueneme Beach, and the nearshore disposal area. The SHPO agreed with the Corps' determination that the project would not affect any historic properties by countersigning the letter on March 23, 1999.

The Corps sent another letter to the SHPO on February 9, 2000 regarding proposed repairs to the east and west jetties. The Corps proposed to repair the jetties to their original design standards. The APE included the jetties and an area along the east jetty that might require dredging to allow barge access to the east jetty. The Corps determined that the east and west jetties were not eligible for the National Register of Historic Places (NRHP) and that the project would not have an adverse effect on historic properties. The SHPO concurred with the determination that the jetties were not eligible and concurred that the proposed project would have no effect on historic properties in a letter dated March 28, 2000 (again, COE940926F). The discrepancy in effect determinations is because the Corps had made an inappropriate determination of effect in the consultation letter. Since the jetties were determined not eligible for the NRHP and no other historic properties were present, no historic properties were present to be adversely affected. The SHPO's language that the project "will have no effect on historic properties" was correct in that situation.

Subsequent sediment sampling indicated that some of the sediment in the harbor contained contaminants that made it unsuitable for onshore or nearshore placement. Maintenance dredging was suspended in the contaminated area while the Corps and the Navy cooperated to establish a Confined Aquatic Disposal (CAD) site within the harbor on Navy property to dispose of the contaminated sediments. The CAD was designed as an area of deeper excavation where the contaminated sediment would be placed, covered with clean sediment, and capped with rock.

In a letter to the SHPO dated April 3, 2008, the Navy introduced a project to conduct maintenance dredging, beach nourishment, and to establish the CAD site. The Navy defined the APE for this project as the area to be dredged within the harbor, including the CAD site, and the Hueneme Beach disposal area. The Navy disclosed in the letter that site CA-VEN-663, the location of which had previously been unknown to the Corps, may be present in the project area. Site CA-VEN-663 was reported in 1933 as a Late Prehistoric shell midden located in the area where the harbor was subsequently constructed. More recent examinations have failed to relocate the site, so the Navy concluded that it was likely destroyed by the development of the Harbor. Because the proposed dredging would occur within the previously constructed and dredged harbor, the Navy further concluded that the area of potential effect (APE) was outside the site boundary, should any portion of it still exist, and determined that the proposed project would have no adverse effect on historic properties. In a letter dated May 20, 2008 (USN080414A), the SHPO concurred with the Navy's determination that the proposed dredging and CAD project would have no adverse effect on historic properties. That project was subsequently implemented and the CAD site created.

**Revisions and Clarification of Proposed Action**

The alternatives currently being considered, particularly the Recommended Plan (2a), differ slightly from the activities previously consulted on. Other points of ambiguity in the consultation history have also come to light. Those changes are discussed below and any ambiguities clarified.

*Project Effect*- The previous Corps' consultations with the SHPO have concluded that the proposed project would have no effect on historic properties (i.e. no historic properties affected). However, the Navy consultation in 2008 resulted in a determination that there would be no adverse effect to historic properties due to the unresolved location and condition of site CA-VEN-663. Now that the Corps is aware of the site, a finding of no adverse effect is deemed appropriate for the proposed harbor deepening project.

*Use of the CAD site*- As discussed previously, the Navy consulted with the SHPO in 2008 regarding creation and use of the CAD site. The Corps was not explicitly named in the correspondence between the Navy and the SHPO. However, the Corps and the Navy cooperated on that previous project, and the Corps agrees with the determination that there would be no adverse effect to historic properties reached in that previous consultation. The Corps proposes to use the existing CAD site to dispose of contaminated sediment as part of the currently proposed project. The existing CAD site has adequate remaining capacity to accommodate the proposed project without being expanded.

*Creation of a disposal trench in Channel A*- Based upon the results of additional sediment analysis, the Corps has elected to manage sediments from five individual core locations within the harbor separate from the other dredged material. These sediments would not be placed onshore or in the nearshore disposal area. These sediments are suitable for unconfined disposal within the harbor, so they do not necessarily need to be placed in the CAD site. Instead, a trench 900 feet long and up to 220 feet wide may be excavated to a depth of -47 feet MLLW adjacent to Wharf 1 within Channel A. The clean sediment dredged from the trench would be used to nourish Hueneme Beach, and the unacceptable sediment placed in the trench. The "trench" would be created because only a limited area within Channel A would be excavated to a depth of -47 feet MLLW, resulting in less than the total amount of dredged area described in the previous consultation. The Corps has designed the trench so that it would fit within the -47.5 feet MLLW dredge depth described in the 1999 consultation. However, an additional 2-foot overdepth allowance should be considered for to account for the imprecision of dredging operations. Thus, the maximum depth of disturbance could extend to -49 feet MLLW within the trench. A portion of the trench area has already been scoured to a depth

over -48 feet MLLW, presumably by prop wash from ships being moved from their berths. Considering that the trench has been designed with a target depth of -47 feet MLLW and that a portion of the trench area has already been scoured to a depth greater than that, it is unlikely that the trench, if implemented, would disturb a substantial amount of sediment beyond what was discussed in the previous consultations.

*Conversion from metric to English measurements*- The Corps consulted on deepening the harbor to a depth of -14.5 m MLLW in the 1999 letter to the SHPO. The current project is being designed in feet. The original -14.5 m MLLW is the equivalent of approximately -47.5 feet MLLW, which is adequate to fully accommodate the Recommended Plan (2a). Alternative 4, which is the alternative with the deepest dredging, would dredge to a depth of -46 feet MLLW. However, adding the additional 2 feet of overdepth allowance means that ground disturbance could extend to -48 feet MLLW. If Alternative 4 were selected instead of the Recommended Plan, dredging could extend an additional 0.5 foot within the Approach Channel beyond the -47.5 feet MLLW (converted from metric) considered in the 1999 consultation but would not result in any adverse effects to historic properties.

*Entrance Channel slope protection*- The eastern slope of the Entrance Channel along a length of approximate 1,000 feet, from Station 20+00 to 30+00, is protected from slumping by a rock revetment. Deepening the channel from its current design depth of -36 feet MLLW to a new design depth of -40 feet MLLW may destabilize the base of the slope. In order to maintain the required factor of safety and stabilize the existing revetment, the deepened slope would be covered with an approximately 3.5 foot thick layer of rock revetment to match the design of the existing revetment. Approximately 14,000 ton of stone would be placed along the toe of the eastern slope to stabilize the slope and prevent the existing rock revetment from slumping into the deepened navigation channel. This estimate is based on historical design documents. Actual conditions may not warrant the placement of additional rock revetment, so that limited or no rocks may need to be placed as part of this project. The need and exact volumes would be determined during construction when dredging obstructions would be used to determine the nature and location of the current rock revetment. Any necessary rock would be placed by derrick barge. The additional rock would be placed below the existing rock revetment to support it and would not disturb or displace any of the existing stone.

*Sediment disposal areas*- A pipeline would be placed on top of the ground surface to convey dredged sediments from the harbor to Hueneme Beach. Setting up temporary pipelines to transport the sediment to the beach has been the standard method used for all past maintenance dredging and was presumably covered in previous consultations. All other sediments would be placed directly into the various disposal areas by dredge or barge.

*Timber pile removal*- A maximum of six hundred and forty cut off pile bases could still be present below the mud line. The 1990 consultation considered removing the remaining piles. Past investigations did not locate any piles, and previous dredging make it unlikely that any remain. However, the currently proposed project would screen any remaining piles out of the dredged sediment and dispose of them separately from the sediment.

**Finding**

The Corps has carefully reviewed all the previous consultation documentation prior to requesting your concurrence to ensure: (1) numerous similar projects have been cleared previously within the APE; (2) the dredging would occur in areas that have been routinely dredged; and (3) sediment would be placed in disposal areas that have been previously approved and used. The proposed project would not change the character or use of any historic property, nor diminish the integrity of the location, design, setting,

materials, workmanship, feeling, or association of such. The Corps concludes that there would be no adverse effect to historic properties as a result of the proposed project.

At this time, the Corps is requesting your concurrence with our determination that no historic properties would be adversely affected by the proposed project. We appreciate your consideration of our request. If you have specific questions or if we can provide any clarification about this request, please contact Mr. Travis Bone at (602) 230-6969 or via e-mail at Travis.S.Bone@usace.army.mil.

Sincerely,

Eduardo T. De Mesa
Chief, Planning Division

Enclosure

**DEPARTMENT OF PARKS AND RECREATION** Lisa Ann L. Mangat, *Director*
**OFFICE OF HISTORIC PRESERVATION**
Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

November 06, 2018

In reply refer to: COE940926F

Mr. Eduardo T. De Mesa
Chief, Planning Division
U.S. Army Corps of Engineers
Los Angeles District
915 Wilshire Boulevard, Suite 930
Los Angeles, CA 90017

Subject: Section 106 Consultation for the Port of Hueneme Harbor Deepening Project, Ventura County, California

Dear Mr. De Mesa:

The California State Historic Preservation Officer (SHPO) received a letter from the U.S. Army Corps of Engineers (COE) re-initiating consultation on the above referenced project in order to comply with Section 106 of the National Historic Preservation Act of 1966 (as amended) and its implementing regulations at 36 CFR Part 800. The COE is requesting comments on their revised finding of effect for the undertaking and have provided the following documents for review:

- APE map and project plans (5 pages)
- *Letter Report for Cultural Resource Investigations Underwater Remote Sensing Survey for the US Army Corps of Engineers, LA District Environmental Planning Division* (Statistical Research Inc. August 31, 1994).

The COE is proposing to deepen the Port of Hueneme Harbor. The recommended project plan (Plan 2a) would deepen the harbor Approach Channel from the authorized depth of -40 feet mean lower low water (MLLW) to -44 feet MLLW, the deep the Entrance Channel, Turning Basin, and Channel A to -40 feet MLLW. In other potential alternatives, the deepest depth would extend to -48 feet MLLW. The project will also include: disposal of contaminated sediment at a Confined Aquatic Disposal (CAD) site; creation of a disposal trench in Channel A; addition of additional rock revetment to the eastern slope of the Entrance Channel; placing a pipeline on top of the ground surface to convey dredged sediments from the harbor to Huemene Beach; and removing any remaining cut piles by screening them out of dredged sediment. The COE has defined the Area of Potential Effects (APE) as the Approach and Entrance Channels, the Turn Basin and Channel A within the harbor, the Confined Aquatic Disposal (CAD) site, Hueneme Beach, and the existing nearshore disposal area.

The Port of Huemene was originally constructed in 1939-1940 and expanded in 1942. The COE has conducted routine dredging on the harbor every four years since 1975. The COE previously consulted on dredging activities in 1988 (COR860715A) and 1990 (COR900320A), consulted on changing to a two-year dredging cycle and the addition of a nearshore disposal area in 1994, consulted on deepening the harbor to -14.5 meters MLLW and other harbor improvements in 1999, and consulted on repairing the east and west jetties in 2000 (COE940926F). All of these consultations resulted in the SHPO concurring with the COE's findings of *no historic properties affected*. The Navy also separately consulted on a project (USN080414A) to conduct maintenance dredging, beach nourishment, and to establish the CAD site in 2008. Although the COE cooperated with the Navy on this project, the COE was not mentioned in the Section 106 correspondence with the SHPO.

The COE is re-initiating consultation with the SHPO on this undertaking because the plans currently being considered differ slightly from those the COE already consulted on with the SHPO. In addition, the Navy's 2008 consultation concluded with a finding of no adverse effect because of the unresolved location of archaeological site CA-VEN-663, a shell midden site recorded in 1933 in the location where the harbor was subsequently constructed. The Navy concluded that the site was likely destroyed during construction of the harbor, but that the previous location appeared to be outside the APE and so the undertaking would have no adverse effect on the site. The COE was unaware of this site during their previous consultations with the SHPO, but is considering the potential effects to this site in their revised finding of effect.

The COE's analysis has concluded that similar undertakings have not affected historic properties, that dredging would occur in areas that have been routinely dredged for decades, that sediment would be placed in previously used disposal areas, and that despite the unknown location of CA-VEN-663, the undertaking will not result in an adverse effect to any historic properties. Pursuant to 36 CFR 800.5(b), **I concur** with the COE's finding of *no adverse effect* for this undertaking.

Be advised that under certain circumstances, such as unanticipated discovery or a change in project description, the COE may have additional future responsibilities for this undertaking under 36 CFR Part 800. For more information or if you have any questions, please contact Koren Tippett, Archaeologist, at (916) 445-7017 or koren.tippett@parks.ca.gov.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

# 2022 SAMPLE TRIBAL CONSULTATION LETTER

**DEPARTMENT OF THE ARMY**
**U.S. ARMY CORPS OF ENGINEERS, LOS ANGELES DISTRICT**
**915 WILSHIRE BOULEVARD, SUITE 1109**
**LOS ANGELES, CALIFORNIA 90017-3409**

September 21, 2022

Mr. Jairo Avila
Fernandeño Tataviam Band of Mission Indians
1019 2nd Street, Suite 1
San Fernando, California 91340-2916

Dear Mr. Avila:

The U.S. Army Corps of Engineers, Los Angeles District (Corps) is reinitiating consultation with you under the National Historic Preservation Act (NHPA; 54 USC § 306108) and its implementing regulations (36 CFR 800) regarding proposed changes in the implementation of the routine maintenance dredging program at Channel Islands and Port Hueneme Harbors, Ventura County, California (Undertaking). The Corps previously consulted with the California State Historic Preservation Officer (SHPO) via letter in 1986 (COE860715), 1990 (CE900320A), and 1994 (COE940926F). At that time, SHPO had no objection to the Corps' finding that the dredging program would not affect historic properties. While COE860715 and CE900320A are currently in storage, and digital copies are not available, COE940926F is included in Enclosure 1. The purpose of this letter is to obtain your concurrence that the maintenance dredging program will continue to have no effect upon historic properties with implementation of proposed changes.

Current Undertaking

The current Undertaking consists of a continuation of the Corps' routine maintenance dredging program at the Channel Islands and Port Hueneme harbors (Enclosure 2). The purpose of the Undertaking is to maintain the Federal channels at their authorized depths and widths, including maintenance dredging of a sand trap outside the Channel Islands Harbor to bypass sand to downcoast beaches avoiding sand being lost to the adjacent Hueneme Submarine Canyon (Enclosure 3). Maintaining authorized depths is needed to ensure navigational safety and to prevent the navigational channels from shoaling, potentially closing the harbors. The proposed project also provides beach replenishment material for down coast (Silver Strand and Hueneme) beaches eroded because of altered littoral transport patterns associated with Channel Islands and Port Hueneme Harbors. The Rivers and Harbors Act of 1899, as amended in 1965 (House Document 76, PL 89-298) authorized the USACE to maintain channel depths and provide suitable materials for replenishment of locally starved beaches. Legislation directs Federal dredging to occur specifically at Channel Islands and Port Hueneme Harbors with dredged material placement at local beaches/nearshore.

As previously noted, consultation for the ongoing dredge program was conducted in 1986 (COE860715), 1990 (CE900320A), and 1994 (COE940926F) for the Channel Islands and Port Hueneme harbors. The original dredge template for the Channel Islands Harbor consisted of an Entrance Channel (Area A), a Sand Trap (Areas B, C, and D), an Entrance Basin (Area E), and Inner Basin (Area F) (Enclosure 3). At that time, SHPO concurred on the Corps' determination of *No Effect* to Historic Properties. However, in order to address environmental changes, the Corps is proposing four changes to the Channel Islands and Port Hueneme Harbors Dredging Project, to include:

- Increase in material removed from 2 million cubic yards (mcy) for each biennial dredge cycle event to 2.5 mcy
- Addition of a dredge unit, the Approach Channel (Area G) to remove shoaling
- Including a 200-foot buffer along the Hollywood Beach shoreline immediately adjacent to the existing dredge template landward boundary of Sand Trap Area D
- Performing habitat restoration as mitigation for impacts to the federally listed California least tern, western snowy plover, and western snowy plover designated critical habitat on Hollywood Beach.

Background

The Channel Islands Harbor has been dredged every two years beginning in 1969, and Port Hueneme Harbor has been dredged approximately every four years since 1975. In 2018 the Corps deepened the Port Hueneme Harbor. The SHPO concurred with the Corps' determination of *No Adverse Effect* for the harbor deepening project (Enclosure 1). No change to the Port Hueneme dredge depths or boundaries will occur in the proposed Undertaking.

In recent years, established fore dunes have formed on the broad, flat beach north of the Channel Island Harbor. Two federally listed species utilize Hollywood Beach, the California least tern (*Sterna antillarum browni*) during nesting season and western snowy plover (*Charadrius nivosus nivosus*) during wintering and nesting season. The Corps is proposing to perform habitat restoration as mitigation for impacts to the federally listed California least tern, western snowy plover, and western snowy plover designated critical habitat on Hollywood Beach. Initially, beach sediment trapped around deposits of *Arundo donax* (giant reed) washed ashore during storm events in the early 2000s began forming embryo dunes. The dunes have since stabilized from the actions of native plants, as well as invasive plant species.

Dredge activities along the landward boundary of Sand Trap Area D has caused erosion and scarping along the active coastal zone where the dredge template intersects the beach face, comprising flat sandy beach habitat and sand dunes. The Corps is proposing to create a 200-foot buffer on the north, east, and south side of Area D. This buffer encompasses the portion of the beach which accounts for the collapse of the steep slope of the dredge cut along the landward boundary of the Area D dredge template.

For the proposed Undertaking, a delivery pipe would be run from the dredge barge directly to the beaches to be nourished. The delivery pipe would originate at the dredge areas, suspended at the surface of the water where possible, and underwater along the seabed in areas that must remain clear for navigation. The pipe will cross over the South Jetty onto the Silver Strand Beach. During construction mobilization, the pipe will be extended the length of Silver Strand Beach. Sand ramps will be pushed up on either side of the delivery pipe along the beach to allow beach access by personnel and equipment while dredging and nourishment is underway (*see* Enclosure 2).

The delivery pipe will be extended from the south end of Silver Strand Beach onto Naval Base Ventura County along a combination of Surface Warfare Engineering Facility (SWEF) Beach and a service road adjacent to SWEF Beach on the north side of the Port Hueneme Harbor entrance. The pipe will be submerged across the Port Hueneme Harbor entrance and extended over the jetty on the south side of the harbor entrance onto Hueneme Beach. As the

beach nourishment progresses, the delivery pipe will be extended along Hueneme Beach north to south. The Hueneme Beach nourishment will occur first, followed by Silver Strand Beach.

Area of Potential Effect

The Area of Potential Effect (APE) consists of multiple components of the project, including the dredge areas for Channel Islands and Port Hueneme harbors; the beach placement areas on Silver Strand and Hueneme beaches, the nearshore placement site adjacent to Hueneme Beach, the buffer area around the Sand Trap Area D; the biological mitigation area; and the delivery pipe corridors between the Channel Islands Harbor and Silver Strand Beach, and between Silver Strand Beach and Hueneme Beach. The APE occupies a total of 430 acres.

*Channel Islands Harbor*

Channel Islands Harbor is located in the city of Oxnard. Harbor structural features consist of a 2,300-foot long offshore detached breakwater, entrance jetties, and an entrance channel leading to the harbor interior. The Harbor is divided into three areas (west, east and peninsula) served by separate public roads, with each area providing different services. The west side consists of marinas, a linear park, restaurants, residential development and retail businesses. The peninsula is dominated by hotel development, marinas, apartments and condominiums. The east side is primarily commercial and serves boaters by offering boat yards, a marine supply store, boat sales, law enforcement, administration and search and rescue facilities.

The sand traps and Channel Islands Harbor federal navigation channels were divided into seven dredge units according to location and design depths. The APE encompasses all seven dredge units, including the Approach Channel (Area G), Entrance Channel (Area A), Entrance Basin (Area E), and Inner Basin (Area F); the Sand Trap, consisting of Areas B, C, and D; a buffer area around Area D; and a Biological Mitigation Area along Hollywood Beach (*see* Enclosures 2 and 3).

The entrance channel is 3,200 feet long and varies in width from 300 feet at the entrance to 600 feet within the harbor. Authorized depth of the entrance channel is -20 feet Mean Lower Low Water (MLLW). The entrance channel comprises “Area A” of the Channel Islands Harbor dredge area (*see* Enclosure 3). The Entrance Basin is comprised of Area E and is 200 feet long. The Entrance Basin varies in width from 300 feet where it abuts the Entrance Channel (Area A), to 580 feet where it abuts the Inner Basin (Area F). The Inner Basin is comprised of Area F. Area F is Y-shaped, with an arm extending into the east and west channels of the harbor, separated by the peninsula. Area F is 2,200 feet long in the east channel, and 2,000 feet long in the west channel.

The offshore detached breakwater and entrance jetties surround the sand trap which collects sand carried downcoast by littoral transport. The jetties were recommended ineligible for inclusion on the National Register of Historic Places (NRHP) during a repair project in early 2000, and SHPO concurred with that determination in a letter dated March 28, 2000 (COE940926F) (*see* Enclosure 1). The sand trap is divided into three parcels; Areas B, C, & D. Area B is 775 feet in length and 450 feet in width, and occupies 3.5 acres. Area C is 1,650 feet in length and 1,150 feet in width, and occupies 33.7 acres. Area D is 1,650 feet in length and 460 feet in width, covering 15.9 acres. The traps were designed to be maintained at a depth of 35 feet MLLW to allow for sufficient accumulation between dredge cycles. The proposed buffer for Area D occupies 18 acres, and wraps around Area D in a 200-ft wide U-shape, It measures

1,900 feet in length, northwest to southeast, and 611 feet at its widest point, southwest to northeast.

The Entrance Channel (Area A), and the Sand Trap (Areas B, C, & D) are dredged every cycle, while the Approach Channel (Area G), Entrance Basin (Area E) and the Inner Basin (Area F) may be dredged on an as needed basis. Authorized depth of the Approach Channel and Entrance Basin is -20 feet MLLW plus a 2 ft over depth. Authorized depth of the Inner Basin is -10 feet MLLW plus a 2 ft over depth (*see* Enclosure 3).

The proposed habitat restoration area occupies 53.8 acres extending approximately 4,100 feet from the north jetty along the shoreline to the north. It varies in width from 200 feet where it lies adjacent to the Area D buffer. North of the Area D buffer, the habitat restoration area extends from the water's edge to approximately 590 feet inland. It tapers slightly to the north, following the natural contours of the beach, and narrows to approximately 380 feet. Habitat restoration would occur on an as-needed basis within the area to provide adequate nesting habitat along the shoreline to replace any habitat lost or modified due to dredging activities. Habitat restoration may include the use of heavy equipment to perform activities such as, reduce the height of the sand dunes to the natural beach level, and artificially create additional nesting habitat for shorebirds along the shoreline. The Corps has committed to restoring 13.47 acres of habitat, further details of the habitat restoration will be coordinated and finalized with the US Fish & Wildlife Service.

*Port Hueneme Harbor*

Port Hueneme is located in the city of Port Hueneme. This harbor is located approximately one mile southeast of Channel Islands Harbor. Harbor features include two entrance jetties, an approach channel, an entrance channel, and a central turning basin. The dredge template is divided into four prisms; the approach channel, entrance channel, turning basin, and channel A. The approach channel is 1,800 feet long, 600 feet wide at its widest, and has an authorized depth of -44 feet MLLW plus a 2 ft over depth. The entrance channel is approximately 1,300 feet long, 330 feet wide, and has an authorized depth of -40 feet MLLW plus a 2 ft over depth. Authorized depth of the turning basin and channel A is -40 feet MLLW plus a 2 ft over depth (*see* Enclosures 2 & 3). No change is proposed for the Port Hueneme dredge template, which will remain consistent with previous consultation (*see* Enclosure 1).

Historic Property Identification Efforts

CH2MHill conducted surveys of the onshore portions of the APE in 2004 for the city of Oxnard (VN2978). The survey was negative for cultural resources within the APE. PS Associates (Pierson, Shiner, and Slater) conducted an archaeological survey of the offshore portions of the APE in 1987, with negative results within the APE (VN-02974). Lastly, Archaeological Research, Inc., conducted a survey of the onshore area between the Channel Island and Port Hueneme harbors in 1977, with negative results (V-1102).

Summary

The Corps is requesting your comments on our finding that the maintenance dredging program at the Channel Island and Port Hueneme harbors, including the increased dredge volume; additional dredging in Area G; addition of a 200-ft buffer around Area D; and habitat restoration along Hollywood beach, will continue to have "no effect to historic properties" per 36 CFR 800.4. The Corps will continue to consult with you regarding any future changes in scope.

If you have any questions or concerns, please contact Dr. John Hale, Corps Archaeologist, via email at john.p.hale@usace.army.mil or by phone at (213) 238-1822.

Sincerely,

Maricris Lee
Deputy Chief, Planning Division

Enclosure(s)

# 2024 SAMPLE TRIBAL CONSULTATION LETTER

**DEPARTMENT OF THE ARMY**
**U.S. ARMY CORPS OF ENGINEERS, LOS ANGELES DISTRICT**
**915 WILSHIRE BOULEVARD, SUITE 1109**
**LOS ANGELES, CALIFORNIA 90017-3409**

February 2, 2024

Gabe Frausto
Chairman
Coastal Band of the Chumash Nation
P.O. Box 40653
Santa Barbara, CA 93140

Dear Chairman Gabe Frausto:

The U.S. Army Corps of Engineers, Los Angeles District (Corps) is reinitiating consultation with you under the National Historic Preservation Act (NHPA; 54 USC § 306108) and its implementing regulations (36 CFR 800). The Corps has previously consulted with the Coastal Band of the Chumash Nation in September 2022 regarding the planned dredging at Channel Islands Harbor and the Port of Hueneme (Enclosure 1). The Rivers and Harbors Act of 1899, as amended in 1965 (House Document 76, PL 89-298), authorized the U.S. Army Corps of Engineers to maintain channel depths and provide suitable materials for replenishment of locally starved beaches. Amendments to the Rivers Harbors Act in 1945 and 1970 directs dredging to occur at Channel Islands and Port Hueneme Harbors and assigns the responsibility to the federal government (P.L. 91-611, Sec 114). The Corps also initiated consultation with the State Historic Preservation Officer (SHPO) who did not object to a continued finding of no effect on historic properties on December 23, 2022 (see Enclosure 1). The purpose of this letter is to reinitiate consultation over an additional expansion of the undertaking to include the removal up to approximately 10,000 cubic yards of sand from the Port Hueneme Drift Sand Pile.

The Port Hueneme Drift Sand Pile is just under half an acre and located on the southwestern fence line of the Naval Base Ventura County Port Hueneme (NBVCPH) [Enclosure 2]. At the request of the U.S. Navy, the Corps intends to remove the depositional sand and place it to support the delivery pipe crossing on Service Warfare Engineering Facility (SWEF) Beach. Previously, the Corps consulted upon the inclusion of SWEF Beach as a component of the area of potential effects (APE) for the purpose of laying a portion of a delivery pipe. Concurrence on the inclusion of the delivery pipe placement at SWEF Beach in the undertaking was received from the SHPO on December 23, 2022 (see Enclosure 1). The Corps is now expanding the undertaking to include the placement of up to approximately 10,000 cubic yards of sand from the Port Hueneme Drift Sand Pile on to SWEF Beach for the purpose of securing the delivery pipe. Although this portion of the undertaking is occurring on the southwestern boundary of NBVCPH property, federal regulations place the responsibility of the entire undertaking on the Corps. Therefore, the U.S. Navy cannot assume the role of Lead Federal Agency, and Section 106 consultation is the responsibility of the Corps pursuant to 36 CFR 800.2(a).

Sediment in the Port Hueneme Drift Sand Pile is composed entirely of depositional sediments that become trapped immediately southeast of the NBVCPH fence line. The Port Hueneme Drift Sand Pile is approximately 0.4 acre and estimated to be 30 feet tall. Frequently, the deposits fall onto the adjacent Venice Road and are pushed back onto the drift pile to maintain safe driving conditions (Enclosure 3). The Corps would remove up to approximately 10,000 cubic yards of sand and place it onto portions of SWEF Beach that were included in the previous 2022 consultation. Sediment placement will be competed with an end loader traveling along an existing access route adjacent to both the NBVCPH perimeter fence and the delivery pipe corridor. As such, the maximum vertical APE in the locality of the Port Hueneme Drift Sand Pile would be no more than 30 feet above ground and zero feet below ground. The horizontal APE is approximately half an acre.

Coastal erosion causes substantial depletion of the beaches in the vicinity of the Port of Hueneme through the process of longshore (littoral) drift. During this process, the littoral drift consistently and cyclically removes and replaces sediment. Under normal environmental circumstances, the sand would be cast down beach. However, the Port Hueneme Drift Sand Pile is the result of an estimated yearly 500-1,000+ cubic yards of wind-blown sediment that becomes trapped and accumulates instead of continuing southwards to complete the natural beach nourishment process. As secondary deposition, any unknown resources within the Port Hueneme Drift Sand Pile would not constitute intact cultural deposits and would not retain, at minimum, aspects of integrity regarding setting and location. Therefore, resources found in the Port Hueneme Drift Sand Pile could not constitute historic properties.

On January 11, 2024, a record search of the South Central Coastal Information Center was performed by Corps Archaeologist, Katie Carbone. While the record search did not show cultural sites within the new APE addition, it has 100% coverage by previous cultural resource investigations (Enclosure 4). Modeling of archaeologically sensitive areas shows that the location of the drift sand pile does not have the expectation of subsurface cultural deposits as it is heavily impacted by disturbance and fill. In 2010, geoprobe technicians took boring samples within the area to the south/southwest of the drift sand pile to support the Navy's implementation of munitions response program, which was the location of a former World War II pistol range (Enclosure 5; Parsons 2012). Soil samples demonstrated that the sediment was loose and poorly graded. Only one sample contained an object that was clearly determined to be a bullet. A second soil sample was thought to have contained bullets, but the metal was too weathered to accurately identify the objects. Due to its proximity to the beach, it can be expected that metal plank flooring lined the pistol range. One soil sample contained staining that was interpreted as the disintegration of the range flooring. While it was the interpretation of the 2010 sediment analysis that the World War II pistol range had been completely obliterated, avoidance flagging will be implemented out of caution. A current survey was not completed because the drift sand pile is construed of loose wind-blown deposits that are not walkable and lacks the stability that would allow for subsurface testing (see Enclosure 3).

An updated Sacred Lands File (SLF) search was requested from the Native American Heritage Commission on December 26, 2023. A reply was received on January 10, 2024, that contained a negative SLF search (Enclosure 6). The Corps is concurrently reaching out to all consultation partners.

If previously unknown historic or archaeological remains are discovered while carrying out the work within the Port Hueneme Drift Sand Pile, work within a 100-foot buffer shall immediately cease and the site protected in conformance with 36 C.F.R. § 800.13. Within 24 hours of the discovery, the Corps Project Manager and Corps Archaeologist shall be notified. Work shall not resume in the area containing the potential cultural resources until the Corps issues a notice to proceed. If human remains are discovered, to the extent not inconsistent with Federal law, the Corps shall ensure that Native American burials and related cultural items are treated in accordance with the applicable requirements of the California Public Resources Code at Sections 5097.98 and 5097.991, and of the California Health and Human Safety Code at Section 7050.5(c).

The addition of sediment removal at the Port Hueneme Drift Sand Pile will not have an impact on historic properties, as none exist within the APE. The Corps has determined that the above constitutes a reasonable and good faith effort pursuant to Section 106 of the NHPA under 36 CFR 800.5(b) to assess the effects of this undertaking and has determined a finding of No Historic Properties Affected pursuant to 36 CFR Part 800.4(d)(1). We hereby request your comments on our effects determination.

To request clarifications or provide comments, please contact Katie Carbone, Corps Archaeologist, via telephone at (213) 655-2457, or via email at Catherine.A.Carbone@usace.army.mil.

Sincerely,

Jodi L. Clifford
Chief, Planning Division

Enclosure(s)

# 2022 SHPO CONSULTATION LETTERS

**DEPARTMENT OF THE ARMY**
**U.S. ARMY CORPS OF ENGINEERS, LOS ANGELES DISTRICT**
**915 WILSHIRE BOULEVARD, SUITE 1109**
**LOS ANGELES, CALIFORNIA 90017-3409**

September 27, 2022

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, California 95816-7100

Dear Ms. Polanco:

The U.S. Army Corps of Engineers, Los Angeles District (Corps) is reinitiating consultation with you under the National Historic Preservation Act (NHPA; 54 USC § 306108) and its implementing regulations (36 CFR 800) regarding proposed changes in the implementation of the routine maintenance dredging program at Channel Islands Harbor, Ventura County, California (Undertaking). The Corps previously consulted you via letter in 1986 (COE860715), 1990 (CE900320A), and 1994 (COE940926F), with no objection to the Corps' finding that the dredging program would not affect historic properties. While COE860715 and CE900320A are currently in storage and digital copies are not available, COE940926F is included in Enclosure 1. The purpose of this letter is to obtain your concurrence that the maintenance dredging program will continue to have no effect upon historic properties with implementation of proposed changes.

Current Undertaking

The current Undertaking consists of a continuation of the Corps' routine maintenance dredging program at the Channel Islands and Port Hueneme harbors (Enclosure 2). The purpose of the Undertaking is to maintain the Federal channels at their authorized depths and widths, including maintenance dredging of a sand trap outside the Channel Islands Harbor to bypass sand to downcoast beaches avoiding sand being lost to the adjacent Hueneme Submarine Canyon (Enclosure 3). Maintaining authorized depths is needed to ensure navigational safety and to prevent the navigational channels from shoaling, potentially closing the harbors. The proposed project also provides beach replenishment material for down coast (Silver Strand and Hueneme) beaches eroded because of altered littoral transport patterns associated with Channel Islands and Port Hueneme Harbors. The Rivers and Harbors Act of 1899, as amended in 1965 (House Document 76, PL 89-298) authorized the USACE to maintain channel depths and provide suitable materials for replenishment of locally starved beaches. Legislation directs Federal dredging to occur specifically at Channel Islands and Port Hueneme Harbors with dredged material placement at local beaches/nearshore.

As previously noted, consultation for the ongoing dredge program was conducted in 1986 (COE860715), 1990 (CE900320A), and 1994 (COE940926F) for the Channel Islands and Port Hueneme harbors. The original dredge template for the Channel Islands Harbor consisted of an Entrance Channel (Area A), a Sand Trap (Areas B, C, and D), an Entrance Basin (Area E), and Inner Basin (Area F) (*see* Enclosure 3). At that time, SHPO concurred on the Corps' determination of *No Effect* to Historic Properties. However, in order to address environmental

changes, the Corps is proposing four changes to the Channel Islands and Port Hueneme Harbors Dredging Project, to include:

- Increase in material removed from 2 million cubic yards (mcy) for each biennial dredge cycle event to 2.5 mcy
- Addition of a dredge unit, the Approach Channel (Area G) to remove shoaling
- Including a 200-foot buffer along the Hollywood Beach shoreline immediately adjacent to the existing dredge template landward boundary of Sand Trap Area D
- Performing habitat restoration as mitigation for impacts to the federally listed California least tern, western snowy plover, and western snowy plover designated critical habitat on Hollywood Beach.

Background

The Channel Islands Harbor has been dredged every two years beginning in 1969, and Port Hueneme Harbor has been dredged approximately every four years since 1975. In 2018 the Corps deepened the Port Hueneme Harbor. The SHPO concurred with the Corps' determination of *No Adverse Effect* for the harbor deepening project (*see* Enclosure 1). No change to the Port Hueneme dredge depths or boundaries will occur in the proposed Undertaking.

In recent years, established fore dunes have formed on the broad, flat beach north of the Channel Island Harbor. Two federally listed species utilize Hollywood Beach, the California least tern (*Sterna antillarum browni*) during nesting season and western snowy plover (*Charadrius nivosus nivosus*) during wintering and nesting season. The Corps is proposing to perform habitat restoration as mitigation for impacts to the federally listed California least tern, western snowy plover, and western snowy plover designated critical habitat on Hollywood Beach. Initially, beach sediment trapped around deposits of *Arundo donax* (giant reed) washed ashore during storm events in the early 2000s began forming embryo dunes. The dunes have since stabilized from the actions of native plants, as well as invasive plant species (Enclosure 4).

Dredge activities along the landward boundary of Sand Trap Area D has caused erosion and scarping along the active coastal zone where the dredge template intersects the beach face, comprising flat sandy beach habitat and sand dunes. The Corps is proposing to create a 200-foot buffer on the north, east, and south side of Area D. This buffer encompasses the portion of the beach which accounts for the collapse of the steep slope of the dredge cut along the landward boundary of the Area D dredge template *(see* Enclosure 4).

For the proposed Undertaking, a delivery pipe would be run from the dredge barge directly to the beaches to be nourished. The delivery pipe would originate at the dredge areas, suspended at the surface of the water where possible, and underwater along the seabed in areas that must remain clear for navigation. The pipe will cross over the South Jetty onto the Silver Strand Beach. During construction mobilization, the pipe will be extended the length of Silver Strand Beach. Sand ramps will be pushed up on either side of the delivery pipe along the beach to allow beach access by personnel and equipment while dredging and nourishment is underway (*see* Enclosure 2).

The delivery pipe will be extended from the south end of Silver Strand Beach onto Naval Base Ventura County along a combination of Surface Warfare Engineering Facility (SWEF) Beach and a service road adjacent to SWEF Beach on the north side of the Port Hueneme

Harbor entrance. The pipe will be submerged across the Port Hueneme Harbor entrance and extended over the jetty on the south side of the harbor entrance onto Hueneme Beach. As the beach nourishment progresses, the delivery pipe will be extended along Hueneme Beach north to south. The Hueneme Beach nourishment will occur first, followed by Silver Strand Beach.

Area of Potential Effect

The Area of Potential Effect (APE) consists of multiple components of the project, including the dredge areas for Channel Islands and Port Hueneme harbors; the beach placement areas on Silver Strand and Hueneme beaches, the nearshore placement site adjacent to Hueneme Beach, the buffer area around the Sand Trap Area D; the biological mitigation area; and the delivery pipe corridors between the Channel Islands Harbor and Silver Strand Beach, and between Silver Strand Beach and Hueneme Beach. The APE occupies a total of 430 acres.

*Channel Islands Harbor*

Channel Islands Harbor is located in the city of Oxnard. Harbor structural features consist of a 2,300-foot long offshore detached breakwater, entrance jetties, and an entrance channel leading to the harbor interior. The Harbor is divided into three areas (west, east and peninsula) served by separate public roads, with each area providing different services. The west side consists of marinas, a linear park, restaurants, residential development and retail businesses. The peninsula is dominated by hotel development, marinas, apartments and condominiums. The east side is primarily commercial and serves boaters by offering boat yards, a marine supply store, boat sales, law enforcement, administration and search and rescue facilities.

The sand traps and Channel Islands Harbor federal navigation channels were divided into seven dredge units according to location and design depths. The APE encompasses all seven dredge units, including the Approach Channel (Area G), Entrance Channel (Area A), Entrance Basin (Area E), and Inner Basin (Area F); the Sand Trap, consisting of Areas B, C, and D; a buffer area around Area D; and a Biological Mitigation Area along Hollywood Beach (*see* Enclosures 2 and 3).

The entrance channel is 3,200 feet long and varies in width from 300 feet at the entrance to 600 feet within the harbor. Authorized depth of the entrance channel is -20 feet Mean Lower Low Water (MLLW). The entrance channel comprises “Area A” of the Channel Islands Harbor dredge area (*see* Enclosure 3). The Entrance Basin is comprised of Area E and is 200 feet long. The Entrance Basin varies in width from 300 feet where it abuts the Entrance Channel (Area A), to 580 feet where it abuts the Inner Basin (Area F). The Inner Basin is comprised of Area F. Area F is Y-shaped, with an arm extending into the east and west channels of the harbor, separated by the peninsula. Area F is 2,200 feet long in the east channel, and 2,000 feet long in the west channel.

The offshore detached breakwater and entrance jetties surround the sand trap which collects sand carried downcoast by littoral transport. The jetties were recommended ineligible for inclusion on the National Register of Historic Places (NRHP) during a repair project in early 2000, and SHPO concurred with that determination in a letter dated March 28, 2000 (COE940926F) (*see* Enclosure 1). The sand trap is divided into three parcels; Areas B, C, & D.

Area B is 775 feet in length and 450 feet in width, and occupies 3.5 acres. Area C is 1,650 feet in length and 1,150 feet in width, and occupies 33.7 acres. Area D is 1,650 feet in length and

460 feet in width, covering 15.9 acres. The traps were designed to be maintained at a depth of 35 feet MLLW to allow for sufficient accumulation between dredge cycles. The proposed buffer

for Area D occupies 18 acres, and wraps around Area D in a 200-ft wide U-shape. It measures 1,900 feet in length, northwest to southeast, and 611 feet at its widest point, southwest to northeast.

The Entrance Channel (Area A), and the Sand Trap (Areas B, C, & D) are dredged every cycle, while the Approach Channel (Area G), Entrance Basin (Area E) and the Inner Basin (Area F) may be dredged on an as needed basis. Authorized depth of the Approach Channel and Entrance Basin is -20 feet MLLW plus a 2 ft over depth. Authorized depth of the Inner Basin is -10 feet MLLW plus a 2 ft over depth (*see* Enclosure 3).

The proposed habitat restoration area occupies 53.8 acres extending approximately 4,100 feet from the north jetty along the shoreline to the north. It varies in width from 200 feet where it lies adjacent to the Area D buffer. North of the Area D buffer, the habitat restoration area extends from the water's edge to approximately 590 feet inland. It tapers slightly to the north, following the natural contours of the beach, and narrows to approximately 380 feet. Habitat restoration would occur on an as-needed basis within the area to provide adequate nesting habitat along the shoreline to replace any habitat lost or modified due to dredging activities. Habitat restoration may include the use of heavy equipment to perform activities such as, reduce the height of the sand dunes to the natural beach level, and artificially create additional nesting habitat for shorebirds along the shoreline. The Corps has committed to restoring 13.47 acres of habitat, further details of the habitat restoration will be coordinated and finalized with the US Fish & Wildlife Service.

*Port Hueneme Harbor*

Port Hueneme is located in the city of Port Hueneme. This harbor is located approximately one mile southeast of Channel Islands Harbor. Harbor features include two entrance jetties, an approach channel, an entrance channel, and a central turning basin. The dredge template is divided into four prisms; the approach channel, entrance channel, turning basin, and channel A. The approach channel is 1,800 feet long, 600 feet wide at its widest, and has an authorized depth of -44 feet MLLW plus a 2 ft over depth. The entrance channel is approximately 1,300 feet long, 330 feet wide, and has an authorized depth of -40 feet MLLW plus a 2 ft over depth. Authorized depth of the turning basin and channel A is -40 feet MLLW plus a 2 ft over depth (*see* Enclosures 2 & 3). No change is proposed for the Port Hueneme dredge template, which will remain consistent with previous consultation (*see* Enclosure 1).

Historic Property Identification Efforts

CH2MHill conducted surveys of the onshore portions of the APE in 2004 for the city of Oxnard (VN2978). The survey was negative for cultural resources within the APE. PS Associates (Pierson, Shiner, and Slater) conducted an archaeological survey of the offshore portions of the APE in 1987, with negative results within the APE (VN-02974). Lastly, Archaeological Research, Inc., conducted a survey of the onshore area between the Channel Island and Port Hueneme harbors in 1977, with negative results (V-1102).

Summary

The Corps is requesting your concurrence with our finding that the maintenance dredging program at the Channel Island and Port Hueneme harbors, including the increased dredge volume; additional dredging in Area G; addition of a 200-ft buffer around Area D; and habitat restoration along Hollywood beach, will continue to have "no effect to historic properties" per 36 CFR 800.4. The Corps will continue to consult with you regarding any future changes in scope.

Concurrent with the Environmental Assessment conducted in 2018 for the previous iteration of this project, the Corps requested a sacred land file search from the Native American Heritage Commission (NAHC) to which the NAHC responded on May 23, 2018, stating that the records search was negative. The NAHC also provided a list of six Federally and non-Federally recognized Tribes and individuals to be contacted regarding cultural resource issues related to the proposed Project (Enclosure 5). On September 21, 2022, the Corps notified all contacts on the NAHC list, inviting them to consult on the undertaking. The Corps is requesting their comment on the appropriateness of the APE, the results of the historic property identification efforts to date, and their assistance in identifying historic properties that may be affected by the project and which may be of religious or cultural significance to the Tribe in accordance with 36 CFR 800.4(a)(4)). Once the Corps consults with all tribal representatives on the NAHC list, it will provide your office a summary of all tribal comments and concerns received.

If you have any questions or concerns, please contact Dr. John Hale, Corps Archaeologist, via email at john.p.hale@usace.army.mil or by phone at (213) 238-1822.

Sincerely,

Maricris Lee
Deputy Chief, Planning Division

Enclosure(s)

State of California • Natural Resources Agency
Gavin Newsom, *Governor*

**DEPARTMENT OF PARKS AND RECREATION**
**OFFICE OF HISTORIC PRESERVATION**
Armando Quintero, *Director*

**Julianne Polanco, State Historic Preservation Officer**
**1725 23rd Street, Suite 100, Sacramento, CA 95816-7100**
**Telephone: (916) 445-7000 FAX: (916) 445-7053**
**calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov**

October 26, 2022 In reply refer to: COE940926F

VIA ELECTRONIC MAIL

Maricris Lee
Deputy Chief, Planning Division
U.S. Army Corps of Engineers, Los Angeles District
915 Wilshire Blvd., Suite 1109
Los Angeles, CA 90017-3409

RE: Reinitiating Section 106 consultation for changes to the routine maintenance dredging at Channel Island Harbors, Ventura County

Dear Maricris Lee,

The U.S. Army Corps of Engineers (COE) is reinitiating consultation with the State Historic Preservation Officer (SHPO) to comply with Section 106 of the National Historic Preservation Act of 1966 (as amended) and its implementing regulation at 36 CFR § 800 *et seq*. By letter received on September 26, 2022, the COE is seeking concurrence on their continued finding of effect and comments on their proposed changes to the undertaking. The COE submitted copies of previous consultations between the COE and the SHPO for COE940926F; 13th Biannual Harbor Dredging, Channel Islands and Port Hueneme (September 22, 1994; October 5, 1994; March 22, 2000; March 28, 2000).

The COE is proposing to conduct routine dredging of at the Channel Islands and Port Hueneme harbors in Ventura County. Proposed project activities include dredging the Federal navigation channels, dredging a sand trap outside the Channel Islands Harbor, to distribute dredge materials to Silver Strand and Hueneme beaches. The COE is proposing to increase the amount of proposed biennially dredged materials from 2 million cubic yards to 2.5 million cubic yards; to add a dredge unit, the Approach Channel (Area G) to remove shoaling; to include a 200-foot buffer along the Hollywood Beach shoreline to the existing landward boundary of Sand Trap Area D in the APE; the temporary placement of a delivery pipe for distributing dredge materials to proposed beach-nourishment locations; and to perform habitat restoration as biological mitigation for impacts to California least tern, western snowy plover, and western snowy plover designated critical habitat on Hollywood Beach. The COE states no change to the Port Hueneme dredge depths or boundaries is proposed for this undertaking.

The COE describes proposed habitat restoration as part of the undertaking and states that the habitat restoration would occur on an as-needed basis to replace any shoreline nesting habitat lost or modified due to dredging activities. The COE states that habitat restoration may include the reduction of the height of the sand dunes to the natural beach level, and the creation of artificial shoreline nesting habitat for shorebirds. The COE states they have committed to restoring 13.47 acres of habitat within a 53.8-acre biological mitigation area, and that further details of the habitat restoration will be coordinated and finalized with the US Fish & Wildlife Service. This indicates more than one federal agency may be involved in the undertaking. Please clarify if this proposed project activity is part of the current undertaking, and if so, if the COE has been designated the lead Federal agency pursuant to 36 CFR § 800.2(a)(2). If the US Fish and Wildlife Service has designated the COE as lead Federal agency, please provide a copy of the agency letter designating such status to the COE.

The COE requested a search of the Sacred Lands File from the Native American Heritage Commission (NAHC) returning negative results on May 23, 2018. The COE states they contacted Native American entities listed by the NAHC as having cultural ties to the project area on September 21, 2022.

It is recommended that the COE use a search of the Sacred Lands File by the NAHC and use a Native American contact list from within the last two years, as the Sacred Lands File is regularly updated, and the appropriate contacts change over time. It is also recommended that in future undertakings the COE conduct follow-up emails and/or phone calls to potentially interested consulting parties to ensure a reasonable and good-faith effort has been made to allow for those parties to comment and consult on the Federal undertaking and provide documentation of those conducted efforts to the SHPO. Please provide an update on the COE's outreach to Tribes and other potentially interested consulting parties and how the COE has taken any received comments into account in making their determinations and findings.

The COE describes the APE as the dredge areas for Channel Islands and Port Hueneme harbors; the beach placement areas on Silver Strand and Hueneme beaches; the nearshore placement site adjacent to Hueneme Beach; the buffer area around the Sand Trap Area D; the biological mitigation area; and the delivery pipe corridors between the Channel Islands Harbor and Silver Strand Beach, and between Silver Strand Beach and Hueneme Beach. The APE occupies a total of 430 acres.

From review of the COE submission letter, it is my understanding that the vertical extent of the APE for the Channel Islands is described as -20 feet Mean Lower Water Level (MLWL) in the navigation channel for Channel Islands Harbor, 35 feet MLWL for the sand traps (Areas A-G), -20 MLWL plus a 2 foot over depth of the approach channel and entrance basin, -10 MLWL plus a 2 foot over depth for the Inner basin. It is my understanding that the vertical extent of the APE for Port Hueneme Harbor is -44 MLWL plus a 2 foot over depth for the approach channel, -40 MLWL plus a 2 foot over depth for the entrance channel, -40 MLWL plus a 2 foot over depth for the turning basin and channel A. Please

confirm or clarify the vertical extent of the APE. Please clarify the vertical extent of the APE in the biological mitigation area if it is part of the undertaking.

The COE describes efforts to identify historic properties as including a review of pedestrian survey of the onshore portions of the APE from 2004, review of survey of the offshore portions of the APE from 1987, review of pedestrian survey of the onshore portion of the APE between the Channel Islands and Port Hueneme harbors in 1977, and Native American outreach in 2022. Efforts to identify historic properties resulted in no cultural resources in the APE.

It is recommended that identification efforts include a recent (not more than two years old) CHRIS records search. Please clarify what, if any, and when record searches were conducted for both the onshore and offshore portions of the APE. If the COE determined that using record searches older than two years remain adequate, please covey the reasons used to come to that conclusion.

It is my understanding that surveys of onshore and offshore portions of the APE were conducted in 1977, 2004, and 1987, respectively. It is recommended that identification efforts include a recent (not more than two years old) survey of the APE. If the COE determined that information from surveys older than two years remain adequate and no update is needed, please covey the reasons used to come to that conclusion.

If the COE has determined the previously taken identification efforts are adequate and do not require updating, it is unclear from the provided information if the previously conducted identification efforts include the areas the COE is proposing to add to the APE. Please convey the information the COE used to come to its conclusions.

The COE is requesting concurrence with their finding that the maintenance dredging program at the Channel Island and Port Hueneme harbors, including the increased dredge volume; additional dredging in Area G; addition of a 200-ft buffer around Area D; and habitat restoration along Hollywood beach, will continue to have no effect to historic properties. As the COE's APE, as well as their scope and appropriateness of identification efforts are unclear, I am presently unable to concur in the COE's finding of effect. I must therefore object to this finding of effect until such time as the COE provides the information used to come to their conclusions in order to address the above comments. If you require further information, please contact Elizabeth Hodges at (916) 445-7017 or Elizabeth.Hodges@parks.ca.gov

Sincerely,

Julianne Polanco
State Historic Preservation Officer

State of California • Natural Resources Agency
Gavin Newsom, *Governor*

**DEPARTMENT OF PARKS AND RECREATION**
**OFFICE OF HISTORIC PRESERVATION**
Armando Quintero, *Director*

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December 23, 2022 In reply refer to: COE940926F

VIA ELECTRONIC MAIL

Jodi L. Clifford
Chief, Planning Division
U.S. Army Corps of Engineers, Los Angeles District
915 Wilshire Blvd., Suite 1109
Los Angeles, CA 90017-3409

RE: Continuing consultation for changes to the routine maintenance dredging at Channel Island Harbors, Ventura County (previously misfiled as COE_2018_0705_003)

Dear Jodi Clifford,

The U.S. Army Corps of Engineers (COE) is continuing consultation with the State Historic Preservation Officer (SHPO) to comply with Section 106 of the National Historic Preservation Act of 1966 (as amended) and its implementing regulation at 36 CFR § 800 *et seq*. By letter received on November 16, 2022, the COE is addressing SHPO comments on the nature of the undertaking, outreach to other potential consulting parties, delineation of the APE, and their identification efforts, and is seeking concurrence on their continued finding of effect and comments on their proposed changes to the undertaking.

The COE reinitiated consultation with the SHPO by letter received on September 26, 2022, proposing to conduct routine dredging of at the Channel Islands and Port Hueneme harbors in Ventura County. Proposed project activities include dredging the Federal navigation channels, dredging a sand trap outside the Channel Islands Harbor, and the distribution of dredge materials to Silver Strand and Hueneme beaches.

The COE is proposing to increase the amount of proposed biennially dredged materials from 2 million cubic yards to 2.5 million cubic yards; to add a dredge unit, the Approach Channel (Area G) to remove shoaling; to include a 200-foot buffer along the Hollywood Beach shoreline to the existing landward boundary of Sand Trap Area D in the APE; the temporary placement of a delivery pipe for distributing dredge materials to proposed beach-nourishment locations; and to perform habitat restoration as biological mitigation for impacts to California least tern, western snowy plover, and western snowy plover designated critical habitat on Hollywood Beach. The COE states no change to the Port Hueneme dredge depths or boundaries is proposed for this undertaking.

The COE describes proposed habitat restoration as part of the undertaking and states that the habitat restoration would occur on an as-needed basis to replace any shoreline nesting habitat lost or modified due to dredging activities. The COE states that habitat restoration may include the reduction of the height of the sand dunes to the natural beach level, and the creation of artificial shoreline nesting habitat for shorebirds. The COE states they have committed to restoring 13.47 acres of habitat within a 53.8-acre biological mitigation area, and that further details of the habitat restoration will be coordinated and finalized with the U.S. Fish & Wildlife Service (USFWS).

By letter dated October 26, 2022, the SHPO commented that the creation of biological mitigation areas indicated that more than one federal agency may be involved in the undertaking and requested clarity on the roles of the federal agencies involved in this undertaking. By letter received on November 16, 2022, the COE clarified that the COE has conducted consultation with the USFWS for Section 7 of the Endangered Species Act, which in most circumstances does not appear to result in the COE's Federal undertaking being a Federal undertaking for the USFWS. Thank you for the clarification.

The COE requested a search of the Sacred Lands File from the Native American Heritage Commission (NAHC) returning negative results on May 23, 2018. The COE stated they contacted Native American entities listed by the NAHC as having cultural ties to the project area on September 21, 2022.

The SHPO recommended on October 26, 2022, that the COE use a search of the Sacred Lands File by the NAHC and use a Native American contact list from within the last two years. It was also recommended that in future undertakings the COE conduct follow-up emails and/or phone calls to potentially interested consulting parties. The SHPO requested an update on the COE's outreach to Tribes and other potentially interested consulting parties and how the COE has taken any received comments into account in making their determinations and findings. The COE responded on November 16, 2022, with a summary of the agency's internal procedure for identifying Indian tribes and relayed that for the current Undertaking, the NAHC list of Native American contacts was checked against the list used for an adjacent project at Ventura Harbor in 2021, with no differences noted between the lists. The COE also conveyed a copy of their tribal consultation letter, sent on September 21, 2022, and that they conducted follow up emails on October 18, 2022. The COE received one response from the Fenandeño Tatviam Band of Mission Indians stating no objection to the project and volunteering contact information for Native American monitors, should monitors be needed.

The COE describes the APE as the dredge areas for Channel Islands and Port Hueneme harbors; the beach placement areas on Silver Strand and Hueneme beaches; the nearshore placement site adjacent to Hueneme Beach; the buffer area around the Sand Trap Area D; the biological mitigation area; and the delivery pipe corridors between the Channel Islands Harbor and Silver Strand Beach, and between Silver Strand Beach and Hueneme Beach. The APE occupies a total of 430 acres.

On October 26, 2022, the SHPO conveyed the understanding that the vertical extent of the APE for the Channel Islands is as -20 feet Mean Lower Water Level (MLWL) in the navigation channel for Channel Islands Harbor, 35 feet MLWL for the sand traps (Areas A-G), -20 MLWL

plus a 2 foot over depth of the approach channel and entrance basin, -10 MLWL plus a 2 foot over depth for the Inner basin. The vertical extent of the APE is understood to be -44 MLWL plus a 2 foot over depth for the approach channel at Port Hueneme Harbor, -40 MLWL plus a 2 foot over depth for the entrance channel, -40 MLWL plus a 2 foot over depth for the turning basin and channel A. On October 26, 2022, the SHPO requested the COE confirm or clarify the vertical extent of the APE as well as the vertical extent of the APE in the biological mitigation area if it is part of the undertaking. The COE responded that this information was correct, and that the distribution of deposited materials within the beach nourishment areas on Silver Strand and Hueneme beaches will not exceed two feet.

The COE clarified in their November 16, 2022 letter that the proposed project activities within the biological mitigation area would consist of lowering accreted sand dunes by up to 25-feet to their original beach surface and to follow the natural contours of the original ground surface, allowing for up to two-feet of ground disturbance from the use of heavy equipment. Thank you for the clarification.

The COE described efforts to identify historic properties in their letter dated September 26, 2022, as including a review of pedestrian survey of the onshore portions of the APE from 2004, review of survey of the offshore portions of the APE from 1987, review of pedestrian survey of the onshore portion of the APE between the Channel Islands and Port Hueneme harbors in 1977, and Native American outreach in 2022. Efforts to identify historic properties resulted in no cultural resources in the APE.

By letter dated October 23, 2022, the SHPO recommended that identification efforts include a recent (not more than two years old) CHRIS records search and pedestrian survey. The SHPO requested the COE clarify what, if any, and when record searches and surveys were conducted for both the onshore and offshore portions of the APE, and if the COE determined that using record searches and surveys older than two years remain adequate, that the agency covey the reasons used to come to that conclusion. By letter received on November 16, 2022, the COE conveyed that no development, regulatory or permitted actions, or other projects or undertakings have occurred within the APE since previous iterations of the undertaking. It is presumed this statement is the COE’s argument that the previously conducted CHRIS record searches and surveys remain adequate and an update is unnecessary. The COE also conveyed their analysis of the depositional and erosional cycles of the APE’s environment, and their conclusion based upon this analysis that active beach zones have no reasonable potential for intact cultural deposits. Thank you for the clarification.

The SHPO also commented that it was unclear from the provided information if the previously conducted identification efforts included the areas the COE proposes to add to the APE. The COE provided clarification in their letter received on November 16, 2022, that the additional areas have been adequately covered by their identification efforts and that the nearshore placement area adjacent to Hueneme Beach is deposition only and is proposed for deposition as the area has been depleted through the regular littoral currents moving the previously existing sediments in a cyclical fashion.

The COE is requesting concurrence with their finding that the maintenance dredging program at the Channel Island and Port Hueneme harbors, including the increased dredge volume; additional dredging in Area G; addition of a 200-ft buffer around Area D; and habitat restoration along Hollywood beach, will continue to have no effect to historic properties. I do not object to a continued finding of *no historic properties affected* for this undertaking pursuant to 36 CFR § 800.4(d)(1).

Be advised that under certain circumstances, such as unanticipated discovery or a change in project description, the COE may have additional future responsibilities for this undertaking under 36 CFR § 800 *et seq*. If you require further information, please contact Elizabeth Hodges of my staff at (916) 445-7017 or Elizabeth.Hodges@parks.ca.gov.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

# 2024 SHPO CONSULTATION LETTERS

**DEPARTMENT OF THE ARMY**
**U.S. ARMY CORPS OF ENGINEERS, LOS ANGELES DISTRICT**
**915 WILSHIRE BOULEVARD, SUITE 1109**
**LOS ANGELES, CALIFORNIA 90017-3409**

February 2, 2024

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, California 95816-7100

Dear Ms. Polanco:

The U.S. Army Corps of Engineers, Los Angeles District (Corps) is reinitiating consultation with the State Historic Preservation Officer (SHPO) under the National Historic Preservation Act (NHPA; 54 USC § 306108) and its implementing regulations (36 CFR 800). The Corps previously consulted with your office regarding the planned dredging at Channel Islands Harbor and the Port of Hueneme (Enclosure 1). The Rivers and Harbors Act of 1899, as amended in 1965 (House Document 76, PL 89-298), authorized the U.S. Army Corps of Engineers to maintain channel depths and provide suitable materials for replenishment of locally starved beaches. Amendments to the Rivers Harbors Act in 1945 and 1970 direct dredging to occur at Channel Islands and Port Hueneme Harbors and assigns the responsibility to the Federal Government (P.L. 91-611, Sec 114). On September 27, 2022, the Corps reinitiated consultation on maintenance dredging operations at Channel Islands and Port Hueneme regarding additions to the original undertaking, and consequently, changes to the area of potential effects (APE). The SHPO did not object to a continued finding of no effect on historic properties on December 23, 2022 (see Enclosure 1). The purpose of this letter is to reinitiate consultation over an additional expansion of the undertaking to include the removal of up to approximately 10,000 cubic yards of sand from the Port Hueneme Drift Sand Pile.

The Port Hueneme Drift Sand Pile is just under half an acre and located on the southwestern fence line of the Naval Base Ventura County Port Hueneme (NBVCPH) [Enclosure 2]. At the request of the U.S. Navy, the Corps intends to remove the depositional sand and place it to support the delivery pipe crossing Service Warfare Engineering Facility (SWEF) Beach. Previously, the Corps consulted upon the inclusion of SWEF Beach as a component of the APE for the purpose of laying a portion of a delivery pipe. Concurrence on the inclusion of this activity in the undertaking was received on December 23, 2022 (see Enclosure 1). The Corps is now expanding the undertaking to include the placement of up to approximately 10,000 cubic yards of sand from the Port Hueneme Drift Sand Pile to SWEF Beach for the purpose of securing the delivery pipe. Although this portion of the undertaking is occurring on the southwestern boundary of NBVCPH property, Federal regulations place the responsibility of the entire undertaking on the Corps. Therefore, the U.S. Navy cannot assume the role of Lead

Federal Agency, and Section 106 consultation is the responsibility of the Corps pursuant to 36 CFR 800.2(a).

Sediment in the Port Hueneme Drift Sand Pile is comprised entirely of depositional sediments that become trapped immediately southeast of the NBVCPH fence line. The Port Hueneme Drift Sand Pile is approximately 0.4 acre and estimated to be 30 feet tall. Frequently, the deposits fall onto the adjacent Venice Road and are pushed back onto the drift pile to maintain safe driving conditions (Enclosure 3). The Corps would remove up to approximately 10,000 cubic yards of sand and place it onto portions of SWEF Beach that were included in the previous consultation (December 23, 2022). Sediment placement will be completed with an end loader traveling along an existing access route adjacent to both the NBVCPH perimeter fence and the delivery pipe corridor. As such, the maximum vertical APE in the locality of the Port Hueneme Drift Sand Pile would be no more than 30 feet above ground and zero feet below ground. The horizontal APE is approximately half an acre.

Coastal erosion causes substantial depletion of the beaches in the vicinity of the Port of Hueneme through the process of longshore (littoral) drift. During this process, the littoral drift consistently and cyclically removes and replaces sediment. Under normal environmental circumstances, the sand would be cast down beach. However, the Port Hueneme Drift Sand Pile is the result of an estimated yearly 500-1,000+ cubic yards of wind-blown sediment that becomes trapped and accumulates instead of continuing southwards to complete the natural beach nourishment process. As secondary deposition, any unknown resources within the Port Hueneme Drift Sand Pile would not constitute intact cultural deposits and would not retain, at minimum, aspects of integrity regarding setting and location. Therefore, resources found in the Port Hueneme Drift Sand Pile could not constitute historic properties.

On January 11, 2024, a record search of the South Central Coastal Information Center was performed by Corps Archaeologist Katie Carbone. While the record search did not show cultural sites within the new APE addition, it has 100% coverage by previous cultural resource investigations (Enclosure 4). Modeling of archaeologically sensitive areas shows that the location of the drift sand pile does not have the expectation of subsurface cultural deposits as it is heavily impacted by disturbance and fill. In 2010, geoprobe technicians took boring samples within the area to the south/southwest of the drift sand pile to support the Navy’s implementation of the munitions response program, which was the location of a former World War II pistol range (Enclosure 5; Parsons 2012). Soil samples demonstrated that the sediment was loose and poorly graded. Only one sample contained an object that was clearly determined to be a bullet. A second soil sample was thought to have contained bullets, but the metal was too weathered to accurately identify the objects. Due to its proximity to the beach, it can be expected that metal plank flooring lined the pistol range. One soil sample contained staining that was interpreted as the disintegration of the range flooring. While it was the interpretation of the 2010 sediment analysis that the World War II pistol range had been completely obliterated, avoidance flagging will be

implemented out of caution. A current survey was not completed because the drift sand pile is construed of loose wind-blown deposits that are not walkable and lacks the stability that would allow for subsurface testing (see Enclosure 3).

An updated Sacred Lands File (SLF) search was requested from the Native American Heritage Commission on December 26, 2023. A reply was received on January 10, 2024, that contained a negative SLF search (Enclosure 6). The Corps is concurrently reaching out to all former consultation partners and will provide a summary of any comments received.

If previously unknown historic or archaeological remains are discovered while carrying out the work within the Port Hueneme Drift Sand Pile, work within a 100-foot buffer shall immediately cease and the site protected in conformance with 36 C.F.R. § 800.13. Within 24 hours of the discovery, the Corps Project Manager and Corps Archaeologist shall be notified. Work shall not resume in the area containing the potential cultural resources until the Corps issues a notice to proceed. If human remains are discovered, to the extent not inconsistent with Federal law, the Corps shall ensure that Native American burials and related cultural items are treated in accordance with the applicable requirements of the California Public Resources Code at Sections 5097.98 and 5097.991, and of the California Health and Human Safety Code at Section 7050.5(c).

The addition of sediment removal at the Port Hueneme Drift Sand Pile will not have an impact on historic properties, as none exist within the APE. The Corps has determined that the above constitutes a reasonable and good faith effort pursuant to Section 106 of the NHPA under 36 CFR 800.5(b) to assess the effects of this undertaking and has determined a finding of No Historic Properties Affected pursuant to 36 CFR Part 800.4(d)(1). We hereby request your review of our effects determination and request your concurrence with a finding of No Historic Properties Affected.

To request clarifications or provide comments, please contact Katie Carbone, Corps Archaeologist, via telephone at (213) 655-2457, or via email at Catherine.A.Carbone@usace.army.mil.

Sincerely,

Jodi L. Clifford
Chief, Planning Division

Enclosure(s)

State of California • Natural Resources Agency
Gavin Newsom, *Governor*

**DEPARTMENT OF PARKS AND RECREATION**
**OFFICE OF HISTORIC PRESERVATION**
Armando Quintero, *Director*

**Julianne Polanco, State Historic Preservation Officer**
**1725 23rd Street, Suite 100, Sacramento, CA 95816-7100**
**Telephone: (916) 445-7000 FAX: (916) 445-7053**
**calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov**

March 5, 2024

VIA EMAIL

In reply refer to: COE940296F

Jodi L. Clifford, Chief
U.S. Army Corps of Engineers
Los Angeles District, Planning Division
915 Wilshire Boulevard, Suite 1109
Los Angeles, CA 90017-3409

Subject: Section 106 Consultation for the Dredging Project at Channel Islands Harbor and the Port of Hueneme, Ventura County, California – Port Hueneme Sand Pile Addition

Dear Ms. Clifford:

The State Historic Preservation Officer (SHPO) is in receipt of a consultation letter dated February 2, 2024, and received on February 5, 2024, from the U.S. Army Corps of Engineers (USACE) for the above referenced undertaking. USACE is continuing consultation with the SHPO to comply with Section 106 of the National Historic Preservation Act of 1966 (as amended) and its implementing regulation at 36 CFR 800. USACE is seeking SHPO review and concurrence on their finding of *no historic properties affected*.

USACE previously initiated consulted with SHPO regarding the planned dredging at Channel Islands Harbor and the Port of Hueneme in 1994. The Rivers and Harbors Act of 1899, as amended in 1965, authorized USACE to maintain channel depths and provide suitable materials for replenishment of locally starved beaches. Amendments to the Rivers Harbors Act in 1945 and 1970 direct dredging to occur at Channel Islands and Port Hueneme Harbors and assigns the responsibility to the Federal Government (P.L. 91-611, Sec 114). On September 27, 2022, USACE continued consultation with SHPO on maintenance dredging operations at Channel Islands and Port Hueneme regarding additions to the original undertaking, and consequently, changes to the area of potential effects (APE). SHPO did not object to a continued finding of *no historic properties affected* on December 23, 2022. USACE is continuing consultation with the SHPO on an additional expansion of the undertaking to include the removal of up to approximately 10,000 cubic yards of sand from the Port Hueneme Drift Sand Pile.

The Port Hueneme Drift Sand Pile is just under half an acre and located on the southwestern fence line of the Naval Base Ventura County Port Hueneme (NBVCPH). At the request of the U.S. Navy, USACE intends to remove the depositional sand and

place it to support the delivery pipe crossing Service Warfare Engineering Facility (SWEF) Beach. USACE previously consulted upon the inclusion of SWEF Beach as a component of the APE for the purpose of laying a portion of a delivery pipe. Concurrence on the inclusion of this activity in the undertaking was received on December 23, 2022. USACE is now expanding the undertaking to include the placement of up to approximately 10,000 cubic yards of sand from the Port Hueneme Drift Sand Pile to SWEF Beach for the purpose of securing the delivery pipe.

Sediment in the Port Hueneme Drift Sand Pile is comprised entirely of depositional sediments that become trapped immediately southeast of the NBVCPH fence line. The Port Hueneme Drift Sand Pile is approximately 0.4 acres in area and is estimated to be 30 feet tall. Frequently, the deposits fall onto the adjacent Venice Road and are pushed back onto the drift pile to maintain safe driving conditions. The Corps would remove up to approximately 10,000 cubic yards of sand and place it onto portions of SWEF Beach that were included in the previous consultation. Sediment placement will be completed with an end loader traveling along an existing access route adjacent to both the NBVCPH perimeter fence and the delivery pipe corridor.

The adjusted horizontal APE will consist of the 0.4-acre sand pile and the maximum vertical APE in the locality of the Port Hueneme Drift Sand Pile would be no more than 30 feet above ground and zero feet below ground. The horizontal APE is approximately half an acre.

Efforts to identify historic properties within the adjusted APE included a records search of the South Central Coastal Information Center (SCCIC) of the California Historical Resources Information System (CHRIS), a review of a geoprobe soil sampling report from 2010 in support of the Navy’s implementation of the munitions response program, a search of the Sacred Lands File (SLF) at the Native American Heritage Commission (NAHC), and Native American consultation. A pedestrian survey was not completed because the drift sand pile is construed of loose wind-blown deposits that are not walkable and lacks the stability that would allow for subsurface testing.

The SLF search at the NAHC yielded negative results and provided a Native American contact list of individuals and groups that may have additional information regarding cultural resources in the vicinity of the project. USACE initiated consultation with the individuals and groups on the NAHC contact list on February 2, 2024. To date, one response has been received:

- The Coastal Band of the Chumash Nation stated that the project location holds tribal and cultural significance and that previously recorded culturally sensitive sites are near this APE, but that it is extremely likely that any resources within the APE were destroyed as a result of the multiple waves of development. The Tribe requested USACE contact them if any cultural resources are discovered, and do not have any other questions or concerns.

As a result of the identification efforts, no historic properties were identified in the adjusted APE. Additionally, coastal erosion causes substantial depletion of the beaches in the vicinity of the Port of Hueneme through the process of longshore (littoral) drift. During this process, the littoral drift consistently and cyclically removes and replaces sediment. Under normal environmental circumstances, the sand would be cast down beach. However, the Port Hueneme Drift Sand Pile is the result of an estimated yearly 500-1,000+ cubic yards of wind-blown sediment that becomes trapped and accumulates instead of continuing southwards to complete the natural beach nourishment process. As secondary deposition, any unknown resources within the Port Hueneme Drift Sand Pile would not constitute intact cultural deposits and would not retain, at minimum, aspects of integrity regarding setting and location.

The addition of sediment removal at the Port Hueneme Drift Sand Pile will not have an impact on historic properties, as none exist within the APE. Therefore, USACE is presenting a finding of *no historic properties affected* pursuant to 36 CFR § 800.4(d)(1).

USACE has requested SHPO review and concurrence on their finding of effect. Following review of the submittal, I offer the following comments:

- Pursuant to 36 CFR § 800.4(a)(1), I do not object to the APE as defined;
- Pursuant to 36 CFR § 800.4(b)(1), I find the efforts to identify historic properties to be reasonable and in good faith;
- Pursuant to 36 CFR § 800.4(d)(1), **I do not object** to a finding of *no historic properties affected* and I have no further comments.

Be advised that under certain circumstances, such as unanticipated discovery or a change in project description, USACE may have additional future responsibilities for this undertaking under 36 CFR 800. If you require further information, please contact Robert Fitzgerald, Associate State Archaeologist, at (916) 894-5496 or Robert.Fitzgerald@parks.ca.gov.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

# APPENDIX G

# CALIFORNIA COASTAL COMMISSION

# CONSISTENCY DETERMINATION CORRESPONDENCE

**CALIFORNIA COASTAL COMMISSION**
ENERGY, OCEAN RESOURCES AND FEDERAL CONSISTENCY
455 MARKET STREET, SUITE 300
SAN FRANCISCO, CA 94105-2421
VOICE (415) 904-5200
FAX (415) 904-5400

May 17, 2024

Jodi Clifford
Chief, Planning Division
U.S. Army Corps of Engineers, Los Angeles District
915 Wilshire Boulevard, Suite 1109
Los Angeles, CA 90017-3409

Re: Consistency Determination CD-0001-24, (Six-Year Maintenance Dredging Program for Channel Islands Harbor and Port Hueneme)

Dear Chief Clifford,

On May 10, 2024, the California Coastal Commission conditionally concurred with the above-referenced consistency determination submitted by the United States Army Corps of Engineers (Corps), for a six-year maintenance dredging program for Channel Islands Harbor and Port Hueneme Harbor, with 8.25 million cubic yards of dredging, and beach placement at Silver Strand Beach, Hueneme Beach, and a nearshore placement site offshore of Hueneme Beach, Ventura County.

Below is the condition for consistency determination CD-0001-24:

1. **Revised Habitat Mitigation and Monitoring Plan.** WITHIN SIX MONTHS OF COMMISSION CONCURRENCE WITH THE USACE CONSISTENCY DETERMINATION, USACE shall provide a revised final version of the Draft *Hollywood Beach Western Showy Plover Habitat Expansion and Enhancement Plan* (Plan) dated March 2024, to the Commission's Executive Director for review. The Corps will carefully consider all comments by the Commission's Executive Director and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions are incorporated into the Plan. The revised Plan shall include, but not be limited to the following:

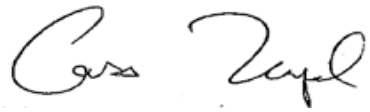
    - A post-project quantification of the permanent adverse impacts to the coastal strand and southern foredune Environmentally Sensitive Habitat Areas (ESHA) as a result of each dredging event and confirmation that the mitigation acreage proposed in the Plan is sufficient to meet the required mitigation ratio for the adverse impacts to ESHA of at least 3:1. If an impact occurs during any given dredge event then future impacts within that same footprint will not be considered a new impact in subsequent cycles, and once mitigated it will be considered fully mitigated and not subject to future mitigation.
    - A timeline for implementation of the Plan by the end of 2025 and information on how the mitigation ratio(s) could be modified to account for temporal lag in the event that project implementation is significantly delayed.

- Revised dune expansion/creation and enhancement methods to include the following:
    - Dune recontouring shall only occur in dune areas highly invaded by European beach grass (*Ammophila arenaria*) and highway icelplant (*Carpobrotus edulis*) such that they have attained abnormal heights. In these areas the focus shall be on achieving a back dune slope of 3:1 or less, as opposed to targeting a height of not more than six feet. Excess sand resulting from dune recontouring will be used in dune expansion.
    - Provision of an Integrated Pest Management Plan that describes the steps and details required to eliminate and remove invasive plant species through hand and mechanical removal, horizon flipping in consultation with United States Fish and Wildlife Service (USFWS), and, if necessary, pesticide (herbicide) application. For areas where hand and mechanical methods are not practical such as where the invasive European beach grass and highway iceplant are widespread and well established, chemical treatment will employ the appropriate glyphosate formula and with surfactants (adjuvants) considered to be the least toxic appropriate for the target species, and constituting the least environmentally damaging alternative. If chemical treatment is deemed to be necessary, a California licensed Pest Control Advisor (PCA) must provide written recommendations regarding the appropriate herbicides and adjuvants for the respective circumstances and species. The product registration number(s) should be provided along with a complete description of how they will be used, including criteria and limits for if/when/how (including frequency and total number of applications), precautions that would be taken for sensitive species (e.g., buffers) and potential runoff, and triggers for adaptive management or remedial actions. In no instance shall spray herbicide application occur if wind speeds on site are greater than 5 mph or 48 hours prior to predicted rain. In the event that rain does occur, herbicide application shall not resume again until 72 hours after rain. Herbicide applications during the rainy season shall be timed to avoid rainfall events. For all work involving chemical applications, a PCA or Qualified Licensed Applicator (QLA) must be on site.
    - Dead invasive plant material that is not left to decompose in place (e.g. highway iceplant) must be transported to a land fill. No invasive plant material shall be buried in the beach below the waterline.
    - Application of erosion control BMPs in areas where invasive species are removed until dune recontouring and planting with native species can take place.
    - Dune expansion Plans including maps/exhibits of the proposed expansion area, methods for sand retention (e.g. sand fencing, sterile hay plugs, etc.), plant palette, source of plant material (seeds and seedlings), maintenance activities, signage, public access routes, etc.
    - Monitoring program that includes the sampling design (schedule and type of qualitative and quantitative monitoring), a map depicting sampling design elements (e.g. permanent photo points and transects or quadrats), annual and final success criteria based on reference sites or the peer-reviewed literature, and statistical basis for judging success.

- In addition to the six-year final monitoring report, annual monitoring reports shall be submitted to USFWS and the Executive Director for review. Annual monitoring reports shall include: an assessment of dune and western snowy plover habitat conditions and issues such as trash, erosion, invasive vegetation, or pests; a general description of the dune morphologic and vegetation conditions along with photos from permanent photo points strategically located and mapped on an exhibit in the final plan depicting the sampling design; a determination as to whether the dunes have met that annual success criteria; and whether the dunes are expected to meet Year six success criteria.
- Objective performance standards that will allow future assessment of the success of the habitat expansion and enhancement, along with detailed criteria for development and implementation of any adaptive management strategies determined to be necessary if the habitat is not meeting performance standards. Implementation of any adaptive management strategies would require prior review of the Executive Director.

The Commission determined that, only as conditioned, could the project be found consistent to the maximum extent practicable with the enforceable policies of the California Coastal Management Program. The Commission notes that as provided in 15 CFR § 930.4(b), should the Corps not agree with the Commission's condition of concurrence, then all parties shall treat this conditional concurrence as an objection.
If you have questions, please feel free to contact Wesley Horn at Wesley.Horn@coastal.ca.gov.

Sincerely,



Cassidy Teufel
Director
Energy, Ocean Resources, Federal Consistency, and Technical Services

CC

Natalie Martinez-Takeshita, United States Army Corps of Engineers

(Natalie.M.Martinez-Takeshita@usace.army.mil )

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# CHANNEL ISLANDS/PORT HUENEME HARBORS MAINTENANCE DREDGING PROJECT
## Ventura County, California

## Revised Consistency Determination

**U.S. Army Corps of Engineers**
**Los Angeles District**

April 2024

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**Consistency Determination**
**Channel Islands and Port Hueneme Harbors**
**Maintenance Dredging**
**Ventura County, California**

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# Consistency Determination
# Channel Islands/Port Hueneme Harbors Maintenance Dredging Project
# Ventura County, California

## 1 INTRODUCTION AND DETERMINATION

Section 307(c) of the Coastal Zone Management Act of 1972 (CZMA), called the "federal consistency" provision, requires that federal actions, within and outside the coastal zone, which have reasonably foreseeable effects on any coastal use (land or water) or natural resource of the coastal zone be consistent with the enforceable policies of a state's federally approved coastal management program. Federal agency activities must be consistent to the maximum extent practicable with the enforceable policies of a state coastal management program. The term "consistent to the maximum extent practicable" means fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency. 15 C.F.R. 930.32(a)(1). The federal government certified the California Coastal Management Program (CCMP) in 1977. The enforceable policies of that document are Chapter 3 of the California Coastal Act of 1976 (CCA). All consistency documents are reviewed for consistency with these policies.

DETERMINATION: The U.S. Army Corps of Engineers' Los Angeles District (Corps) has determined the Proposed Action, Channel Islands and Port Hueneme Harbors Maintenance Dredging Project, is consistent to the maximum extent practicable with the enforceable policies of the CCMP.

## 2 AUTHORITY FOR PROJECT

Section 2 of the Rivers and Harbor Act 1945 (Public Law 79-14) authorizes the Corps to maintain the Federal Navigation Channels at Port Hueneme Harbor and Channel Islands Harbor to authorized depths. Through this maintenance authorization and upon receiving appropriations, the Corps is directed to ensure that safe and continuous navigation is afforded within the harbors' federal channels. Congress further expanded this authorization to include sand bypass to the immediately adjacent downcoast beach of Port Hueneme Harbor to address downcoast erosional impacts associated with Port Hueneme Harbor.

It was previously determined that sand bypass activity may result in adverse effects to federally listed species and designated critical habitat protected under the federal Endangered Species Act of 1972 (ESA). In 2022, the Corps consulted with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the ESA and received a biological opinion in December 2022 [08EVEN00-2022-0085983-S7] that includes requirements for offsetting these effects.

The applicable authorizations for the proposed action and the federal interest in the action are as follows [history noted as excerpt from *Ventura County, California Survey Report for Beach Erosion Control* (USACE, May 1979)]:

***Channel Islands Harbor***
*The 1954 River and Harbor Act (H. Doe. 362, 83d Cong., 2d sess.) authorized the construction of this small-craft harbor and shore protection works. The authorized project was modified by the Chief of Engineers, U.S. Army Corps of Engineers in 1957. The construction of the jetties and of the offshore breakwater was completed by October 1960. The dredging of the harbor and of the sand trap was completed in August 1961. In constructing the harbor, about 6,238,000 cubic yards of dredged material were deposited on the downcoast shoreline.* ***The Channel Islands dredge template, including the sand trap in the shelter of the 2,300-foot-long offshore breakwater, is authorized to be dredged biennially up to 2,500,000 cubic yards of material.***

***Port Hueneme Harbor***
*This harbor is a manmade improvement that was constructed by the Oxnard Harbor District in 1940. The U.S. Navy acquired this harbor by r ~condemnation in 1942. The 1968 River and Harbor Act (H. Doc. V-2, 90th Cong., 2d sess.) authorized the modernization and expansion of the existing harbor and the maintenance of the modified harbor. The lengthening, deepening, and widening of part of channel A, included in the Federal project, were completed by the local interests in May 1972 under the agreement that was made pursuant to section 215 of the 1968 Flood Control Act. The deepening of the central basin and of part of channel A was completed in September 1975. The channels of Port Hueneme were deepened in 2021 to the current authorized depths.*

# 3 PROJECT DESCRIPTION

## 3.1 Introduction

Since construction of the Port Hueneme jetties in 1940, accretion has occurred north (upcoast) of Port Hueneme, and erosion has occurred south (downcoast) of Port Hueneme. The average rate of littoral drift downcoast (east) of Port Hueneme is approximately 1,250,000 cubic yards per year. Since the Port Hueneme jetties block any littoral drift from moving north to south past the jetties, artificial bypassing of sand is required. Bypassing approximately 2.5 million cubic yards of sand every two years from the Channel Islands Harbor sand traps onto Hueneme Beach maintains an equilibrium with the littoral drift for the beach downcoast of Port Hueneme (pers. comm. Joe Ryan, Coastal Engineer USACE LAD, March 18, 2024).

The Proposed Action covers a proposed six-year maintenance dredging program at Channel Islands and Port Hueneme Harbors in Ventura County, California intended to benefit the continued operations of coastal dependent industrial facilities at Port Hueneme as well as within Channel Islands Harbor that also serves as an important recreational and commercial harbor within the region. The project is further necessary to protect against damage to Port Hueneme industrial facility infrastructure, specifically roadways, industrial buildings and the historic lighthouse, as well as downcoast beaches and dunes resulting from interruption of littoral drift sand transport. The project area would encompass approximately 3 miles of shoreline, extending from Hollywood Beach to Hueneme Beach. The area is located approximately 65 miles northwest of Los Angeles at the edge

of the Oxnard Plain in Ventura County (Figure 1). Placement of the majority of dredged materials is expected to be on Hueneme Beach, with smaller quantities of material potentially placed on Silver Strand Beach or in the Hueneme Nearshore Placement Site (Figure 2). The proposed project consists of maintenance dredging of up to a maximum cumulative quantity of 8.25 million cubic yards (CY) from both Harbors over the six-year period. This includes a maximum biennial volume from Channel Islands Harbor of 2.5 million CY. This bypass volume from Channel Islands Harbor is based on the authorized biennial dredging volumes authorized under the Rivers and Harbors Act, which is still applicable and remains unchanged today.

### *3.1.1 Location and Background*

**Channel Islands Harbor**
Channel Islands Harbor is located in the city of Oxnard (Figure 1). Channel Islands Harbor is predominantly a recreational and light commercial harbor that also hosts a U.S. Coast Guard installation. The harbor entrance is protected by structural features consisting of a 2,300-foot long offshore detached breakwater, entrance jetties, and an entrance channel leading to the harbor interior. The Entrance Channel and Basin is 3,400 feet long and varies in width from approximately 300 feet at the entrance to 600 feet within the harbor. Authorized depth of the Entrance Channel (Area A as shown in Figures 2 and 3) is -20 feet Mean Low Water (MLLW). The Entrance Basin (Area E) may be dredged during this six-year cycle if needed. Authorized depth of the Entrance Basin is -20 feet MLLW. The Inner Basin (Area F) will not be dredged during this six-year cycle and is not addressed in this Consistency Determination.

The offshore detached breakwater and entrance jetties form a Sand Trap which was designed to accumulate sand prior to its entry into Channel Islands Harbor and Port Hueneme navigation channels. Sand which is carried downcoast by littoral drift is trapped in the Sand Trap and minimizes shoaling in the Entrance Channel. The Sand Trap is divided into four parcels as shown in Figures 2 and 3: Areas B, C, D, & G. The Sand Trap Areas B, C, & D were designed to be maintained at a depth of -35 feet MLLW. Sand Trap Area G was designed to be maintained to -25 ft MLLW.

Channel Islands Harbor receives sediments from upcoast beaches and streams by the southerly littoral transport system. Maintenance dredging has been conducted routinely by the Corps since the 1960s at Channel Islands Harbor. During the most recent biennial dredge cycle (Fiscal Year 2023) 2,405,000 cubic yards of material was dredged from the Channel Islands Harbor dredge template. From 1963 through 1979 the average cycle volume dredged was 2,337,333 cubic yards. This has declined in more recent years due to funding priority shifts. The present action is intended to return to the original bypass volumes of up to 2.5 million cubic yards.

**Port Hueneme Harbor**
Port Hueneme Harbor is located in the city of Port Hueneme (Figure 1). Port Hueneme provides critical Navy infrastructure for Naval Base Ventura County as well as providing the only commercial industrial deep water harbor located between the Port of Los Angeles and port facilities within San Francisco Bay. Port Hueneme is principally an international trade port operating for 88 years in the region. The Port contributes $2.2 billion to the region and provides 20,032 trade related jobs to the region's economy.

This harbor is located approximately one mile southeast of Channel Islands Harbor. Harbor features include two entrance jetties, an Approach Channel, Entrance Channel, Channel A, and a Turning Basin. The Approach Channel is approximately 1800 feet long, 600 feet wide, and has an authorized depth of -44 feet MLLW. The Entrance Channel is 1,400 feet long, 330 feet wide, and has an authorized depth of -40 feet MLLW. Channel A and the Turning Basin will not be dredged during this six-year cycle and are not addressed in this Consistency Determination.

Construction of Port Hueneme Harbor was completed in 1940 and receives sediments from both southerly and northerly littoral transport. With the construction of Port Hueneme Harbor, downcoast sand supply was interrupted resulting in beach erosion damage. The first effort to address sand supply was a 2,000,000 cubic yard dredging in 1953-1954 from the upcoast surf zone. This was met with severe issues that ultimately led to the 1958-1961 construction of the Channel Islands Harbor detached breakwater and Channel Islands Harbor to capture sand and provide a safe area from which sand could be dredged and bypassed immediately downcoast of Port Hueneme Harbor.

Previous routine maintenance dredging has been conducted by the Corps as needed at Port Hueneme Harbor dating back to 1975. During the 2008/2009 Port Hueneme Confined Aquatic Disposal (CAD) Project, a total of 685,000 CY of sand was hydraulically dredged from a prescribed area of the harbor's Turning Basin to create a CAD cell to facilitate confined aquatic disposal of contaminated sediment from the harbor. The dredged sand (685,000 CY) was pumped directly onto Hueneme Beach. Approximately 280,000 CY of submerged contaminated dredge material from the Port Hueneme Harbor was placed in the CAD site. Another 130,000 CY of clean sediment was dredged from the Entrance Channel and placed on top to "cap" and sequester the contaminants, with a small amount of rock placed over the cap to protect capping material from being displaced by tides, near-shore currents, and propeller wash from passing vessels.

The channels of Port Hueneme were deepened in 2021 to the current authorized depths of – 44 feet and – 40 feet MLLW. 384,000 CY were removed during the 2021 Port Hueneme Deepening Project. 21,900 CY were unsuitable material and were placed within the Port Hueneme CAD in the Turning Basin. The remaining 362,100 CY was placed either onto Hueneme Beach or in the Hueneme Nearshore Placement Site.

**Silver Strand Beach**

Silver Strand Beach is a heavily utilized recreational beach located in the city of Oxnard, between Channel Islands Harbor and Port Hueneme (Figure 2). Silver Strand beach is approximately 5,000 feet long and typically 200-300 feet wide. Construction of Channel Islands Harbor and Port Hueneme has altered the natural transport of littoral material to down coast beaches. Silver Strand Beach is heavily used during the summer. Beach replenishment through deposition of dredged materials is considered a beneficial use. On average approximately 100,000 to 200,000 CY of material from the Channel Islands Harbor dredging program is deposited on Silver Strand Beach every two years.

**Hueneme Beach Placement Site**

Hueneme Beach is located in the city of Port Hueneme, southeast and immediately adjacent of the Port Hueneme Harbor (Figure 2). Hueneme Beach Placement Site is approximately 3,500 feet long from the Port Hueneme East Jetty to approximately 500 feet south of Market Street. The beach

width varies from 0 to 800 feet wide**.** Construction of Port Hueneme Harbor has altered the natural transport of littoral material to downcoast beaches. This beach is heavily used during the summer. Beach replenishment is necessary to maintain the beaches for shoreline protection and recreational uses. Beach replenishment through placement of dredged materials is considered a beneficial use.

**Hueneme Nearshore Placement Site**
The Hueneme Nearshore Placement Site is located offshore of Hueneme Beach (Figure 2). The Hueneme Nearshore Placement Site is approximately 3,700 feet long, 1,000 feet wide, and ranges in depth from –10 feet to –30 feet MLLW with an average depth of –20 feet MLLW. Placement of dredge materials in the nearshore zone is a proven method of nourishing adjacent and downcoast beaches. During the 2021 Port Hueneme Deepening project, approximately 140,000 CY were placed in the Hueneme Nearshore Placement Site. During the previous twelve years no material from the Channel Islands Harbor/Port Hueneme dredging programs were deposited in the Hueneme Nearshore Placement Site. This is due to the preference for beach placement by local officials.

**SWEF Beach**
Surface Warfare Engineering Facility (SWEF) Beach is located on Naval Base Ventura County (NBVC) – adjacent to Silver Strand Beach and at the entrance of Port Hueneme Harbor (Figure 2). A security fence separates SWEF Beach from Silver Strand Beach. Wind-blown sand from Silver Strand Beach naturally accumulates in the Drift Sand Pile on NBVC, and spills onto Venice Road within NBVC.

## 3.2 Proposed Action

Dredging would occur in three biennial cycles (every two years, beginning in years 1, 3 and 5) over a six-year period (2024-2029). This schedule allows for maximum sediment loading within the Channel Islands Harbor dredge template while still allowing for safe navigability. However, the amount of sediment buildup in the Port Hueneme Harbor is not normally sufficient to require biennial dredging, so that area would likely be dredged less frequently within the six-year period, dependent on sediment discharges to the littoral cell and wave transport conditions.

At Channel Islands Harbor, material will be dredged from the Entrance Channel, Sand Traps, and Entrance Basin (Area E). Note, only a portion of Area E is currently deemed physically suitable by the Southern California - Dredged Material Management Team (SC-DMMT) for placement at the Hueneme Beach Placement Site, consistent with the area that is planned to be dredged in the first cycle. If the remainder of Area E requires dredging during the six-year period, that area would be tested and evaluated for suitability prior to dredging. Each biennial dredging cycle could remove up to a maximum of 2.5 million CY of material from the entire Channel Islands Harbor dredge template, consistent with the historic dredging authorization. Dredging would occur to authorized depths plus 2 feet of allowable over-depth. Authorized depths are as follows; -20 feet Mean Low Water (MLLW) at the Entrance Channel and Entrance Basin (Area E), -35 feet MLLW at the Sand Trap Areas B, C, & D, and -25 feet MLLW at Sand Trap Area G.

At Port Hueneme Harbor, material would be dredged from the Approach Channel and Entrance Channel. Note, only a portion of the Entrance Channel is currently approved by the SC-DMMT for dredging and placement at the receiver sites. If the remainder of the Entrance Channel requires dredging during the six-year period, that area would be re-evaluated for suitability. The required

dredging is planned to be accomplished as needed on the same schedule as the dredging of Channel Islands Harbor (i.e., during one or more of the three biennial cycles), removing up to 250,000 CY of material per dredge cycle. Dredging would occur to authorized depths plus 2 feet of allowable over-depth. Authorized depths are as follows; -44 feet MLLW at the Approach Channel and -40 feet MLLW at the Entrance Channel.

Project authorization mandates a majority of dredge material from Channel Islands Harbor dredge template be placed on Hueneme Beach to fulfill established commitments for sand bypass. Placement at Silver Strand Beach (up to 250,000 CY per cycle) may also occur on an as-needed basis to offset periodic erosion. Total project dredging would not exceed 8.25 million CY cumulatively for all three biennial dredging cycles at both harbors over the six-year period.

Throughout the 6-year period, a cumulative total of approximately 10,000 CY may be removed from the Drift Sand Pile on NBVC and placed within the SWEF Beach pipeline corridor to secure the discharge pipeline as needed using equipment such as an end loader. The contractor may completely demobilize the discharge pipeline at the end of each biennial cycle or potentially: (1) bury or leave above ground the discharge pipeline on SWEF Beach for the duration of the six-year construction contract, and/or (2) bury the discharge pipeline on Silver Strand Beach for the duration of the six-year construction contract.

Additional subsurface and surface sediment samples (Vibracore and grab samples) may be taken as needed within the Action Area during the 6-year period. After the completion of the third biennial dredge cycle and prior to the project's subsequent six-year Final EA, subsurface and surface sediment samples will be collected for the project's next Sampling and Analysis Plan Results Report (SAPR). Specific timing of sampling will depend on shoaling patterns and funding availability.

To avoid potential impacts to protected resources, no construction/dredging activities (i.e. equipment mobilization, dredging, equipment demobilization) would be conducted within the Channel Islands Harbor and adjacent beaches (Silver Strand and Hollywood Beach), from March 1 through September 30. Biennial dredging and beach placement would occur between October 1 and February 28 to accommodate sensitive environmental windows (western snowy plover nesting season – March 1 – September 15; California least tern nesting season – April 1 to September 15; California grunion – March 1 to August 31), and nonpeak beach use. Work windows and timelines within the allowable work window (October 1 – February 28) are variable due to weather patterns and other factors such as equipment availability, working performance of the equipment, contractual commitments, and availability of funds. Marine staging areas would be located within Channel Islands Harbor, in the lee of the Channel Islands detached breakwater, and within Port Hueneme Harbor. Terrestrial staging areas would occur immediately adjacent to Channel Islands Harbor, on Silver Strand Beach, and at Hueneme Beach. Construction operations would occur seven days a week, 24 hours a day.

**Construction Equipment**
Work could be accomplished by a variety of dredge types.

**Hydraulic Pipeline Dredge:** Typically, a floating dredge with an attached hydraulic cutterhead is used to dredge the sand. The sand slurry is pumped through a pipeline onto the receiver beach for

beach placement. Following pipeline transport, the sand is uniformly spread over the beach using conventional earth moving equipment. Approximately 10,000 to 40,000 CY of sediment can be piped to the beach per day using a hydraulic dredge. Additional construction equipment typically required to support dredging activities are conventional earth moving equipment and support vessels (i.e. an anchor tender, a pipe tender, tug vessels, and a crew boat).

**Clamshell Dredge.** This method consists of a crane mounted on a barge outfitted with a clamshell bucket and a scow. Dredged materials are placed into a scow for transport to the Nearshore Placement Site. Approximately 4,000 to 10,000 CY of sediment can be removed and transported to the Nearshore Placement Site per day using a clamshell dredge. Additional construction equipment typically required to support dredging activities are support vessels (i.e. tug vessels and a crew boat).

Table 1. Potential Dredge Types and Placement Options

| **Dredge Template Location** | **Dredge Type(s)** | **Placement Method** | **Placement Site Location(s)** |
|---|---|---|---|
| Channel Islands Harbor Dredge Template (Areas A, B, C, D, E*, & G) | Hydraulic Pipeline Dredge | Beach Placement | Silver Strand Beach, Hueneme Beach |
| Channel Islands Harbor Area A | Clamshell Dredge | Nearshore Placement | Hueneme Nearshore Placement Site |
| Port Hueneme Harbor Dredge Template | Hydraulic Pipeline Dredge | Beach Placement | Silver Strand Beach, Hueneme Beach |
| Port Hueneme Harbor Dredge Template | Clamshell Dredge | Nearshore Placement | Hueneme Nearshore Placement Site |

*****Portion of Area E material currently approved for dredging is only deemed suitable for beach placement at the Hueneme Beach Placement Site.

Table 2: Dredge Quantities and Placement Location Options

| **Dredge Template Location** | **Maximum Dredge Quantity per Cycle (in CY)** | **Placement Site Location Options** |
|---|---|---|
| Channel Islands Harbor | 2.5 million | Hueneme Beach<br>Silver Strand Beach (max 250,000 CY per cycle, Area E material excluded)<br>Hueneme Nearshore Placement Site (Area A dredge material only) |
| Port Hueneme Harbor | 250,000 | Hueneme Beach<br>Hueneme Nearshore Placement Site<br>Silver Strand Beach |

Figure 1. Regional Vicinity Map

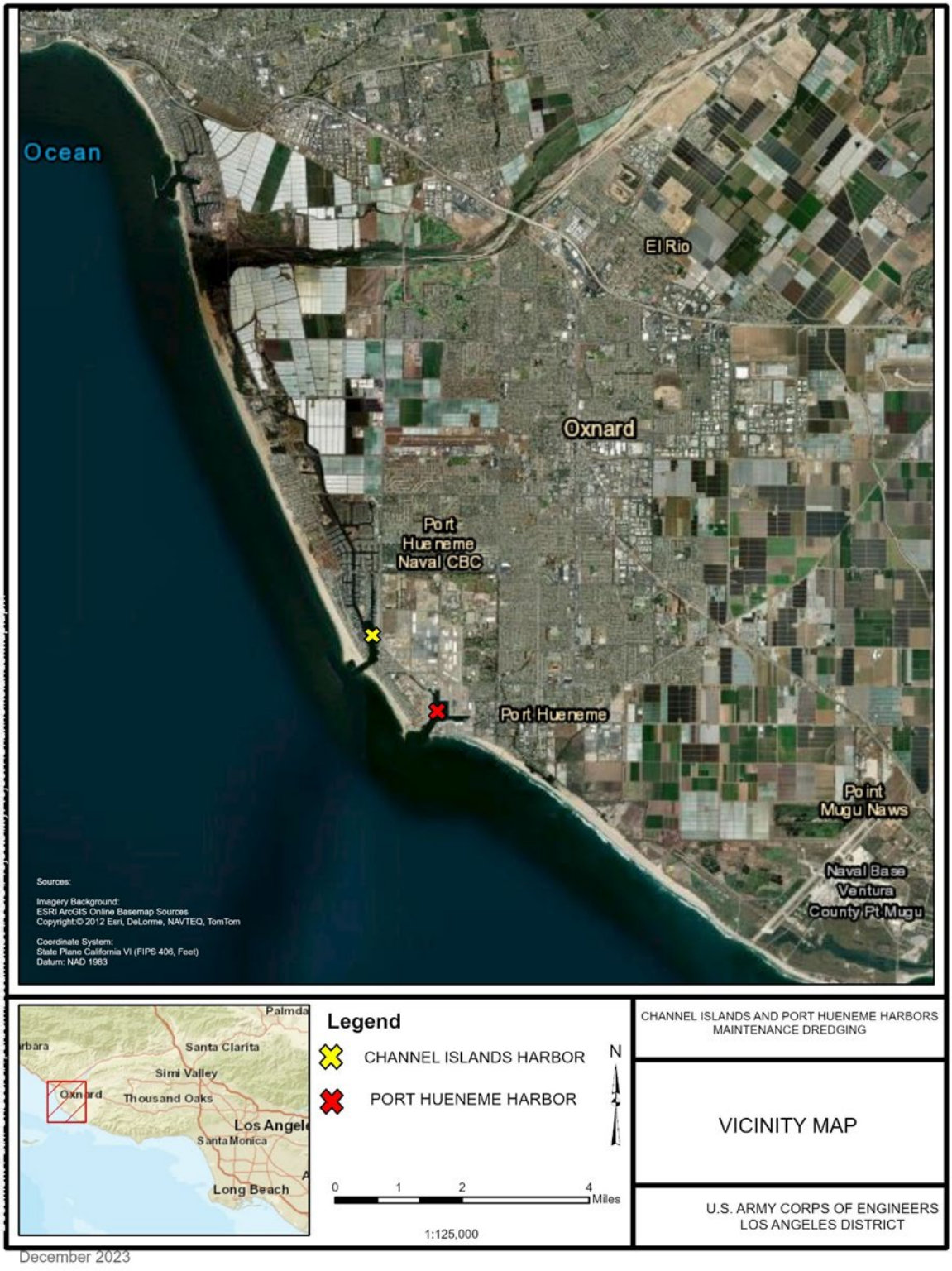
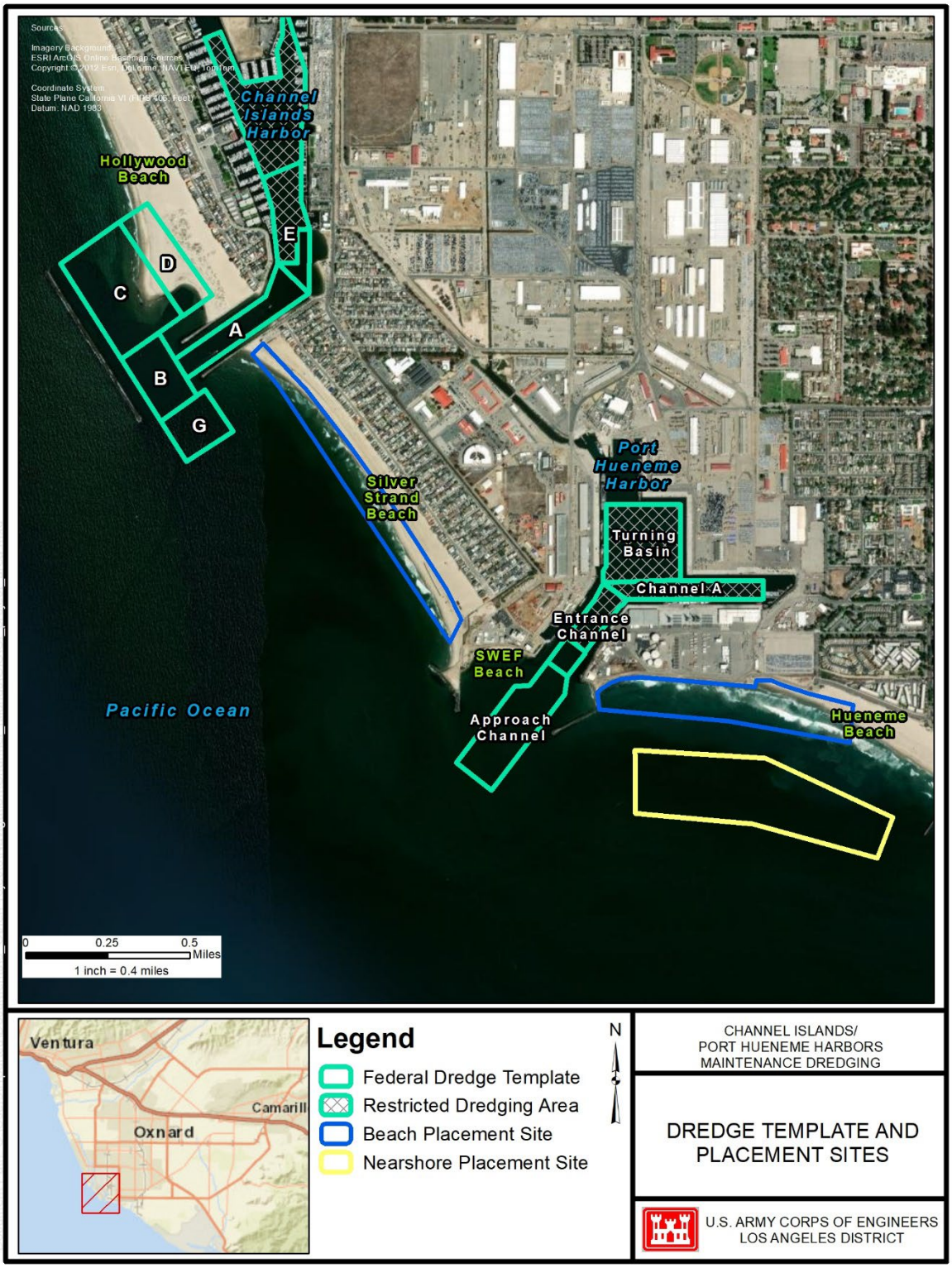


Figure 2. Project Area (Dredge Template and Placement Sites)




January 2024

Figure 3. Project Area North

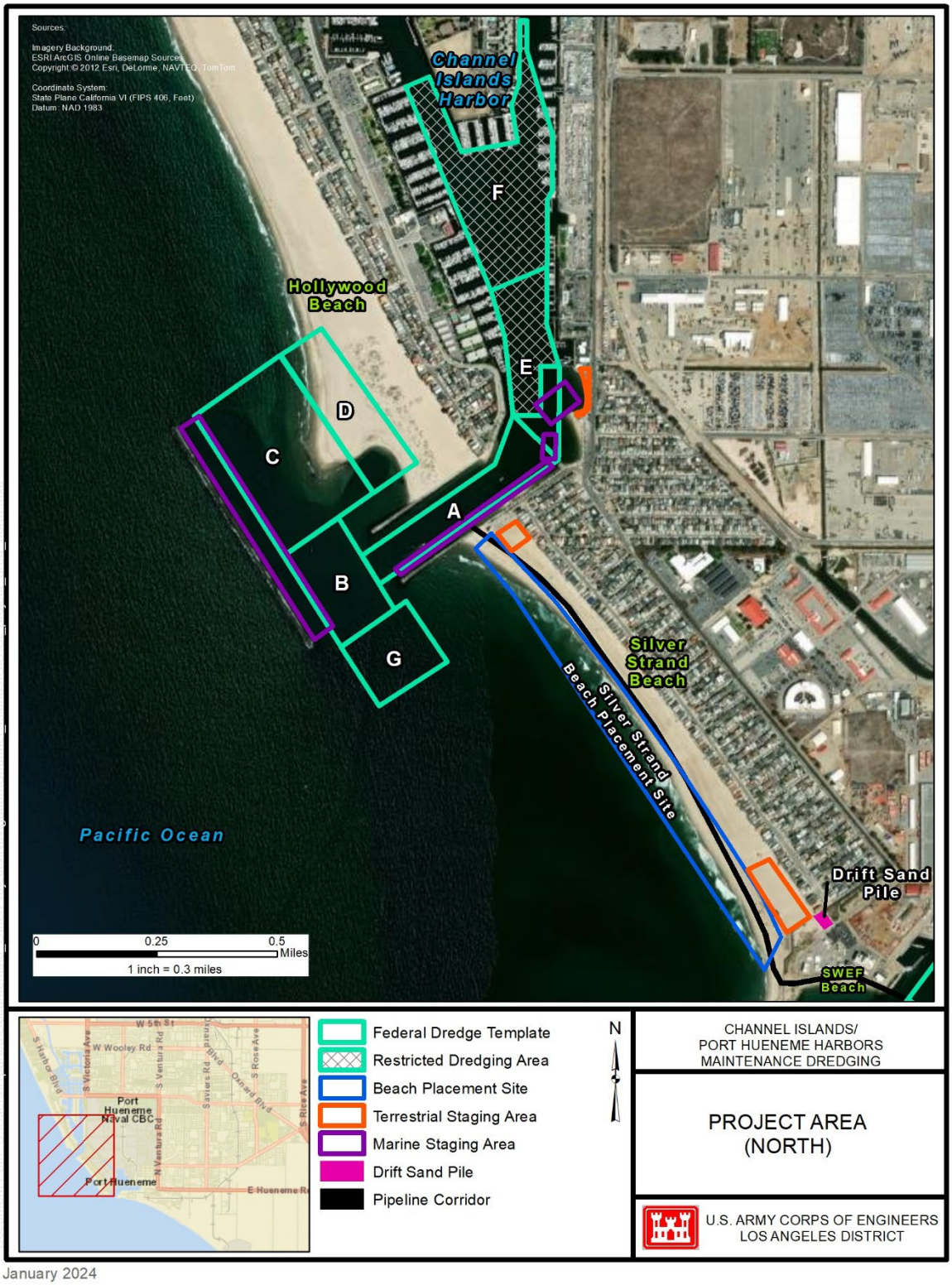


Figure 4. Project Area South

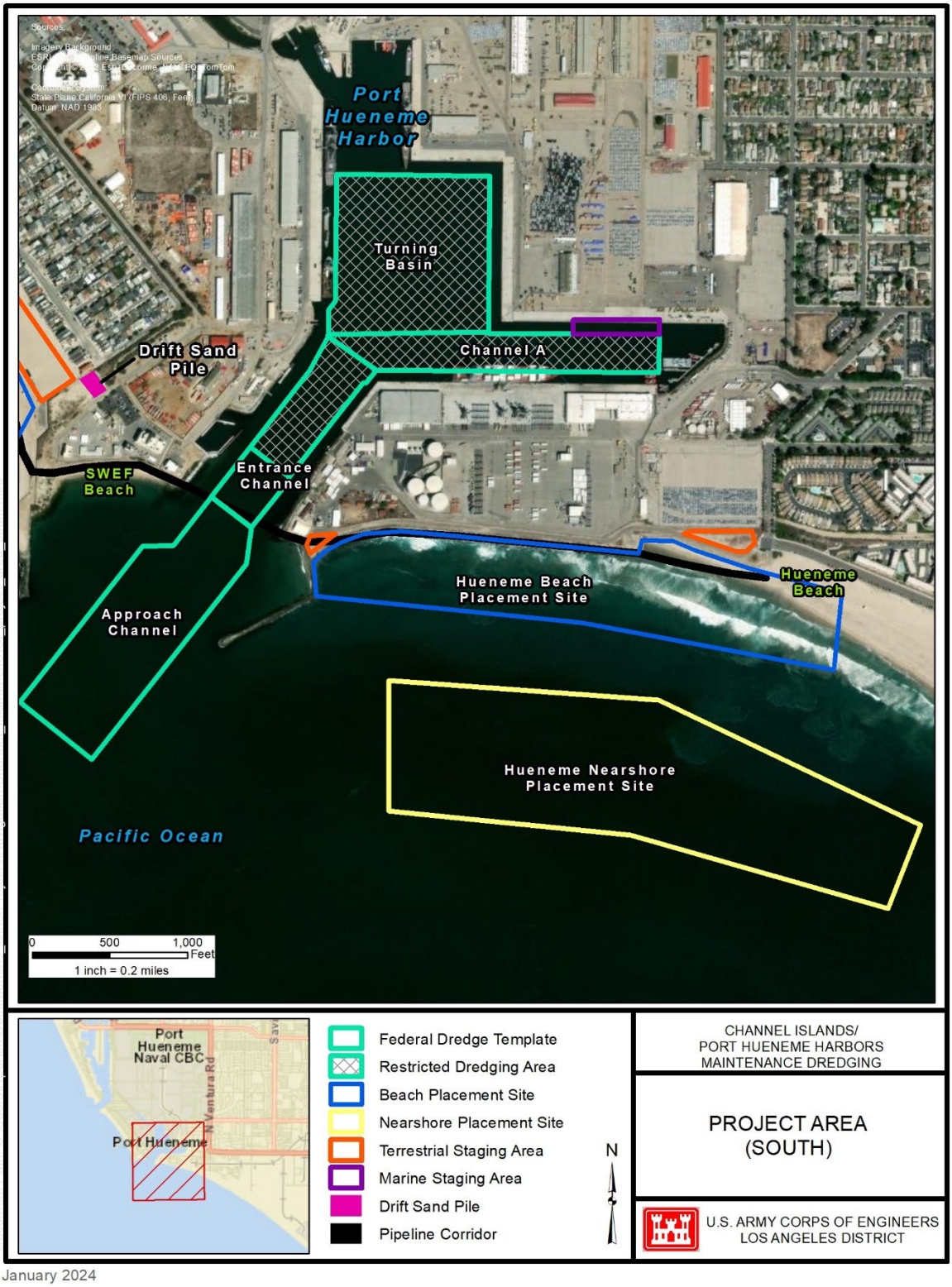


Figure 5. Fiscal Year (FY) 2023 Dredging Dune Impacts

Figure 6. Potential Impacts to Hollywood Beach Dunes

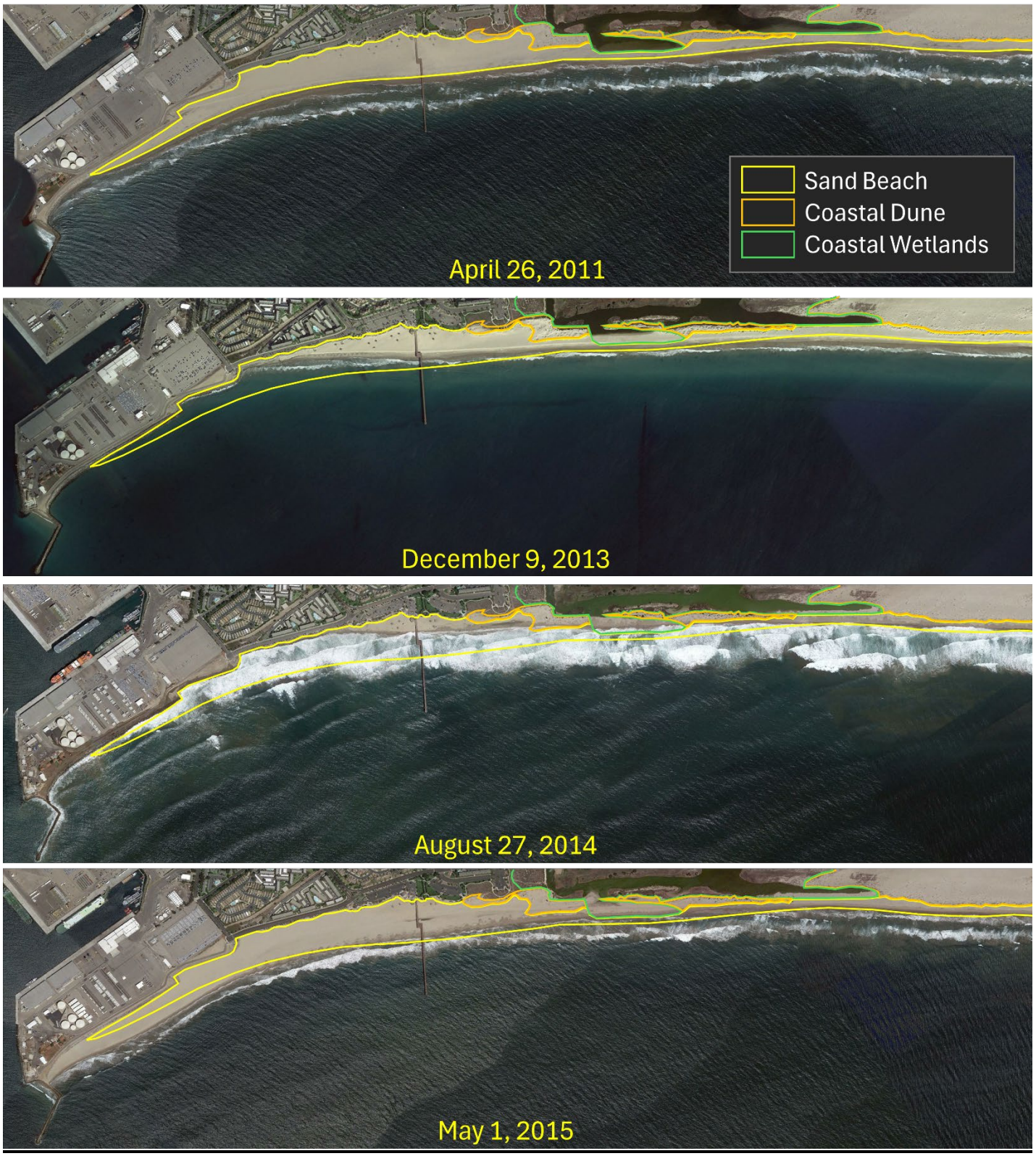
## 3.3 Purpose and Need for the Project

### *3.3.1 Need for the Project*

Federal navigation channels within Channel Islands and Port Hueneme Harbors are subject to continual infill of sand from littoral processes. Without frequent dredging, sediment would eventually shoal the channels to such an extent that vessels would not be able to navigate safely. Degradation of safe navigation into and out of Channel Islands and Port Hueneme Harbors would have significant economic impact to the region, disrupting commerce from the industrialized port facilities of Port Hueneme, and adversely effecting commercial and recreational benefits associated with Channel Islands Harbor. This would also adversely affect U.S. Coast Guard and Navy operations from these harbor facilities.

In addition, the presence of Port Hueneme Harbor interrupts the natural transport of sand, resulting in decreased nourishment and increased erosion of downcoast beaches. This creates infrastructure exposure and damage, as well as resulting in natural resource and recreational shoreline impacts associated with beach and dune erosion along immediately adjacent downcoast Beaches, such as Hueneme and Ormond Beach, and some loss of coastal salt marsh and brackish marsh along the beach edge of Ormond Lagoon. An example of the role of the bypass nourishment importance to down coast beaches can be seen in the photographic chronology of beach conditions prior to, during, and following a period of reduced bypass during the 2010-2011 and 2013-2014 period when only 732,000 cy and 400,000 cy, respectively were passed to the downcoast receiver beach, Hueneme Beach. When sand is not bypassed, or a smaller volume of sand is bypassed onto Hueneme Beach, the beaches downcoast of Port Hueneme Harbor erode quickly. In a matter of a few years (2 to 4 years), the beach fronting East Surfside Drive will erode back to the street as far east as the Hueneme Pier and the beach will continue to erode downcoast, including Ormond Beach. This results in recreational, infrastructure, and natural resource damage. A photo chronology illustrates beach, dune, and lagoon wetland impacts due to erosion during this period (Figure 7).

Figure 7. Photographic history of the low nourishment period of 2013-2014 illustrating beach, dune, and lagoon damage occurring downcoast of Port Hueneme due to shoreline erosion



Hueneme Beach in Oxnard, CA – 24 April 2013 following 400,000 CY Sand Placement (Photo by Jeff Cole)

### *3.3.2 Purpose of the Project*

The project would serve the following purposes: (1) maintain the Federal navigation channels and sand traps at authorized depths and widths which are subject to continual filling by littoral transport processes; (2) assure the continued safe navigation for maritime traffic within the harbors by minimizing the risk of hazardous shoaling conditions; and (3) provide beach nourishment material for downcoast beaches (Silver Strand and Hueneme Beach, and further downcoast areas such as Ormond Beach). This has been deemed a federal responsibility under the Rivers and Harbors Act.

## 3.4 Benefits and Environmental Considerations

### *3.4.1 Benefits*

Benefits of the proposed project include maintaining conditions for a safe and navigable harbor and providing sand bypass for beach replenishment of downcoast beaches that would experience erosion due to the harbor's disruption of the longshore transport of sand. Beach replenishment is necessary to provide sandy material for the beaches aiding in shoreline protection, coastal habitat function, and recreational uses. Beach replenishment through placement of dredged materials is considered a beneficial use. The proposed project would ensure Channel Islands and Port Hueneme Harbors are properly maintained to ensure safe navigation and harbor operations, as well as providing sand bypass material into the littoral cell.

### *3.4.2 Environmental Considerations*

The environmental resources documented to occur within the proposed Action Area requiring consultations/coordination with respective resource agencies are as follows:

- Federally Listed Species
  - California Least Tern
  - Western Snowy Plover
  - Western Snowy Plover Designated Critical Habitat

- Essential Fish Habitat
- Environmentally Sensitive Habitat - Coastal Foredunes

### 3.5 Resource Agency Coordination

The Corps presented the Proposed Action to the SC-DMMT, which includes USEPA, California Coastal Commission (CCC), and the Regional Water Quality Control Board (RWQCB), on January 24, 2024, to confirm dredged material suitability for beach and nearshore placement. The suitability determination is reflected in the Proposed Action project description.

A pre-filing meeting request was submitted to the Los Angeles Regional Water Quality Control Board (LARWQCB) on December 12, 2023, and the pre-filing meeting was held on January 11, 2024. A request for water quality certification pursuant to section 401 of the Clean Water Act was submitted to the LARWQCB on February 9, 2024.

The Corps has consulted with the State Historic Preservation Officer (SHPO) and reached out to Native American tribes regarding the ongoing maintenance dredging of the harbors, placement of the material to restore Hueneme and Silver Strand Beaches, and planned plover and least tern habitat mitigation on Hollywood Beach. On December 23, 2022, the Corps received concurrence from the SHPO regarding a finding of no effect on historic properties and a continued "no objection" to the undertaking. Consultation was reinitiated on February 2, 2024 in order to include the cumulative removal of up to approximately 10,000 cubic yards of windblown sand deposits throughout the six-year period from a 30-ft tall pile along the Naval Base Ventura County Port Hueneme fence line that will be used to secure the dredge pipe along SWEF Beach as needed. On March 5, 2024, the Corps received concurrence from the SHPO regarding a finding of no effect on historic properties and a continued "no objection" to the undertaking.

In accordance with the 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act, an assessment of Essential Fish Habitat (EFH) has been conducted for the Proposed Action. The Corps concluded that the Proposed Action would not result in a substantial, adverse impact to EFH. NMFS concurred with the Corps' determination on February 29, 2024.

Formal consultation with the USFWS to address potential indirect impacts to federally listed endangered California Least Tern (CLT), federally listed threatened Western Snowy Plover (WSP) and associated WSP critical habitat resulting from maintenance dredging was initiated by the Corps in August 2022. USFWS responded with a Biological Opinion December 15, 2022. The BO called for implementation of measures to offset unavoidable impacts to listed species and critical habitat due to the recurring maintenance dredging. This includes conservation measures built into the project action, as well as habitat mitigation and management. The Corps is proposing to comply with BO requirements through implementation of the *Hollywood Beach Western Snowy Plover Habitat Expansion and Enhancement Plan, Channel Islands/Port Hueneme Harbors Maintenance Dredging Project, Ventura County, California* (Merkel & Associates 2024). The plan calls for protecting, expanding and enhancing dune and natal dune habitat within and to the north of the existing dune fields, implement monitoring and species and habitat management actions over a 5-year period, and

document and report on the effectiveness of the actions, in order to offset impacts. This plan is found in the Appendix 1 of this CD and is considered to be part of the proposed action, although details are subject to change based on further coordination with and review by the USFWS.

# 4 PROJECT ALTERNATIVES

The Rivers and Harbors Act directs dredging operations to occur specifically at Channel Islands Harbor and Port Hueneme Harbor and placement at local downcoast beaches, no other alternative dredge sites or placement sites are considered viable. Therefore, no other alternative sites are analyzed. Various recommendations such as reducing frequency or amount of dredging have been put forward as a means that may potentially exist to reduce dune and beach impact levels within and adjacent to the sand trap. Some of these recommendations would not meet the purpose and need of the project and are not consistent with project authorization, and therefore those options would not be carried forward as alternatives for the NEPA analysis, but are addressed below.

Section 2 of the Rivers and Harbors Act of 1945 (Public Law 79-14) authorizes maintenance dredging at Channel Islands Harbor to ensure continued safe navigability within the harbor and to provide suitable materials for replenishment of local beaches. Over the life of the project dredge quantities have varied due to sand availability and/or funding constraints, however the proposed action is consistent with historic practice and the Congressional authorization.

## 4.1 Considerations Related to Dredge Frequency (Scheduling Options)

Some of the recommendations considered differ in the frequency of dredging and placement over the 6-year action period. The following scheduling options have been considered:

- Option 1: Dredge biennially (preferred action)
- Option 2: Dredge annually
- Option 3: One dredging episode every 6 years
- No Action

### *4.1.1 Option 1- Biennial Dredging of Channel Islands Harbor (Proposed Action)*

Under Option 1, dredging would occur biennially (every two years) with up to 2.5 million cubic yards (mcy) of sand being harvested from Channel Island Harbor and up to 250,000 cy of sediment being dredged from Port Hueneme Harbor. Suitable sandy sediment would be transported to downcoast receiver beaches. Option 1 is the preferred alternative for Channel Islands Harbor because it would allow maximum sediment loading within the dredge template while still allowing for safe navigability for the Channel Islands Harbor. However, the amount of sediment buildup in the Port Hueneme Harbor is not normally sufficient to require biennial dredging.

### *4.1.2 Option 2- Annual Dredging*

Under Option 2, dredging would occur annually (once per year) with a presumptive reduction in dredge volumes to approximately half of the volume dredged biennially under Option 1. This would provide a more regular supply of sand for local beach nourishment. However, the amount of sediment

buildup in the harbors is typically not sufficient to justify annual dredging.

Annual dredging may reduce the extent of dune footprint effects as a result of sand trap excavation due to less drastic changes between dredged conditions and a stable equilibrium beach condition. However, annual dredging is more likely to require dredging of the full sand trap template in order to secure the necessary bypass sediment volume in some years. This can be expected to result in an initial fore-beach and fore dune loss that is never recovered during the 6-year action period due to repeated harvesting before the beach is allowed to fully accrete and build to elevations suitable to support natal foredune development as presently occurs between dredge cycles.

The lack of dry beach and natal dune development under this option would be expected to have an impact on beach suitability for use by western snowy plover. This change would also reduce the availability of recreational beach habitat within the highly desirable area of the sand trap where wave energy is blocked by the detached breakwater.

Annual dredging would deliver an annual supply of sand to the down coast beaches and would reduce the overall fluctuation in beach width and dune habitat development in areas at Silver Strand, Hueneme Beach, and on Ormond Beach. It is not clear whether this change in frequency would translate into increases or decreases in the amount of dune development or persistence on Ormond Beach. While the annual passage of sand would provide a more stable supply, the amount of beach development at any point in time would be less and thus there would be less beach width over which aeolian sand transport could occur. This is important to the development of dunes.

### *4.1.3 Option 3- Single Dredge Episode*

Under Option 3, a single dredge event would occur within a 6-year cycle with a total of approximately 8.25 mcy of dredging. This option is not considered feasible for Channel Islands Harbor because this would result in unacceptable shoaling in the harbor and its channels resulting in navigational hazards and unacceptable erosion of down coast beaches. This option would allow maximum channel sediment loading while still allowing for safe navigability for Port Hueneme Harbor. There is a high potential that sediment would accumulate at a rate that would create a beach bridge from Hollywood Beach out to the detached breakwater leading to discharge of sand around the detached breakwater where it would be unretrievable for beach nourishment reuse.

### *4.1.4 No Action Option*

The No Action Option would allow the harbors to shoal which would eventually result in a condition of unsafe or impassable navigation conditions. Eventual harbor closures could result. This would result in a loss to recreational, commercial, and national security operations. There is also potential for danger to life and property if the harbors are not maintained at safe depths. Without nourishment, the downcoast local beaches would continue to erode and deteriorate. This would eventually impact beach visitation, reducing the value of the recreational experience. In addition, downcoast erosion would result in a loss of sandy beach, coastal dune, and estuary habitat. Loss of use would result in serious economic losses to the local community. Losses of down coast beaches would also result in an increased risk of storm damage as a result of narrowed beaches allowing storm waves to overtop coastal protection structures designed to function behind beaches. This alternative is inconsistent with Congressional mandate and federal obligations to maintain navigational improvements.

## 4.2 Other Recommendations Considered Related to Dredge Limits and Quantity

In addition to the options outlined above that would be consistent with the federally authorized Project, various other options have been put forth as recommendations to meet the navigational maintenance requirements and bypass adequate sand volumes to supplement sand supply to adjacent downcoast shorelines. As stated previously, dredging outside of the authorized federal dredge template (such as north of the sand trap, offshore, or to greater depths within the template) is not feasible or viable due to the constraints of the currently authorized project. Furthermore, these recommendations would not result in lesser impacts to marine/coastal resources than the proposed action. These additional recommendations are discussed below.

### *4.2.1 Recommendation 1- Bypass Sand from North of the Detached Breakwater*

The initial concept of the present sand bypass was similar, in that it involved conducting nearshore borrow from unprotected areas along Hollywood Beach to be bypassed to areas down coast of Port Hueneme. However, it was determined after attempts, that this could not be achieved without protection. This determination led to the detached breakwater construction for safe implementation of the sand bypass project. Should an alternative site away from dunes be advanced, it would require a similar detached breakwater for protection and would ultimately develop dunes adjacent to and within the borrow site as has occurred with the present detached breakwater/sand trap configuration. As a result, this concept would result in impacts from the new breakwater, and would ultimately have the same effects on dredging conflicts with the sand dunes that will ultimately develop behind the new detached breakwater.

### *4.2.2 Recommendation 2- Modify Dredge Template to Create a Buffer Zone Around Existing Dunes/Excavate the Sand Trap to Greater Depths further from the Beach*

Under this concept the dredge template would be modified to create a buffer zone around the existing sand dunes, sand would then be excavated deeper within the outer portions of the sand trap to harvest the project volumes with less encroachment towards the beach. This would allow the requisite 2.5 mcy to be bypassed with an anticipated reduced impact to dunes. At present areas of the sand trap are dredged to -37 feet (-35 feet MLLW plus 2 feet of authorized overdepth). Deeper dredging would begin to threaten the stability of the detached breakwater toe and north jetty toe due to undermining the breakwater and jetty bases. In addition, sediment at greater depths is less coarse than the shallower sand and would likely not be deemed suitable by the SC-DMMT to meeting the objectives of beach nourishment.

Finally, if deeper dredging were limited to sand trap Area C, each additional foot of depth would only add approximately 2 percent of the total volume required but would contribute at a lesser value due to reduced sediment grain size and increased risk of damage to navigation structures.

### *4.2.3 Recommendation 3- Harvest Additional Sand from Hollywood Beach*

Hollywood Beach is building in width and elevation as a result of accumulation of sand driven by the navigational improvements as well as natural dynamics of waves, wind, and the proximate Santa Clara River. It may be possible to harvest sand from the up-coast high beach to make up deficits associated with a smaller dredge project that results in less extensive effects to the dunes. This would have the effect of lowering the beach profile and potentially narrowing the upcoast beach, which

would be counter to early planning for sea level rise protection in this area that calls for more beach elevation and dune development over time (County of Ventura Resource Management Agency - Planning Division 2019. VC Resilient Coastal Adaptation Project Seal Level Rise Adaptation Strategies Report).

### *4.2.4 Recommendation 4- Offshore Borrow Site*

This scenario is similar to that of the initial project directive of 1953-54 to harvest sand from the active transport cell and bypass Port Hueneme for placement, except that it would rely on offshore borrow, thereby reducing the complexity of dredging. This would likely be performed by hopper dredge rather than suction cutterhead or clam shell dredging with a subline to pump back to the beach. This approach is not consistent with project implementing legislation (Section 2 of the Rivers and Harbors Act of 1945 (Public Law 79-14)) but has merit as a standalone nourishment action to make up deficits in littoral sand. However, due the large volume of sand required to be bypassed, this approach would be unsustainable long-term and could not achieve the navigational inlet protection requirements afforded by the proposed action.

## 5 CONSISTENCY WITH PROVISIONS OF THE CALIFORNIA COASTAL ACT (CCA)

The CCMP contains enforceable policies to meet the requirements of 15 CFR 930.39. The proposed project is consistent to the maximum extent practicable, with supporting data and information, to meet the requirements of 15 CFR 930.39.

### 5.1 CCA, Chapter 3, Article 1, General, Section 30020

Section 30200 of the CCA provides polices as standards, and resolution of policy conflicts. This section provides:

*Section 30200: Policies as standards; resolution of policy conflicts*
*(a) Consistent with the coastal zone values cited in Section 30001 and the basic goals set forth in Section 30001.5, and except as may be otherwise specifically provided in this division, the policies of this chapter shall constitute the standards by which the adequacy of local coastal programs, as provided in Chapter 6 (commencing with Section 30500), and, the permissibility of proposed developments subject to the provisions of this division are determined. All public agencies carrying out or supporting activities outside the coastal zone that could have a direct impact on resources within the coastal zone shall consider the effect of such actions on coastal zone resources in order to assure that these policies are achieved.*

The Proposed Action is required to: (1) maintain the Federal navigation channels and sand traps at authorized depths and widths which are subject to continual filling by littoral transport processes; (2) assure the continued safe navigation for maritime traffic within the harbors by minimizing the risk of hazardous shoaling conditions; and (3) provide beach nourishment material for downcoast beaches (Silver Strand and Hueneme Beach), severely eroded by the harbor disruption of the longshore transport of sand.

Federal navigation channels within Channel Islands and Port Hueneme Harbors are subject to continual

infill of sand from littoral processes. Without frequent dredging, sediment would eventually change the bathymetry to such an extent that vessels would not be able to navigate safely. In addition, the presence of the harbors interrupts the natural transport of sand, resulting in decreased nourishment and increased erosion of downcoast beaches.

The methods of dredging would not result in significant adverse environmental impacts to the project area and the surrounding environments. Upon completion of the proposed project, the environment within the coastal zone would return to pre-project conditions. Therefore, the Proposed Action would have less than significant impacts to the environment within the coastal zone.

The Corps finds that the Proposed Action is consistent with the general policies of the CCA (Section 30200) and consistent with the coastal zone values (Section 30200(a); Section 30001) and the basic goals (Section 30001.5).

## 5.2 CCA, Chapter 3, Article 2, Public Access, Sections 30210-30214

Sections 30210 through 30214 of the CCA require the protection of public access. These sections provide:

*Section 30210: Access; recreational opportunities; posting*
*In carrying out the requirements of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners and natural resource areas from overuse.*

*Section 30211:*
*Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

*Section 30212: New development projects*
*(a) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where:*
*(1) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources,*
*(2) adequate access exists nearby.*

*Section 30212.5: Public facilities, distribution*
*Wherever appropriate and feasible, public facilities, including parking areas or facilities, shall be distributed throughout an area so as to mitigate against the impacts, social and otherwise, of overcrowding.*

*Section 30213: Lower cost visitor and recreational facilities; encouragement and provision; overnight room rentals*
*Lower cost visitor and recreational facilities shall be protected, encouraged, and, where*

*feasible, provided. Developments providing public recreational opportunities are preferred.*

In order to implement mitigation requirements for impacts to dune habitat and federally listed species as stipulated in the [December 15, 2022] biological opinion, the Corps plans to expand and enhance dune habitat on Hollywood Beach. This would alter public use of the beach by using symbolic fencing to curtail trampling of dunes and disturbance of nesting and roosting areas. The location of the expansion would be situated on the middle portion of broad beach that avoids the surfline forebeach and crest beach areas where water oriented activities are concentrated, and will also avoid the back beach where higher activity levels of organized beach use occur. Passage through the habitat expansion area would be provided in line with all existing public access to the beach to allow for shore normal movement patterns that typically occur across this mid beach area. The approach retains ample beach area, as restoration activities would occur in areas that are underutilized at this time. Planned restoration would not conflict with recreational opportunities, but would provide opportunities for multipurpose beach functions.

Dredging related activities would affect only those areas within the project's Action Area. Public access to the affected marine waters and beaches may be restricted during the dredging cycle to ensure public safety, but restrictions would remain limited to those marine waters being occupied by the working dredge operations and beaches actively receiving nourishment, and access would return to normal after dredging and placement activities are completed.

To the extent practicable, adequate public access to Port Hueneme and Channel Islands Harbors would be available during dredging and placement activities and dredging would not interfere with general public access or with public parking/docking in these locations. Navigational impacts would be minimized during dredging by issuing a Notice to Mariners and properly marking the active dredging areas so that public would safely avoid the immediately affected project area. The public's right of access to the sea, surrounding areas, and associated recreation facilities would not be interfered with and would not result in a physical encroachment upon such facilities, including public access, public parking/docking, and navigation to and from shore. Upon completion of the proposed project, full and unimpeded public access would return to pre-project conditions. Therefore, the Proposed Action would have less than significant impacts to public access.

The Corps finds that the Proposed Action is consistent with the public access policies of the CCA (Sections 30210 through 30214).

## 5.3 CCA, Chapter 3, Article 3, Recreation, Sections 30220-30224

Sections 30220 through 30224 of the CCA require the protection of recreation. These sections provide:

*Section 30220: Protection of certain water-oriented activities*
*Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.*

Port Hueneme Harbor is a shared port between the Naval Base Ventura County and Oxnard Harbor District. The port is utilized for commercial use, industrial use, and is an operating

facility of Naval Base Ventura County. It is not used for recreational purposes. SWEF Beach is Navy Property that is fenced in and does not allow public access. Therefore, any impacts to SWEF Beach will not affect the public. However, Hueneme Beach and the paved walkway along the beach immediately adjacent to Port Hueneme Harbor is used for recreational purposes by beach goers. Channel Islands Harbor is a small craft harbor providing important recreational resources for the regional and local area. These recreational uses include boating, fishing, whale watching, and beach activities on surrounding beaches (Silver Strand Beach and Hollywood Beach).

The Proposed Action would not impede recreational boating, fishing, or whale watching as public access to Channel Islands Harbor will remain unaffected to the extent practicable. Navigational impacts would be minimized during dredging by issuing a Notice to Mariners and properly marking the immediate dredging area so that surfers, kayakers, and boaters would be able to safely avoid the immediate project area. Dredging of shoaled material from the harbor would improve navigational safety.

Public access to portions of the beaches (Silver Strand Beach and Hueneme Beach) may be restricted within limited areas while the construction contractor mobilizes/demobilizes equipment or while placing dredged materials to ensure public safety, however, restrictions will be temporary in nature, be limited to only a small portion of the total available beach, and be relatively short in duration (ranging from days to a few months every other year depending on the specific construction activity, location within the project area, weather delays, and efficiency of contractor's equipment).

Once the project is complete, public access will be restored to pre-project conditions. The proposed project would improve the navigational safety and enhance and maintain the overall recreational values by renourishing the beach. Upon project completion, recreation would return to pre-project conditions. Impacts would be less than significant.

The Corps finds that the Proposed Action is consistent with the recreation policies of the CCA (Sections 30220 through 30224 of the CCA).

## 5.4 CCA, Chapter 3, Article 4, Marine Environment, Sections 30230-30237

Sections 30230 through 30237 of the CCA require the protection of marine environment. These sections provide:

*Section 30230. Marine resources; maintenance*
*Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long- term commercial, recreational, scientific, and educational purposes.*

*Section 30231. Biological productivity; water quality*

*The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of wastewater discharges and entrainment, controlling runoff, preventing depletion of groundwater supplies and substantial interference with surface water flow.*

*Section 30233(a) Diking, filling or dredging; continued movement of sediment and nutrients of the CCA applies to dredging and filling activities and provides in relevant part:*

> *(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:*
>
> *(5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.*

*Section 30233(b) encourages beach replenishment, requires disposal to occur in a manner protecting sensitive habitat, and provides:*

> *(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable long shore current systems.*

*Impacted Marine Resources:*
The dominant marine habitat in the immediate project area includes the marine waters and sandy bottom benthic habitat of the Federal Navigation Channels' maintenance dredging template, and the sandy bottom benthic intertidal and subtidal habitat of the Beach Placement Sites and Nearshore Placement Site. Marine habitats along the margins and immediately adjacent to the project area are dominated by sandy bottom benthic habitat and in some areas the artificial rocky habitats created by the surrounding jetties and breakwater. Canopy kelp occurs intermittently on the outside of the Federal Navigation Channel and within artificial rocky substrate of the breakwater and jetty structures. The proposed dredge template and placement sites experience sandy bottom benthic habitat disturbance due to both the annual maintenance dredging activities and highly active natural littoral transport processes occurring in the littoral cell. The dredging and placement operations would result in temporary disturbance to sandy benthic habitat and temporary increases in turbidity. Mobile organisms may leave and/or avoid the area. Impacts to benthic invertebrate and fish species within the project footprint may include direct mortality of organisms due to direct impacts such as removal/burial/crushing/entrainment of organisms, and indirect impacts caused by temporary turbidity plumes. Turbidity caused by dredging activities would normally subside within an hour to 24 hours after dredging has completed as suspended sediments begin to settle. Displaced organisms from dredging and placement activities would likely begin to quickly recolonize the areas impacted by dredging and placement activities once construction is complete.

The environmental resources documented to occur within the proposed Action Area requiring consultations/coordination with respective resource agencies are as follows:

- Federally Listed Species
  - California Least Tern
  - Western Snowy Plover
  - Western Snowy Plover Designated Critical Habitat
- Essential Fish Habitat

*Federally Listed Species*
Pursuant to section 7 of the Endangered Species Act of 1973, as amended, the Corps determined that ongoing maintenance dredging may adversely affect the federally listed endangered California Least Tern (*Sternula antillarum browni*), federally listed threatened Western Snowy Plover (*Charadrinus nivosus nivosus*), and associated Western Snowy Plover Designated Critical Habitat. Formal consultation pursuant to section 7 of the ESA of 1973, as amended, was initiated with USFWS on August 31, 2022, and was completed with receipt of a Biological Opinion (BO) from USFWS on December 15, 2022. For a complete evaluation of the potential effects to the species and habitats protected under the Endangered Species Act see the Biological Assessment (Appendix 1). The Corps will continue to implement the avoidance and minimization measures and terms and conditions of the Incidental Take Statement outlined in the BO (Appendix 1).

*Essential Fish Habitat (EFH)*
In this section, direct impacts are defined or described as injury or mortality to fish from direct entrainment or burial, or changes to habitat that would occur as a result of dredging, placement or movement and maintenance of pipeline, or dredged material placement activities. Indirect impacts would potentially be caused by plumes of suspended sediment or changes in water quality that could occur as a result of dredging or placement activities and that may extend beyond the direct dredge template.

While proposed dredging and placement operations would be short-term in duration and localized, recurrent direct and indirect impacts to fish species and EFH would occur primarily due to benthic disturbance and elevated turbidity. The proposed dredge template and placement areas experience sandy bottom benthic habitat disturbance due to both the biennial maintenance dredging activities and highly active natural littoral transport processes occurring in the littoral cell. The dredging and placement operations could result in temporary disturbance to sandy benthic habitat, loss of fish foraging habitat, prey, and temporary increases in turbidity. Impacts to EFH within the project footprint may include direct mortality of organisms due to direct impacts such as removal/burial/crushing of organisms, and indirect impacts such as; temporary turbidity plumes and suspension of sediments from propeller wash, release of contaminants from equipment, entrainment, and noise. Direct disturbance to sandy benthic habitat due to removal/burial/crushing of organisms and water quality impacts would be considered potential adverse impacts to EFH. Turbidity caused by dredging activities would subside within an hour to 24 hours after dredging has completed as suspended sediments begin to settle. Displaced organisms from dredging and disposal activities would likely begin to quickly recolonize the areas impacted by dredging and placement activities once construction is complete (Merkel & Associates, 2010). Some fish may avoid the immediate project area during dredging and placement operations because of the

increased turbidity, noise levels, and oxygen depletion caused by dredging operations. Other fish species may be attracted to the surf zone or nearshore area to feed on mollusks, crustaceans, and other organisms which may have been caught up in, or exposed by, the dredged material. The localized and limited project area is a small percentage of available open water and sandy bottom benthic habitat therefore fish movement and migration would not be impeded due to dredging and placement activities. While turbidity at the placement site could be more extensive than that at the dredge location, the surf zone has naturally high turbidity due to wave action.

For the Pacific region, EFH has been identified for a total of over 119 species covered by four FMPs under the auspices of the Pacific Fishery Management Council; Coastal Pelagic Species FMP, Pacific Coast Groundfish FMP, Pacific Coast Salmon FMP, and Highly Migratory Species FMP. Species managed under two of the FMPs have the potential to occur within the project area. The National Oceanic and Atmospheric Administration's (NOAA's) EFH Mapper (https://www.habitat.noaa.gov/apps/efhmapper) identified the harbors and surrounding project area as EFH for all life stages for groundfish and coastal pelagic finfish, and krill (*Thysonoessa spinifera*, *Euphausia pacifica*, and other krill species). Several of the species managed under the Pacific Coast Groundfish FMP and Coastal Pelagic Species FMP are known to occur commonly within the project area. In addition, many species identified as Ecosystem Component Species under the Pacific Groundfish Management Plan are present in the project area. Furthermore, many other native marine fish in the project area undoubtedly serve as prey for many of the managed species.

Within the project area no HAPC components are present, however an eelgrass survey will be conducted prior to each biennial dredge cycle to confirm the absence of eelgrass within the applicable project area. In the unlikely event the nearshore placement method would be utilized a pre-construction eelgrass survey would be conducted of the nearshore placement site to confirm the absence of eelgrass. An annual pre-construction survey for Caulerpa species would be conducted prior to each biennial dredge cycle to ensure invasive Caulerpa species are not present within the dredge template and applicable surrounding project area.

The dredging operation would be monitored to ensure that any substantial increases in turbidity or decreases in dissolved oxygen are restricted to the immediate area around the dredge, and that these impacts dissipate within 300 feet of the dredge. The monitoring program also includes reporting requirements and measures that would be taken if impacts exceed acceptable levels. Greater potential for impacts would exist if there were substantial amounts of fine sediments in the dredging template; however, testing of samples of material to be dredged indicated that grain sizes are predominately fine to medium grain sands (USACE, 2024). This material settles quickly instead of remaining suspended in the water column.

With the minimization and avoidance measures outlined above to monitor and control water quality, and survey to ensure no eelgrass or Caulerpa species are within the project area, the Corps has determined the Proposed Action may result in a temporary adverse effect to EFH, but impacts would not be substantial. The NMFS concurred with the Corps' determination on February 29, 2024, and did not offer any additional EFH conservation recommendations.

*Water Quality*

Sediment samples and suitability determinations were assessed in accordance with the Inland Testing Manual (USEPA & USACE, 1998) and coordinated with the SC-DMMT on January 24, 2024. Materials proposed for dredging and placement during the initial or all dredge cycles were characterized as clean sandy material suitable for beach and/or nearshore placement.

The Corps routinely monitors the dredge operations, measuring water quality parameters including pH, turbidity, dissolved oxygen (DO), light transmittance, water temperature, and salinity. The Proposed Action's impacts may include temporary increases in turbidity and possibly decreases in DO in the immediate vicinity (generally within 300 feet) of the dredging operations. Water quality would be temporarily affected during placement operations. Decreases in DO and increases in turbidity could occur. However, it is expected that any impacts to water quality will not be significantly greater than those caused by natural surf zone processes. The dredged material would redistribute and settle as a result of normal surf and littoral transport processes. Previous monitoring for the Channel Islands/Port Hueneme Maintenance Dredging program has not identified any significant or lingering water quality issues associated with dredging or placement activities. Water quality would return to pre- project conditions upon completion of project.

A Water Quality Monitoring Plan will be implemented to monitor water quality to ensure that significant adverse impacts to water quality do not occur during dredging and beach/nearshore placement operations. Weekly monitoring will be conducted for salinity, pH, temperature, dissolved oxygen, turbidity, and light transmissivity. Dredging will be modified if necessary to ensure water quality compliance thresholds are met. Additionally, the dredge contractor will be required to have a Spill Prevention and Cleanup Plan in place to prevent spills and to details how to contain and cleanup any spills that could occur. Based on the sediment characterization, the implementation of a spill prevention plan, and water quality monitoring program impacts to water quality would be temporary and less than significant.

*Dredging and Beach Replenishment*

Dredging provides a beneficial impact to local oceanographic conditions. This is achieved by picking up sand deposited in the sand trap at Channel Islands Harbor and in the channels of both Channel Islands Harbor and Port Hueneme Harbor and depositing those materials down coast of the harbors. This activity allows the dredged sands to re-enter the littoral transport regime and provide beach nourishment material for downcoast beaches (Silver Strand and Hueneme Beach), severely eroded by the harbor disruption of the longshore transport of sand. Dredging with beach or nearshore placement, therefore, artificially maintains natural littoral transport.

The Corps finds that the Proposed Action is consistent with the marine environment of the CCA (Sections 30230 through 30237 of the CCA).

## 5.5 CCA, Chapter 3, Article 5, Land Resources, Sections 30240-30244

Sections 30240 through 30244 of the CCA require the protection of land resources. These sections provide:

*30240. Environmentally sensitive habitat areas; adjacent developments*

(a) *Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*

(b) *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

The Proposed Action would continue the Corps' ongoing O&M Navigation Program of routine maintenance dredging and placement of sediments to nourish adjacent and downcoast beaches from Channel Islands and Port Hueneme Harbors. Nourishment of downcoast beaches provides benefits to the coastal shoreline and land resources, including to downcoast environmentally sensitive areas.

The Action Area land use areas are a mix of public and Naval use areas. Hollywood Beach, Silver Strand Beach, and Hueneme Beach are widely used year-round for recreational purposes with peak uses during the summer season. Public parking lots within the Action Area are also utilized by the public. The limits of the placement activities shall be clearly marked to prevent heavy equipment from entering areas beyond the smallest footprint needed to complete the project. Vehicles and all dredging activities shall remain within the defined activity area and use only designated access points and staging areas to protect surrounding resources.

Southern foredune habitat has developed within and adjacent to the Channel Islands Harbor sand trap as a result of the influence of the detached breakwater and north jetty of Channel Islands Harbor creating an area of sand aggregation that has widened the beach adequately to develop conditions suited to the natural establishment of aeolian dunes. This habitat is considered to constitute Environmentally Sensitive Habitat Area (ESHA) under Section 30107.5 of the Coastal Act.

The first sign of dunes on Hollywood Beach occurred at the southerly end of the beach between 1959 and 1967, after the commencement of construction of the breakwater (historicaerials.com). By 1985, sparse dunes were noted to extend from the northern jetty northward to approximately the tip of the detached breakwater. This is approximately the distribution of dunes today, although the dunes have matured and stabilized considerably since establishment. Dunes expand and contract within the sand trap and adjacent beach area in the lee of the detached breakwater relatively rapidly and in response to dredging cycle removal of sand and natural rebuilding of the beach between cycles.

***Hollywood Beach and Dune Dynamics (excerpt from Corps' "Hollywood Beach Western Snowy Plover Habitat Expansion and Enhancement Plan, Channel Islands/Port Hueneme Harbors Maintenance Dredging Project, Ventura County, California" Merkel & Associates 2024).***

*Hollywood Beach extends southward to the mouth of Channel Islands Harbor with the southerly 1,500 feet of the beach being situated within the lee of the detached breakwater. The beach is*

*generally relatively stable along its northern end with a predominantly southern littoral transport. In the lee of the breakwater, sand piles up due to loss of wave energy and creates a large protruding shoal that extends outward from the beach into a sand trap designed into the channel configuration to capture littoral sand, reducing the influx of sand into the entrance channel of the harbor.*

*The sand trap is regularly dredged to remove the accumulated sand as part of the navigational channel maintenance operations and the sand is passed to the south beyond the entrance to Port Hueneme in order to allow sand to continue to migrate down the shoreline. This creates a temporary deficit of sand behind the breakwater resulting in beach and dune erosion in proximity to the dredge footprint until beach slopes stabilize. Once this occurs, erosion ceases and littoral transport from the north reverts the southern beach behind the breakwater to a zone of accretion, building back beach width and height. Within a short period of months, the northernmost portion of the sand trap fills and begins to develop a protruding shoal of sand, that blocks sand infill along the southern edge of the sand trap adjacent to the north jetty. At the upper portions of this newly developed sand spit, dunes begin to develop where there is beach debris or seedling plant establishment. The dunes on the upper margin of the active beach are generally sparse, low in elevation, and characterized by widely scattered plants.*

*Beach rebuilding and dune development at the beach edge of the sand trap is a consistent and predictable process in response to sand transport and maintenance dredge cycles. However, the rate and extent of dune development is likely influenced by many factors that are less predictable. First, dunes generally begin to form against anchoring windbreaks. This often takes the form of woody debris derived most substantially from discharges from the Santa Clara River. The extent of debris discharge varies and thus the amount of dune generating windbreaks varies over time. The second highly variable factor influencing dune development in this area is the seedling establishment rate. This is influenced by the amount of seed produced, the seasonal rainfall conditions, and the extent of seed spread to the west of the existing dunes. A final unpredictable factor driving the rate of dune development is the extent of pedestrian and vehicle traffic within the beach area that disrupts early dune development.*

*The extent of beach and dune development at the southern end of Hollywood Beach has varied over time in response to the accumulation of sand based on variable rates of sand transport and the extent and frequency of maintenance dredging. Over the past three decades, the maximum extent of dune development has reached a high of 20.5 acres in 2014, with a low of approximately 8.5 acres in 1994. In recent years, the average extent of dunes has been between approximately 9 and 11 acres. The most variable dunes present on the beach are the foredunes that are intermittently lost to erosion from wave run-up that is facilitated by maintenance dredging. These dunes are therefore low in stature, sparsely vegetated, and intermixed with the more open beach environment. Where dunes are stable within the back of the dune complex, they are tall, ranging up to over 10 feet in height and are stabilized by predominantly invasive species including European beachgrass (Ammophila arenaria) and hottentot fig (Carpobrotus edulis).*

*While the stable back dune habitat is not suited to supporting use by western snowy plover, it does reduce vehicular and pedestrian traffic seaward of the dune complex. This barrier effect allows for*

*the development of foredune habitat that, when coupled with the beach, is suitable habitat for nesting, foraging, and roosting by western snowy plovers (WSP) and California least tern (CLT). The intermittent maintenance dredging both results in a loss of dune habitat and a maintenance of the foredune complex in a state of low stature and partially stabilized condition, preventing this area from developing towards back dune conditions. While the effects of dredging on the dune habitat is ephemeral, the necessity to conduct dredging at a frequency suited to maintaining navigational safety and function of the harbor entrance, results in a dynamic equilibrium of dune extent that is less than would otherwise occur absent dredging, but also sustaining in character to the dune characteristics most suited to supporting use by plover. Because dune development and loss occur as a continuous and recurrent process adjacent to the sand trap, the conditions differ from those associated with permanent losses such as for roadways, parking lots, or other development. Rather, the character of the active foredune is derived from the maintenance dredging, but it comes with a reduced overall dune footprint. If dredging were to cease, the dunes would become larger, but would also stabilize and grow in elevation, resulting in a reduction in function for species associated with the more active dune margin, such as WSP and CLT, since the offshore breakwater would eliminate natural shoreline erosion and accretion patterns that help sustain active foredunes in less developed environments.*

***Dunes in Plover Habitat Development***

*In considering dune restoration to support beach use by WSP and CLT, it is important that dune design optimize the values that the dune configuration provides to achieve the benefits the various dune conditions provide on Hollywood Beach. Back dunes provide a barrier to widespread vehicle disturbance and curtail intensive foot-traffic, conversely, this barrier effect does not restrict beach access of a more passive nature, in that access through the dune complex by narrower foot trails continues to provide for surf zone access. These back dunes do not provide suitable habitat for plover use.*

*Fore dunes of a low and open stature can be developed on the leading side of barrier dunes. These habitats develop where trampling does not occur and nuclei such as woody debris or plant can start to influence blown sand deposition. This habitat provides good sheltering and roosting habitat by WSP and CLT but is generally not used for nesting. As a result, the complex should also include beach areas, protected from traffic that can support nesting. Persistent protection of the beach areas at Hollywood Beach would be expected to result in a conversion of this habitat to dunes, and ultimately a reduction in nesting habitat on the beach. In 2023, the fenced exclosure provided for plover nesting effectively precluded vehicle, pedestrian, and dog traffic and over the season before the exclosure was removed, precursor dune formation patterns were beginning to develop inside the fenced exclosure around any small debris items and the few seedling plants.*

During the Corps Fiscal Year (FY) 2023 biennial dredging cycle, 0.73 acres of foredune habitat was impacted (Figure 5). Dune impacts occurred due to a combination of dredging within the eastern portion of adjacent Area D of the Corps' existing dredge template, slope sloughing following the dredge cut, and severe wave events. During the FY 2023 biennial dredge cycle 2,405,000 cubic yards (CY) were dredged. In future biennial dredge events up to 2.5 million CY and the entirety of Area D is anticipated to be dredged. In order to meet its congressional mandate to provide safe navigation the Corps has routinely maintained the dredge template since the 1960's. Dredging will

continue to be conducted within the historic maintenance footprint of the Channel Islands Harbor dredge template. Although unexpected to occur, the Corps has determined a maximum potential extent of temporary impacts to dunes on Hollywood Beach could be up to 5.88 acres (Figure 6). Corps Coastal Engineering calculated potential immediate direct impacts could occur 135 ft beyond the dredge template boundary based on a 3:1 slope failure, often resulting in a scarp along Hollywood Beach landward of dredge Area D. Additionally, to conservatively account for potential indirect impacts in the period following dredging as the scarp is further eroded by oceanographic processes and to account for potential water inundation during extreme high tide events or severe wave events the potential impact buffer boundary line was extended to 200 ft beyond the dredge template boundary. The Corps is currently finalizing the development of a draft plan to mitigate project impacts to WSP and CLT habitat on Hollywood Beach, encompassing 13.47 acres of habitat expansion and enhancement in accordance with the BO issued to the Corps from USFWS on December 15, 2022. Within the Hollywood Beach Western Snowy Plover and California Least Tern Habitat Expansion and Enhancement Plan in Support of Channel Islands/Port Hueneme Harbors Maintenance Dredging Project the 5.88 acres of maximum potential temporal and transitory impacts to dunes would be addressed.

As previously stated, when sand is not bypassed, or a smaller volume of sand is bypassed onto Hueneme Beach, the beaches downcoast of Port Hueneme Harbor erode quickly. In a matter of a few years (2 to 4 years), the beach fronting East Surfside Drive will erode back to the street as far east as the Hueneme Pier and the beach will continue to erode downcoast, including Ormond Beach. This results in recreational, infrastructure, and natural resource damage.

While the Proposed Action is not fully consistent with Section 30340 in that foredune habitat at the dredge site is subject to recurring effects associated with the Congressionally mandated bypass activities, the purpose and result is to protect similar habitats and recreational beach use downcoast by continuing to supply littoral material that had been artificially cut off from natural replenishment. Moreover, as discussed above, the Corps is working with the USFWS on a plan to create or restore habitat outside of the dredge template which would ensure no net or temporal loss of this resource.

The Corps will conduct pre-construction and post-construction surveys each dredge cycle of the dunes on Hollywood Beach to document any impacts that occur to the dunes during the maintenance dredging. Additionally, the sequencing of dredging within the Channel Islands dredge template will prioritize dredging Area D last to the maximum extent possible with regards to safety, weather conditions, and logistic issues.

As discussed in Section 4, there are no reasonable or authorized alternatives to achieving project benefits and protecting coastal resources outside of the currently authorized project and dredge template that would entirely avoid impacts to foredune habitat at the dredge site.

Section 5.7 below addresses other balancing factors that have been considered in determining overall consistency with California Coastal Act provisions.

*Section 30244 Archaeological or paleontological resources*

*Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.*

*Archaeological Resources*

The Corps has coordinated with the California State Historic Preservation Officer (SHPO) and with Native American tribes on the dredging template. On December 23, 2022, the Corps received concurrence from the SHPO regarding a finding of no effect on historic properties and a continued "no objection" to the undertaking. The Corps reached out to the Native American tribes regarding the dredge template on September 21 and October 18, 2022. The only response received was a telephone call from Ms. Beverly Salazar Folkes of the Fernandeño Tataviam Band of Mission Indians on October 20, 2022. Ms. Salazar Folkes stated that there was no objection to the undertaking nor made any requests of the Corps with the exception of being vigilant for potential artifacts. Consultation was reinitiated on February 2, 2024 in order to include the cumulative removal of up to approximately 10,000 cubic yards of windblown sand deposits throughout the six-year period from a 30-ft tall pile along the Naval Base Ventura County Port Hueneme fence line that will be used to secure the dredge pipe along SWEF Beach as needed. On March 5, 2024, the Corps received concurrence from the SHPO regarding a finding of no effect on historic properties and a continued "no objection" to the undertaking. Therefore, impacts are less than significant.

In the event that previously unknown cultural resources are discovered during the project, all ground disturbing activities shall immediately cease within 200 feet of the discovery until the Corps has met the requirement of 36 CFR 800.13 regarding post-review discoveries. The Corps shall evaluate the eligibility of such resources for listing on the National Register of Historic Places and propose actions to resolve any anticipated adverse effects. Work shall not resume in the area surrounding the potential historic property until the Corps re-authorizes project construction.

The Corps finds that the Proposed Action is consistent with the land resources of the CCA (Sections 30240 through 30244 of the CCA).

## 5.6 CCA, Chapter 3, Article 6, Development, Sections 30250-30255

Sections 30250 through 30255 of the CCA require the protection from new development. These sections provide:

*Section 30251 Scenic and visual qualities*

*The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance.*

The Proposed Action is not a development project, and therefore, policies under all sections of Article 6 (Development) of the CCA are not applicable to the Proposed Action.

## 5.7 CCA, Chapter 3, Article 7, Industrial Development, Sections 30260-30265.5

Sections 30260 through 30265.5 of the CCA require the protection from new industrial development. Sections 30261-30265.5 involve petroleum and energy development actions that are not applicable to the present action.

***Section 30260 Location or expansion***

*(a) Coastal-dependent industrial facilities shall be encouraged to locate or expand within existing sites and shall be permitted reasonable long-term growth where consistent with this division.*

*(b) Notwithstanding subdivision (a), where new or expanded coastal-dependent industrial facilities cannot feasibly be accommodated consistent with other policies of this division, they may nonetheless be permitted in accordance with this section and Sections 30261 and 30262 if all of the following conditions are met:*

*(1) Alternative locations are infeasible or more environmentally damaging.*

*(2) Permitting the development would not adversely affect the public welfare.*

*(3) Adverse environmental effects are mitigated to the maximum extent feasible.*

*(4) The new or expanded coastal-dependent industrial facility is not an oil and gas development, refinery, or petrochemical facility.*

Section 30101 of the Coastal Act defines a coastal-dependent development or use as one that "*requires a site on, or adjacent to, the sea to be able to function at all.*" A coastal-dependent industrial facility is one that meets the definition of a coastal-dependent development. The Coastal Act does not separately define "coastal-dependent *industrial* facilities"; however, a Commission review of *local coastal plans, port plans, and the American Planning Association's system for classifying land uses resulted in the following common aspects in defining coastal-dependent industrial facilities:*

1. *Has existing (deep draft) navigational access;*
2. *Requires access to a navigational channel to function (receive and distribute items);*
3. *Includes loading and unloading goods and has a large storage component;*
4. *When compared to land uses that are more commercial in nature, often requires relatively large land areas.*

The present action is a continuation of Congressionally authorized maintenance activities to retain navigation at Channel Islands Harbor and Port Hueneme through maintenance dredging and bypass of sand to downcoast environments. This is to secure continued capacity and safety for operations of the two harbors. Channel Islands Harbor includes maximum depth maintenance dredging to -35 feet MLLW while Port Hueneme maximum maintenance dredging depths reach -44 feet MLLW (both with an allowable 2 foot overdepth). Both require navigational channels to function. Port Hueneme was established in 1940 and supports deep water commercial and naval uses, while Channel Island Harbor provides recreational and commercial uses, including commercial fishing, as well as a U.S.

Coast Guard Station dependent upon ocean access. Port Hueneme Harbor hosts deep-water berthing for the U.S. Navy as well as commercial port facilities reliant upon ocean shipping, extensive back lands (approximately 1,500 acres between the Navy and Port of Hueneme), and rail and trucking access. As a result, these facilities are considered to be coastal-dependent industrial facility pursuant to Coastal Act Section 30260, and the maintenance of navigation facilities to support these harbors is inextricably linked and also coastal-dependent.

Section 30260 of the Coastal Act provides that the Commission may authorize coastal-dependent industrial facilities that cannot feasibly be accommodated consistent with the other Chapter 3 policies of the Coastal Act if three criteria are satisfied. In the present action, the maintenance of Channel Islands Harbor and Port Hueneme Harbor, including the obligatory bypass of sand to the down coast shoreline that is mandated due to the interruption of littoral transport by the deep harbor inlets qualifies as a coastal-dependent industrial facility.

As noted above, the proposed maintenance dredging and sand bypass will impact ESHA in the form of foredunes and therefore the proposed action is not fully consistent with the requirements of Section 30240. However, balancing factors must be considered with respect to these impacts. All four criteria required for over-ride of Section 30240 have been met. As a balancing factor, it is important to note that the coastal dunes have developed within and adjacent to the federal navigation channel sand trap maintenance area as a result of and in conjunction with the navigational improvements (detached breakwater and north jetty to Channel Islands Harbor) and are maintained in a current serial state of development by the recurrent maintenance dredging action as has been discussed previously. The proposed 2.5 million CY biennial maintenance dredging and bypassed from Channel Islands Harbor to downcoast of Port Hueneme is consistent with the Congressional authorization, historic maintenance, and determined bypass quantity required to maintain littoral transport. Prior reductions in bypass quantity have reflected funding constraints rather than a change in project need. Further, when dredging quantities are curtailed, downcoast beaches, infrastructure, and dune and wetland ESHA at Ormond Beach and further south suffer. Because the existing dunes at Hollywood Beach have developed and will continue to develop within the maintenance area of effect associated with dredging and bypass, there is no feasible way of avoiding the impacts to ESHA, while sustaining the existing industrial development.

In order for the Commission to support application of the coastal-dependent industrial development over-ride policy outlined in Section 30260, four conditions must be met:

***(1) Alternative locations are infeasible or more environmentally damaging.***

The maintenance dredging is site specific to the harbors and has been established with the development of the harbors. This cannot be relocated as has been discussed previously. The bypass of sand to mitigate the impact of the deep harbor channels on shoreline sand supply has been mandated by Congress and built into the original project in the form of a sand trap to collect sand for bypass prior to it reaching the entrance to Channel Islands

Harbor. As the goal of the bypass is to balance the littoral transport volume reaching the sand trap with that placed down coast, harvesting sand from another area such as an offshore borrow site would result in an imbalance and impact channel maintenance effectiveness eventually resulting in impacts to safe navigation into and out of the harbors. Harvesting sand further up the beach away from the dunes would require a similar detached breakwater structure to provide wave protection for the dredge activity, allowing beach widths to increase forming a sand trap for sand harvest and bypass. This new structure would be of similar scale as the current structure in order to accommodate safe dredging and adequate sand trapping capacity. However, as this structure would have a similar beach building effect as the current structures, as the beach widens and elevation rises, the changes would allow for the commencement of aeolian dune development and the resource conflict of dunes encroaching into the sand maintenance area would once again develop. Finally, excavating a smaller footprint deeper within the sand trap would undermine the breakwater, excavate finer sediments unsuited to littoral nourishment, and would not alter the fact that the impact to dunes is due to encroachment of dunes on the sand trap rather than the sand trap encroaching on the dunes. Reducing impacts by reducing the footprint of dredging for bypass, would have a transitory effect on dune impact as the beach would grow larger into the sand trap with developing dunes following this expansion.

There are no feasible and less environmentally damaging alternatives to the project location. This is because of the characteristics of the project siting requirements to accomplish both navigational channel protection and sand bypass and the scale of the required dredging being set by littoral drift volumes intercepted. The fact that the existing maintenance sand trapping has been codeveloped with the harbor and the detached breakwater is necessary to effectively capture and dredge sediment, a similar and highly impactive new detached breakwater would need to be constructed to support upcoast sand trapping and bypass pumping. This would not result in an avoidance of conflict between the maintenance dredging and ESHA, but would rather defer the timeframe to development of dune habitat. As noted above, the first dunes at Hollywood Beach began to develop within the first seven years following the detached breakwater construction and were well distributed in the action area within 25 years of the detached breakwater construction. This would be expected to occur more rapidly with a new detached breakwater, due to the already widened beach width. Once dunes are developed a similar policy conflict would develop between Section 30240 and 30260.

***(2) Permitting the development would not adversely affect the public welfare.***

Concurrence by the Commission would not adversely affect public welfare. The concurrence would support the Corps' continued maintenance of the harbor navigation facility infrastructure and sand bypass at the Congressionally authorized levels and as has been performed over the past 64 years, when federal funding was available. The project would however include implementation of mitigation associated with impacts on western snowy plover critical habitat and dune habitat that would make use of additional under

utilized high beach immediately to the north of the existing dune complex (Appendix 2). This habitat is intended to offset impacts to the low dune habitat that develops in and adjacent to the sand trap as well as the natal foredune habitat that forms in the sand trap when maintenance is overly deferred. The proposed action continues the maintenance of safe harbor facilities, ensures coastal access for U.S. Coast Guard and U.S. Navy vessels, ensures maritime commerce, maintains commercial and recreational access from the harbors, and continues to nourish downcoast beaches and dunes, preventing deterioration of these resources. Further, the project recognizes and replaces/enhances dune and listed species critical habitat affected by the maintenance dredging actions. As a result, it would not adversely affect the public welfare, but rather is essential to maintain it.

***(3) Adverse environmental effects are mitigated to the maximum extent feasible.***

The proposed action is expected to result in transitory and incomplete recurrent impacts to coastal foredune habitat and impacts to two federally listed species, the California least tern and western snowy plover, along with designated critical habitat for the western snowy plover. These impacts have been the subject of consultation between the Corps and USFWS, resulting in the issuance of a biological opinion for the Channel Islands/Port Hueneme Harbors Maintenance Dredging (08EVEN00-2022-0085983-S7) (Appendix 1). This consultation, among measures to avoid and minimize construction period impacts called for compensatory mitigation of impacts to critical habitat and foredune habitat as follows:

> *To offset potential impacts to western snowy plover designated critical habitat, the Corps proposes to restore 13.47 acres (1:1 impact restoration ratio) of foredune habitat adjacent to the action area as agreed to with the Service. The restoration effort will include beach grass (Ammophila sp.) control to zero density, recontouring of sand dunes to approximate natural dune contours using heavy equipment, restoration of native beach species using plants or seeds, and manual removal of non-native plant species. The Corps will manage this area for a period of 5 years. Management activities will include installation and maintenance of native dune vegetation, manual removal of non-native plant species, strategic fencing, predator exclosures for shorebird protection, and other measures intended to protect any nesting or foraging activities that may occur in this area without significantly impacting authorized recreational beach use. The purpose of the restoration site is to provide comparable habitat function and value for the western snowy plover to offset the temporary and recurring loss of beach that would occur whenever the Corps excavates "sand trap D". At a minimum, weekly monitoring for California least tern and western snowy plover will occur during the proposed action and for 5 years post - dune restoration completion to verify the restoration site is fulfilling the purpose as stated above. Annual metrics monitoring of the dune restoration will occur for 5 years post - dune restoration completion to verify the restoration site will remain functional habitat for the intended species. (08EVEN00-2022-0085983-S7)*

The details of this mitigation program are incorporated in the Hollywood Beach Western Snowy Plover Habitat Expansion and Enhancement Plan, Channel Islands/Port Hueneme Harbors Maintenance Dredging Project, Ventura County, California (Appendix 2). The plan calls for the expansion and enhancement of dunes through measures to remove invasives species, protect dune habitat, expand dunes and plover habitat to the north of the existing dunes and to provide interpretive signage to facilitate public support for the activities. The project has been developed following a full year of monitoring wintering and breeding activities of targeted species in order to understand the bird use patterns, as well as an examination of beach dynamics over the past 30 years in order to plan the restoration. The mitigation is planned to include enhancement of the existing dunes and expansion of dunes within areas of the middle high beach that are underutilized by the public due to low overall use rates on Hollywood Beach, and focal uses being along the water and on the back beach near development.

The mitigation plan would fully offset impacts to dunes and listed species and their critical habitat and thus would ensure that adverse effects are mitigated to the maximum extent feasible.

***(4) The new or expanded coastal-dependent industrial facility is not an oil and gas development, refinery, or petrochemical facility.***

The proposed project is not an oil and gas development, refinery, or petrochemical facility and thus satisfies this criterion.

Based on the coastal-dependent industrial facility standard and meeting all of the criteria evaluated under Section 30260 of the Coastal Act, the Corps concludes that the proposed action, while not fully consistent with Section 30240 of the Coastal Act, nonetheless is consistent with CZMA when applying the overriding standard set forth Section 20360.

This is a uniquely important consideration in that ESHA has developed within the recurrent maintenance action areas due to the characteristics that are developed by the project site configurations achieving its intended sand capture and accumulation purpose. To restrict the capacity to impact ESHA as it develops to differing extents between maintenance events would eliminate the capacity to conduct ongoing maintenance that was established with the project's authorizations pre-dating the Coastal Act.

## 6 SIMILAR PROJECTS THAT RECEIVED CALIFORNIA COASTAL COMMISSION APPROVAL

**Channel Islands and Port Hueneme Harbors Maintenance Dredging**

The Proposed Action is a part of the Corps' ongoing Operations and Maintenance Navigation Program. Maintenance dredging has been conducted routinely by the Corps since the 1960s at Channel Islands Harbor. Maintenance volumes dredged biennially from Channel Islands Harbor

averaged 2.34 million cubic yards biennially through 1978 (USACE 1979). Routine Operations and Maintenance volumes dredged biennially from Channel Islands Harbor averaged 1.6 million cubic yards biennially from 1979 through 2023. Note, most of the dredge cycles have remained on a biennial cycle schedule, however, over the history of the project occasional deviations from that schedule have occurred. Port Hueneme may accumulate up to 250,000 cubic yards that may be dredged biennially. Maintenance volumes to supplement long-shore transport through bypass vary based on input of material into the system, storm history and wave climate, and dredged volumes can vary based on allocated funding levels for each dredge cycle. Routine maintenance dredging has been conducted by the Corps as needed at Port Hueneme Harbor dating back to 1975.

The Commission previously concurred with the previous six-year maintenance dredging programs for these two harbors in 1994 (CD-052-94), and the Executive Director concurred with six-year maintenance dredging programs in 2000 (ND-040-00), 2006 (ND-048-06), 2012 (ND-045-12), 2018 (ND-0024-18), and Supplemental Action for a project modification in 2022 (ND-0042-22). Volumes for these prior programs have been set at or below the Congressionally authorized 2.5 million cubic yards at Channel Island Harbor, based on funding and/or sandy dredge material availability, however the Congressionally authorized volume has not changed.

**U.S. Navy Weapons Station Seal Beach and the public navigation channel connecting Anaheim Bay with the Pacific Ocean, Seal Beach**

In 2018, the Commission faced similar circumstances of competing policies relating to resource protection, specifically impacts to coastal foredune ESHA, and the necessity to modify a coastal-dependent industrial facility to account for necessary security and public safety concerns at Naval Weapons Station Seal Beach (NAVWPNSTA Seal Beach). In this case a similar conflict existed between accommodating necessary reconfiguration of navigation corridors and pier infrastructure and permanent impacts to 4.7 acres of ESHA in the form of southern foredune habitat (CD-0002-18). In this case, the project also was found to qualify for special consideration under the Coastal Act's coastal-dependent industrial development "override" policy (Coastal Act Section 30260). The Commission concurred with the Navy's determination after considering the four test criteria that must be met under Section 30260.

The present project shares similarities with that of the public navigation project at NAVWPNSTA Seal Beach, in the nature of the installation, the ESHA, and the mitigation undertaken. However, the present circumstance differs in that the dunes at Hollywood Beach encroach into the maintenance area at Channel Islands Harbor between maintenance cycles and each cycle can be expected to have some degree of impact to the dunes, that subsequently rebuild within the impact area as a designed function of trapping sand and building beach volumes for channel protection and sand bypass. As a result, the dune development and maintenance areas are inextricably coupled. At NAVWPNSTA Seal Beach, geometric constraints of the site generated the necessity to construct a new channel through dunes that were otherwise not within the prior harbor development area.

# 7 REFERENCES

Merkel & Associates, Inc. 2010. *Demersal Fisheries Response to the 2004 Channel Deepening Project in San Diego Bay*. Prepared for Port of San Diego, Port of Los Angeles, Port of Long Beach, NOAA Fisheries and Naval Facilities Engineering Command Southwest, California, January 2010.

Merkel & Associates 2024. Hollywood Beach Western Snowy Plover Habitat Expansion and Enhancement Plan, Channel Islands/Port Hueneme Harbors Maintenance Dredging Project, Ventura County, California.

USACE/Corps. 2024. Sampling and Analysis Plan Results (SAPR) Report and Appendices, Channel Islands Harbor and Port Hueneme Harbor 2023 Environmental and Geotechnical Investigation. January 2024.

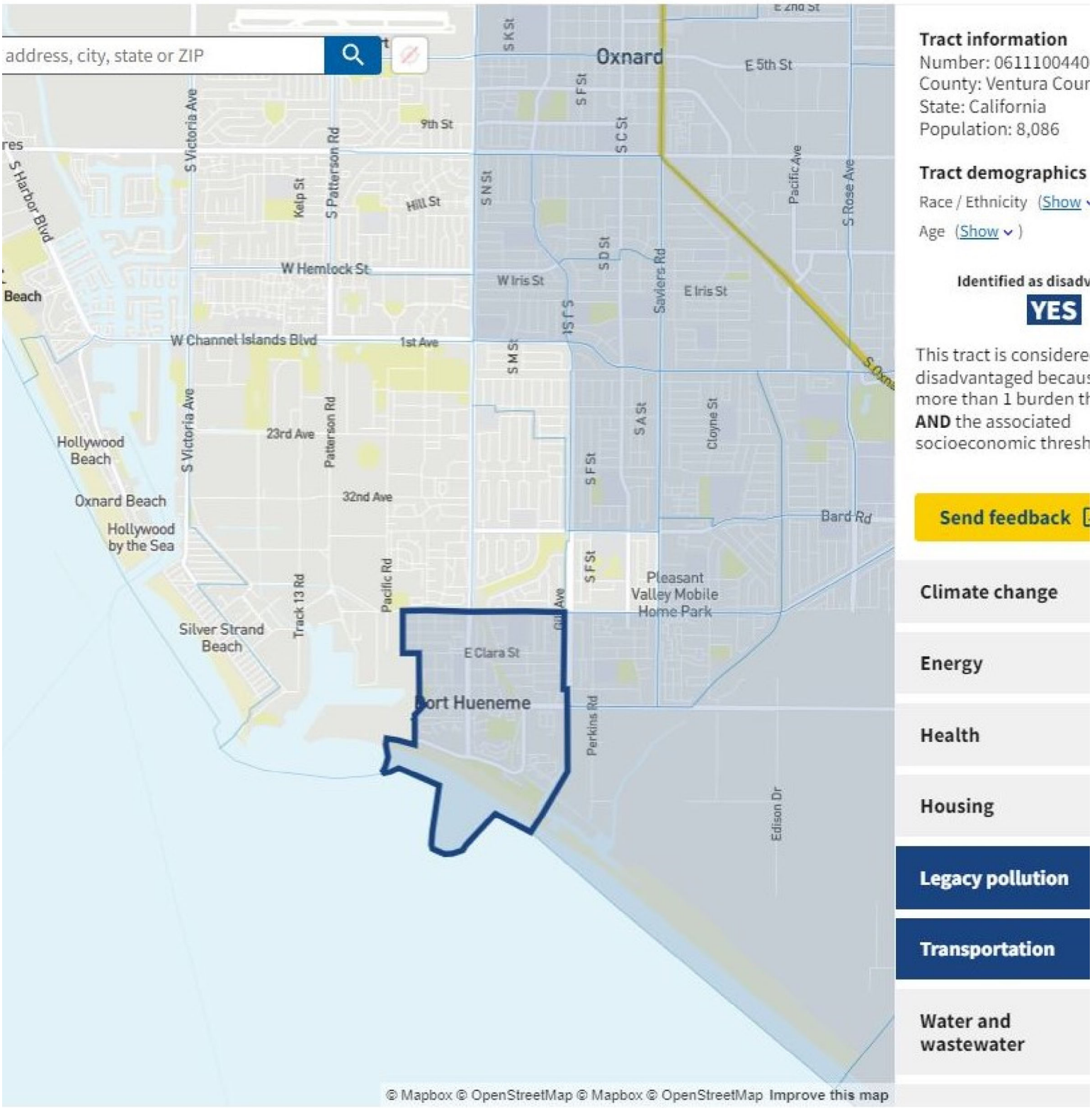
USACE/Corps. May 1979. Ventura County, California Survey Report for Beach Erosion Control

# APPENDIX

1. Section 7 Biological Assessment and Biological Opinion
2. Hollywood Beach Western Snowy Plover Habitat Expansion and Enhancement Plan Channel Islands/Port Hueneme Harbors Maintenance Dredging Project, Ventura County, California

# APPENDIX H
# ENVIRONMENTAL JUSTICE ANALYSIS

# CEJST Results



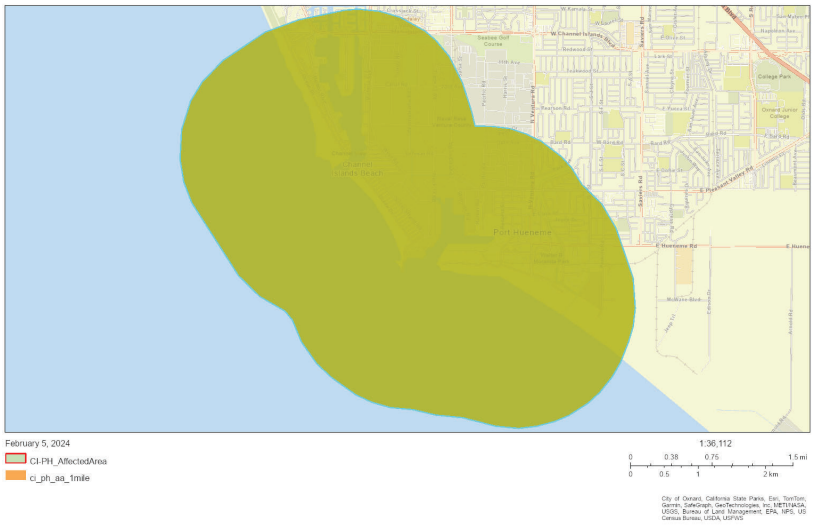
# EJScreen Community Report

This report provides environmental and socioeconomic information for user-defined areas, and combines that data into environmental justice and supplemental indexes.

## Channel Islands Beach, CA

the User Specified Area
Population: 19,473
Area in square miles: 10.86

A3 Landscape




### LANGUAGES SPOKEN AT HOME

| LANGUAGE | PERCENT |
|---|---|
| English | 57% |
| Spanish | 39% |
| Other Indo-European | 1% |
| Tagalog (including Filipino) | 1% |
| Other and Unspecified | 2% |
| Total Non-English | 43% |

### COMMUNITY INFORMATION

- Low income: 41 percent
- People of color: 68 percent
- Less than high school education: 25 percent
- Limited English households: 10 percent
- Unemployment: 4 percent
- Persons with disabilities: 10 percent
- Male: 53 percent
- Female: 47 percent
- 74 years — Average life expectancy
- $37,419 — Per capita income
- Number of households: 6,142
- Owner occupied: 32 percent

### BREAKDOWN BY RACE

- White: 32%
- Black: 2%
- American Indian: 0%
- Asian: 2%
- Hawaiian/Pacific Islander: 0%
- Other race: 0%
- Two or more races: 2%
- Hispanic: 62%

### BREAKDOWN BY AGE

| | |
|---|---|
| From Ages 1 to 4 | 7% |
| From Ages 1 to 18 | 28% |
| From Ages 18 and up | 72% |
| From Ages 65 and up | 9% |

### LIMITED ENGLISH SPEAKING BREAKDOWN

| | |
|---|---|
| Speak Spanish | 82% |
| Speak Other Indo-European Languages | 3% |
| Speak Asian-Pacific Island Languages | 2% |
| Speak Other Languages | 13% |

Notes: Numbers may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, American Community Survey (ACS) 2017 -2021. Life expectancy data comes from the Centers for Disease Control.

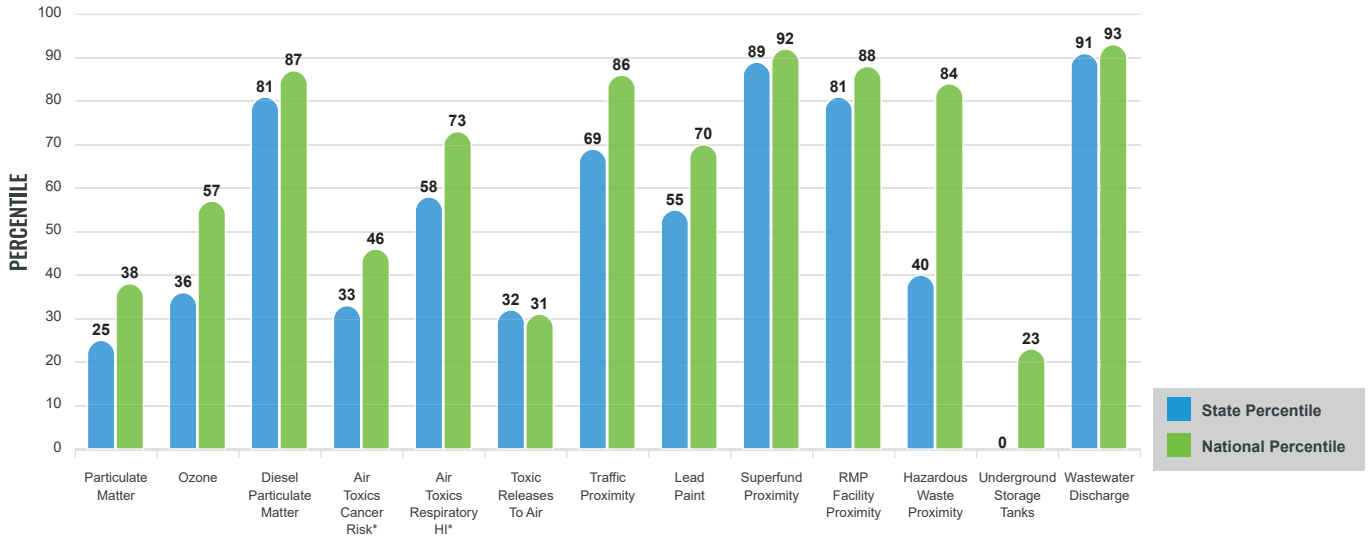
# Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the EJScreen website.

## EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

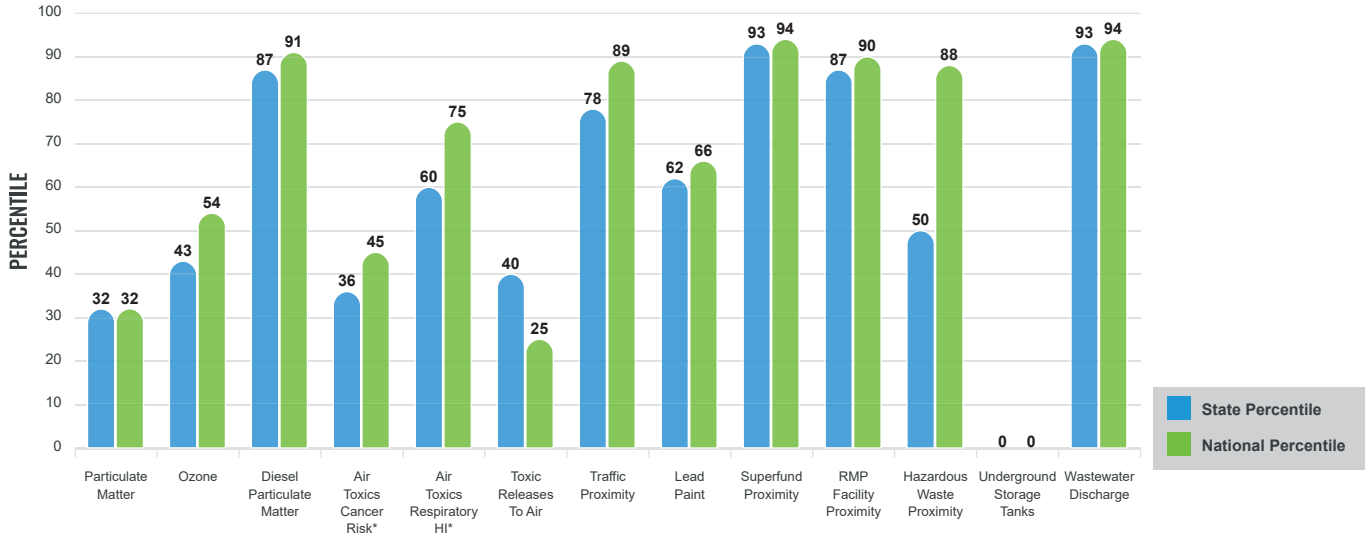
### EJ INDEXES FOR THE SELECTED LOCATION




## SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on percent low-income, percent linguistically isolated, percent less than high school education, percent unemployed, and low life expectancy with a single environmental indicator.

### SUPPLEMENTAL INDEXES FOR THE SELECTED LOCATION




These percentiles provide perspective on how the selected block group or buffer area compares to the entire state or nation.

# EJScreen Environmental and Socioeconomic Indicators Data

| SELECTED VARIABLES | VALUE | STATE AVERAGE | PERCENTILE IN STATE | USA AVERAGE | PERCENTILE IN USA |
|---|---|---|---|---|---|
| **POLLUTION AND SOURCES** | | | | | |
| Particulate Matter (µg/m$^3$) | 6.67 | 8.65 | 14 | 8.08 | 14 |
| Ozone (ppb) | 58.2 | 65.9 | 21 | 61.6 | 25 |
| Diesel Particulate Matter (µg/m$^3$) | 0.45 | 0.26 | 91 | 0.261 | 88 |
| Air Toxics Cancer Risk* (lifetime risk per million) | 20 | 27 | 3 | 25 | 5 |
| Air Toxics Respiratory HI* | 0.35 | 0.34 | 17 | 0.31 | 31 |
| Toxic Releases to Air | 20 | 780 | 20 | 4,600 | 12 |
| Traffic Proximity (daily traffic count/distance to road) | 260 | 510 | 58 | 210 | 80 |
| Lead Paint (% Pre-1960 Housing) | 0.22 | 0.31 | 49 | 0.3 | 50 |
| Superfund Proximity (site count/km distance) | 0.57 | 0.17 | 95 | 0.13 | 95 |
| RMP Facility Proximity (facility count/km distance) | 0.94 | 0.57 | 83 | 0.43 | 87 |
| Hazardous Waste Proximity (facility count/km distance) | 1.8 | 5.9 | 24 | 1.9 | 72 |
| Underground Storage Tanks (count/km$^2$) | 0.041 | 1.5 | 74 | 3.9 | 24 |
| Wastewater Discharge (toxicity-weighted concentration/m distance) | 38 | 4 | 98 | 22 | 98 |
| **SOCIOECONOMIC INDICATORS** | | | | | |
| Demographic Index | 55% | 45% | 67 | 35% | 79 |
| Supplemental Demographic Index | 22% | 15% | 78 | 14% | 83 |
| People of Color | 68% | 61% | 54 | 39% | 77 |
| Low Income | 41% | 28% | 75 | 31% | 71 |
| Unemployment Rate | 5% | 7% | 47 | 6% | 57 |
| Limited English Speaking Households | 10% | 9% | 68 | 5% | 85 |
| Less Than High School Education | 25% | 16% | 76 | 12% | 87 |
| Under Age 5 | 7% | 6% | 65 | 6% | 67 |
| Over Age 64 | 9% | 16% | 29 | 17% | 23 |
| Low Life Expectancy | 19% | 18% | 65 | 20% | 45 |

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

### Sites reporting to EPA within defined area:

| | |
|---|---|
| Superfund | 1 |
| Hazardous Waste, Treatment, Storage, and Disposal Facilities | 1 |
| Water Dischargers | 28 |
| Air Pollution | 1 |
| Brownfields | 0 |
| Toxic Release Inventory | 4 |

### Other community features within defined area:

| | |
|---|---|
| Schools | 4 |
| Hospitals | 1 |
| Places of Worship | 3 |

### Other environmental data:

| | |
|---|---|
| Air Non-attainment | Yes |
| Impaired Waters | Yes |

| | |
|---|---|
| Selected location contains American Indian Reservation Lands* | No |
| Selected location contains a "Justice40 (CEJST)" disadvantaged community | Yes |
| Selected location contains an EPA IRA disadvantaged community | Yes |

*Report for the User Specified Area*

# EJScreen Environmental and Socioeconomic Indicators Data

## HEALTH INDICATORS

| INDICATOR | VALUE | STATE AVERAGE | STATE PERCENTILE | US AVERAGE | US PERCENTILE |
|---|---|---|---|---|---|
| Low Life Expectancy | 19% | 18% | 65 | 20% | 45 |
| Heart Disease | 5.1 | 5.2 | 52 | 6.1 | 31 |
| Asthma | 10.4 | 9.5 | 76 | 10 | 66 |
| Cancer | 4.4 | 5.3 | 35 | 6.1 | 16 |
| Persons with Disabilities | 9.6% | 10.9% | 44 | 13.4% | 29 |

## CLIMATE INDICATORS

| INDICATOR | VALUE | STATE AVERAGE | STATE PERCENTILE | US AVERAGE | US PERCENTILE |
|---|---|---|---|---|---|
| Flood Risk | 19% | 13% | 79 | 12% | 84 |
| Wildfire Risk | 0% | 30% | 0 | 14% | 0 |

## CRITICAL SERVICE GAPS

| INDICATOR | VALUE | STATE AVERAGE | STATE PERCENTILE | US AVERAGE | US PERCENTILE |
|---|---|---|---|---|---|
| Broadband Internet | 10% | 10% | 61 | 14% | 46 |
| Lack of Health Insurance | 16% | 7% | 92 | 9% | 86 |
| Housing Burden | Yes | N/A | N/A | N/A | N/A |
| Transportation Access | Yes | N/A | N/A | N/A | N/A |
| Food Desert | Yes | N/A | N/A | N/A | N/A |

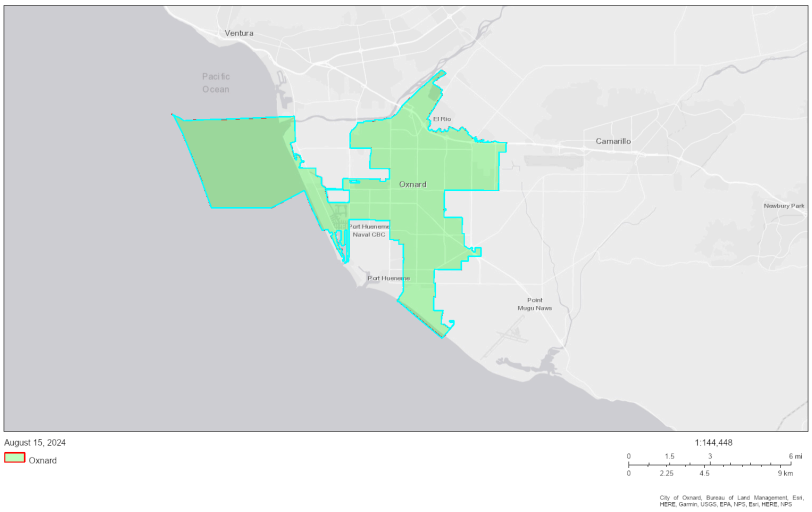
*Report for the User Specified Area*

# EJScreen Community Report

This report provides environmental and socioeconomic information for user-defined areas, and combines that data into environmental justice and supplemental indexes.

## Oxnard, CA

City: Oxnard
Population: 202,117
Area in square miles: 39.15




### LANGUAGES SPOKEN AT HOME

| LANGUAGE | PERCENT |
|---|---|
| English | 34% |
| Spanish | 59% |
| Vietnamese | 1% |
| Tagalog (including Filipino) | 3% |
| Other and Unspecified | 2% |
| Total Non-English | 66% |

### COMMUNITY INFORMATION

- Low income: 34 percent
- People of color: 87 percent
- Less than high school education: 30 percent
- Limited English households: 13 percent
- Unemployment: 6 percent
- Persons with disabilities: 10 percent
- Male: 51 percent
- Female: 49 percent
- 80 years — Average life expectancy
- N/A — Per capita income
- Number of households: 51,054
- Owner occupied: 54 percent

### BREAKDOWN BY RACE

- White: 13%
- Black: 2%
- American Indian: 0%
- Asian: 7%
- Hawaiian/Pacific Islander: 0%
- Other race: 0%
- Two or more races: 2%
- Hispanic: 76%

### BREAKDOWN BY AGE

| | |
|---|---|
| From Ages 1 to 4 | 6% |
| From Ages 1 to 18 | 26% |
| From Ages 18 and up | 74% |
| From Ages 65 and up | 11% |

### LIMITED ENGLISH SPEAKING BREAKDOWN

| | |
|---|---|
| Speak Spanish | 84% |
| Speak Other Indo-European Languages | 2% |
| Speak Asian-Pacific Island Languages | 8% |
| Speak Other Languages | 6% |

Notes: Numbers may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, American Community Survey (ACS) 2018-2022. Life expectancy data comes from the Centers for Disease Control.

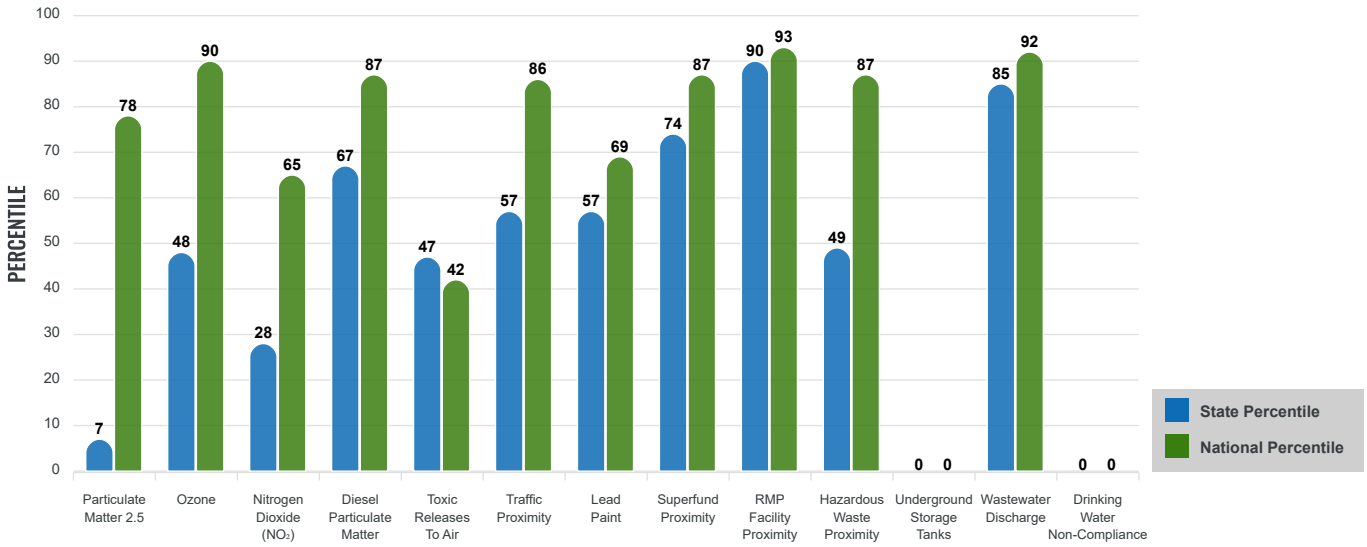
# Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the EJScreen website.

## EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

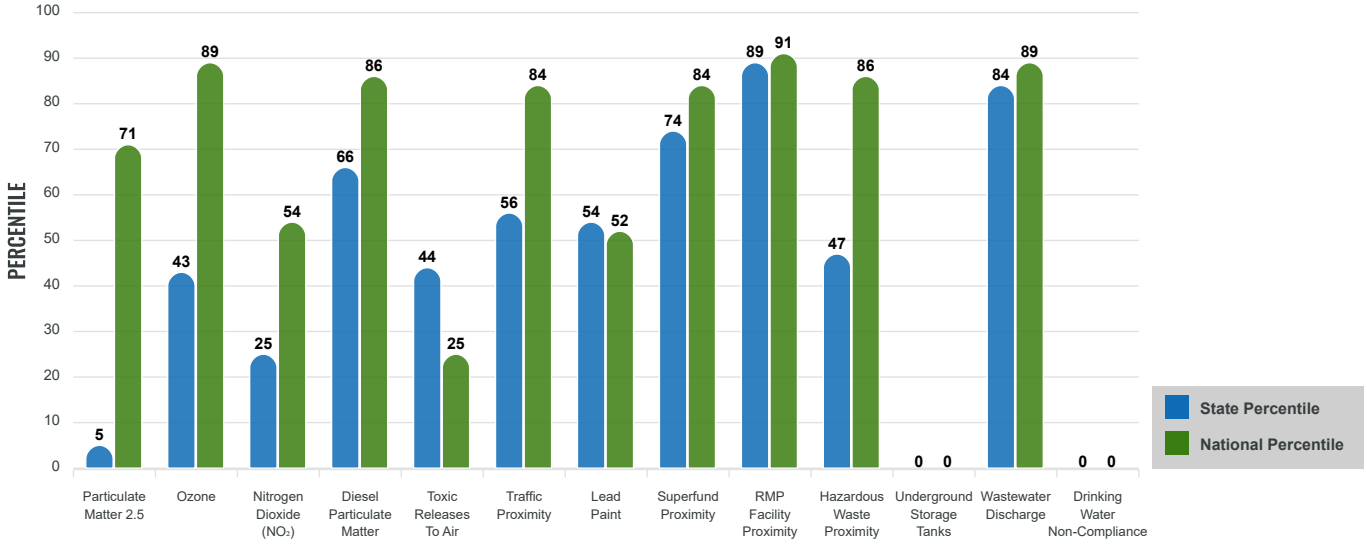
### EJ INDEXES FOR THE SELECTED LOCATION




## SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on percent low income, percent persons with disabilities, percent less than high school education, percent limited English speaking, and percent low life expectancy with a single environmental indicator.

### SUPPLEMENTAL INDEXES FOR THE SELECTED LOCATION




*Report for City: Oxnard*

*Report produced August 15, 2024 using EJScreen Version 2.3*

# EJScreen Environmental and Socioeconomic Indicators Data

| SELECTED VARIABLES | VALUE | STATE AVERAGE | PERCENTILE IN STATE | USA AVERAGE | PERCENTILE IN USA |
|---|---|---|---|---|---|
| **ENVIRONMENTAL BURDEN INDICATORS** | | | | | |
| Particulate Matter 2.5 ($\mu g/m^3$) | 8.26 | 12.3 | 3 | 8.45 | 53 |
| Ozone (ppb) | 67.6 | 74.2 | 29 | 61.8 | 80 |
| Nitrogen Dioxide ($NO_2$) (ppbv) | 6.4 | 9.1 | 15 | 7.8 | 38 |
| Diesel Particulate Matter ($\mu g/m^3$) | 0.263 | 0.286 | 49 | 0.191 | 78 |
| Toxic Releases to Air (toxicity-weighted concentration) | 65 | 780 | 35 | 4,600 | 20 |
| Traffic Proximity (daily traffic count/distance to road) | 2,200,000 | 4,000,000 | 38 | 1,700,000 | 75 |
| Lead Paint (% Pre-1960 Housing) | 0.18 | 0.31 | 46 | 0.3 | 46 |
| Superfund Proximity (site count/km distance) | 0.24 | 0.68 | 63 | 0.39 | 73 |
| RMP Facility Proximity (facility count/km distance) | 3.9 | 0.83 | 97 | 0.57 | 99 |
| Hazardous Waste Proximity (facility count/km distance) | 4.5 | 11 | 30 | 3.5 | 76 |
| Underground Storage Tanks (count/$km^2$) | 0 | 0.00036 | 0 | 3.6 | 0 |
| Wastewater Discharge (toxicity-weighted concentration/m distance) | 8400 | 11000 | 78 | 700000 | 87 |
| Drinking Water Non-Compliance (points) | 0 | 0.5 | 0 | 2.2 | 0 |
| **SOCIOECONOMIC INDICATORS** | | | | | |
| Demographic Index USA | 2.18 | N/A | N/A | 1.34 | 82 |
| Supplemental Demographic Index USA | 1.99 | N/A | N/A | 1.64 | 73 |
| Demographic Index State | 2.47 | 1.83 | 75 | N/A | N/A |
| Supplemental Demographic Index State | 1.83 | 1.49 | 71 | N/A | N/A |
| People of Color | 87% | 62% | 75 | 40% | 87 |
| Low Income | 34% | 28% | 67 | 30% | 62 |
| Unemployment Rate | 6% | 6% | 56 | 6% | 65 |
| Limited English Speaking Households | 13% | 8% | 75 | 5% | 88 |
| Less Than High School Education | 30% | 16% | 82 | 11% | 92 |
| Under Age 5 | 6% | 5% | 64 | 5% | 65 |
| Over Age 64 | 11% | 16% | 35 | 18% | 28 |

*Diesel particulate matter index is from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

### Sites reporting to EPA within defined area:

Superfund ..... 1
Hazardous Waste, Treatment, Storage, and Disposal Facilities ..... 12
Water Dischargers ..... 256
Air Pollution ..... 6
Brownfields ..... 0
Toxic Release Inventory ..... 24

### Other community features within defined area:

Schools ..... 43
Hospitals ..... 5
Places of Worship ..... 65

### Other environmental data:

Air Non-attainment ..... Yes
Impaired Waters ..... Yes

Selected location contains American Indian Reservation Lands* ..... No
Selected location contains a "Justice40 (CEJST)" disadvantaged community ..... Yes
Selected location contains an EPA IRA disadvantaged community ..... Yes

*Report for City: Oxnard*

*Report produced August 15, 2024 using EJScreen Version 2.3*

# EJScreen Environmental and Socioeconomic Indicators Data

## HEALTH INDICATORS

| INDICATOR | VALUE | STATE AVERAGE | STATE PERCENTILE | US AVERAGE | US PERCENTILE |
|---|---|---|---|---|---|
| Low Life Expectancy | 17% | 18% | 44 | 20% | 26 |
| Heart Disease | 4.5 | 4.8 | 46 | 5.8 | 24 |
| Asthma | 9.7 | 9.6 | 57 | 10.3 | 36 |
| Cancer | 4.2 | 5.6 | 26 | 6.4 | 11 |
| Persons with Disabilities | 9.8% | 11.3% | 43 | 13.7% | 28 |

## CLIMATE INDICATORS

| INDICATOR | VALUE | STATE AVERAGE | STATE PERCENTILE | US AVERAGE | US PERCENTILE |
|---|---|---|---|---|---|
| Flood Risk | 14% | 13% | 72 | 12% | 77 |
| Wildfire Risk | 0% | 30% | 0 | 14% | 0 |

## CRITICAL SERVICE GAPS

| INDICATOR | VALUE | STATE AVERAGE | STATE PERCENTILE | US AVERAGE | US PERCENTILE |
|---|---|---|---|---|---|
| Broadband Internet | 11% | 9% | 67 | 13% | 53 |
| Lack of Health Insurance | 16% | 7% | 93 | 9% | 86 |
| Housing Burden | Yes | N/A | N/A | N/A | N/A |
| Transportation Access Burden | Yes | N/A | N/A | N/A | N/A |
| Food Desert | Yes | N/A | N/A | N/A | N/A |

*Report for City: Oxnard*

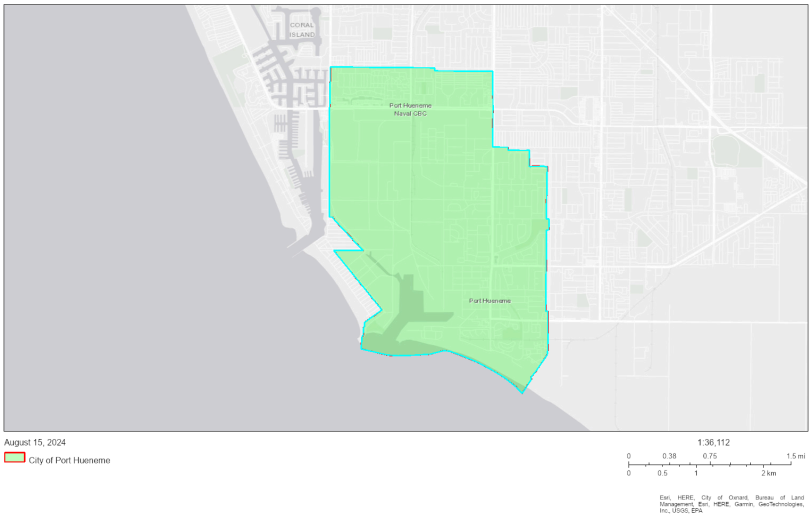
*Report produced August 15, 2024 using EJScreen Version 2.3*

# EJScreen Community Report

This report provides environmental and socioeconomic information for user-defined areas, and combines that data into environmental justice and supplemental indexes.

## Port Hueneme, CA

City: Port Hueneme
Population: 21,847
Area in square miles: 4.66




### LANGUAGES SPOKEN AT HOME

| LANGUAGE | PERCENT |
|---|---|
| English | 53% |
| Spanish | 43% |
| Tagalog (including Filipino) | 1% |
| Other and Unspecified | 2% |
| Total Non-English | 47% |

### COMMUNITY INFORMATION

- Low income: 37 percent
- People of color: 73 percent
- Less than high school education: 22 percent
- Limited English households: 12 percent
- Unemployment: 8 percent
- Persons with disabilities: 15 percent
- Male: 51 percent
- Female: 49 percent
- 80 years — Average life expectancy
- $31,777 — Per capita income
- Number of households: 6,984
- Owner occupied: 47 percent

### BREAKDOWN BY RACE

- White: 27%
- Black: 3%
- American Indian: 0%
- Asian: 2%
- Hawaiian/Pacific Islander: 0%
- Other race: 0%
- Two or more races: 4%
- Hispanic: 63%

### BREAKDOWN BY AGE

| | |
|---|---|
| From Ages 1 to 4 | 7% |
| From Ages 1 to 18 | 23% |
| From Ages 18 and up | 77% |
| From Ages 65 and up | 14% |

### LIMITED ENGLISH SPEAKING BREAKDOWN

| | |
|---|---|
| Speak Spanish | 91% |
| Speak Other Indo-European Languages | 1% |
| Speak Asian-Pacific Island Languages | 8% |
| Speak Other Languages | 0% |

Notes: Numbers may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, American Community Survey (ACS) 2018-2022. Life expectancy data comes from the Centers for Disease Control.

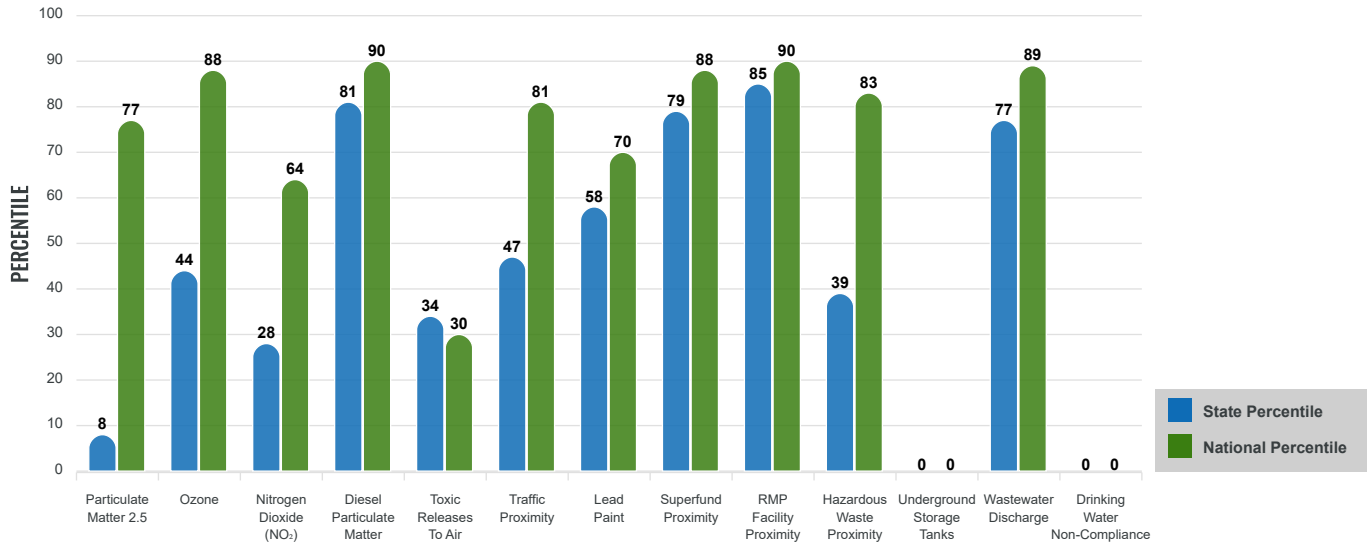
# Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the EJScreen website.

## EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

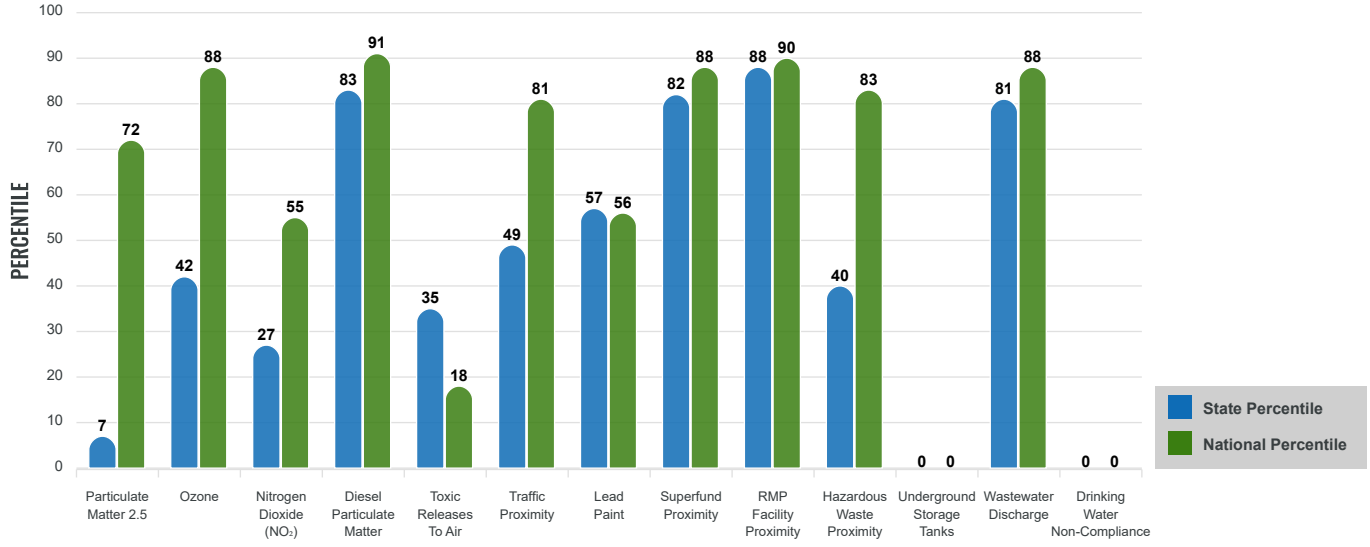
### EJ INDEXES FOR THE SELECTED LOCATION




## SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on percent low income, percent persons with disabilities, percent less than high school education, percent limited English speaking, and percent low life expectancy with a single environmental indicator.

### SUPPLEMENTAL INDEXES FOR THE SELECTED LOCATION




*Report for City: Port Hueneme*

*Report produced August 15, 2024 using EJScreen Version 2.3*

# EJScreen Environmental and Socioeconomic Indicators Data

| SELECTED VARIABLES | VALUE | STATE AVERAGE | PERCENTILE IN STATE | USA AVERAGE | PERCENTILE IN USA |
|---|---|---|---|---|---|
| **ENVIRONMENTAL BURDEN INDICATORS** | | | | | |
| Particulate Matter 2.5 ($\mu g/m^3$) | 8.34 | 12.3 | 4 | 8.45 | 56 |
| Ozone (ppb) | 67.2 | 74.2 | 27 | 61.8 | 79 |
| Nitrogen Dioxide ($NO_2$) (ppbv) | 6.5 | 9.1 | 15 | 7.8 | 38 |
| Diesel Particulate Matter ($\mu g/m^3$) | 0.53 | 0.286 | 93 | 0.191 | 96 |
| Toxic Releases to Air (toxicity-weighted concentration) | 23 | 780 | 21 | 4,600 | 12 |
| Traffic Proximity (daily traffic count/distance to road) | 1,700,000 | 4,000,000 | 31 | 1,700,000 | 68 |
| Lead Paint (% Pre-1960 Housing) | 0.19 | 0.31 | 46 | 0.3 | 47 |
| Superfund Proximity (site count/km distance) | 0.48 | 0.68 | 76 | 0.39 | 83 |
| RMP Facility Proximity (facility count/km distance) | 2.3 | 0.83 | 90 | 0.57 | 95 |
| Hazardous Waste Proximity (facility count/km distance) | 3.6 | 11 | 24 | 3.5 | 71 |
| Underground Storage Tanks (count/$km^2$) | 0 | 0.00036 | 0 | 3.6 | 0 |
| Wastewater Discharge (toxicity-weighted concentration/m distance) | 3200 | 11000 | 67 | 700000 | 82 |
| Drinking Water Non-Compliance (points) | 0 | 0.5 | 0 | 2.2 | 0 |
| **SOCIOECONOMIC INDICATORS** | | | | | |
| Demographic Index USA | 2.02 | N/A | N/A | 1.34 | 78 |
| Supplemental Demographic Index USA | 1.96 | N/A | N/A | 1.64 | 72 |
| Demographic Index State | 2.28 | 1.83 | 69 | N/A | N/A |
| Supplemental Demographic Index State | 1.86 | 1.49 | 73 | N/A | N/A |
| People of Color | 73% | 62% | 59 | 40% | 79 |
| Low Income | 37% | 28% | 70 | 30% | 66 |
| Unemployment Rate | 8% | 6% | 71 | 6% | 77 |
| Limited English Speaking Households | 12% | 8% | 73 | 5% | 87 |
| Less Than High School Education | 22% | 16% | 72 | 11% | 84 |
| Under Age 5 | 7% | 5% | 71 | 5% | 71 |
| Over Age 64 | 14% | 16% | 49 | 18% | 41 |

*Diesel particulate matter index is from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

### Sites reporting to EPA within defined area:

| | |
|---|---|
| Superfund | 0 |
| Hazardous Waste, Treatment, Storage, and Disposal Facilities | 1 |
| Water Dischargers | 12 |
| Air Pollution | 0 |
| Brownfields | 0 |
| Toxic Release Inventory | 2 |

### Other community features within defined area:

| | |
|---|---|
| Schools | 4 |
| Hospitals | 1 |
| Places of Worship | 4 |

### Other environmental data:

| | |
|---|---|
| Air Non-attainment | Yes |
| Impaired Waters | Yes |

| | |
|---|---|
| Selected location contains American Indian Reservation Lands* | No |
| Selected location contains a "Justice40 (CEJST)" disadvantaged community | Yes |
| Selected location contains an EPA IRA disadvantaged community | Yes |

*Report for City: Port Hueneme*

*Report produced August 15, 2024 using EJScreen Version 2.3*

# EJScreen Environmental and Socioeconomic Indicators Data

## HEALTH INDICATORS

| INDICATOR | VALUE | STATE AVERAGE | STATE PERCENTILE | US AVERAGE | US PERCENTILE |
|---|---|---|---|---|---|
| Low Life Expectancy | 15% | 18% | 26 | 20% | 14 |
| Heart Disease | 4.7 | 4.8 | 56 | 5.8 | 30 |
| Asthma | 9.8 | 9.6 | 57 | 10.3 | 36 |
| Cancer | 5.2 | 5.6 | 47 | 6.4 | 24 |
| Persons with Disabilities | 15.3% | 11.3% | 83 | 13.7% | 65 |

## CLIMATE INDICATORS

| INDICATOR | VALUE | STATE AVERAGE | STATE PERCENTILE | US AVERAGE | US PERCENTILE |
|---|---|---|---|---|---|
| Flood Risk | 10% | 13% | 63 | 12% | 65 |
| Wildfire Risk | 0% | 30% | 0 | 14% | 0 |

## CRITICAL SERVICE GAPS

| INDICATOR | VALUE | STATE AVERAGE | STATE PERCENTILE | US AVERAGE | US PERCENTILE |
|---|---|---|---|---|---|
| Broadband Internet | 7% | 9% | 55 | 13% | 41 |
| Lack of Health Insurance | 11% | 7% | 78 | 9% | 70 |
| Housing Burden | Yes | N/A | N/A | N/A | N/A |
| Transportation Access Burden | Yes | N/A | N/A | N/A | N/A |
| Food Desert | Yes | N/A | N/A | N/A | N/A |

*Report for City: Port Hueneme*

*Report produced August 15, 2024 using EJScreen Version 2.3*

# APPENDIX I
# LARWQCB WATER QUALITY CERTIFICATION

**DEPARTMENT OF THE ARMY**
**U.S. ARMY CORPS OF ENGINEERS, LOS ANGELES DISTRICT**
**915 WILSHIRE BOULEVARD, SUITE 1109**
**LOS ANGELES, CALIFORNIA 90017-3409**

February 9, 2024

Ms. Susana Arrendondo
Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 500
Los Angeles, California 90013

Dear Ms. Arrendondo:

The U.S. Army Corps of Engineers, Los Angeles District (Corps) requests a Clean Water Act Section 401 Water Quality Certification (401 WQC) for the Channel Islands and Port Hueneme Harbors Maintenance Dredging Project for a period of six years from 2024 through 2029 for the purpose of maintaining designed depths in the Federal Channels. The Corps proposes to dredge a maximum cumulative quantity of 8.25 million cubic yards (cy) from Channel Islands Harbor and Port Hueneme Harbors over a 6-year period beginning in 2024. The proposed project is located in Ventura County, California.

The following is detailed information regarding the 401 WQC request per the requirements under 40 CFR Part 121:

a. The Corps is the project proponent. The point of contact for this 401 WQC request is Kenneth Wong (40 CFR 121.5(b)(1)).

b. The proposed project consists of dredging up to approximately 2.75 million cy biennially per dredge cycle from Channel Islands and Port Hueneme Harbors, with up to approximately 2.5 million cy taken from Channel Islands Harbor and up to approximately 250,000 cy from Port Hueneme Harbor. Dredging would occur outside nesting and spawning seasons to avoid and minimize potential impacts to federally endangered and state sensitive species. Maintenance dredging will maintain conditions for safe and navigable harbors and provide needed sand replenishment for eroded down coast beaches. Beach replenishment will maintain the beaches for shoreline protection and recreational uses. Biennial dredging activities will occur from October 1 to February 28. For a further detailed project description see the enclosed 401 WQC Application (Section Two: Project Information). (40 CFR 121.5(b)(2))

c. Section 404 of the Clean Water Act governs the discharge of dredged or fill material into waters of the U.S. Although the Corps does not process and issue permits for its own activities, the Corps authorizes its own discharges by applying all applicable substantive legal requirements. The Corps is seeking 401 WQC for discharges of dredged or fill material into waters of the U.S. associated with the

proposed project. The Corps has prepared a section 404(b)(1) evaluation for the discharge (40 FR121.5(b)(3)). The evaluation is included with this request as Enclosure 2.

d. As described in Section Two of the enclosed 401 WQC application, dredged materials would be placed on Silver Strand Beach, Hueneme Beach, or Hueneme nearshore placement site. (40 CFR 121.5(b)(4))

e. Section Eight of the enclosed 401 WQC application (Avoidance and Minimization Measures) provides a complete description of the methods and means proposed to monitor the discharge and equipment or measures planned to control or manage the discharge. (40 CFR 121.5(b)(5))

f. Section Three of the enclosed 401 WQC application (Agency Contact Information) includes a complete list of all other federal, state, tribal, or other governmental authorizations required for the proposed project. (40 CFR 121.5(b)(6))

A pre-filing meeting request in accordance with 40 CFR 121.4 was sent to you on December 12, 2023. A copy of this pre-filing meeting request is included as Enclosure 3 (40 CFR 121.5(b)(7)). The pre-filing meeting was held on January 11, 2024, with representatives of the Corps and your staff, including Dr. Emily Duncan. As the project proponent, the Corps hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief (40 CFR 121.5(b)(8)). The Corps hereby requests that the certifying authority review and take action on this application for a 401 WQC within the applicable reasonable period of time. (40 CFR 121.5(b)(9)). The Corps has verified that the contents of this 401 WQC application with its enclosures meet the requirements provided in 40 CFR §121.5 and 33 CFR 336.1(b)(8). This 401 WQC request is consistent with the requirements of 40 CFR Part 121.

In accordance with 40 CFR 121.6, the Corps and the Regional Water Quality Control Board (RWQCB) agreed upon establishing a reasonable period of time to act on this certification request as 74 days from the date of the 401 WQC request, which includes a two-week review period for the RWQCB to review the application. Because the Corps is the project proponent, the date identified for receipt of a completed 401 WQC request is the date of this certification request to your agency, February 9, 2024. If your agency does not act on this 401 WQC request by April 23, 2024, we will consider the requirement to obtain a 401 WQC waived on April 24, 2024, unless you request a time extension from the Corps and the Corps grants a time extension. Any request from your agency to extend the reasonable period of time must be made in writing to the Corps.

Additional materials requested by Dr. Duncan in addition to the 401 WQC application and the 404(b)(1) evaluation will be provided via email. These include an example water quality monitoring report from previous dredging, the Corps' 2023 Sediment Sampling Analysis Report, and the 2022 Biological Opinion that addressed effects of Channel Islands maintenance dredging on the Federally listed species, Western snowy plover and California least tern.

We appreciate your review and action of the 401 WQC request. If you require further information regarding the proposed project, please contact Mr. Kenneth Wong at (213) 361-2269 or by electronic mail at Kenneth.Wong@usace.army.mil. Thank you for your assistance and attention to this matter.

Sincerely,

Maricris C. Lee, P.E.

Digitally signed by Maricris C. Lee, P.E.
Date: 2024.02.09 16:13:06 -08'00'

Jodi L. Clifford
Chief, Planning Division

Enclosure(s)

# Los Angeles Regional Water Quality Control Board

## CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION AND ORDER

**Effective Date:** April 29, 2024

**Program Type:** Fill/Excavation

| | |
|---|---|
| Reg. Meas. ID: | 455868 |
| Place ID: | 893514 |
| WDID: | 4WQC24016 |
| R4 File No: | 24-016 |

**Project Type:** Boating and Navigation

**Project:** Channel Islands/Port Hueneme Harbors Maintenance Dredging Project (Project)

**Applicant:** U.S. Army Corps of Engineers

**Applicant Contact:**
Jodi L. Clifford
Chief, Planning Division
U.S. Army Corps of Engineers
915 Wilshire Blvd.
Los Angeles CA 90017
Phone: (213) 452-3840
Email: Jodi.L.Clifford@usace.army.mil

**Applicant's Agent:**
Kenneth Wong
Environmental Coordinator
U.S. Army Corps of Engineers
915 Wilshire Blvd. Los Angeles CA 90017
Phone: (213) 361-2269
Email: Kenneth.wong@usace.army.mil

**Water Board Staff:**
Emily Duncan
Senior Environmental Scientist
320 4th St. Suite 200
Los Angeles CA 90013
Phone: 213-576-6679
Email: Emily.Duncan@waterboards.ca.gov

**Water Board Contact Person:**
If you have any questions, please call the Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) Staff listed above or (213) 576-6600 and ask to speak with the Water Quality Certification and Wetlands Unit Program Manager. When corresponding via email, please include our general email: RB4-401Certification@waterboards.ca.gov.

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**Attachment C** Report and Notification Requirements
**Attachment D** 40 CFR Part 121.7 Compliance

## I. Order

This Clean Water Act (CWA) section 401 Water Quality Certification action and Order (Order) is issued at the request of the U.S. Army Corps of Engineers (hereinafter Permittee) for the Project. This Order is for the purpose described in the application and supplemental information submitted by the Permittee. The application was received on February 9, 2024. The application was deemed complete on March 3, 2024.

The Applicant submitted a certification request as defined by 40 CFR section 121.5 to the Los Angeles Water Board on February 12, 2024. In response to the certification request, the Corps provided a reasonable period of time as defined by 40 CFR 121.6 for the Water Board to act on the request by April 23, 2024.

## II. Public Notice

The Los Angeles Water Board provided public notice of the application pursuant to California Code of Regulations, title 23, section 3858 from February 23, 2024 to the effective date of the Order. The Los Angeles Water Board did not receive any comments during the comment period.

## III. Project Purpose

The Project will maintain the federal navigation channels and sand traps at authorized depths and widths, which are subject to continual filling by littoral transport processes, and assure the continued safe navigation within both Channel Islands Harbor and Port Hueneme Harbor. The Project will also provide beach nourishment material for downcoast beaches.

## IV. Project Description

Approximately 2.75 million cubic yards (cy) of sand will be dredged from the federal navigation channels at Channel Islands Harbor and Port Hueneme Harbor biennially (every 2 years) using clamshell and hydraulic dredges. Beach compatible sand will be discharged at Silver Strand Beach and Hueneme Beach. Non-beach compatible sand will be discharged in the nearshore near Hueneme Beach.

Channel Islands Harbor:

Channel Islands Harbor is located in the city of Oxnard. Channel Islands Harbor receives sediments from upcoast beaches and streams by the southerly littoral transport system. Maintenance dredging has been conducted routinely since the 1960s at Channel Islands Harbor.

Harbor structural features consist of a 2,300-foot long offshore detached breakwater, entrance jetties, and an entrance channel leading to the harbor interior. The Entrance Channel (Area A), (see Attachment A for maps of the Harbors and the Areas) widens to include a Basin (Area E). The Entrance Channel and Basin are 3,400 feet long and vary in width from approximately 300 feet at the entrance to 600 feet at the Basin within the harbor. The Entrance Channel will be dredged to the authorized depth of -20 feet Mean Low Water (MLLW). The Basin may be dredged to the authorized depth of -20 feet MLLW during this Order term, if needed. The inner basin (Area F) will not be dredged during this Order term.

The offshore detached breakwater and entrance jetties form a sand trap which was designed to trap sand. Sand which is carried downcoast by littoral drift is trapped in the sand trap to minimize shoaling in the entrance channel. The sand trap is divided into four areas: Areas B, C, D, and G. The sand trap areas B, C, and D will be dredged to the design depth of ~35 feet MLLW. Sand trap area G will be dredged to the design depth of -25 ft MLLW.

Port Hueneme Harbor:

Port Hueneme is located in the city of Port Hueneme. This harbor is located approximately one mile southeast of Channel Islands Harbor. Port Hueneme was built in 1940 and receives sediments from both southerly and northerly littoral transport. Previous routine maintenance dredging has been conducted approximately every 5 years at Port Hueneme.

The channels of Port Hueneme were deepened in 2021 to the current authorized depths of – 44 feet and – 40 feet MLLW.

Port Hueneme Harbor features include two entrance jetties, an Approach Channel, Entrance Channel, Channel A, and a Turning Basin. The Approach Channel is approximately 1800 feet long, 600 feet wide, and will be dredged to the authorized depth of -44 feet MLLW. The Entrance Channel is 1,400 feet long, 330 feet wide, and will be dredged to the authorized depth of -40 feet MLLW. Channel A and the Turning Basin will not be dredged during this Order term.

Dredged Sediment Placement:

Dredged sediment will be placed at one of three sediment placement sites, Silver Strand Beach, Hueneme Beach and the Hueneme Nearshore Placement Site using a discharge pipeline.

Silver Strand Beach:

Silver Strand Beach is located in the city of Oxnard, between Channel Islands Harbor and Port Hueneme and is heavily used during the summer. Silver Strand beach is approximately 5,000 feet long and typically 200-300 feet wide. Construction of Channel Islands Harbor and Port Hueneme has altered the natural transport of littoral material to down coast beaches.

Beach replenishment is necessary to maintain the beaches for shoreline protection and recreational uses. On average, approximately 100,000 to 200,000 cy of material from the Channel Islands Harbor dredging program is deposited on Silver Strand Beach every two years.

Hueneme Beach Placement Site:

Hueneme Beach is located in the city of Port Hueneme, southeast of the Port Hueneme Harbor and is heavily used during the summer. The beach width varies from 0 to 800 feet wide**.** Construction of Port Hueneme Harbor has altered the natural transport of littoral material to downcoast beaches.

Beach replenishment is necessary to maintain the beaches for shoreline protection and recreational uses. Hueneme Beach Placement Site is approximately 3,000 feet long from the Port Hueneme East Jetty to Market Street.

Hueneme Nearshore Placement Site:

The Hueneme Nearshore Placement Site is located offshore of Hueneme Beach. The Hueneme Nearshore Placement Site is approximately 3,700 feet long, 1,000 feet wide, and ranges in depth from –10 feet to –30 feet MLLW with an average depth of –20 feet MLLW. Placement of dredge materials in the nearshore zone is a proven method of nourishing adjacent and down coast beaches. During the 2021 Port Hueneme Deepening project, approximately 140,000 CY were placed in the Hueneme Nearshore Placement Site. During the previous twelve years no material from the Channel Islands Harbor/Port Hueneme dredging programs were deposited in the Hueneme Nearshore Placement Site. This is due to the preference for beach placement by local officials.

In addition, sand will be removed from the Drift Sand Pile on the Surface Warfare Engineering Facility (SWEF) Beach at Naval Base Ventura County (NBVC) and placed within the SWEF Beach

pipeline corridor along Venice Road adjacent to Silver Strand Beach and at the entrance of Port Hueneme Harbor.

A security fence separates SWEF Beach from Silver Strand Beach. Wind-blown sand from Silver Strand Beach naturally accumulates in the Drift Sand Pile on NBVC, and spills onto Venice Road within NBVC.

Throughout the Order term, a cumulative total of approximately 10,000 cy of sand may be removed from the Drift Sand Pile on NBVC along Venice Road and placed within the SWEF Beach pipeline corridor to secure the discharge pipeline as needed using equipment such as an end loader.

Construction Equipment: Work can be accomplished by a variety of dredge types.

Hydraulic Pipeline Dredge: Typically, a floating dredge with an attached hydraulic cutterhead is used to dredge the sand. The sand slurry is pumped through a pipeline onto the receiver beach for beach placement. F ollowing pipeline transport, the sand is uniformly spread over the beach using conventional earth moving equipment. Approximately 10,000 to 40,000 cy of sediment can be piped to the beach per day using a hydraulic dredge. Additional construction equipment typically required to support dredging activities are: conventional earth moving equipment and support vessels (i.e. an anchor tender, a pipe tender, tug vessels, and a crew boat).

Clamshell Dredge: This method consists of a crane mounted on a barge outfitted with a clamshell bucket and a scow. Dredged materials are placed into a scow for transport to the Nearshore Placement Site. Approximately 4,000 to 10,000 CY of sediment can be removed and transported to the Nearshore Placement Site per day using a clamshell dredge. Additional construction equipment typically required to support dredging activities are: support vessels (i.e. tug vessels and a crew boat).

| **Dredge Location** | **Dredge Type(s)** | **Placement Method** | **Placement Site Location(s)** |
|---|---|---|---|
| Channel Islands Harbor Dredge Template (Areas A, B, C, D, E*, & G) | Hydraulic Pipeline Dredge | Beach Placement | Silver Strand Beach, Hueneme Beach |
| Channel Islands Harbor Area A | Clamshell Dredge | Nearshore Placement | Hueneme Nearshore Placement Site |
| Port Hueneme Harbor Dredge Template | Hydraulic Pipeline Dredge | Beach Placement | Silver Strand Beach, Hueneme Beach |
| Port Hueneme Harbor Dredge Template | Clamshell Dredge | Nearshore Placement | Hueneme Nearshore Placement Site |

Dredging will occur outside of nesting and spawning seasons for the Western Snowy Plover (March 1 – September 15), California least tern (April 1- September 15) and the California Grunion (March 1 – August 31).

## V. Project Location

Channel Islands Harbor and Port Hueneme Harbor in Ventura County.

| | Latitude | Longitude |
|---|---|---|
| Channel Islands Harbor | 34.157167 | -119.226245 |
| Port Hueneme Harbor | 34.146690 | -119.211096 |

Maps and Figures showing the Project location are found in Attachment A of this Order.

## VI. Project Impact and Receiving Waters Information

The Project is located within the jurisdiction of the Los Angeles Water Board. Receiving waters and groundwater potentially impacted by this Project are protected in accordance with the applicable water quality control plan (Basin Plan) for the region and other plans and policies which may be accessed online at: http://www.waterboards.ca.gov/plans_policies/. The Basin Plan includes water quality standards, which consist of existing and potential beneficial uses of waters of the state, water quality objectives to protect those uses, and the state and federal antidegradation policies.

| | |
|---|---|
| Receiving Waters: | Channel Islands Harbor (Hydrologic Unit Code: 180701030201) |
| Designated Beneficial Uses: | IND, NAV, REC-1, REC-2, COMM, MAR, WILD |
| | Port Hueneme (Hydrologic Unit Code: 180701030201) |
| Designated Beneficial Uses: | PROC, NAV, REC-1, REC-2, COMM, MAR, WILD |

## VII. Description of Direct Impacts to Waters of the State

Total Project dredge quantities for all impacts are summarized in Table 1. Permanent impacts are categorized as those resulting in a physical loss in area and also those degrading ecological condition only.

**Table 1: Total Project Dredge Quantity**

| Aquatic Resource Type | Temporary Impact[1] | | | Permanent Impact | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Physical Loss of Area | | | Degradation of Ecological Condition Only | | |
| | Acres | CY[2] | LF | Acres | CY | LF | Acres | CY | LF |
| Ocean/bay/ estuary | 252.9 | 2.75 million biennially | | | | | | | |

[1] Includes only temporary direct impacts to waters of the state and does not include upland areas of temporary disturbance which could result in a discharge to waters of the state. Temporary impacts, by definition, are restored to pre-project conditions and therefore do not include a physical loss of area or degradation of ecological condition.

[2] Cubic Yards (CY); Linear Feet (LF)

## VIII. Avoidance and Minimization

No alternatives analysis is required because the Project has no permanent impacts to aquatic resources and no impacts to rare, threatened or endangered species habitat in waters of the state, wetlands, eel grass beds, Outstanding National Resources Waters or Areas of Special Biological Significance.

## IX. Compensatory Mitigation

No compensatory mitigation was required for permanent impacts because impacts from the maintenance dredging are temporary.

## X. California Environmental Quality Act (CEQA)

The Los Angeles Water Board has determined that the Project is exempt from review under CEQA pursuant to California Water Code of Regulations, title 14, section 15061. Specifically, the issuance of this Order and the activities described herein meet the exemption criteria under California Code of Regulations title 14, section 15304 minor alterations to land. Additionally, the Los Angeles Water Board concludes that no exceptions to the CEQA exemption apply to the activities approved by this Order.

## XI. Petitions for Reconsideration

Any person aggrieved by this action may petition the State Water Board to reconsider this Order in accordance with California Code of Regulations, title 23, section 3867. A petition for reconsideration must be submitted in writing and received within 30 calendar days of the issuance of this Order.

## XII. Fees Received

This is a federal project and not subject to fees.

## XIII. Findings

1. This Order is adopted pursuant to section 401 of the Clean Water Act and the California Porter-Cologne Water Quality Control Act (Cal. Water Code § § 13000, et seq.). Discharges to waters of the state are prohibited except when in accordance with Water Code section 13264. Notwithstanding any determinations made by the U.S. Army Corps or other federal agency pursuant to 40 C.F.R. section 121.9, dischargers must comply with the entirety of this Order because the Order also serves as waste discharge requirements in accordance with State Water Board Water Quality General Order No. 2003-0017-DWQ.

2. Failure to comply with any condition of this Order shall constitute a violation of the Porter-Cologne Water Quality Control and the Clean Water Act. The Permittee and/or discharger may then be subject to administrative and/or civil liability pursuant to Water Code section 13385.

3. In the event of any violation or threatened violation of the conditions of this Order, the violation or threatened violation shall be subject to any remedies, penalties, process, or sanctions as provided for under state and federal law.

4. In response to a suspected violation of any condition of this Order, the Water Board may require the holder of this Order to furnish, under penalty of perjury, any technical or monitoring reports the Water Boards deem appropriate, provided that the burden, including costs, of the reports

shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. The additional monitoring requirements ensure that permitted discharges and activities comport with any applicable effluent limitations, water quality standards, and/or other appropriate requirement of state law.

**5.** This Order and all of its conditions contained herein continue to have full force and effect regardless of the expiration or revocation of any federal license or permit issued for the Project.

**6.** This Order does not provide coverage under the Construction General Permit. As applicable, dischargers shall maintain compliance with conditions described in, and required by, the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-009-DWQ; NPDES No. CAS000002 as amended by Order No. 2010-0014-DWQ, Order No. 2012-0006-DWQ, and any amendments thereto) (General Construction Permit). Enrollment in the Construction General Permit may be required for construction activity resulting in a land disturbance of one acre or more, or less than one acre but part of a larger common plan of development or sale. For projects with ground disturbing activities that require enrollment in the Construction General Permit, dischargers shall maintain compliance with conditions described in, and required by the Permit. For ground disturbing activities that do not require enrollment in Order No. 2009-0009-DWQ, project plans included with the application shall include appropriate erosion and sediment control measures as described in the *Best Management Practices* Section (Stormwater subsection) below.

**7.** This Order does not authorize any act which results in the taking of a threatened, endangered or candidate species or any act, which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & Wildlife Code, sections 2050-2097) or the federal Endangered Species Act (16 U.S.C. sections 1531-1544). If a “take” will result from any act authorized under this Order held by the discharger, the discharger must obtain authorization for the take prior to any construction or operation of the portion of the Project that may result in a take. The discharger is responsible for meeting all requirements of the applicable endangered species act for the Project authorized under this Order.

**8.** This Order includes monitoring and reporting requirements pursuant to Water Code section 13267. The burden of preparing these reports, including costs, are reasonable to the need and benefits of obtaining the reports. The reports confirm that the best management practices required under this Order are sufficient to protect beneficial uses and water quality objectives. The reports related to accidental discharges also ensure that corrective actions, if any, that are necessary to minimize the impact or clean up such discharges can be taken as soon as possible. The anticipated costs are minimal as the reporting obligations require only visual monitoring, in-field measurements, and notification reporting.

## XIV. Conditions

The Los Angeles Water Board has independently reviewed the record of the Project to analyze impacts to water quality and designated beneficial uses within the watershed of the Project. In accordance with this Order, the Permittee may proceed with the Project under the following terms and conditions. This Order provides reasonable assurance that the Project authorized under this Order will comply with state and federally approved water quality requirements, provided that the following conditions are adhered to.

**A. Authorization**

Impacts to waters of the state shall not exceed quantities shown in Table 1.

**B. Reporting and Notification Requirements**

Requirements for the content of these reporting and notification types are detailed in Attachment C, including specifications for photo and map documentation during the Project. Written reports and notifications must be submitted using the Reporting and Notification Cover Sheet located in Attachment C, which must be signed by the Permittee or an authorized representative.

**1. Project Reporting**

**a. Annual Reporting:** The Permittee shall submit an Annual Report each year on the anniversary of Project effective date. Annual Reporting requirements are detailed in Attachment C. Annual reporting shall continue until a Notice of Project Complete Letter is issued to the Permittee.

**2. Project Status Notifications**

**a. Commencement of Construction:** The Permittee shall submit a Commencement of Construction Report at least seven (7) days prior to start of initial ground disturbance activities.

**b. Request for Notice of Project Complete Letter:** The Permittee shall submit a Request for Notice of Project Complete Letter when construction and/or any post-construction monitoring is complete,[3] and no further Project activities will occur. This request shall be submitted to Los Angeles Water Board staff within thirty (30) days following completion of all Project activities. Upon approval of the request, Los Angeles Water Board staff shall issue a Notice of Project Complete Letter to the Permittee which will end the post discharge monitoring period and associated annual fees.

**3. Conditional Notifications and Reports:** The following notifications and reports are required as appropriate.

**a. Accidental Discharges of Hazardous Materials**[4]

Following an accidental discharge of a reportable quantity of a hazardous material, sewage, or an unknown material, the following applies (Wat. Code, § 13271):

[3] Completion of post-construction monitoring shall be determined by Los Angeles Water Board staff and shall be contingent on successful attainment of restoration and mitigation performance criteria.

[4] "Hazardous material" means any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment. (Health & Saf. Code, § 25501.)

**i.** As soon as (A) the Permittee has knowledge of the discharge or noncompliance, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures then:
- first call – 911 (to notify local response agency)
- then call – Office of Emergency Services (OES) State Warning Center at: (800) 852-7550 or (916) 845-8911
  Lastly, follow the required OES procedures as set forth in the Office of Emergency Services' Accidental Discharge Notification Web Page (https://www.caloes.ca.gov/office-of-the-director/operations/response-operations/fire-rescue/hazardous-materials/spill-release-reporting/)

**ii.** Following notification to OES, the Permittee shall notify the Los Angeles Water Board, as soon as practicable (ideally within 24 hours). Notification may be via telephone, e-mail, or delivered written notice.

**iii.** Within five (5) working days of notification to the Los Angeles Water Board, the Permittee must submit an Accidental Discharge of Hazardous Material Report.

**b. Violation of Compliance with Water Quality Standards:** The Permittee shall notify the Los Angeles Water Board of any event causing a violation of compliance with water quality standards. Notification may be via telephone, e-mail, or delivered written notice.

**i.** Examples of noncompliance events include: lack of any reporting in a timely manner, lack of storm water treatment following a rain event, discharges causing a visible plume in a water of the state, water contact with uncured concrete, and exceedances of limits for the analytes for *In-Water Work or Diversions* listed below.

**ii.** This notification must be followed within three (3) working days by submission of a Violation of Compliance with Water Quality Standards Report.

**c. In-Water Work or Diversion**

i. During stream diversion or in-water work, water quality monitoring shall be conducted. Requirements for water quality monitoring are below.

ii. The Permittee shall notify the Los Angeles Water Board at least forty-eight (48) hours prior to initiating work in water or stream diversions. Notification may be via telephone, e-mail, or delivered written notice.

**d. Modifications to Project:** Project modifications may require an amendment of this Order. The Permittee shall give advance notice to Los Angeles Water Board staff if Project implementation as described in the application materials is altered in any way or by the imposition of subsequent permit conditions by any local, state or federal regulatory authority by submitting a Modifications to Project Report. The Permittee shall inform Los Angeles Water Board staff of any Project modifications that will interfere with the Permittee's compliance with this Order.

**e. Transfer of Property Ownership:** This Order is not transferable in its entirety or in part to any person or organization except after receiving certification for the Project from the Los Angeles Water Board. In addition:

**i.** The Permittee must notify the Los Angeles Water Board of any change in ownership or interest in ownership of the Project area by submitting a Transfer of Property Ownership Report. The Permittee and purchaser must sign and date the notification and provide such notification to the Los Angeles Water Board at least 30 days prior to the transfer of ownership.

**ii.** Until such time as a new Order has been issued, the Permittee shall continue to be responsible for all requirements set forth in this Order.

## C. Water Quality Monitoring

1. **General:** If surface water is present, continuous visual surface water monitoring shall be conducted to detect accidental discharge of construction related pollutants (e.g., oil and grease, turbidity plume, or uncured concrete).

2. **Accidental Discharges/Noncompliance:** Upon occurrence of an accidental discharge of hazardous materials or a violation of compliance with a water quality standard, Los Angeles Water Board staff may require water quality monitoring based on the discharge constituents and/or related water quality objectives and beneficial uses.

3. **In-Water Work or Diversions:**

During planned work in water, any discharge(s) to waters of the state shall conform to the following water quality standards:

**a.** Oil and Grease. Waters shall not contain oils, greases, waxes or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause nuisance, or that otherwise adversely affect beneficial uses.

**b.** Dissolved Oxygen. At a minimum, the mean annual dissolved oxygen concentration of all waters shall be greater than 7 mg/L, and no single determination shall be less than 5.0 mg/L, except when natural conditions cause lesser concentrations.

**c.** pH. The pH of bays or estuaries shall not be depressed below 6.5 or raised above 8.5 as a result of waste discharges. Ambient pH levels shall not be changed more than 0.2 units from natural conditions as a result of waste discharge.

**d.** Turbidity. Where natural turbidity is between 0 and 50 Nephelometric Turbidity Units (NTU), increases shall not exceed 20%. Where natural turbidity is greater than 50 NTU, increases shall not exceed 10%.

Sampling shall be conducted in accordance with Table 2 sampling parameters.[5]

[5] Pollutants shall be analyzed using the analytical methods described in 40 Code of Federal Regulations Part 136; where no methods are specified for a given pollutant, the method shall be approved by Los Angeles Water Board staff. Grab samples shall be taken between the surface and mid-depth and not be collected at the same

*(footnote continued on next page)*

| Table 2: Sample Type and Frequency Requirements | | | |
|---|---|---|---|
| Parameter | Unit of Measurement | Type of Sample | Minimum Frequency |
| Oil and Grease | N/A | Visual | Continuous |
| Dissolved Oxygen | mg/L & % saturation | Grab or CTD | Daily for the first week, weekly, thereafter |
| pH | Standard Units | Grab or CTD | Daily for the first week, weekly, thereafter |
| Turbidity | NTU or % light transmittance | Grab or CTD | Daily for the first week, weekly, thereafter |
| Temperature | °F (or as °C) | Grab or CTD | Daily for the first week, weekly, thereafter |

Baseline sampling may be conducted at one location within the project boundary for each phase. All other sampling shall take place within and outside of the project boundary at a minimum of two locations (4 locations total). Results of the analyses shall be submitted to this Regional Board by the 15th day of each subsequent sampling month. A map or drawing indicating the locations of sampling points shall be included with each submittal. A summary of results shall discuss the analysis and compliance. Every measurement not meeting the compliance limits shall be accompanied by an explanation, the actions taken to correct the degradation to waters, and addressed in *Violation of Compliance with Water Quality Standards* report described above.

**D. Standard Conditions**

1. This Order is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Water Code section 13330, and California Code of Regulations, title 23, chapter 28, Article 6 commencing with sections 3867-3869, inclusive. Additionally, the Los Angeles Water Board reserves the right to suspend, cancel, or modify and reissue this Order, after providing notice to the Permittee, if the Los Angeles Water Board determines that: the Project fails to comply with any of the conditions of this Order; or, when necessary to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.) or federal Clean Water Act section 303 (33 U.S.C. § 1313). For purposes of Clean Water Act section 401(d), the condition constitutes a limitation necessary to assure compliance with water quality standards and appropriate requirements of state law.

2. This Order is not intended and shall not be construed to apply to any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license, unless the pertinent certification application was filed pursuant

*(footnote continued from previous page)*
time each day to get a complete representation of variations in the receiving water. Measurements with a conductivity, temperature and depth (CTD) tool shall be taken throughout the water column, at a minimum of 2-meter increments, an average of surface to mid-depth readings shall be reported. A hand-held field meter may be used, provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring shall be maintained onsite.

to subsection 3855(b) of chapter 28, title 23 of the California Code of Regulations, and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

3. This Order is conditioned upon total payment of any fee required under title 23 of the California Code of Regulations and owed by the Permittee.

## E. General Compliance

**1.** Permitted actions must not cause a violation of any applicable water quality standards, including impairment of designated beneficial uses for receiving waters as adopted in the Basin Plans by any applicable Los Angeles Water Board or any applicable State Water Board (collectively Water Boards) water quality control plan or policy. The source of any such discharge must be eliminated as soon as practicable.

**2.** Authorization under this Order is granted based on the application information submitted, including engineering plans, specifications, and technical reports. Water Code section 13264 prohibits any discharge that is not specifically authorized in this Order.

## F. Administrative

**1.** Signatory requirements for all document submittals required by this Order are presented in Attachment B of this Order.

**2.** The Permittee shall grant Los Angeles Water Board staff, or an authorized representative (including an authorized contractor acting as a Water Board representative), upon presentation of credentials and other documents as may be required by law, permission to:

1. Enter upon the Project or compensatory mitigation site(s) premises where a regulated facility or activity is located or conducted, or where records are kept.
2. Have access to and copy any records that are kept and are relevant to the Project or the requirements of this Order.
3. Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order.
4. Sample or monitor for the purposes of assuring Order compliance.

**3.** A copy of this Order shall be provided to any consultants, contractors, and subcontractors working on the Project. Copies of this Order shall remain at the Project site for the duration of this Order. The Permittee shall be responsible for work conducted by its consultants, contractors, and any subcontractors.

**4.** A copy of this Order must be available at the Project site(s) during construction for review by site personnel and agencies. All personnel performing work on the Project shall be familiar with the content of this Order and its posted location at the Project site.

**5.** This Order shall expire six (6) years from date of this Order. The Applicant shall submit a complete application at least 90 days prior to termination of this Order if renewal is requested.

## G. Best Management Practices

### 1. Dredging

**a.** Should turbidity or any of the other parameters exceed objectives, prescribed actions shall be taken, (i.e. slowing dredge cycle times, relocating operations to areas less susceptible to the current drift at the time of dredging or placement operations, and/or temporarily halting dredging/placement activities).

**b.** All dredging and fill activities shall remain within the boundaries specified in the plans. There shall be no dumping of fill or material outside of the project area or within any adjacent aquatic community.

### 2. Site Management

**a.** A spill prevention plan, employee training, and staging materials on site to clean up accidental spills shall be maintained at the work site.

**b.** The Contractor shall remove all trash, debris, and excess construction material from the dredge operations and from the dredged material placement stie at the end of each workday and shall dispose of all materials at an approved disposal site. All debris shall be disposed of as solid waste.

**c.** The contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters and to minimize interference with, disturbance to, and damage of fish and wildlife.

### 3. Hazardous Materials

**a.** The Corps shall require its contractor to not discharge petroleum products or other hazardous materials to surface water.

**b.** The Corps shall require its contractor to not cause visible oil, or grease, in the work area.

**c.** The Corps shall require its contractor to develop and maintain onsite a Project-specific spill prevention, containment and cleanup plan outlining the practices to prevent, minimize, and/or clean up potential spills during construction of the Project.

### 4. Wildlife and Special Status Species

**a.** Prior to each biennial dredge cycle an eelgrass and Caulerpa survey shall be performed in accordance with the California Eelgrass Mitigation Policy (CEMP) and the Caulerpa Control Protocol.

**b.** No dredging activities shall be conducted in the sand trap area (adjacent to Hollywood Beach) during the shorebird/seabird nesting season (March 1 - September 30).

### 5. Stormwater

**a.** The project shall comply with the local regulations associated with the Los Angeles Water Board’s Municipal Stormwater Permit issued to Los Angeles and Ventura County

and co-permittees under NPDES No. CAS004004 and Waste Discharge Requirements Order No. R4-2021-0105 or subsequent order.

**b.** If not enrolled in the General Construction Permit, the Permittee shall develop and implement a site-specific Storm Water Pollution Prevention Plan (SWPPP) and a Rain Event Action Plan (REAP) as described in the General Construction Permit.

### H. On-site Mitigation for Temporary Impacts

1. The Permittee shall restore all areas of temporary impacts to waters of the state.

## XV. Water Quality Certification

I hereby issue the Order for the Channel Islands/Port Hueneme Harbors Maintenance Dredging Project, 4WQC24016 certifying that as long as all of the conditions listed in this Order are met, any discharge from the referenced Project will comply with the applicable provisions of Clean Water Act sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards).

This discharge is also regulated pursuant to State Water Board Water Quality Order No. 2003-0017-DWQ which authorizes this Order to serve as Waste Discharge Requirements pursuant to the Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.).

Except insofar as may be modified by any preceding conditions, all Order actions are contingent on: (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the conditions of this Order and the attachments to this Order; and, (b) compliance with all applicable requirements of Statewide Water Quality Control Plans and Policies, the Regional Water Boards' Water Quality Control Plans and Policies.

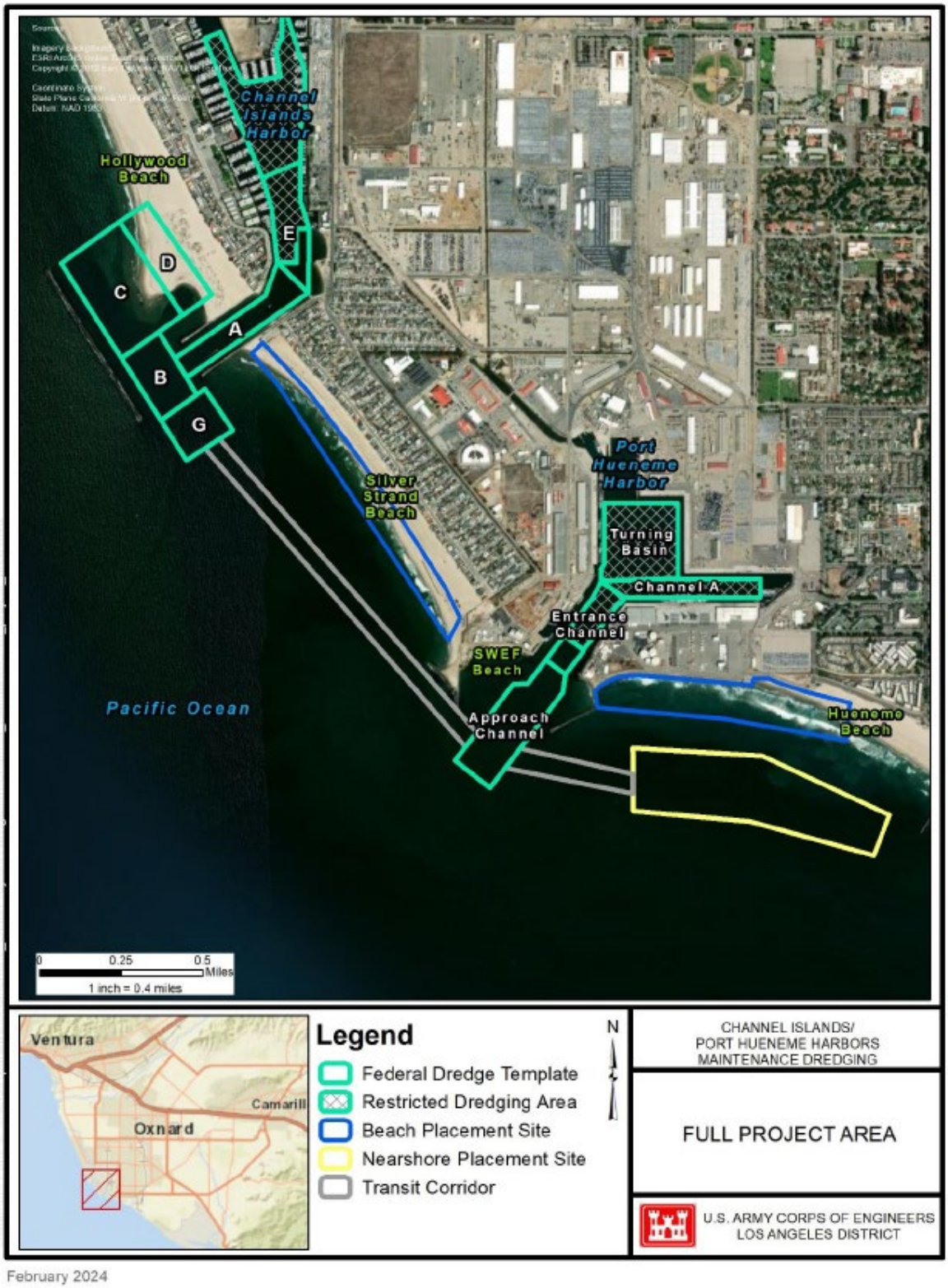
Jenny Newman Digitally signed by Jenny Newman
Date: 2024.04.29 10:31:12 -07'00'

April 29, 2024

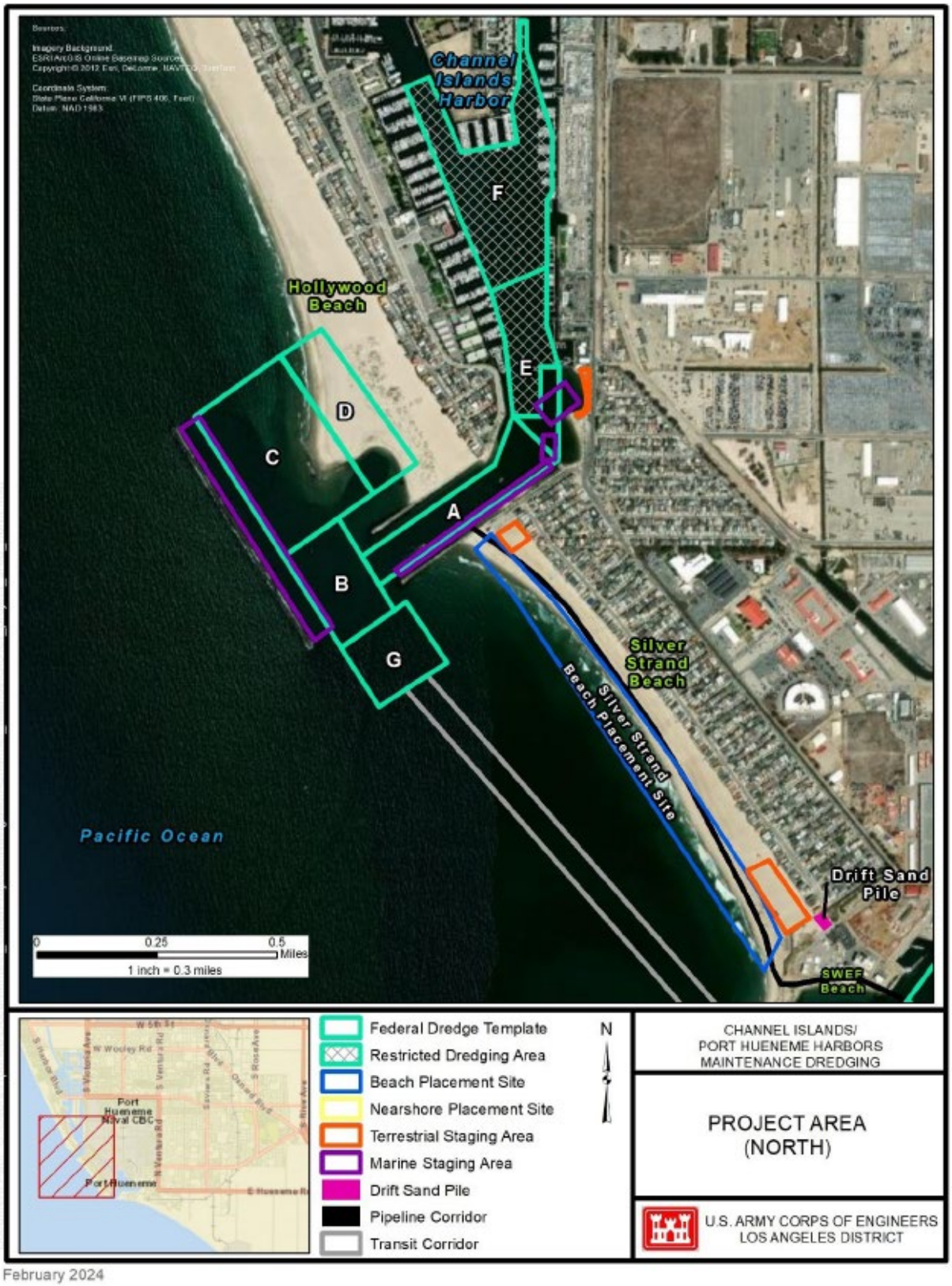
for Susana Arredondo
Executive Officer
Los Angeles Water Quality Control Board

Date

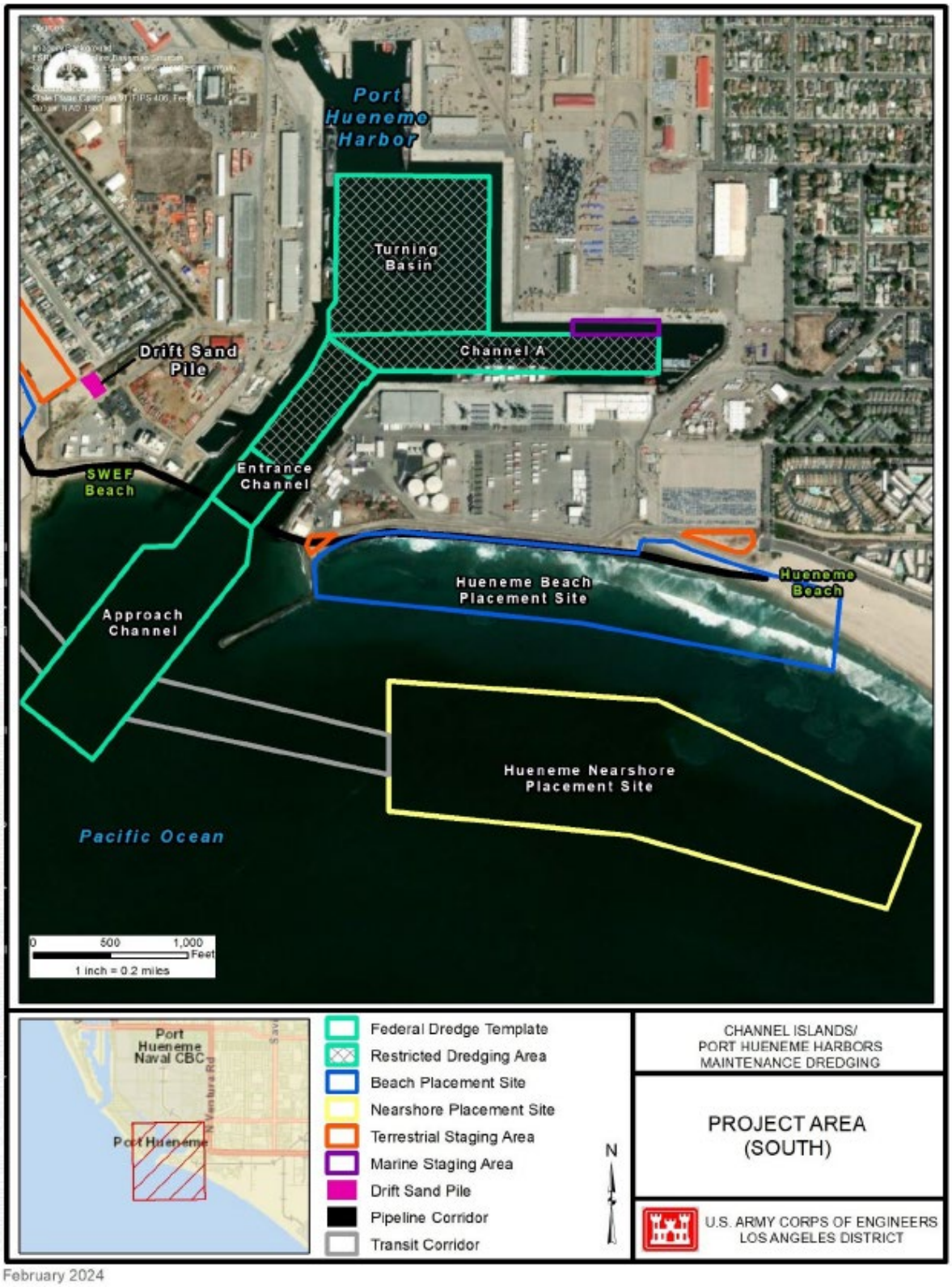
**Figure 1: Vicinity Map**




February 2024




February 2024




February 2024

# SIGNATORY REQUIREMENTS

*All Documents Submitted In Compliance With This Order*
*Shall Meet The Following Signatory Requirements:*

1. All applications, reports, or information submitted to the Los Angeles Water Quality Control Board (Los Angeles Water Board) must be signed and certified as follows:

   a) For a corporation, by a responsible corporate officer of at least the level of vice-president.
   b) For a partnership or sole proprietorship, by a general partner or proprietor, respectively.
   c) For a municipality, or a state, federal, or other public agency, by either a principal executive officer or ranking elected official.

2. A duly authorized representative of a person designated in items 1.a through 1.c above may sign documents if:

   a) The authorization is made in writing by a person described in items 1.a through 1.c above.
   b) The authorization specifies either an individual or position having responsibility for the overall operation of the regulated activity.
   c) The written authorization is submitted to the Los Angeles Water Board Staff Contact prior to submitting any documents listed in item 1 above.

3. Any person signing a document under this section shall make the following certification:

   "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

## Copies of this Form

Include a copy of the Project specific Cover Sheet below with your report: please retain a copy for your records.

## Report Submittal Instructions

1. Check the box on the Report and Notification Cover Sheet next to the report or notification you are submitting.
   - **Part A (Annual Report):** This report will be submitted annually from the anniversary of Project effective date until a Notice of Project Complete Letter is issued.
   - **Part B (Project Status Notifications):** Used to notify the Los Angeles Water Board of the status of the Project schedule that may affect Project billing.
   - **Part C (Conditional Notifications and Reports):** Required on a case by case basis for accidental discharges of hazardous materials, violation of compliance with water quality standards, notification of in-water work, or other reports.
2. Sign the Report and Notification Cover Sheet and attach all information requested for the Report Type.
3. **Electronic Report Submittal Instructions:**
   - Submit signed Report and Notification Cover Sheet and required information via email to: RB4-401Certification@Waterboards.ca.gov
   - Include in the subject line of the email: Subject: ATTN: Emily Duncan; File No: 24-016, Reg. Measure ID: 455868 Report

## Definition of Reporting Terms

1. **Active Discharge Period:** The active discharge period begins with the effective date of this Order and includes all elements of the Project including site construction and restoration, and any Permittee responsible compensatory mitigation construction.
2. **Post-Discharge Monitoring Period:** The post-discharge monitoring period begins when all elements of the Project including site construction and restoration, and any Permittee responsible compensatory mitigation construction have taken place. The Post-Discharge Monitoring Period includes continued water quality monitoring or compensatory mitigation monitoring.
3. **Request for Notice of Project Complete Letter:** This request by the Permittee to the Los Angeles Water Board staff pertains to projects that have completed construction and/or any post-construction monitoring and achieved performance standards, and no further Project activities are planned. Los

Angeles Water Board staff will review the request and send a Project Complete Letter to the Permittee upon approval. Termination of annual invoicing of fees will correspond with the date of this letter.

4. **Effective Date:** Date of Order issuance.

## Map/Photo Documentation Information

When submitting maps or photos, please use the following formats.

1. **Map Format Information:**
   Preferred map formats of at least 1:24000 (1" = 2000') detail (listed in order of preference):

   - **GIS shapefiles**: The shapefiles must depict the boundaries of all project areas and extent of aquatic resources impacted. Each shape should be attributed with the extent/type of aquatic resources impacted. Features and boundaries should be accurate to within 33 feet (10 meters). Identify datum/projection used and if possible, provide map with a North American Datum of 1983 (NAD38) in the California Teale Albers projection in feet.
   - **Google KML files** saved from Google Maps: My Maps or Google Earth Pro. Maps must show the boundaries of all project areas and extent/type of aquatic resources impacted. Include URL(s) of maps. If this format is used include a spreadsheet with the object ID and attributed with the extent/type of aquatic resources impacted.
   - **Other electronic format** (CAD or illustration format) that provides a context for location (inclusion of landmarks, known structures, geographic coordinates, or USGS DRG or DOQQ). Maps must show the boundaries of all project areas and extent/type of aquatic resources impacted. If this format is used include a spreadsheet with the object ID and attributed with the extent/type of aquatic resources impacted.
   - Aquatic resource maps marked on paper **USGS 7.5 minute topographic maps** or **Digital Orthophoto Quarter Quads (DOQQ)** printouts. Maps must show the boundaries of all project areas and extent/type of aquatic resources impacted. If this format is used include a spreadsheet with the object ID and attributed with the extent/type of aquatic resources impacted.

2. **Photo-Documentation:** Include a unique identifier, date stamp, written description of photo details, and latitude/longitude (in decimal degrees) or map indicating location of photo. Successive photos should be taken from the same vantage point to compare pre/post construction conditions.

## REPORT AND NOTIFICATION COVER SHEET

| | | | | | |
|---|---|---|---|---|---|
| **Project:** | Channel Islands/Port Hueneme Harbors Maintenance Dredging Project | | | | |
| **Permittee:** | Army Corps of Engineers, Jodi L. Clifford | | | | |
| **Reg. Meas. ID:** | 455868 | **Place ID:** | 893514 | **File No:** | 24-016 |

## Report Type Submitted

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|---|---|
| **Part A – Project Reporting** | |
| **Report Type** | ☐ **Annual Report** |
| **Part B - Project Status Notifications** | |
| **Report Type** | ☐ **Commencement of Construction** |
| | ☐ **Request for Notice of Project Complete Letter** |
| **Part C - Conditional Notifications and Reports** | |
| **Report Type** | ☐ **Accidental Discharge of Hazardous Material Report** |
| **Report Type** | ☐ **Violation of Compliance with Water Quality Standards Report** |
| **Report Type** | ☐ **In-Water Work/Diversions Water Quality Monitoring Report** |
| **Report Type** | ☐ **Modifications to Project Report** |
| **Report Type** | ☐ **Transfer of Property Ownership Report** |

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

| | |
|---|---|
| **Print Name** [1] | **Affiliation and Job Title** |
| **Signature** | **Date** |

**[1]STATEMENT OF AUTHORIZATION (include if authorization has changed since application was submitted)**

I hereby authorize _____ to act in my behalf as my representative in the submittal of this report, and to furnish upon request, supplemental information in support of this submittal.

Permittee's Signature

Date

***This Report and Notification Cover Sheet must be signed by the Permittee or a duly authorized representative and included with all written submittals.**

## Part A – Project Reporting

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| **Report Type** | **Annual Report** |
| **Report Purpose** | Notify the Los Angeles Water Board staff of Project status during both the active discharge and post-discharge monitoring periods. |
| **When to Submit** | Annual reports shall be submitted each year on the anniversary of Project effective date. Annual reports shall continue until a Notice of Project Complete Letter is issued to the Permittee. |
| **Report Contents** | The contents of the annual report shall include the topics indicated below for each project period. Report contents are outlined in Annual Report Topics below.<br><br>**<u>During the Active Discharge Period</u>**<br>• **Topic 1: Construction Summary**<br>• **Topic 2: Mitigation for Temporary Impacts Status**<br>• **Topic 3: Compensatory Mitigation for Permanent Impacts Status**<br><br>**<u>During the Post-Discharge Monitoring Period</u>**<br>• **Topic 2: Mitigation for Temporary Impacts Status**<br>• **Topic 3: Compensatory Mitigation for Permanent Impacts Status** |
| **Annual Report Topics (1-3)** | |
| **Annual Report Topic 1** | **Construction Summary** |
| **When to Submit** | With the annual report during the Active Discharge Period. |
| **Report Contents** | **1.** Project progress and schedule including initial ground disturbance, site clearing and grubbing, road construction, site construction, and the implementation status of construction storm water best management practices (BMPs). If construction has not started, provide estimated start date and reasons for delay.<br>**2.** Color photos, pre-project and current.<br>**3.** Map showing general Project progress.<br>**4.** If applicable:<br>**a.** Summary of any conditional reports sent during the year such as "Accidental Discharge of Hazardous Material Report" or "Violation of Compliance with Water Quality Standards Report"<br>**b.** Copies of revised permits from other agencies<br>**c.** Compilation of all water quality monitoring results for the year in a spreadsheet format. |
| **Annual Report Topic 2** | **Mitigation for Temporary Impacts Status** |
| **When to Submit** | With the annual report during both the Active Discharge Period and Post-Discharge Monitoring Period. |

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| **Report Contents** | ***If not applicable report N/A.**<br><br>**1.** Planned date of initiation and map showing locations of mitigation for temporary impacts to waters of the state and all upland areas of temporary disturbance which could result in a discharge to waters of the state**.**<br>**2.** If mitigation for temporary impacts has already commenced, provide a map and information concerning attainment of mitigation success. |
| **Annual Report Topic 3** | **Compensatory Mitigation for Permanent Impacts Status** |
| **When to Submit** | With the annual report during both the Active Discharge Period and Post-Discharge Monitoring Period. |
| **Report Contents** | ***If not applicable report N/A.**<br><br>**Part A. Permittee Responsible**<br>**1.** Planned date of initiation of compensatory mitigation site installation**.**<br>**2.** If installation is in progress, a map of what has been completed to date.<br>**3.** If the compensatory mitigation site has been installed, provide a final map and information concerning attainment of performance standards contained in the compensatory mitigation plan.<br>**Part B. Mitigation Bank or In-Lieu Fee**<br>**1.** Status or proof of purchase of credit types and quantities.<br>**2.** Include the name of bank/ILF Program and contact information.<br>**3.** If ILF, location of project and type if known. |

## Part B – Project Status Notifications

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| **Report Type** | **Notice of Completion of an Eelgrass surveyr** |
| **Report Purpose** | Notify Los Angeles Water Board staff of the completion of an Eelgrass survey. |
| **When to Submit** | Construction shall not begin before approval of the survey by the Los Angeles Regional Water Board. |
| **Report Contents** | **1.** An eelgrass survey conducted following the California Eelgrass Mitigation Policy (CEMP) instructions.<br>**2.** As stated in CEMP, a survey must be conducted during the active growth period for eelgrass (typically March through October for southern California) no more than 60 days prior to construction activities. |

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| **Report Type** | **Commencement of Construction** |
| **Report Purpose** | Notify Los Angeles Water Board staff prior to the start of construction. |
| **When to Submit** | Must be received at least seven (7) days prior to start of initial ground disturbance activities. |
| **Report Contents** | **3.** Date of commencement of construction.<br>**4.** Anticipated date when discharges to waters of the state will occur. |

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| | **5.** Project schedule milestones including a schedule for onsite compensatory mitigation, if applicable. |

| **Report Type** | **Request for Notice of Project Complete Letter** |
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| **Report Purpose** | Notify Los Angeles Water Board staff that construction and/or any post-construction monitoring is complete, or is not required, and no further Project activity is planned. |
| **When to Submit** | Must be received by Los Angeles Water Board staff within thirty (30) days following completion of all Project activities. |
| **Report Contents** | **Part A: Project Construction**<br>**1.** Pre- and post-photo documentation of all Project activity sites where the discharge of dredge and/or fill/excavation was authorized.<br><br>**Part B: Mitigation for Temporary Impacts**<br>**1.** A report establishing that areas of temporary impacts to waters of the state, and upland areas of temporary disturbance which could result in a discharge to waters of the state, have been successfully restored and all identified success criteria have been met. Pre- and post-photo documentation of all restoration sites.<br><br>**Part C: Permittee Responsible Compensatory Mitigation**<br>**2.** A report establishing that the performance standards outlined in the compensatory mitigation plan have been met.<br>**3.** Status on the implementation of the long-term maintenance and management plan and funding of endowment.<br>**4.** Pre- and post-photo documentation of all compensatory mitigation sites.<br>**5.** Final maps of all compensatory mitigation areas (including buffers).<br><br>**Part D: Post-Construction Storm Water BMPs**<br>**6.** Date of storm water permit Notice of Termination(s), if applicable.<br>**7.** Report status and functionality of all post-construction BMPs. |

## Part C – Conditional Notifications and Reports

| **Report Type** | **Accidental Discharge of Hazardous Material Report** |
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| **Report Purpose** | Notifies Los Angeles Water Board staff that an accidental discharge of hazardous material has occurred. |
| **When to Submit** | Within five (5) working days following the date of an accidental discharge. Continue reporting as required by Los Angeles Water Board staff. |
| **Report Contents** | **1.** The report shall include the OES Incident/Assessment Form, a full description and map of the accidental discharge incident (i.e. location, time and date, source, discharge constituent and quantity, aerial extent, |

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| | and photo documentation). If applicable, the OES Written Follow-Up Report may be substituted.<br>**2.** If applicable, any required sampling data, a full description of the sampling methods including frequency/dates and times of sampling, equipment, locations of sampling sites.<br>**3.** Locations and construction specifications of any barriers, including silt curtains or diverting structures, and any associated trenching or anchoring. |

| **Report Type** | **Violation of Compliance with Water Quality Standards Report** |
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| **Report Purpose** | Notifies Los Angeles Water Board staff that a violation of compliance with water quality standards has occurred. |
| **When to Submit** | The Permittee shall report any event that causes a violation of water quality standards within three (3) working days of the noncompliance event notification to Los Angeles Water Board staff. |
| **Report Contents** | The report shall include: the cause; the location shown on a map; and the period of the noncompliance including exact dates and times. If the noncompliance has not been corrected, include: the anticipated time it is expected to continue; the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and any monitoring results if required by Los Angeles Water Board staff. |

| **Report Type** | **In-Water Work and Diversions Water Quality Monitoring Report** |
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| **Report Purpose** | Notifies Los Angeles Water Board staff of the completion of in-water work. |
| **When to Submit** | Within three (3) working days following the completion of in-water work. Continue reporting in accordance with the approved water quality monitoring plan. |
| **Report Contents** | As required by the approved water quality monitoring plan. |

| **Report Type** | **Modifications to Project Report** |
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| **Report Purpose** | Notifies Los Angeles Water Board staff if the Project, as described in the application materials, is altered in any way or by the imposition of subsequent permit conditions by any local, state or federal regulatory authority. |
| **When to Submit** | Prior to any alteration or modification of Project activities. |
| **Report Contents** | A description and location of any alterations of Project activities. Identify any Project modifications that will interfere with the Permittee's compliance with the Order. Any alteration may require an Amendment, to be determined by Los Angeles Water Board staff. |

| **Report Type** | **Transfer of Property Ownership Report** |
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| **Report Purpose** | Notifies Los Angeles Water Board staff of change in ownership of the Project or Permittee-responsible mitigation area. |
| **When to Submit** | At least 10 working days prior to the transfer of ownership. |

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| **Report Contents** | **1.** A statement that the Permittee has provided the purchaser with a copy of this Order and that the purchaser understands and accepts:<br>**a.** the Order's requirements and the obligation to implement them or be subject to administrative and/or civil liability for failure to do so; and<br>**b.** responsibility for compliance with any long-term BMP[1] maintenance plan requirements in this Order.<br>**2.** A statement that the Permittee has informed the purchaser to submit a written request to the Los Angeles Water Board to be named as the permittee in a revised order. |

[1] Best Management Practices (BMPs) is a term used to describe a type of water pollution or environmental control.

**Compliance with Code of Federal Regulations, title 40, section 121.7, subdivision (d).**

The purpose of this attachment is to comply with Title 40, Code of Federal Regulations (CFR) Part 121.7(d)(1), which requires an explanation of why a condition is necessary to assure that the authorized discharge will comply with water quality requirements, and a citation to federal, state, or tribal law that authorizes the condition.

This Attachment uses the same organizational structure as the *Conditions* Section, and the statements below correspond with the conditions set forth in the *Conditions* Section. The Sections preceding the *Conditions* Section are not "conditions" as used in 40 CFR section 121.7.(A).

The following three sources of authority are applicable to almost all conditions. Because these authorities are relevant to so many conditions, they are described in greater detail here and then cross-referenced below.

The state's Statement of Policy with respect to Maintaining High Quality of Waters in California ("Antidegradation Policy", State Board Resolution No. 68-16), requires that any "activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the state will be maintained." All Regional Board Water Quality Control Plans incorporate the state's Antidegradation Policy by reference. The state Antidegradation Policy incorporates the federal Antidegradation Policy (40 CFR Part 131.12), which requires "[e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." According to U.S. EPA, for dischargers of dredged or fill material comply with the federal Antidegradation Policy by complying with U.S. EPA's section 404(b)(1) Guidelines. The State Water Board adopted a modified version of U.S. EPA's section 404(b)(1) Guidelines in the Dredge or Fill Procedures (also referred as State Supplemental Guidelines).

The State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Dredge or Fill Procedures) were adopted on April 2, 2019 and went into effect on May 28, 2020. The Dredge or Fill Procedures were adopted pursuant to the State Water Board's authority under Water Code section 13140 (state policy for water quality control) and 13170 (water quality control plan), and accordingly have regulatory effect. Consistent with Government Code, section 11353, a clear and concise summary of the Dredge or Fill Procedures is available in California Code of Regulations, section 3013. Per the Dredge or Fill Procedures, the permitting authority may only approve a project if the demonstrations set forth in Section IV.B.1 have been made. The information required by Section IV.A is necessary to ensure compliance with Section IV.B.1.

In addition, the conditions within the Order are generally required pursuant to the Los Angeles Water Board's Water Quality Control Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan). The Basin Plan includes water quality standards, which consist of existing and potential beneficial uses of waters of the state, water quality objectives to protect those uses, and the state and federal antidegradation policies. For instance, the Basin Plan

includes water quality objectives for chemical constituents, oil and grease, pH, dissolved oxygen, temperature, toxicity, pesticides, solid, suspended or settleable materials, floating material, turbidity, exotic vegetation, color, and taste and odor which ensure protection of beneficial uses.

Furthermore, the conditions within the Order are also required, where applicable, pursuant to statewide water quality control plans and policies which were adopted and are periodically revised pursuant to Water Code section 13240, including, but not limited to, the following:

- California Ocean Plan (Ocean Plan),
- California Thermal Plan (Thermal Plan),
- Enclosed Bays and Estuaries Plan,
- Inland Surface Waters, Enclosed Bays, and Estuaries (ISWEBE) Plan,
- Plan for California's Nonpoint Source (NPS) Pollution Control Program,
- Water Quality Control Policy for the Enclosed Bays and Estuaries of California,
- Policy for the Implementation and Enforcement of the Nonpoint Source (NPS) Pollution Control Program,
- State of California Executive Order W-59-93 (Wetlands "No Net Loss" Policy), and

Furthermore, California Code of Regulations, title 23, Chapter 28 also sets forth regulations pertaining to water quality certifications. Section 3856 sets forth information that must be included in water quality certification requests, includes a description of steps that have or will be taken to avoid, minimize, and compensate for impacts to waters of the state.

## Conditions

### Authorization

Authorization under this Order is granted based on the application information submitted. Water Code section 13264 prohibits any discharge that is not specifically authorized in this Order.

### Reporting and Notification Requirements

The reports confirm that the best management practices required under this Order are sufficient to protect beneficial uses and water quality objectives. The reports related to accidental discharges also ensure that corrective actions, if any, that are necessary to minimize the impact or clean up such discharges are taken as soon as possible. These monitoring and reporting conditions are authorized because the Water Boards have the authority to investigate the quality of any waters of the state within its region under Water Code sections 13383 and 13267. The burden of preparing these reports, including costs, bears a reasonably relationship to the benefits to be obtained from the reports. Specifically, the reports are necessary to demonstrate protection of beneficial uses and compliance with the requirements of the Order and relevant laws (including the Clean Water Act and other authorities). The anticipated costs are minimal as the reporting obligations require only visual monitoring, in-field measurements, and notification reporting.

Authorization under this Order is granted based on the application information submitted, including identification of the legally responsible party. Conditions regarding transfers are necessary to confirm whether the new owner wishes to assume legal responsibility for compliance with this Order. If not, the original discharger remains responsible for compliance with this Order. Confirmation is also necessary to confirm whether liability for long-term best management practices maintenance is accepted by another entity. If not, the original discharger remains responsible for compliance with this Order. Water Code section 13264 prohibits any discharge that is not specifically authorized in this Order.

## Water Quality Monitoring

### General

This monitoring condition is authorized because the Water Boards have the authority to investigate the quality of any waters of the state within its region under Water Code sections 13383 and 13267. The burden of monitoring, including costs, bears a reasonable relationship to the need for the monitoring, and the benefits to be obtained from the monitoring. The anticipated costs are minimal as only visual monitoring and in-field measurements are required. Specifically, the reports are necessary to demonstrate protection of beneficial uses and compliance with the requirements of the Order and relevant laws (including the Clean Water Act and other authorities

### Accidental Discharges/Noncompliance

See explanation for the *Reporting and Notification Requirements* Section

### In-Water Work or Diversions

Consistent with the Dredge or Fill Procedures, section IV.A.2.c, water quality monitoring plans are required for any in-water work, including temporary dewatering or diversions. These conditions are required to assure that 1) the discharge shall not adversely affect the beneficial uses of the receiving water or cause a condition of nuisance; 2) the discharge shall comply with all applicable water quality objectives; and 3) treatment and control of the discharge shall be implemented to assure that pollution and nuisance will not occur and the highest water quality is maintained. A water quality monitoring plan is necessary to conform to water quality standards for oil and grease, dissolved oxygen, pH, turbidity, and temperature. The Regional Water Board's Basin Plan and/or applicable statewide plans and policies contains provisions related to all these constituents.

These monitoring and reporting conditions are authorized because the Water Boards have the authority to investigate the quality of any waters of the state within its region under Water Code sections 13383 and 13267. The burden of preparing these reports, including costs, bears a reasonable relationship to the need for, and benefits of, the reports. The anticipated costs are minimal as the sampling requirements are either visual or only require a grab sample on a daily and/or weekly basis. Specifically, the reports are necessary to demonstrate protection of beneficial uses and compliance with the requirements of the Order and relevant laws (including the Clean Water Act and other authorities

### Post-Construction

The reports confirm that the best management practices required under this order are sufficient to protect beneficial uses and water quality objectives. The reports related to accidental

discharges ensure that corrective actions, if any, that are necessary to minimize the impact or clean up such discharges are taken as soon as possible. These monitoring and reporting conditions are authorized because the Water Boards have the authority to investigate the quality of any waters of the state within its region under Water Code sections 13383 and 13267. The burden of preparing these reports, including costs, bears a reasonable relationship to the need for, and benefits of, the reports. The anticipated costs are minimal as the reporting obligations require only visual monitoring, in-field measurements, and notification reporting.

### Standard Conditions

**"This Order is subject to modification or revocation …"**

**"This Order is not intended and shall not be construed to apply to any activity involving a hydroelectric facility …"**

**"This Order is conditioned upon total payment of any fee …"**

These Conditions are standard conditions that "shall be included as conditions of all water quality certification actions." (Cal. Code of Regs., section 3860.)

### General Compliance

**"Permitted actions must not cause a violation of any applicable water quality standards …"**

By the plain language of section 401 of the Clean Water Act, permitted actions may not cause a violation of applicable water quality standards. This condition related to compliance with water quality objectives and designated beneficial uses is required pursuant to the Los Angeles Water Board's Basin Plan and/or other applicable statewide plans and policies. The Basin Plan's water quality standards consist of existing and potential beneficial uses of waters of the state, water quality objectives to protect those uses, and the state and federal antidegradation policies. The Antidegradation Policy requires that the quality of existing high-quality water be maintained unless any change will be consistent with the maximum benefit to the people of the state, will not unreasonably affect present or anticipated future beneficial uses of such water, and will not result in water quality less than that prescribed in water quality control plans or policies. The Antidegradation Policy further requires best practicable treatment or control of the discharge necessary to assure that pollution or nuisance will not occur and the highest water quality consistent with maximum benefit to the people of the state will be maintained. Applicable beneficial uses and water quality objectives to protect those uses include the designated beneficial uses (Basin Plan, Chapter 2, Tables 2-1, 2-1a, 2-3, 2-3a, 2-4, and 2-4a; Ocean Plan, Page 4), and water quality objectives for chemical constituents (Basin Plan, page 3-29), color (Basin Plan, page 3-32), exotic vegetation (Basin Plan, page 3-32), floating material (Basin Plan, page 3-33), oil and grease (Basin Plan, page 3-34), dissolved oxygen (Basin Plan, page 3-39), pesticides (Basin Plan, page 3-40), pH (Basin Plan, page 3-40), solid, suspended and settleable material (Basin Plan, page 3-44), taste and odor (Basin Plan, page 3-44), temperature (Basin Plan, page 3-44), toxicity (Basin Plan, page 3-45), and turbidity (Basin Plan, page 3-46), and in ocean waters for physical (Ocean Plan, page 7), chemical (Ocean Plan, page 7), and biological characteristics (Ocean Plan, page 8).

**"The Permittee must, at all times, fully comply with engineering plans, specifications, and technical reports…"**

Authorization under this Order is granted based on the application information submitted, including engineering plans, specifications, and technical reports. Water Code section 13264 prohibits any discharge that is not specifically authorized in this Order.

## Administrative

**"Signatory requirements for all document submittals…"**

Conditions related to signatory requirements are also authorized by Water Code sections 13383 and 13267, which requires any person discharging waste that could affects the quality of waters to provide to the Water Boards, under penalty of perjury, any technical or monitoring program reports as required by the Water Boards. The signatory requirements are consistent with 40 C.F.R. section 122.22.

**"The Permittee shall grant Los Angeles Water Board staff …"**

Conditions related to site access requirements are authorized pursuant to the Water Boards' authority to investigate the quality of any waters of the state within its region under Water Code sections 13383 and 13267. Water Code section 13267(c) provides that "the regional board may inspect the facilities of any person to ascertain whether the purposes of this division are being met and waste discharge requirements are being complied with."

**"A copy of this Order shall be provided to any consultants, contractors, and subcontractors …"**

**"A copy of this Order must be available at the Project site(s) during construction…"**

These conditions require site personnel (agents of the applicant) and agencies to be familiar with the content of the Order and mandate availability of the document at the project site. These conditions are required to assure that any authorized discharge will comply with the terms and conditions of the Order and is inherently tied to the signature requirements required by Water Code section 13267.

## Best Management Practices

All the conditions related to best management practices are consistent with the Water Board's authority to establish, "[w]ater quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area" pursuant to Water Code section 13241(c). Water Code section 13264 prohibits any discharge that is not specifically authorized in this Order. The activities authorized under this Order have the potential to result in a discharge that exceeds water quality objectives, which is prohibited by the Clean Water Act, Antidegradation Policy and Water Code section 13263. As required by Water Code section 13369, all Water Quality Control Plans incentivize the use of best management practices to prevent prohibited discharges into waters of the state.

**Dredging**

Dischargers of dredged or fill material comply with the federal Antidegradation Policy by complying with U.S. EPA's section 404(b)(1) Guidelines. The State Water Boards adopted a modified version of U.S. EPA's section 404(b)(1) Guidelines in the Dredge or Fill Procedures

(State Supplemental Guidelines). In addition, this condition is required to assure that dredging operations will comply with water quality objectives established for surface waters, including solid, suspended and settleable material, toxicity and turbidity (Basin Plan, page 3-44, 3-45, 3-46), and in ocean waters physical (Ocean Plan, page 7), chemical (Ocean Plan, page 7), and biological characteristics (Ocean Plan, page 8), Ocean Plan, Thermal Plan, Enclosed Bays and Estuaries Plan, ISWEBE Plan, NPS Pollution Control Plan, Water Quality Control Policy for the Enclosed Bays and Estuaries of California, Policy for the Implementation and Enforcement of the NPS Pollution Control Program, Wetlands “No Net Loss” Policy.

**Site Management**

This condition is necessary to prevent violation of state discharge prohibitions that protect water quality objectives. For instance, fuels and lubricants associated with the use of mechanized equipment have the potential to result in toxic discharges to waters of the state in violation of water quality standards, including the floating material and toxicity and floating material water quality objectives (Basin Plan, pages 3-33 & 3-45), and in ocean waters the physical (Ocean Plan, page 7), chemical (Ocean Plan, page 7), and biological characteristics objectives (Ocean Plan, page 8). Water Code section 13264 prohibits any discharge that is not specifically authorized in this Order. Failure to appropriately manage site conditions has the potential to result in a discharge that exceeds water quality objectives, which is prohibited by the Clean Water Act, Antidegradation Policy and Water Code section 13263, Ocean Plan, Thermal Plan, Enclosed Bays and Estuaries Plan, ISWEBE Plan, NPS Pollution Control Plan, Water Quality Control Policy for the Enclosed Bays and Estuaries of California, Policy for the Implementation and Enforcement of the NPS Pollution Control Program, Wetlands “No Net Loss” Policy.

**Hazardous Materials**

These conditions are required pursuant to the Los Angeles Basin Plan (toxicity objective, page 3-40), and the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP), which prohibit the discharge of substances in concentrations toxic to human, plant, animal, or aquatic life. Toxic compounds can impair the beneficial uses of cold freshwater habitat, estuarine habitat, marine habitat, preservation of rare and endangered species, fish migration, fish spawning, warm freshwater habitat, and wildlife habitat. Conditions related to toxic and hazardous materials are necessary to assure that discharges comply with any water quality objectives adopted or approved under sections 13170 or 13245 of the Water Code.

Conditions related to concrete/cement are required pursuant to the Los Angeles Basin Plan, which require discharges to waters do not adversely raise or lower pH levels (Basin Plan, page 3-40). Water Code section 13264 prohibits any discharge that is not specifically authorized in this Order. The release of hazardous materials has the potential to result in a discharge that exceeds water quality objectives, which is prohibited by the Clean Water Act, the Antidegradation Policy, the Los Angeles Basin Plan, the Dredge or Fill Procedures and Water Code section 13263, Ocean Plan, Thermal Plan, Enclosed Bays and Estuaries Plan, ISWEBE Plan, NPS Pollution Control Plan, Water Quality Control Policy for the Enclosed Bays and Estuaries of California, Policy for the Implementation and Enforcement of the NPS Pollution Control Program, Wetlands “No Net Loss” Policy.

**Wildlife and Special Status Species**

a) Prior to each biennial dredge cycle an eelgrass and Caulerpa survey shall be performed in accordance with the California Eelgrass Mitigation Policy (CEMP).

b) No dredging activities shall be conducted in the sand trap area (adjacent to Hollywood Beach) during the shorebird/seabird nesting season (March 1 - September 30).

Pursuant to the California Endangered Species Act (Fish & Wildlife Code, sections 2050 et seq.) and federal Endangered Species Act (16 U.S.C. sections 1531 et set.), the Order does not authorize any act which results in the taking of a threatened, endangered, or candidate species. In the event a Permittee requires authorization from the state or federal authorities, California Code of Regulations, title 23, section 3856(e), requires that copies be provided to the Los Angeles Water Board of “any final and signed federal, state, and local licenses, permits, and agreements (or copies of the draft documents, if not finalized) that will be required for any construction, operation, maintenance, or other actions associated with the activity. If no final or draft document is available, a list of all remaining agency regulatory approvals being sought shall be included.”

**Stormwater**

Conditions related to stormwater management are required to comply with the Los Angeles Region’s Basin Plan and the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 20090009-DWQ; NPDES No. CAS000002 as amended by Order No. 2010-0014-DWQ, Order No. 2012-0006-DWQ, Order WQ 2022-0057-DWQ and any amendments thereto) (General Construction Permit). Post-rain erosion and sedimentation problems can contribute to significant degradation of the waters of the state; therefore, it is necessary to take corrective action to eliminate such discharges to avoid or minimize such degradation. Implementation of control measures and best management practices (BMPs) described in the condition will assure compliance with water quality objectives including floating material, temperature, suspended and settleable material, and turbidity. (Basin Plan, pages 3-33, 3-44, 3-44, 3-46) Water Code section 13264 prohibits any discharge that is not specifically authorized in this Order. Rain events have the potential to result in a discharge that exceeds water quality objectives, which is prohibited by the Clean Water Act, the Antidegradation Policy, the Los Angeles Basin Plan, the Dredge or Fill Procedures and Water Code section 13263, Ocean Plan, Thermal Plan, Enclosed Bays and Estuaries Plan, ISWEBE Plan, NPS Pollution Control Plan, Water Quality Control Policy for the Enclosed Bays and Estuaries of California, Policy for the Implementation and Enforcement of the NPS Pollution Control Program, Wetlands “No Net Loss” Policy.

## On-site Mitigation for Temporary Impacts

Conditions in this section related to restoration and/or mitigation of temporary impacts are required by the Dredge or Fill Procedures, which requires "in all cases where temporary impacts are proposed, a draft restoration plan that outlines design, implementation, assessment, and maintenance for restoring areas of temporary impacts to pre-project conditions." (Dredge or Fill Procedures section IV. A.2(d) & B.4.)

Additional authorities applying to this condition include:

- Clean Water Act Section 401 (a discharge shall comply with water quality standards, which are established in Water Quality Control Plans)
- California Water Code section 13263 (discharges must implement water quality control plans and water quality objectives)
- California Code of Regulations, Title 23, section 3859 (conditions shall be added to ensure compliance with water quality standards and other appropriate requirements)
- 40 CFR 230.10 (a) (no discharge permitted if there is a practicable alternative with less impacts)
- 40 CFR 230.10 (b) (discharges may not cause or contribute to violations of water quality standards)
- 40 CFR 230.10 (c) (discharges may not cause degradation)
- 40 CFR 230.12 (conditions shall be included to minimize adverse effects to aquatic ecosystems)
- 40 CFR 230.70 (minimize effects of discharge through various actions)
- 40 CFR 230.71 (minimize effects of discharge through treatment of or limitations on the material)
- 40 CFR 230.72 (effects of discharge may be controlled by containment areas and other best management practices)
- 40 CFR 230.73 (minimize effects of discharged by controlling dispersion)
- 40 CFR 230.74 (minimize effects through use of appropriate equipment and techniques)
- 40 CFR 230.75 (minimize adverse effects on plant and animal populations)
- 40 CFR 230.76 (minimize adverse effects on human use, including timing of discharge)
- 40 CFR 230.77 (control runoff, maintain desired water quality, consider ecological changes)
- 40 CFR 230.91 (take all appropriate and practicable steps to avoid and minimize adverse impacts to waters of the United States)
- 40 CFR Part 230, Subpart J (sections 230.92 *et seq*.) (compensatory mitigation for losses of aquatic resources)
- The National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) (require identifying alternatives to avoid and minimize effects (40 CFR 1500.2 and California Code of Regulations, Title 144, section 15021))
- Dredge or Fill Procedures section IV. A.2(c) (water quality monitoring plan to monitor compliance with water quality objectives)
- Dredge or Fill Procedures, Subpart H (actions to minimize adverse effects)

# Los Angeles Regional Water Quality Control Board

July 29, 2024

Jodi L Clifford
Chief, Planning Division
U.S. Army Corps of Engineers
915 Wilshire Blvd.
Los Angeles CA 90017
Phone: (213) 452-3840
Email: Jodi.L.Clifford@usace.army.mil

Dear Ms. Clifford:

**AMENDMENT TO CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION AND ORDER FOR THE CHANNEL ISLANDS/PORT HUENEME HARBORS MAINTENANCE DREDGING PROJECT (File No. 24-016) (4WQC40124016)**

The Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) is in receipt of your notification on July 25, 2024, requesting an amendment of your Clean Water Act section 401 Water Quality Certification for the Channel Islands/Port Hueneme Harbors Maintenance Dredging Project issued on April 29, 2024 (File No. 24-016). As we understand, the United States Army Corps of Engineers (Permittee) has requested that the Los Angeles Water Board adopt several suggested revisions. In the interest of meeting the expedited timeline of the Permittee, the Los Angeles Water Board has agreed to make only the following substantive changes described below.

In response to your request, the following changes are made to the certification: footnote '1.' in Section VII, Description of Direct Impacts to Waters of the State, Section XIII. Finding 6., Section D. Standard conditions 1., Section G. Best Management Practices 'Site Management', and H. On site Mitigation for Temporary Impacts. Los Angeles Water Board staff have reviewed the Certification amendment request and determined that the conditions of the Certification continue to be appropriate.

The revised Certification will now read as follows, deleted text is shown in ~~strike out~~ and additional text is shown in double <u>underline</u>:

VII. Description of Direct Impacts to Waters of the State

Footnote to Table 1. Includes only temporary direct impacts to waters of the state and does not include upland areas of temporary disturbance which could result in a

discharge to waters ~~of the state~~. ~~Temporary impacts, by definition, are restored to pre=project conditions and therefore do not include a physical loss of area or degradation of ecological condition.~~

XIII. Findings

6. This Order does not provide coverage under the Construction General Permit. As applicable, dischargers shall maintain compliance with conditions described in, and required by, the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-009-DWQ; NPDES No. CAS000002 as amended by Order No. 2010-0014-DWQ, Order No. 2012-0006-DWQ, Order No. 2022-0057-DWQ and any amendments thereto) (General Construction Permit). Enrollment in the Construction General Permit may be required for construction activity resulting in a land disturbance of one acre or more, or less than one acre but part of a larger common plan of development or sale. For projects with ground disturbing activities that require enrollment in the Construction General Permit, dischargers shall maintain compliance with conditions described in, and required by the Permit. For ground disturbing activities that do not require enrollment in Order No. 2009-0009-DWQ, project plans included with the application shall include appropriate erosion and sediment control measures as described in the *Best Management Practices* Section (Stormwater subsection) below.

D. Standard Conditions

1. This Order is subject ~~to modification or revocation upon~~ remand, amendment, or vacatur by administrative or judicial ~~review~~ adjudication, including review and amendment pursuant to Water Code section 13330, and California Code of Regulations, title 23, chapter 28, Article 6 commencing with sections 3867-3869, inclusive. Additionally, the Los Angeles Water Board reserves the right to suspend, cancel, or modify and reissue this Order, after providing notice to the Permittee, if the Los Angeles Water Board determines that: the Project fails to comply with any of the conditions of this Order; or, when necessary to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.) or federal Clean Water Act section 303 (33 U.S.C. § 1313). For purposes of Clean Water Act section 401(d), the condition constitutes a limitation necessary to assure compliance with water quality standards and appropriate requirements of state law.

G. Best Management Practices

2. Site Management

b. The Corps shall require its contractor to ~~Contractor shall~~ remove all trash, debris, and excess construction material from the dredge operations and from the dredged material placement site ~~stie~~ at the end of each workday and to ~~shall~~ dispose of all material sat an approved disposal site. All debris shall be disposed of as solid waste.

c. The Corps shall require its contractor to ~~contractor shall~~ keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters and to minimize interference with, disturbance to, and damage of fish and wildlife.

~~H. On site Mitigation for Temporary Impacts~~

~~1. The Permittee shall restore all areas of temporary impacts to waters of the state.~~

Sincerely,

Jenny Newman Digitally signed by Jenny Newman Date: 2024.07.29 11:25:30 -07'00'
Water Boards

for Susanna Arredondo
Executive Officer
Los Angeles Water Quality Control Board

cc:

Tiffany Troxel
Assistant District Counsel
Office of Counsel Ventura, CA
U.S. Army Corps of Engineers

Kenneth Wong
Environmental Coordinator
U.S. Army Corps of Engineers

Elizabeth Payne
CWA Section 401 WQC Program
Division of Water Quality
State Water Resources Control Board

Loni Adams
California Department of Fish and Wildlife

Office of Water
US EPA, Region 9

Christopher Diel
Assistant Field Supervisor
U.S. Fish and Wildlife Service

Tevin Schmitt
Watershed Scientist
Wishtoyo & Ventura Coastkeeper

Brian Trautwein
Watershed Program Director

Environmental Defense Center

Shannon Vaugn
Coastal Program Manager
California Coastal Commission

Ted Morton
Executive Director
Santa Barbara Channelkeeper

# Los Angeles Regional Water Quality Control Board

October 28, 2024

Jodi L Clifford
Chief, Planning Division
U.S. Army Corps of Engineers
915 Wilshire Blvd.
Los Angeles CA 90017
Phone: (213) 452-3840
Email: Jodi.L.Clifford@usace.army.mil

Dear Ms. Clifford:

**SECOND AMENDMENT TO CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION AND ORDER FOR THE CHANNEL ISLANDS/PORT HUENEME HARBORS MAINTENANCE DREDGING PROJECT (File No. 24-016) (4WQC40124016)**

The Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) has revised the Clean Water Act section 401 Water Quality Certification and Order for the Channel Islands/Port Hueneme Harbors Maintenance Dredging Project (File no. 24-016) (Certification) issued on April 29 2024, as amended July 29, 2024, per the request of the US Army Corps of Engineers as discussed at the October 8, 2024 meeting held with the US Army Corps of Engineers, US Environmental Protection Agency, State Water Resources Control Board and the Los Angeles Water Board.

The revisions are in section XIII, *Findings*, and in section XIV, *Conditions*, D, *Standard Conditions*. All changes are deletions only and there is no additional text.

The revised Certification will now read as follows, deleted text is shown in ~~strike out~~:

**XIII. Findings**

1. This Order is adopted pursuant to section 401 of the Clean Water Act and the California Porter-Cologne Water Quality Control Act (Cal. Water Code § § 13000, et seq.). Discharges to waters of the state are prohibited except when in accordance with Water Code section 13264. Notwithstanding any determinations made by the U.S. Army Corps or other federal agency pursuant to 40 C.F.R. section 121.9, dischargers must comply with the entirety of this Order because the Order also serves as waste discharge requirements in accordance with State Water Board Water Quality General Order No. 2003-0017-DWQ.

2. Failure to comply with any condition of this Order shall constitute a violation of the Porter-Cologne Water Quality Control and the Clean Water Act. The Permittee and/or discharger may then be subject to administrative and/or civil liability pursuant to Water Code section 13385.

3. In the event of any violation or threatened violation of the conditions of this Order, the violation or threatened violation shall be subject to any remedies, penalties, process, or sanctions as provided for under state and federal law.

4. In response to a suspected violation of any condition of this Order, the Water Board may require the holder of this Order to furnish, under penalty of perjury, any technical or monitoring reports the Water Boards deem appropriate, provided that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. The additional monitoring requirements ensure that permitted discharges and activities comport with any applicable effluent limitations, water quality standards, and/or other appropriate requirement of state law.

~~5. This Order and all of its conditions contained herein continue to have full force and effect regardless of the expiration or revocation of any federal license or permit issued for the Project.~~

6. This Order does not provide coverage under the Construction General Permit. As applicable, dischargers shall maintain compliance with conditions described in, and required by, the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-009-DWQ; NPDES No. CAS000002 as amended by Order No. 2010-0014-DWQ, Order No. 2012-0006-DWQ, and any amendments thereto) (General Construction Permit). Enrollment in the Construction General Permit may be required for construction activity resulting in a land disturbance of one acre or more, or less than one acre but part of a larger common plan of development or sale. For projects with ground disturbing activities that require enrollment in the Construction General Permit, dischargers shall maintain compliance with conditions described in, and required by the Permit. For ground disturbing activities that do not require enrollment in Order No. 2009-0009-DWQ, project plans included with the application shall include appropriate erosion and sediment control measures as described in the Best Management Practices Section (Stormwater subsection) below.

7. This Order does not authorize any act which results in the taking of a threatened, endangered or candidate species or any act, which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & Wildlife Code, sections 2050-2097) or the federal Endangered Species Act (16 U.S.C. sections 1531-1544). If a “take” will result from any act authorized under this Order held by the discharger, the discharger must obtain authorization for the take prior to any construction or operation of the portion of the Project that may result in a take. The discharger is responsible for meeting all requirements of the applicable endangered species act for the Project authorized under this Order.

~~8. This Order includes monitoring and reporting requirements pursuant to Water Code section 13267. The burden of preparing these reports, including costs, are reasonable to the need and benefits of obtaining the reports. The reports confirm that the best management practices required under this Order are sufficient to protect beneficial uses and water quality objectives. The reports related to accidental discharges also ensure that corrective actions, if any, that are necessary to minimize the impact or clean up such discharges can be taken as soon as possible. The anticipated costs are minimal as the reporting obligations require only visual monitoring, in-field measurements, and notification reporting.~~

**XIV, Conditions**

**D. Standard Conditions**

1. This Order is subject to remand, amendment, or vacatur upon administrative or judicial review, including adjudication and amendment pursuant to Water Code section 13330, and California Code of Regulations, title 23, chapter 28, Article 6 commencing with sections 3867-3869, inclusive. ~~Additionally, the Los Angeles Water Board reserves the right to suspend, cancel, or modify and reissue this Order, after providing notice to the Permittee, if the Los Angeles Water Board determines that: the Project fails to comply with any of the conditions of this Order; or, when necessary to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.) or federal Clean Water Act section 303 (33 U.S.C. § 1313). For purposes of Clean Water Act section 401(d), the condition constitutes a limitation necessary to assure compliance with water quality standards and appropriate requirements of state law.~~

2. This Order is not intended and shall not be construed to apply to any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license, unless the pertinent certification application was filed pursuant to subsection 3855(b) of chapter 28, title 23 of the California Code of Regulations, and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

3. This Order is conditioned upon total payment of any fee required under title 23 of the California Code of Regulations and owed by the Permittee.

Sincerely,

Jenny Newman Digitally signed by Jenny Newman Date: 2024.10.28 13:51:04 -07'00'

for Susanna Arredondo
Executive Officer
Los Angeles Water Quality Control Board

cc:

Tiffany Troxel
Assistant District Counsel
Office of Counsel Ventura, CA
U.S. Army Corps of Engineers

Kenneth Wong
Environmental Coordinator
U.S. Army Corps of Engineers

Elizabeth Payne
CWA Section 401 WQC Program
Division of Water Quality
State Water Resources Control Board

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Watershed Scientist
Wishtoyo & Ventura Coastkeeper

Brian Trautwein
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Shannon Vaugn
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Executive Director
Santa Barbara Channelkeeper