APP Nos. 161019-159, 170209-017, 170221-024, 200402-057, and 200402-058

# BERTHS 148-151 [Phillips 66] MARINE OIL TERMINAL AND WHARF IMPROVEMENT PROJECT

## DRAFT INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION

THE PORT OF LOS ANGELES

November 2021


PREPARED BY:

Environmental Management Division
Los Angeles Harbor Department
425 S. Palos Verdes Street
San Pedro, CA 90731

with assistance from:

RAMBOLL

# Notice of Completion & Environmental Document Transmittal

*Mail to:* State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
*For Hand Delivery/Street Address:* 1400 Tenth Street, Sacramento, CA 95814

**SCH #**

**Project Title:** Berths 148-151 (Phillips 66) Marine Oil Terminal and Wharf Improvement Project

Lead Agency: City of Los Angeles Harbor Department | Contact Person: Leah Kohler

Mailing Address: 425 S. Palos Verdes Street | Phone: 310-732-7673

City: San Pedro | Zip: 90731 | County: Los Angeles

**Project Location:** County: Los Angeles | City/Nearest Community: Los Angeles/Wilmington

Cross Streets: Pier "A" Street | Zip Code: 90744

Longitude/Latitude (degrees, minutes and seconds): 33 ° 45 ′ 21.4 ″ N / 118 ° 16 ′ 20.7 ″ W Total Acres: 15.7

Assessor's Parcel No.: | Section: | Twp.: | Range: | Base:

Within 2 Miles: State Hwy #: SR-47 | Waterways: Port of Los Angeles Main Channel

Airports: Zamperini Field (Torrance, CA) | Railways: PHL/UP | Schools:

**Document Type:**

CEQA: ☐ NOP ☐ Early Cons ☐ Neg Dec ☒ Mit Neg Dec ☐ Draft EIR ☐ Supplement/Subsequent EIR (Prior SCH No.) ☐ Other:

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other:

**Local Action Type:**

☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☐ Community Plan
☐ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan
☐ Rezone ☐ Prezone ☐ Use Permit ☐ Land Division (Subdivision, etc.)
☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☒ Other: Wharf Improvements

**Development Type:**

☐ Residential: Units Acres
☐ Office: Sq.ft. Acres Employees
☐ Commercial: Sq.ft. Acres Employees
☐ Industrial: Sq.ft. Acres Employees
☐ Educational:
☐ Recreational:
☐ Water Facilities: Type MGD
☐ Transportation: Type
☐ Mining: Mineral
☐ Power: Type MW
☐ Waste Treatment: Type MGD
☐ Hazardous Waste: Type
☒ Other: Wharf Improvements/Replacement

**Project Issues Discussed in Document:**

☒ Aesthetic/Visual ☒ Agricultural Land ☒ Air Quality ☒ Archeological/Historical ☒ Biological Resources ☒ Coastal Zone ☐ Drainage/Absorption ☐ Economic/Jobs
☐ Fiscal ☐ Flood Plain/Flooding ☐ Forest Land/Fire Hazard ☒ Geologic/Seismic ☐ Minerals ☒ Noise ☒ Population/Housing Balance ☒ Public Services/Facilities
☒ Recreation/Parks ☐ Schools/Universities ☐ Septic Systems ☐ Sewer Capacity ☐ Soil Erosion/Compaction/Grading ☐ Solid Waste ☒ Toxic/Hazardous ☐ Traffic/Circulation
☐ Vegetation ☒ Water Quality ☐ Water Supply/Groundwater ☐ Wetland/Riparian ☐ Growth Inducement ☐ Land Use ☐ Cumulative Effects ☐ Other:

**Present Land Use/Zoning/General Plan Designation:**

Qualified Heavy Industrial [(Q)M3-1]

**Project Description:** *(please use a separate page if necessary)*

The primary objective of the proposed Project is to ensure that the Phillips 66 marine oil terminal at Berths 148-151 complies with Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS) to protect public health, safety, and the environment. The timber wharf at Berths 150-151 will be replaced with a new concrete wharf and associated equipment to comply with MOTEMS seismic and safety standards. The proposed Project includes temporary improvements at Berths 148-149 that would allow these berths to continue to be utilized while Berths 150-151 are being reconstructed. The proposed Project also includes consideration of a new 20-year entitlement (with two potential 10-year additional options) to Phillips 66 for continued operations at Berths 148-151.

*Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.*

## Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

| | | | |
|---|---|---|---|
| S | Air Resources Board | | Office of Historic Preservation |
| | Boating & Waterways, Department of | | Office of Public School Construction |
| | California Emergency Management Agency | | Parks & Recreation, Department of |
| | California Highway Patrol | | Pesticide Regulation, Department of |
| S | Caltrans District # 7 | | Public Utilities Commission |
| | Caltrans Division of Aeronautics | | Regional WQCB # |
| | Caltrans Planning | | Resources Agency |
| | Central Valley Flood Protection Board | | Resources Recycling and Recovery, Department of |
| | Coachella Valley Mtns. Conservancy | | S.F. Bay Conservation & Development Comm. |
| X | Coastal Commission | | San Gabriel & Lower L.A. Rivers & Mtns. Conservancy |
| | Colorado River Board | | San Joaquin River Conservancy |
| | Conservation, Department of | | Santa Monica Mtns. Conservancy |
| | Corrections, Department of | | State Lands Commission |
| | Delta Protection Commission | | SWRCB: Clean Water Grants |
| | Education, Department of | S | SWRCB: Water Quality |
| | Energy Commission | | SWRCB: Water Rights |
| X | Fish & Game Region # 5 | | Tahoe Regional Planning Agency |
| | Food & Agriculture, Department of | S | Toxic Substances Control, Department of |
| | Forestry and Fire Protection, Department of | | Water Resources, Department of |
| | General Services, Department of | | |
| | Health Services, Department of | S | Other: South Coast Air Quality Management District |
| | Housing & Community Development | | Other: |
| X | Native American Heritage Commission | | |

**Local Public Review Period (to be filled in by lead agency)**

Starting Date November 18, 2021 Ending Date December 20, 2021

**Lead Agency (Complete if applicable):**

Consulting Firm: Ramboll
Address: 7250 Redwood Blvd.
City/State/Zip: Novato, CA 94945
Contact: Till Stoeckenius
Phone: 415-899-0709

Applicant: Los Angeles Harbor Department
Address: 425 S. Palos Verdes Street
City/State/Zip: San Pedro, CA 90731
Phone: 310-732-7673

**Signature of Lead Agency Representative:** _____ **Date:** 11/10/2021

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

# DRAFT INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

## Berths 148-151 (Phillips 66) Marine Oil Terminal and Wharf Improvement Project

**APP Nos. 161019-159, 170209-017, 170221-024, 200402-057, and 200402-058**

**November 2021**

THE PORT OF LOS ANGELES

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# Draft Berths 148-151 (Phillips 66) Marine Oil Terminal and Wharf Improvement Project

Initial Study/Mitigated Negative Declaration

APP Nos. **161019-159, 170209-017, 170221-024, 200402-057, and 200402-058**

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Los Angeles Harbor Department
Environmental Management Division
425 South Palos Verdes Street
San Pedro, California 90731

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# 1. INTRODUCTION

The City of Los Angeles Harbor Department (LAHD) has prepared this Initial Study and Mitigated Negative Declaration (IS/MND) to address the environmental effects associated with the Berths 148-151 (Phillips 66) Marine Oil Terminal (MOT) and Wharf Improvement Project (proposed Project) at the Port of Los Angeles (Port). LAHD is the lead agency under the California Environmental Quality Act (CEQA). Phillips 66 Company (Phillips 66) is the applicant for the proposed Project.

The primary objective of the proposed Project is to comply with the State of California's Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS). The proposed Project includes vessel berthing improvements at Berth 148-149 and demolition and reconstruction of the Phillips 66 wharf structures at Berth 150-151 in compliance with MOTEMS to allow for continued operation as a marine oil terminal. The proposed Project also includes shoreline protection improvements and the installation or modification of various landside marine oil terminal components, including piping, pumps, pollution control systems (e.g., vapor recovery, spill containment, storm water management) and tankage, to support future operations at the new wharf at Berth 150-151. See Section 2.2.1, Project Background, for more information. The proposed Project also includes consideration of a new 20-year entitlement (with two potential 10-year additional options) to Phillips 66 for continued operations at Berths 148-151.

## 1.1 CEQA PROCESS

This document has been prepared in accordance with CEQA, California Public Resources Code Section 21000 *et seq.*, CEQA Guidelines (14 California Code of Regulations [CCR] 15000 *et seq.*), and the City of Los Angeles CEQA Thresholds Guide (2006). One of the main objectives of CEQA is to disclose the potential environmental effects of proposed activities to the public and decision-makers. CEQA requires that the potential environmental effects of a project be evaluated prior to implementation. This IS/MND includes a discussion of the proposed Project's potential impact on the existing environment. LAHD has determined that an IS/MND is the appropriate level of CEQA document for the proposed Project because potential environmental impacts resulting from proposed Project implementation would, with implementation of mitigation, be below significance thresholds.

Under CEQA, the lead agency is the public agency with primary responsibility over approval of a proposed Project. Pursuant to Section 15367, of the CEQA Guidelines (14 CCR 15000 *et seq.*), LAHD is the lead agency for the proposed Project and has prepared an environmental document that complies with CEQA. The LAHD Board of Harbor Commissioners will consider the information in this document when determining whether to approve the proposed Project.

The preparation of an IS is guided by Section 15063 of the State CEQA Guidelines, whereas Sections 15070-15075 guide the process for the preparation of a Negative Declaration or a MND (14 CCR 15000, *et seq.*). Where appropriate and supportive to an understanding of the issues, reference will be made to the statute, the State CEQA Guidelines, City of Los Angeles Guidance, or appropriate case law.

This IS/MND meets CEQA content requirements by including a project description; a description of the environmental setting and project location, a finding that the proposed Project will not have

a significant effect on the environment, and inclusion of any feasible mitigation measures, if necessary, to avoid potentially significant effects.

In accordance with the CEQA statutes and Guidelines, this IS/MND will be circulated for a period of 30 days for public review and comment. The public review period is scheduled to begin on November 18, 2021 and concludes on December 20, 2021. This Draft IS/MND will be distributed to responsible public agencies, other interested or involved agencies, organizations, and private individuals for review and will be made available for general public review online at the Port website at http://www.portoflosangeles.org. A copy of the document is also available for public review at the Harbor Department Environmental Management Division (EMD) located at 425 S. Palos Verdes Street, San Pedro. Due to COVID-19 restrictions, please send your request to ceqacommments@portla.org or call (310) 732-3675 to schedule an appointment to pick up a copy.

During the 30-day public review period, the public has an opportunity to provide written comments on the information contained within this IS/MND. The public comments on the IS/MND and responses to public comments will be included in the record and considered by LAHD during deliberation as to whether or not necessary approvals should be granted for the proposed Project. A project will only be approved when LAHD finds "that there is no substantial evidence that the proposed Project will have a significant effect on the environment and that the negative declaration or mitigated negative declaration reflects the lead agency's independent judgment and analysis" (14 CCR 15070). Responses to all public comments on the Draft IS/MND will be included in the Final IS/MND.

In reviewing the document, affected public agencies and interested members of the public should focus on the sufficiency of the document in identifying and analyzing potential project impacts on the environment. Comments on the IS/MND should be submitted in writing either through mail or email prior to the end of the 30-day public review period, and comments submitted by mail must be postmarked by December 20, 2021. All correspondence, through mail or e-mail, should include the proposed Project title "Berths 148-151 (Phillips 66) Marine Oil Terminal and Wharf Improvement Project" in the subject line.

Please submit written comments to:

Christopher Cannon, Director
City of Los Angeles Harbor Department
Environmental Management Division
425 South Palos Verdes Street
San Pedro, California 90731

Written comments sent via email should be addressed to ceqacomments@portla.org.

For additional information, please contact the LAHD Environmental Management Division at (310) 732-3675.

## 1.2 DOCUMENT FORMAT

This IS/MND contains the following eight sections:

**Section 1.0**. **Introduction.** This section provides an overview of the proposed Project and the CEQA environmental documentation process.

**Section 2. Project Description**. This section provides a detailed description of the proposed Project's objectives and components.

**Section 3. Initial Study Checklist.** This section presents the CEQA checklist for all impact areas and mandatory findings of significance.

**Section 4. Impacts and Mitigation Measures.** This section presents the environmental analysis for each issue area identified on the environmental checklist form. If the proposed Project does not have the potential to significantly impact an issue area, the relevant section provides a brief discussion of the reasons why no impacts are expected. If the proposed Project could have a potentially significant impact on a resource, the issue area discussion provides a description of potential impacts and the appropriate mitigation measures that would reduce those impacts to a less-than-significant level.

**Section 5. Proposed Finding.** This section presents the proposed finding regarding environmental impacts.

**Section 6. Preparers and Contributors.** This section provides a list of key personnel involved in the preparation of the IS/MND.

**Section 7. Acronyms and Abbreviations.** This section defines acronyms and abbreviations used throughout the IS/MND.

**Section 8. References.** This section provides a list of reference materials used to support preparation of the IS/MND.

The environmental analysis included in Section 4, *Impacts and Mitigation Measures*, is consistent with the CEQA IS/MND format presented in Section 3, *Initial Study Checklist*. Impacts under CEQA are separated into the following categories:

***Potentially Significant Impact.*** This category is applicable where there is substantial evidence that an effect may be significant and no feasible mitigation measures can be identified to reduce impacts to a less-than-significant level. Upon completion of the IS, no impacts were identified that fall into this category.

***Less-than-Significant After Mitigation Incorporated*.** This category applies where the incorporation of mitigation measures would reduce an effect from a "Potentially Significant Impact" to a "Less-than-Significant Impact." The lead agency must describe the mitigation measure(s), and briefly explain how they would reduce the effect to a less-than-significant level (mitigation measures from earlier analyses may be cross-referenced).

***Less-than-Significant Impact*.** This category is identified when the proposed Project would result in impacts below the threshold of significance, and no mitigation measures are required.

***No Impact.*** This category applies when implementation of a proposed project would not result in an impact in the specific environmental issue area. "No Impact" answers do not require a detailed explanation if they are adequately supported by information sources cited by the lead agency and

show that the impact does not apply to the specific project. A “No Impact” answer should be explained where it is based on project-specific factors as well as general standards.

# 2. PROJECT DESCRIPTION

## 2.1 Project Overview

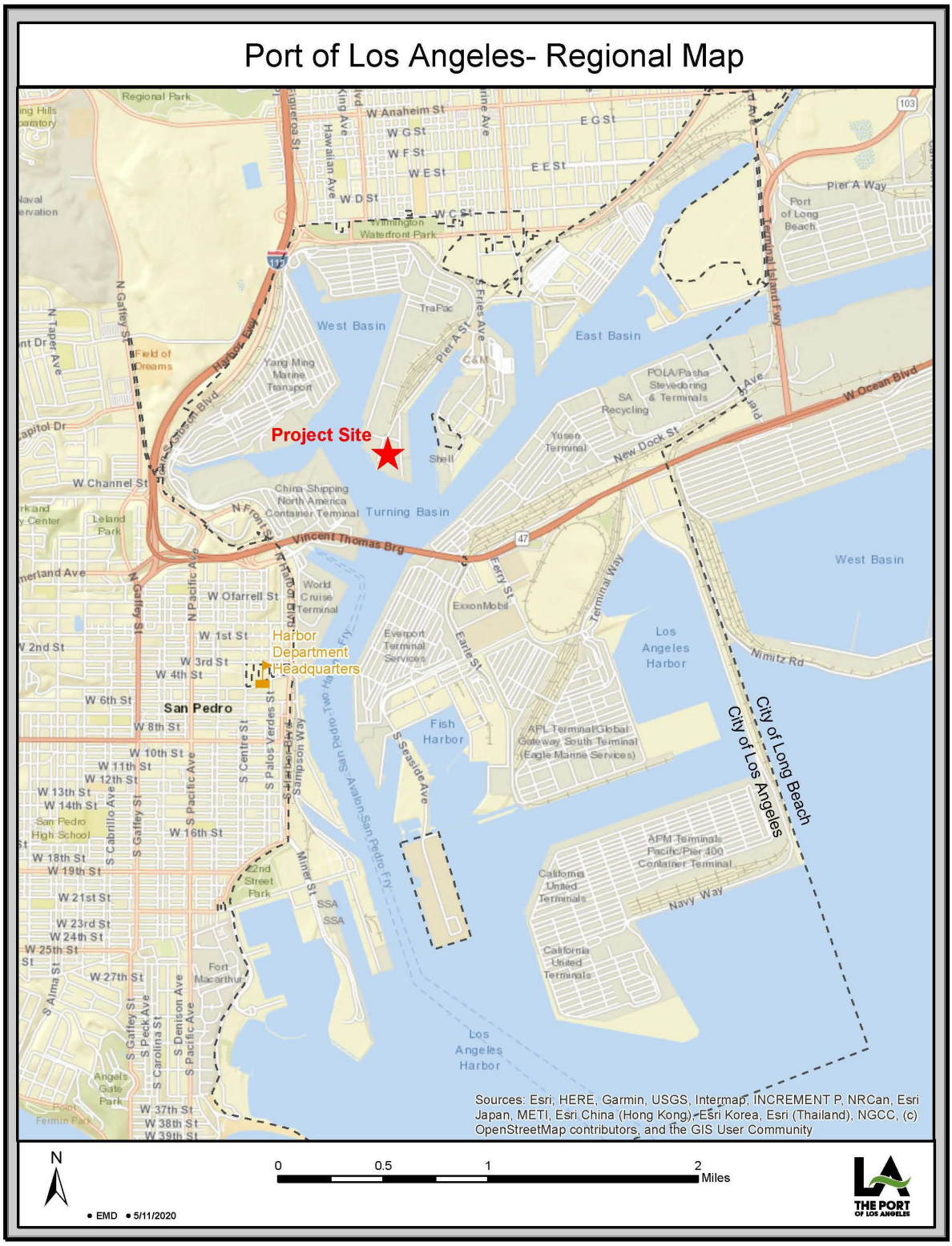
This IS/MND has been prepared to evaluate the potential environmental impacts associated with improvements to the Berths 148-151 wharf area for the purpose of complying with the MOTEMS. The project site is operated as a marine oil terminal by Phillips 66. Project elements include: vessel berthing improvements at Berth 148-149; demolition of the existing timber wharf at Berth 150-151; construction of a MOTEMS-compliant concrete wharf with associated mooring and berthing elements, oil commodity transfer, and pollution control facilities at Berth 150-151; installation or modification of oil commodity transfer facilities and supporting infrastructure in the backlands of Berths 148-151; shoreline reinforcement improvements; and decommissioning of Berth 148-149 from oil commodity transfer activities. The proposed Project also includes consideration by the Board of Harbor Commissioners of entitlement for up to 40 years to Phillips 66 for continued operations at Berths 148-151. To be conservative, this IS/ND assumes 40 years of operation for the analysis.

### *2.1.1 Project Location*

Regional Setting

The Port is located in San Pedro Bay, approximately 20 miles south of downtown Los Angeles (Figure 2.1-1). The Port encompasses approximately 7,500 acres of land and water along 43 miles of waterfront and provides a major gateway for international goods and services. The Port comprises approximately 25 cargo terminals, including dry and liquid bulk, container, breakbulk, automobile, and passenger facilities (LAHD 2018a). In addition to cargo business operations, the Port is home to commercial fishing vessels, shipyards, boat repair facilities, and recreational, community, and educational facilities. The Port also provides slips for approximately 3,800 recreational vessels, 78 commercial fishing boats, 35 miscellaneous small-service crafts, and 15 charter vessels that handle sport fishing and harbor cruises. The Port has retail shops and restaurants primarily located along the west side of the Main Channel. It also accommodates recreation, community, and educational facilities, such as a public swimming beach, Cabrillo Beach Youth Waterfront Sports Center, the Cabrillo Marine Aquarium, the Los Angeles Maritime Museum, 22nd Street Park, and the Wilmington Waterfront Park.

## Figure 2.1-1. Project Vicinity



Project Setting

The Project site is located at the southern end of Pier "A" Street on approximately 13.8 acres of land, including approximately 1,800 feet of Turning Basin waterfront. The Project site is bounded by the TraPac Container Terminal (Berths 135-147) to the north, the West Basin to the west, the Turning Basin to the south, and Slip No. 1 to the east. Nearby land uses are all marine cargo terminals and access roads.

Direct landside access to the Project site is provided via Pier "A" Street. Regional landside access is provided by a network of freeways and arterial routes and is available via Harry Bridges Boulevard and Fries Avenue. The freeway network consists of the Harbor Freeway (Interstate [I]-110), Long Beach Freeway (I-710), San Diego Freeway (I-405), and Seaside Freeway (State Route [SR]-47). Harry Bridges Boulevard connects I-110 to Pier "A" Street. Active train tracks managed by Pacific Harbor Line, Inc. extend the length of Pier "A" Street between Fries Avenue and the waterfront. Security and gating are located at the terminus of Pier "A" Street to control access to Berths 148-151.

Land Use and Zoning

The proposed Project is located in the Port, which is part of the City of Los Angeles General Plan. The Port Master Plan (PMP) established policies and guidelines to direct the future development of the Port (LAHD 2018a). The PMP includes five planning areas. The Project site is located within Planning Area 2 of the Port Master Plan, which encompasses the West Basin and Wilmington areas between the intersection of Harbor Freeway and Harry Bridges Boulevard to Commodore Schuyler F. Helm Bridge along the boundary of the Port and the Port of Long Beach. Planning Area 2 extends from Berths 96 to 204 and includes a range of land use activities (LAHD 2018a). The West Basin area primarily consists of container terminals, while the Wilmington area consists of liquid bulk at Berths 148-151, along with liquid and dry bulk uses on Mormon Island, recreational boating and open spaces along Anchorage Road, and public access provided at Berths 183-186. Planning Area 2 continues to be developed with new recreational and visitor-serving commercial use along the Avalon Boulevard Corridor and at Banning's Landing. The proposed Project site is designated for liquid bulk uses in the PMP.

The Project site includes Assessor's Parcel Numbers (APN Nos.) 7440018909, 74400118810, and 7440018905 as the location of the proposed wharf and topside improvements. The proposed wharf area is currently designated as General/Bulk Cargo (Non-Hazardous Industrial and Commercial) under the City of Los Angeles General Plan and is zoned [Qualified] Heavy Industrial ([Q]M3-1) under the City of Los Angeles Zoning Ordinance. The [Q]M3-1 zoning designation allows heavy industrial uses.

### *2.1.2 Existing Conditions*

Facilities

The current Phillips 66 MOT consists of approximately 13.8 acres of backlands and a currently non-operational wharf at Berths 150-151, and the adjacent wharf at Berths 148-149 at which the MOT's marine tanker vessel operations are conducted. The site has been a MOT since 1919, when Union Oil commenced operations using a wharf that has since been replaced. As stated above, the proposed Project also includes consideration of a new 20-year entitlement (with two potential 10-year additional options) to Phillips 66 for continued operations at Berths 148-151.

Phillips 66 and LAHD are in negotiations for that entitlement, which may include additional acreage at Berths 148-151 to be used for laydown/staging and parking or storage, bringing the total acreage to approximately 15.7 acres. Figure 2.1-2 roughly illustrates the Proposed Project Area. The additional acreage consists of three parcels depicted by the colored outline in Figure 2.1-2. For purposes of the analysis contained in this Initial Study and Mitigated Negative Declaration, it is assumed that Phillips 66 and LAHD will conclude negotiations for the entitlement and that the entire approximately 15.7-acre property will become entitled going forward. If, however, the additional parcels depicted in Figure 2.1-2 are not part of the entitlement going forward, the environmental analysis and conclusions contained in this Initial Study and Mitigated Negative Declaration remain substantively the same.

**Figure 2.1-2. Proposed Project Area (Berths 148-151)**


The existing 575-foot-long timber wharf at Berths 150-151 was originally constructed in 1919-1927 and is supported by hundreds of timber pilings, which have been replaced over time as needed. Extensive structural deterioration has occurred on the western side of the wharf, rendering this facility unsuitable for continued operation. The initial 2009 Port MOTEMS program audit identified the wharf at Berths 150-151 as “high risk” and subsequently classified it as “not fit

for service" per MOTEMS. As a result, the existing wharf at Berths 150-151 has not been utilized as a MOT since 2008, although the wharf is intermittently used for temporary berthing of tugs.

Phillips 66 currently conducts vessel loading and unloading operations only at Berths 148-149. Berths 148-149, built in 1955, consist of a 608-foot-long concrete wharf and a 432-foot-long concrete pipe-support structure. To support the transfer of oil commodities, this facility contains a vapor recovery system, risers, oil spill containment gear, and other associated equipment. While determined by California State Lands Commission (CSLC) to be in acceptable condition for temporary ongoing use, the concrete wharf at Berths 148-149 is not fully MOTEMS-compliant.

The Phillips 66 site includes tank farms containing 26 storage tanks of varying sizes. The tanks are located within spill containment walls approximately 15 feet high with a total storage capacity of approximately 850,000 barrels. Other landside facilities on the site include piping systems, pumps and compressors, vapor-recovery equipment used when loading (i.e., exporting) lighter commodities, a dock house, a gatehouse, a truck loading rack, a warehouse, an office building, and electrical substations.

Operations

The Phillips 66 MOT loads and unloads oil commodities products such as gas oils, residual fuel, dark oils, lube oil stocks, naphthas, gasoline/gasoline blend stocks, diesel and jet fuels, and distillate blend stocks, as well as renewables and renewable feedstocks, recovered oil, and water, to and from tanker vessels, both oceangoing vessels (OGVs) and barges. These products are transported by pipeline between the MOT and the nearby Phillips 66 refineries in Carson and Wilmington or other facilities connected to the USDOT pipeline network. Vessels calling at the terminal vary in size; currently, the largest are Panamax tankers (with typical maximum loads of approximately 75,000 deadweight tons). Only one vessel, whether barge or tanker, can be accommodated at a time at the existing Berth 148-149 wharf. Terminal operations occur 24 hours per day and 365 days per year to support existing operations at nearby facilities.

The terminal also loads imported lube oil onto trucks for distribution within an approximately 15-mile radius of the terminal. The MOT does not have any rail operations. Activity levels in 2019 are summarized in Table 2.2-1 along with projected maximum future activity levels after completion of the proposed Project as described in Section 2.2; Phillips 66 represents that, although vessel and truck numbers vary from year to year, the 2019 activity levels are typical of terminal operations in recent years. For purposes of this IS/MND evaluation, therefore, the 2019 vessel calls and throughput volume in Table 2.2-1 are considered to be the CEQA baseline for the evaluations herein. They represent both typical existing conditions as well as actual throughput for 2019, which was the most recent full calendar year prior to the COVID-19 pandemic and the preparation of this CEQA document.

**Table 2.2-1. Baseline and Projected Future Year Operational Activity Levels.**

| Annual Activity | 2019 Baseline | Projected with Project |
|---|---|---|
| Oceangoing Tankers | 25 | 40 |
| Barges | 204 | 266 |
| Total Vessel Calls[1] | 229 | 306 |
| Trucks (round trips) | 1,951 | 1,951 |
| Terminal Throughput (barrels) | 7,658,573 | 13,724,000 |

1: All vessels in 2019 called at Berth 149

2: No changes in truck trips are anticipated in the future since most products are moved via pipeline transfer to and/or from the marine terminal and the truck rack handles only lube oil

### 2.1.3 Project Background and Objectives

Project Background

The MOTEMS are comprehensive engineering standards for the analysis, design, inspection, and maintenance of existing and new marine oil terminals. The MOTEMS were approved by the California Building Standards Commission on January 19, 2005, became effective on January 6, 2006 (CSLC 2005), and are codified as part of CCR Title 24, Part 2, Marine Oil Terminals, Chapter 31F.

The MOTEMS apply to all existing and proposed marine oil terminals in California and include criteria for inspection, structural analysis and design, mooring and berthing, geotechnical considerations, fire, piping, mechanical, and electrical systems. The CSLC oversees the MOTEMS program. Through ongoing discussions with the CSLC, the LAHD developed an implementation strategy to complete the necessary MOTEMS requirements. The Phillips 66 MOT is one of seven existing MOTs at the Port.

MOTEMS require each MOT to conduct an audit to evaluate the facility's compliance and confirm its fitness-for-purpose. Depending on audit results, the terminal owner and/or terminal operators must determine what actions are required to bring facilities into compliance with established standards and to provide a schedule for implementation of deficiency corrections and/or rehabilitation. The standards define criteria in the following areas:

- Audit and Inspection
- Structural Loading
- Seismic Analysis and Structural Performance
- Mooring and Berthing Analysis and Design
- Geotechnical Hazards and Foundations
- Structural Analysis and Design of Components
- Fire Prevention, Detection, and Suppression
- Piping and Pipelines
- Mechanical and Electrical Equipment
- Electrical Systems.

The MOTEMS audits performed for the Phillips 66 MOT at Berths 148-149 identified existing infrastructure deficiencies related to structural, mooring, berthing, and piping systems that require upgrading. The proposed Project would correct the identified deficiencies by constructing a new, MOTEMS-compliant berthing facility at Berths 150-151 and limiting the future uses of Berths 148-149 to non-MOT uses such as, the occasional mooring of harbor craft (e.g., boom deployment boats, tugboats, and barges) to reduce congestion in the channel, and storage of topside equipment. These uses are similar to the current uses of Berths 150-151.

Project Objectives

The primary goal of the proposed Project is to ensure that the Phillips 66 MOT at Berths 148-151 complies with MOTEMS to protect public health, safety, and the environment and to ensure

continued viability of MOT operations within the Port. To achieve that goal, the proposed Project has the following objectives:

- Construct improvements to the wharf at Berths 148-149 to allow limited, temporary operation as a MOT while the new MOTEMS facility is built.
- Construct a new MOTEMS-compliant berthing and loading/unloading facility at Berths 150-151.
- Optimize the use of existing land at the terminal and associated waterways in a manner that is consistent with the LAHD's public trust obligations by maintaining the existing facility's throughput capabilities and operational parameters through a new, long-term entitlement.
- Ensure continued reliability and availability of fuel supplies to help meet Southern California's energy needs given evolving market conditions and business cycle variability.

Together, these four objectives define the project need, and are consistent with those set forth by LAHD for MOT operations.

## 2.2 Project Description

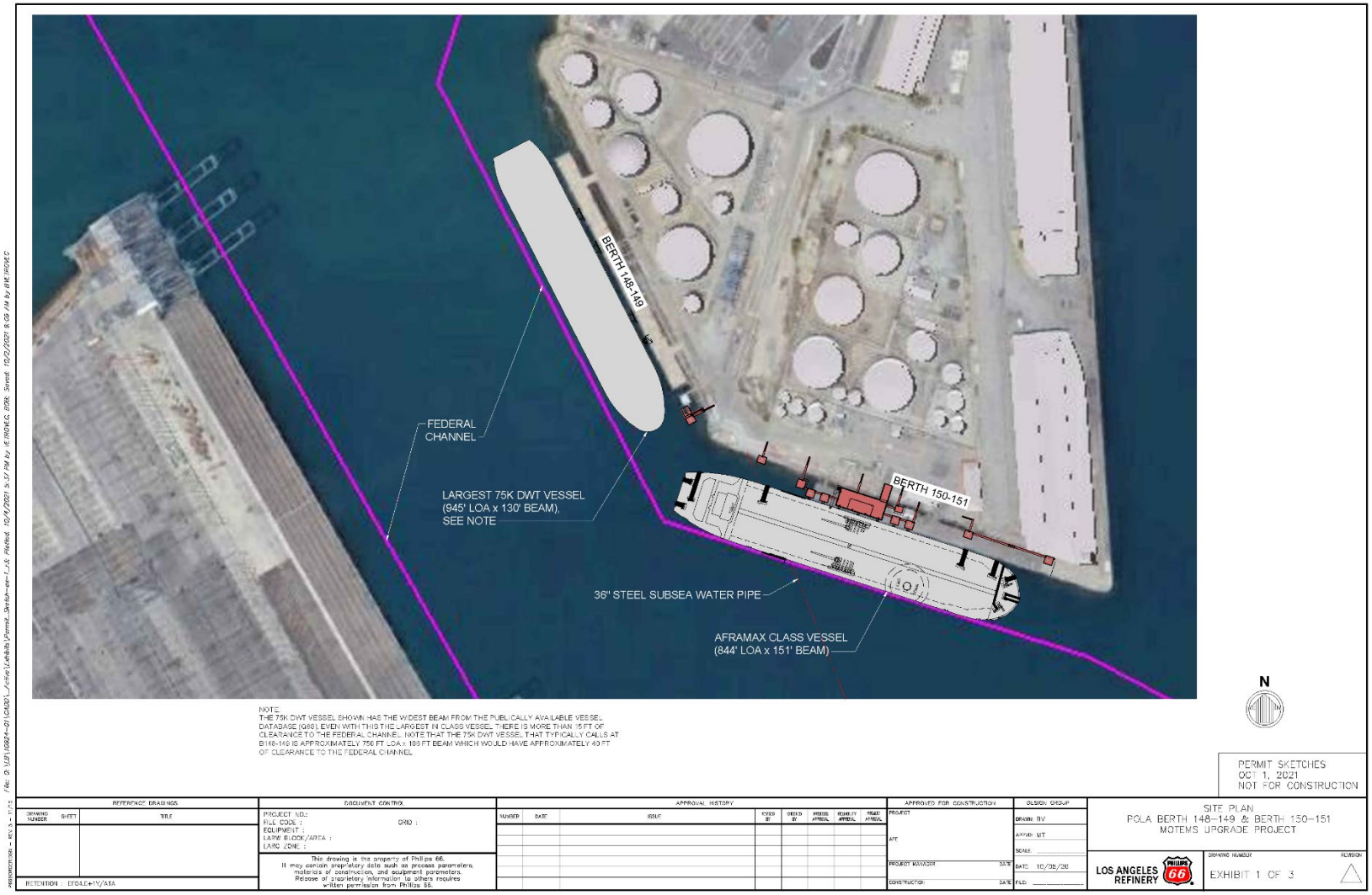
The proposed Project would consist of three primary elements that would provide improvements to ensure operation and viability of the Phillips 66 marine oil terminal. Details about each task and each phase of construction for Berths 148-149 and Berths 150-151 are included in the Air Quality Technical Appendix (Appendix A).

Berths 148-149 Improvements: Improvements to Berths 148-149 are included as part of this project. These improvements would allow these berths to be utilized while the Berths 150-151 MOTEMS compliant wharf is built. Improvements for non-MOT uses are also included such as, the occasional mooring of harbor craft (e.g., boom deployment boats, tugboats, and barges) to reduce congestion in the channel, and storage of topside equipment.

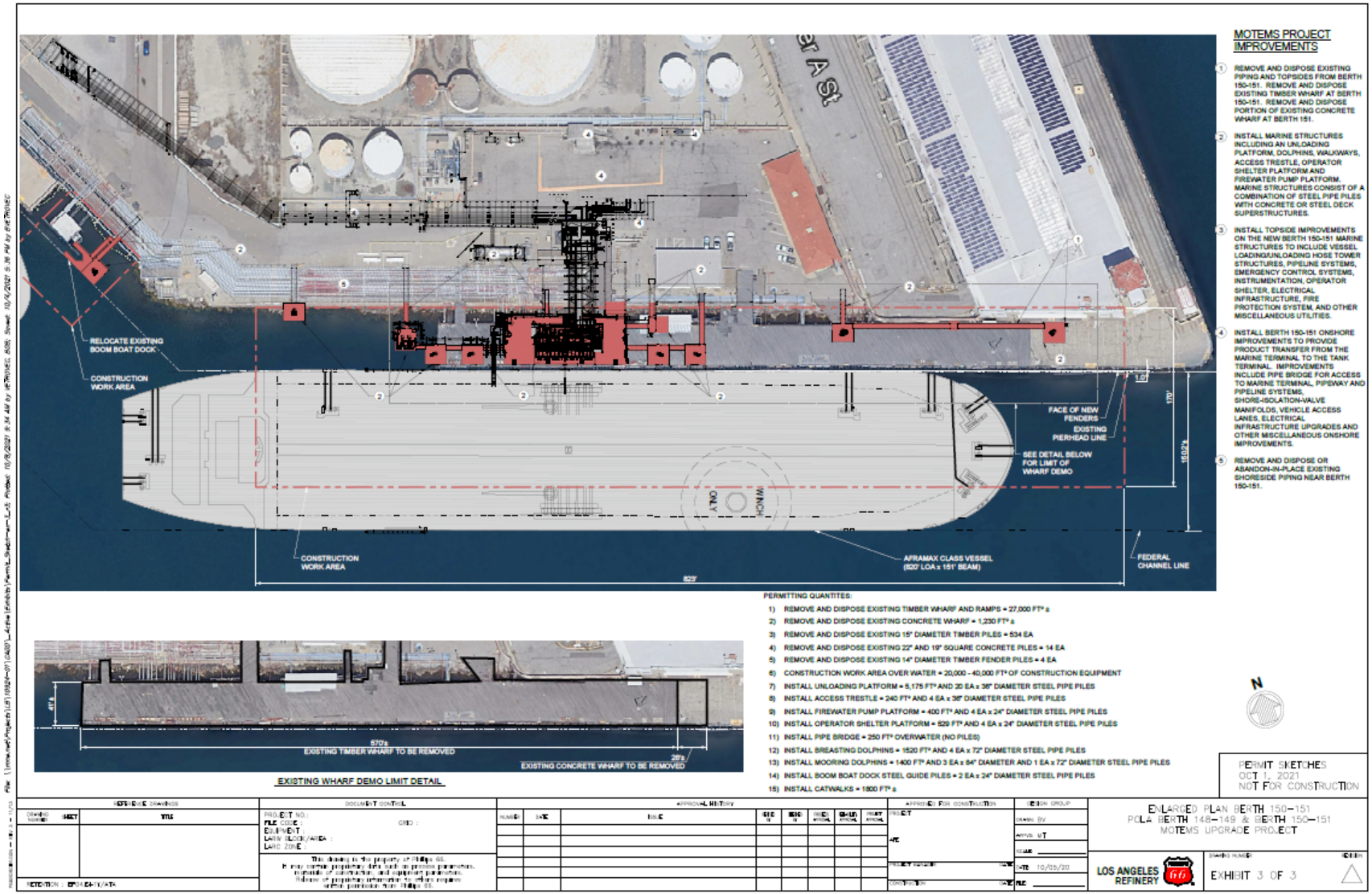
Berths 150-151 Improvements: This element consists of demolition of the existing timber wharf at Berths 150-151 and construction of a concrete wharf and loading platform designed and engineered to be MOTEMS-compliant, including the installation of mooring and breasting dolphins, access ramps, and catwalks (Figure 2.2-1).

Marine Oil Terminal Topside and Landside Improvements: Topside facilities and pipeline systems at Berths 150-151 (Figure 2.2-1) would be constructed to allow transfer of commodities between the dock and landside tanks and pipeline systems. The existing marine vapor recovery system at Berths 148-149 would be transferred to Berths 150-151, after which the wharf at Berths 148-149 would be limited to future non-MOT uses as indicated above.

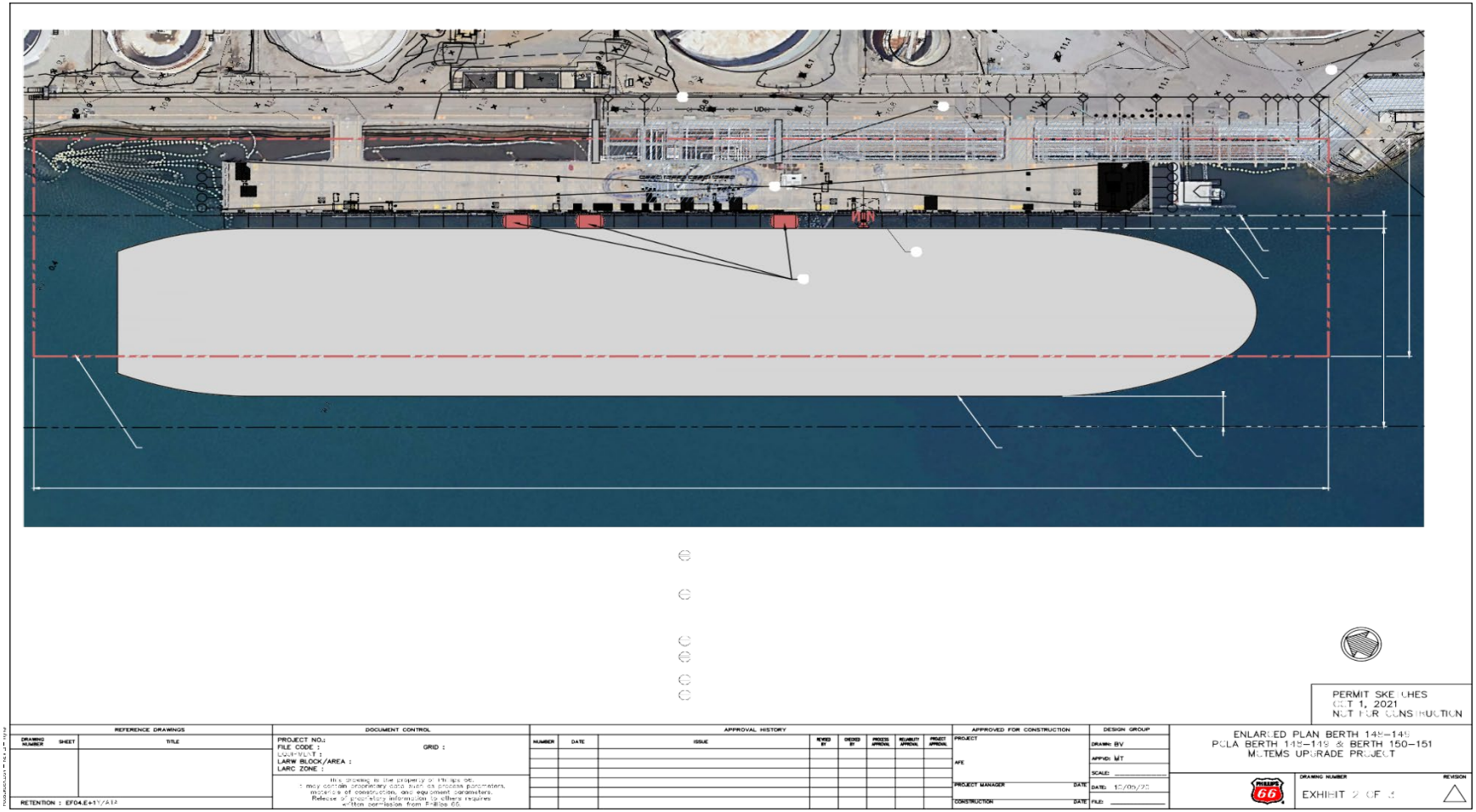
## Figure 2.2-1a. Berths 148-151 (Phillips 66) Marine Oil Terminal and Wharf Improvement Project



## Figure 2.2-1b.Berths 150-151 (Phillips 66) Marine Oil Terminal and Wharf Improvement Project



## Figure 2.2-1c. Berths 148-149 (Phillips 66) Marine Oil Terminal and Wharf Improvement Project



### *In-Water Improvements*

Before any work is started at Berths 150-151, Berths 148-149 would be upgraded for temporary use for marine vessel mooring and loading/unloading during construction of the facilities at Berths 150-151. Construction would include partial demolition of the existing concrete deck, partial removal and disposal of the existing timber fender system, timber and marine fenders, and installation of approximately 39 steel fender piles. The existing bulkhead wall would also be repaired with concrete. This work would take approximately three months.

Once the Berths 148-149 improvements were completed, the existing wharf structure at Berths 150-151 would be demolished and the new, MOTEMS-compliant structure would be built. The new structure would be constructed of reinforced concrete and supported by steel pilings of up to 72 inches in diameter. The new structure would consist of a loading platform, mooring and breasting dolphins, access ramps, and catwalks. The new berth would be able to accommodate OGVs of up to "Aframax" size (123,000 deadweight tonnage [DWT]) as well as barges.

The loading platform would be approximately 45 feet wide and 115 feet long to accommodate topside facilities necessary for safe unloading and loading of OGVs. Topside facilities would include hose handling equipment, manifolds, piping, fire protection equipment, and spill prevention and response equipment. The platform would be surrounded by a spill containment curb to contain and collect runoff or spills. Mooring and breasting dolphins would consist of small, pile-supported concrete platforms with quick-release mooring gear and fendering structures, and would be connected to one another, the loading platform, and the shore by pile-supported catwalks. The new wharf would include a small, pile-supported platform for handling the spill containment boom. The various platforms and catwalks comprising the new wharf would extend along approximately 1,100 feet of the shoreline, but the open nature of the structure means that the over-water footprint would be approximately 12,000 square feet, a reduction of approximately 16,000 square feet from the footprint of the existing timber wharf.

An existing underwater concrete bulkhead underneath the timber wharf needs minor repairs and reinforcement, which would be conducted following the removal of the wharf. Clean-up dredging would also be done to maintain historical subsurface contours.

### *Landside Improvements*

Under the proposed Project, Phillips 66 would install necessary topside improvements for MOT operations on the new concrete wharf at Berths 150-151. Landside improvements would include refurbishment of 11 idle storage tanks, construction of three new tanks for the pollution control and fire protection systems, installation of equipment and pipelines to allow transfers of petroleum commodities between the new wharf and the landside storage tanks and to existing pipeline systems that run to the refinery, and flushing, blinding and removal or abandonment of out of service pipelines as appropriate. Phillips 66 would also relocate the marine vapor recovery system (e.g., thermal oxidizer, dockside safety unit) currently at Berths 148-149 to Berths 150-151. The firewater system at Berths 150-151 would be reconstructed to comply with MOTEMS, and the electrical distribution system would be modified to support operations at Berths 150-151. Approximately 17 new pipelines from the new wharf to onshore facilities within the Project site would be installed to transport oil commodities and water for fire protection, similar to the number of pipelines currently in operation. These pipelines would range from 2 to 12 inches in diameter.

Approximately 2.2 acres of unpaved areas may be graded and paved for use as laydown/staging and parking or storage areas.

Operations at Berths 148-149 would continue while construction activities are ongoing, but these operations would be relocated to Berths 150-151 following completion of the new wharf and equipment, and Berths 148-149 would be limited to non-MOT uses as indicated above.

### *Project Schedule*

For the purposes of this analysis, it has been assumed that construction of the proposed Project would occur in multiple phases. Demolition and construction of the wharf elements, topside and landside improvements would occur over a period of approximately three years, from approximately 2022 to 2025, at which time the new berth would become operational. Refurbishment of the tank farm would proceed in three phases from 2025-2028.

### *Construction*

Prior to construction, the necessary permits and pre-construction surveys would be completed. Construction of the proposed Project would begin with the work at Berths 148-149 described above.

Prior to demolition of the existing wharf at Berths 150-151, Phillips 66 would demolish all existing topside improvements (i.e., pipelines and utility feeder lines). Following removal of wooden decking, the existing timber piles would be removed and/or extracted intact and cut at the mud line). Demolition of the existing wharf would require the use of barges supporting floating cranes, tugs to move/steady barges, and heavy-haul trucks to remove demolition debris to an appropriate disposal location.

Construction of the new wharf structure would require vibratory hammers and diesel pile drivers to sink steel piles into the sediment; crews would construct the wharf, the platforms, the access ramps, and other facilities using concrete trucks, pumps, and similar equipment. It is anticipated that deliveries of support piles would occur via barge.

Clean-up dredging of up to 2,000 cubic yards of sediment could be required at Berth 150-151 if post-construction surveys indicate insufficient depth alongside the new unloading structure. In that case, a derrick barge, tugboat, and disposal scow would be employed. Dredge material would be disposed of at a permitted upland site.

Phillips 66's construction and installation of topside improvements would occur following completion of the new wharf, and would proceed primarily from the landside, requiring only minor in-water work to construct/emplace utility pipelines and service fields over and under the new wharf deck.

### *Operations at Berths 148-151*

Operations at Berths 150-151 would occur in the same manner as existing operations at Berths 148-149. Upon completion of product transfer and refueling, OGVs would depart from the facility with assistance from tugs and then proceed under their own power when safe to transition. Inbound and outbound OGVs would use the same transit lanes within the Outer Harbor and the Port to reach Berths 150-151.

Phillips 66 would manage future operations at Berths 148-151. Operational activities would require the same number of staff as existing operational activities. The facility would be permitted to operate 24 hours per day and 365 days per year to support existing operations at nearby facilities as it is today. The number of OGV berthings and throughput volume of petroleum products at Berths 150-151 would vary depending on periods of scheduled and unscheduled maintenance of nearby refineries as well as economic cycles. Berths 150-151 would continue to serve barges, tugs, and a range of OGV sizes from barges up to Aframax-class OGVs (123,000 DWT). On average, approximately 15 additional tanker vessel calls per year are expected in the future. Since most products are moved via pipeline transfer to and/or from the marine terminal and the truck rack handles only lube oil, no changes in truck trips are anticipated in the future. Berths 148-149 would no longer be used as a MOT; future use of Berths 148-149 would be limited to non-MOT uses such as, the occasional mooring of harbor craft (e.g., boom deployment boats, tugboats, and barges) to reduce congestion in the channel, and storage of topside equipment.

## 2.4 Project Approvals and Permits

Under CEQA, the Lead Agency is the public agency with primary responsibility over approval of a proposed Project. Pursuant to Section 15367, the CEQA Lead Agency for the proposed Project is the LAHD.

Anticipated permits and approvals that may be required to implement to the proposed Project include but are not limited to the following:

- U.S. Army Corps of Engineers (USACE) Letter of Permission (LOP)
- Los Angeles Regional Water Quality Control Board (LARWQCB) Clean Water Act Section 401 Water Quality Certification
- LARWQCB Storm Water Pollution Prevention Plan (SWPPP)
- LARWQCB National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Industrial Activities
- California State Lands Commission
- LAHD Coastal Development Permit issued by the Los Angeles Board of Harbor Commissioners
- LAHD Entitlement
- LAHD Harbor Engineers Permit
- South Coast Air Quality Management District (SCAQMD) Permit to Construct/Operate
- City of Los Angeles Fire Department
- City of Los Angeles Building Permit
- City of Los Angeles Grading Permit
- City of Los Angeles Electrical Permit

# 3. Initial Study Checklist

| | | |
|---|---|---|
| 1. | Project Title: | Berths 148-151 (Phillips 66) Marine Oil Terminal and Wharf Improvement Project |
| 2. | Lead Agency Name and Address: | LAHD<br>Environmental Management Division<br>425 South Palos Verdes Street<br>San Pedro, California 90731 |
| 3. | Contact Person and Phone Number: | Leah Kohler, Project Manager, Environmental Management Division, LAHD, (310) 732-3675 |
| 4. | Project Location: | Berths 148 – 151, Port of Los Angeles<br>Pier "A" St.<br>Wilmington, CA 90744 |
| 5. | Project Sponsor's Name and Address: | Phillips 66 Company<br>1660 West Anaheim Street<br>Wilmington, CA 90744 |
| 6. | Port Master Plan Designation: | Liquid Bulk Cargo |
| 7. | Zoning: | Qualified Heavy Industrial [Q]M3-1 |
| 8. | Description of Project: | The proposed Project consists of vessel berthing improvements at Berth 148-149; demolition of the existing timber wharf at Berth 150-151; construction of a MOTEMS-compliant concrete wharf with associated mooring and berthing elements, petroleum transfer, and pollution control facilities at Berth 150-151; installation or modification of petroleum transfer facilities and supporting infrastructure in the backlands of Berths 148-151; shoreline reinforcement improvements; and decommissioning of Berth 148-149 from petroleum transfer activities. The proposed Project also includes consideration of a new 20-year entitlement to Phillips 66 by the Board of Harbor Commissioners. |
| 9. | Surrounding Land Uses/Setting: | The overall character of the surrounding area is primarily industrial. The Project site and adjacent properties to the north and west are all zoned for heavy industrial uses ([Q] M3-1), similar to the Project site. The project area is adjacent to the City of Los Angeles communities of San Pedro and Wilmington. The Project site is located at the southern end of Pier "A" Street and is bounded by the TraPac Container Terminal (Berths 135-147) to the north, the West Basin to the west, the Turning Basin to the south, and Slip No. 1 to the east. Nearby land uses are all marine cargo terminals and access roads. The nearest residential receptor community is an apartment complex on N. Harbor Blvd. in San Pedro, approximately two-thirds of a mile southwest of the Project site. |
| 10. | Other Public Agencies Whose Approval is Required: | • USACE<br>• LARWQCB<br>• CSLC<br>• SCAQMD<br>• LADBS<br>• LAFD |

| | | |
|---|---|---|
| 11. | Have California Native American Tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code 21808.3.1? | Yes (see Section 4.18) |

## 3.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this Project (i.e., the proposed Project would involve at least one impact that is a "potentially significant impact" prior to mitigation, as indicated by the checklist on the following pages.

| | | |
|---|---|---|
| ☐ Aesthetics | ☐ Agriculture and Forestry Resources | ☒ Air Quality |
| ☒ Biological Resources | ☐ Cultural Resources | ☐ Energy |
| ☐ Geology and Soils | ☐ Greenhouse Gas Emissions | ☐ Hazards and Hazardous Materials |
| ☐ Hydrology and Water Quality | ☐ Land Use and Planning | ☐ Mineral Resources |
| ☐ Noise | ☐ Population and Housing | ☐ Public Services |
| ☐ Recreation | ☐ Transportation and Traffic | ☐ Tribal Cultural Resources |
| ☐ Utilities and Service Systems | ☐ Wildfires | ☒ Mandatory Findings of Significance |

## 3.2 DETERMINATION (TO BE COMPLETED BY THE LEAD AGENCY)

On the basis of this initial evaluation:

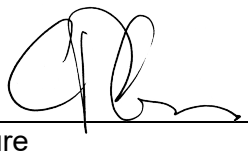
I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared. ☐

I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared. ☒

I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required. ☐

I find that the proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed. ☐

I find that although the proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required. ☐



Signature

11/11/2021

Date

Christopher Cannon, Director
Environmental Management Division
City of Los Angeles Harbor Department

Environmental Checklist

| | Potentially Significant Impact | Less-than-Significant Impact with Mitigation Incorporated | Less-than-Significant Impact | No Impact |
|---|---|---|---|---|
| **1. AESTHETICS.** Except as provided in Public Resources Code Section 21099, **would the project:** | | | | |
| a. Have a substantial adverse effect on a scenic vista? | ☐ | ☐ | ☒ | ☐ |
| b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway? | ☐ | ☐ | ☒ | ☐ |
| c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality? | ☐ | ☐ | ☐ | ☒ |
| d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? | ☐ | ☐ | ☒ | ☐ |
| **2. AGRICULTURE AND FORESTRY RESOURCES.** In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. **Would the project:** | | | | |
| a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | ☐ | ☐ | ☐ | ☒ |
| b. Conflict with existing zoning for agricultural use, or a Williamson Act contract? | ☐ | ☐ | ☐ | ☒ |

| | Potentially Significant Impact | Less-than-Significant Impact with Mitigation Incorporated | Less-than-Significant Impact | No Impact |
|---|---|---|---|---|
| c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code §12220(g)), timberland (as defined by Public Resources Code §4526), or timberland zoned Timberland Production (as defined by Government Code §51104(g))? | ☐ | ☐ | ☐ | ☒ |
| d. Result in the loss of forest land or conversion of forest land to non-forest use? | ☐ | ☐ | ☐ | ☒ |
| e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use? | ☐ | ☐ | ☐ | ☒ |
| **3. AIR QUALITY.** Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. **Would the project:** | | | | |
| a. Conflict with or obstruct implementation of the applicable air quality plan? | ☐ | ☐ | ☒ | ☐ |
| b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard? | ☐ | ☒ | ☐ | ☐ |
| c. Expose sensitive receptors to substantial pollutant concentrations? | ☐ | ☐ | ☒ | ☐ |
| d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? | ☐ | ☐ | ☒ | ☐ |
| **4. BIOLOGICAL RESOURCES. Would the project:** | | | | |
| a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? | ☐ | ☒ | ☐ | ☐ |

| | Potentially Significant Impact | Less-than-Significant Impact with Mitigation Incorporated | Less-than-Significant Impact | No Impact |
|---|---|---|---|---|
| b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in the City or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? | ☐ | ☐ | ☒ | ☐ |
| c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? | ☐ | ☐ | ☐ | ☒ |
| d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? | ☐ | ☐ | ☒ | ☐ |
| e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? | ☐ | ☐ | ☐ | ☒ |
| f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan? | ☐ | ☐ | ☐ | ☒ |
| **5. CULTURAL RESOURCES. Would the project:** | | | | |
| a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5? | ☐ | ☐ | ☐ | ☒ |
| b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? | ☐ | ☐ | ☐ | ☒ |
| c. Disturb any human remains, including those interred outside of dedicated cemeteries? | ☐ | ☐ | ☐ | ☒ |
| **6. ENERGY. Would the project:** | | | | |
| a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation? | ☐ | ☐ | ☒ | ☐ |

| | Potentially Significant Impact | Less-than-Significant Impact with Mitigation Incorporated | Less-than-Significant Impact | No Impact |
|---|---|---|---|---|
| b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency? | ☐ | ☐ | ☒ | ☐ |
| **7. GEOLOGY AND SOILS. Would the project:** | | | | |
| a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: | | | | |
| i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. | ☐ | ☐ | ☒ | ☐ |
| ii) Strong seismic ground shaking? | ☐ | ☐ | ☒ | ☐ |
| iii) Seismic-related ground failure, including liquefaction? | ☐ | ☐ | ☒ | ☐ |
| iv) Landslides? | ☐ | ☐ | ☐ | ☒ |
| b. Result in substantial soil erosion or the loss of topsoil? | ☐ | ☐ | ☐ | ☒ |
| c. Be located on geologic units or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse? | ☐ | ☐ | ☒ | ☐ |
| d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property? | ☐ | ☐ | ☒ | ☐ |
| e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater? | ☐ | ☐ | ☐ | ☒ |
| f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? | ☐ | ☐ | ☐ | ☒ |

| | Potentially Significant Impact | Less-than-Significant Impact with Mitigation Incorporated | Less-than-Significant Impact | No Impact |
|---|---|---|---|---|
| **8. GREENHOUSE GAS EMISSIONS. Would the project:** | | | | |
| a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? | ☐ | ☐ | ☒ | ☐ |
| b. Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases? | ☐ | ☐ | ☒ | ☐ |
| **9. HAZARDS AND HAZARDOUS MATERIALS. Would the project:** | | | | |
| a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? | ☐ | ☐ | ☒ | ☐ |
| b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? | ☐ | ☐ | ☒ | ☐ |
| c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? | ☐ | ☐ | ☐ | ☒ |
| d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment? | ☐ | ☐ | ☒ | ☐ |
| e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area? | ☐ | ☐ | ☐ | ☒ |
| f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | ☐ | ☐ | ☒ | ☐ |

| | Potentially Significant Impact | Less-than-Significant Impact with Mitigation Incorporated | Less-than-Significant Impact | No Impact |
|---|---|---|---|---|
| g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires? | ☐ | ☐ | ☐ | ☒ |
| **10. HYDROLOGY AND WATER QUALITY. Would the project:** | | | | |
| a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality? | ☐ | ☐ | ☒ | ☐ |
| b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? | ☐ | ☐ | ☒ | ☐ |
| c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: | | | | |
| (i) result in substantial erosion or siltation on- or off-site; | ☐ | ☐ | ☐ | ☒ |
| (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; | ☐ | ☐ | ☒ | ☐ |
| (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or | ☐ | ☐ | ☒ | ☐ |
| (iv) impede or redirect flood flows? | ☐ | ☐ | ☐ | ☒ |
| d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation? | ☐ | ☐ | ☒ | ☐ |
| e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? | ☐ | ☐ | ☐ | ☒ |
| **11. LAND USE PLANNING. Would the project:** | | | | |
| a. Physically divide an established community? | ☐ | ☐ | ☐ | ☒ |

| | Potentially Significant Impact | Less-than-Significant Impact with Mitigation Incorporated | Less-than-Significant Impact | No Impact |
|---|---|---|---|---|
| b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect? | ☐ | ☐ | ☐ | ☒ |
| **12. MINERAL RESOURCES. Would the project:** | | | | |
| a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State? | ☐ | ☐ | ☐ | ☒ |
| b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan? | ☐ | ☐ | ☐ | ☒ |
| **13. NOISE. Would the project result in:** | | | | |
| a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? | ☐ | ☐ | ☒ | ☐ |
| b. Generation of excessive groundborne vibration or groundborne noise levels? | ☐ | ☐ | ☒ | ☐ |
| c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? | ☐ | ☐ | ☐ | ☒ |
| **14. POPULATION AND HOUSING. Would the project:** | | | | |
| a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | ☐ | ☐ | ☐ | ☒ |
| b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? | ☐ | ☐ | ☐ | ☒ |

| | Potentially Significant Impact | Less-than-Significant Impact with Mitigation Incorporated | Less-than-Significant Impact | No Impact |
|---|---|---|---|---|
| **15. PUBLIC SERVICES.** Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: | | | | |
| a. Fire protection? | ☐ | ☐ | ☒ | ☐ |
| b. Police protection? | ☐ | ☐ | ☒ | ☐ |
| c. Schools? | ☐ | ☐ | ☐ | ☒ |
| d. Parks? | ☐ | ☐ | ☐ | ☒ |
| e. Other public facilities? | ☐ | ☐ | ☒ | ☐ |
| **16. RECREATION** | | | | |
| a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | ☐ | ☐ | ☐ | ☒ |
| b. Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment? | ☐ | ☐ | ☐ | ☒ |
| **17. TRANSPORTATION. Would the project:** | | | | |
| a. Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? | ☐ | ☐ | ☐ | ☒ |
| b. Conflict or be inconsistent with CEQA Guidelines §15064.3, subdivision (b)? | ☐ | ☐ | ☐ | ☒ |
| c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? | ☐ | ☐ | ☐ | ☒ |

| | Potentially Significant Impact | Less-than-Significant Impact with Mitigation Incorporated | Less-than-Significant Impact | No Impact |
|---|---|---|---|---|
| d. Result in inadequate emergency access? | ☐ | ☐ | ☐ | ☒ |
| **18. TRIBAL CULTURAL RESOURCES** | | | | |
| a. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code §21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: | | | | |
| (i) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code §5020.1(k), or | ☐ | ☐ | ☐ | ☒ |
| (ii) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code §5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | ☐ | ☐ | ☐ | ☒ |
| **19. UTILITIES AND SERVICE SYSTEMS. Would the project:** | | | | |
| a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? | ☐ | ☐ | ☐ | ☒ |
| b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? | ☐ | ☐ | ☐ | ☒ |
| c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? | ☐ | ☐ | ☐ | ☒ |

| | Potentially Significant Impact | Less-than-Significant Impact with Mitigation Incorporated | Less-than-Significant Impact | No Impact |
|---|---|---|---|---|
| d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals? | ☐ | ☐ | ☒ | ☐ |
| e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste? | ☐ | ☐ | ☐ | ☒ |
| **20. WILDFIRE.** If located in or near State responsibility areas or lands classified as very high fire hazard severity zones, **would the project:** | | | | |
| a. Substantially impair an adopted emergency response plan or emergency evacuation plan? | ☐ | ☐ | ☐ | ☒ |
| b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire? | ☐ | ☐ | ☐ | ☒ |
| c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment? | ☐ | ☐ | ☐ | ☒ |
| d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes? | ☐ | ☐ | ☐ | ☒ |
| **21. MANDATORY FINDINGS OF SIGNIFICANCE** | | | | |
| a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? | ☐ | ☒ | ☐ | ☐ |

| | Potentially Significant Impact | Less-than-Significant Impact with Mitigation Incorporated | Less-than-Significant Impact | No Impact |
|---|---|---|---|---|
| b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.) | ☐ | ☐ | ☒ | ☐ |
| c. Does the project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly? | ☐ | ☐ | ☒ | ☐ |

# 4. Environmental Analysis and Discussion of Impacts and Mitigation Measures

## 4.1 AESTHETICS

a. Would the project have a substantial adverse effect on a scenic vista?

**Less-than-Significant Impact.** The Conservation Element of the City of Los Angeles General Plan defines a scenic vista as a panoramic public view with access to natural features, including views of the ocean, striking or unusual natural terrain, or unique urban or historic features (City of Los Angeles, 2001). The Project site is industrial in nature, is located inside a working port, and is not within or near any protected or designated scenic vistas. The site consists of large storage tanks, a timber wharf, a concrete wharf, and offices and other associated industrial structures. The Project site is surrounded by other port uses, including container terminals and other bulk cargo facilities, in an area of the Port rarely visited by the general public (i.e., at the end of Pier "A" Street), and it is not an individually prominent feature from any scenic vista in the area. Further, the new loading platform, catwalks, and topside equipment would be at nearly the same location as the existing features and would be similar in appearance; thus, the Project improvements would not result in a substantive change in the visual character or quality of the site.

The Port of Los Angeles Master Plan Update Draft Environmental Impact Report (LAHD, 2013) identifies important and representative public views, including panoramic views of the Pacific Ocean and near and distant views that are representative of a working port environment, including vessels, wharves, cranes, and other dockside facilities. These critical views occur from points including the Main Channel and the San Pedro Waterfront, Harbor Freeway, Banning's Landing, San Pedro Bluffs and Lookout Point Park, Wilmington Waterfront Park, and "C" Street residential area in Wilmington. Due to the combination of topography, intervening development, and distance, visibility of the Project site from many of these locations, or from higher locations, is limited. The critical views would not be obstructed by any of the elements of the proposed Project such as the new loading platform, mooring dolphins, catwalks, and topside equipment.

Construction of the proposed Project would involve construction equipment (i.e., cranes and barges) that could temporarily alter views of the Project site; however, this equipment would not obscure views, would be consistent with activities within the Port, and would be used over a short duration. Therefore, construction of the proposed Project would not introduce a new visual element that could have a substantial adverse effect on a scenic resource.

In the future, the Phillips 66 terminal would be used by vessels of the same types as those that are currently accommodated under baseline conditions. The largest vessels under baseline conditions are Panamax-class tankers (up to 80,000 DWT) while the largest vessels that would be able to be accommodated after completion of the proposed Project would be Aframax class tankers (up to 123,000 DWT, which would be expected to visit the terminal up to six times per year). Introduction of these somewhat larger but similar looking vessels would not substantially alter the visual characteristics of terminal operations. Furthermore, there would be no increase in the maximum number of vessels at the terminal

at one time. Accordingly, operation of the proposed Project would not substantially change views of the site or any scenic vista.

In summary, the proposed Project would not introduce a new visual element that could alter or obstruct recognized and valued views and would not have a substantial adverse effect on a scenic vista. This impact is would be less than significant and no mitigation is required.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

**Less-than-Significant Impact.** The Project site is not located near an eligible or designated state scenic highway, nor are there scenic resources located at the Project site; therefore, the proposed Project activities would not have the potential to damage scenic resources within a state scenic highway. The California Department of Transportation (Caltrans) is responsible for the official nomination and designation of eligible scenic highways. The nearest officially designated state scenic highway is located approximately 32 miles north of the proposed Project (State Highway 2, north of Interstate (I)-210 in La Cañada to the San Bernardino County Line) (Caltrans 2013a). The nearest eligible state scenic highway is approximately 8 miles northeast of the proposed Project (State Highway 1 near Long Beach to I-5 south of San Juan Capistrano) (Caltrans 2013a). The Project site is not visible from either of these locations. Therefore, proposed Project activities would not affect the quality of the scenic views from these locations.

The City of Los Angeles has City-designated scenic highways that are considered during local planning and development decisions, several of which are in the vicinity of the proposed Project (City of Los Angeles 1999). John S. Gibson Boulevard, Pacific Avenue (from Crescent Avenue to Paseo del Mar), Front Street, and Harbor Boulevard (between Front Street and Crescent Avenue) are City-designated scenic highways because they afford views of the Port and the Vincent Thomas Bridge. However, views of the Project site from the City-designated scenic highways are either very limited or non-existent due to topography and/or intervening development, including buildings, gantry cranes, and stacked containers. The visual elements associated with the proposed project have either a low profile (loading platform, catwalks and associated improvements) or would be consistent with the existing terminal features (topside improvements), and would not have any impact on the views of the Vincent Thomas Bridge or from a City-designated scenic highway.

The Vincent Thomas Bridge is not a designated scenic route, but provides brief panoramic views of the Main Channel, West Turning Basin, and Port to observers on the bridge. Although the views of the Port and the Pacific Ocean from the bridge are panoramic, they are generally fleeting and highly obstructed by the bridge structure itself. Furthermore, the bridge is accessible to vehicles only: no provisions are made for pedestrian or bicycle use. The relatively narrow lanes of the bridge are the primary features of forward views.

The proposed Project would not result in additional vessels moored at the new loading platform. Because the vessels that would visit the terminal would be consistent with existing terminal operations and a working port, they would not have an impact on the fleeting views from the Vincent Thomas Bridge or City-designated scenic highways.

The Project site is located within an existing marine oil terminal. No scenic trees or rock outcroppings exist at the Project site. Improvements associated with the proposed Project,

including the loading platform, catwalks, and topside equipment would look similar to the existing facilities, would be consistent with the existing visual context of a working port and would not alter scenic resources visible from a City-designated scenic highway. Therefore, impacts to scenic resources from the proposed Project would be less than significant and no mitigation is required.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

**No Impact.** The Project site is within an urbanized area and would not conflict with the applicable zoning at the site or surrounding areas, which is [Q] M3-1 (Qualified-Heavy Industrial). The appearance of the facilities in the area of the Project site is functional in nature and is characterized by exposed infrastructure, open storage, the use of unfinished or unadorned building materials, and the use of safety-conscious, high-visibility colors for mobile equipment such as cranes, containers, and railcars. The proposed Project would continue the existing use, which is consistent with the zoning of the site, and would maintain the visual character of the site and its vicinity. Accordingly, the proposed Project would not conflict with existing zoning or regulations governing visual quality, and neither construction nor operations would degrade the existing visual character or quality of public views. No impacts would occur and no mitigation is required.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

**Less-than-Significant Impact.** The Port is an area of high ambient lighting that includes approximately 25 terminals and other facilities, all of which are illuminated at night. The overall lighting environment includes two types of light sources: 1) fixed or stationary light sources associated with terminals (including crane lights), parking lot and backland light standards, building security lighting, and terminal access road or rail spur lighting; and 2) mobile light sources associated with ship, rail and truck traffic, cargo-moving equipment, and other vehicles on interior Port roadways.

The Project site has existing security and general nighttime lighting on the property and along the wharf, but lighting levels are generally lower than in nearby container terminals, which typically have much higher lighting levels associated with illuminated backlands, dockyards, and gantry cranes. Mobile light sources at the Project site include ships berthed at the wharf, trucks, and cars on the site and on the access road leading to the site.

Construction of the proposed Project would require construction lighting, but that lighting would be similar to existing conditions. Therefore, construction lighting would not cause a substantial change in the light environment. The existing wharf lighting or any unnecessary lighting would be removed from the wharf structures and replaced with new lighting. Lights along the new loading platform, the catwalks, and on some topside equipment would comply with the permit requirements of the Port of Los Angeles. The new lighting will provide the same function as existing lighting to provide safe visibility during nighttime operations and will not differ significantly from the existing lighting. Thus, the proposed Project would not result in a substantial increase in light.

Operation of the proposed Project would not result in an increase above baseline conditions in vessels at berth on any given day or truck trips and thus would not cause a substantial increase in light or glare which would adversely affect day or nighttime views in the area.

The proposed Project would not include elements that can cause glare, such as windows, light-color building surfaces, or metal or other reflective surfaces. Therefore, the proposed Project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. Impacts to nighttime or daytime views from light or glare from the proposed Project would be less than significant and no mitigation is required.

## 4.2 AGRICULTURE AND FORESTRY RESOURCES

a) Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

**No Impact.** The Project site does not contain any Farmland and is not located within any agricultural land use designation. The proposed Project is located in a highly developed area with existing petroleum tanks, piping and related equipment. Although the California Department of Conservation's Farmland Mapping and Monitoring Program has not mapped the Project site, the developed urban character of the surrounding area suggests that the appropriate Farmland Mapping and Monitoring Program mapping designation would be Urban and Built-Up Land (CDOC, 2011a, 2013). Therefore, the proposed Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. No impacts would occur, and no mitigation is required.

b) Would the Project conflict with existing zoning for agricultural use, or a Williamson Act contract?

**No Impact.** The Williamson Act, also known as the California Land Conversion Act of 1969 (14 CCR Section 51200 *et seq*.), preserves agricultural and open space lands from the conversion to urban land uses by establishing a contract between local governments and private landowners to voluntarily restrict their land holdings to agricultural or open space use. Williamson Act contracts only apply to agricultural or related open spaces (CDOC, 2020). The Project site is not located on any lands with Williamson Act contracts. The Project site is located in a highly developed area currently designated as [Qualified] Heavy Industrial ([Q]M3-1) and does not support any agricultural uses. As such, the proposed Project would not conflict with existing zoning for agricultural use or a Williamson Act contract. No impacts would occur, and no mitigation is required.

c) Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

**No Impact.** The Project site is currently zoned for qualified heavy industrial uses ([Q] (M3-1) and is within the Harbor Gateway State Enterprise Zone (ZI-2130). The Project site does not support timberland or forest land. Therefore, the proposed Project would not conflict with

existing zoning of, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production. Therefore, no impact would occur and no mitigation is required.

d) Would the Project result in the loss of forest land or conversion of forest land to non-forest use?

**No Impact.** As discussed in Section 4.2(c) above, the Project site does not support forest land, nor is any forest land located in the vicinity. Therefore, the proposed Project would not result in the loss of forest land or conversion of forest land to non-forest use. No impacts would occur, and no mitigation is required.

e) Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

**No Impact.** As discussed in Sections 4.2(a) through (d) above, the Project site is developed and does not have any Farmland or forest land, nor is any Farmland or forest land located in the vicinity. Therefore, the proposed Project would not result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. No impacts would occur, and no mitigation is required.

## 4.3 AIR QUALITY

a) Would the Project conflict with or obstruct implementation of the applicable air quality plan?

**Less-than-Significant Impact**

***Air Quality Management Plan.*** The federal Clean Air Act (CAA) of 1970 and its subsequent amendments form the basis for the nation's air pollution control effort. The United States Environmental Protection Agency (EPA) is responsible for implementing most aspects of the CAA. A key element of the CAA is the national ambient air quality standards (NAAQS) for major air pollutants. The CAA delegates enforcement of the NAAQS to the states. In California, the California Air Resources Board (CARB) is responsible for enforcing air pollution regulations. CARB, in turn, delegates to local air agencies the responsibility of regulating stationary emission sources.

The South Coast Air Quality Management District (SCAQMD) monitors air quality within the proposed Project site and the South Coast Air Basin (Air Basin or Basin), which includes Orange County and portions of Los Angeles, Riverside, and San Bernardino Counties. The Basin is bounded by the Pacific Ocean to the west; the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east; and the San Diego County line to the south. For regions that do not attain the NAAQS, the CAA requires the preparation of a State Implementation Plan (SIP).

The SCAQMD 2016 Air Quality Management Plan (AQMP) (SCAQMD 2017) focuses on attainment of the ozone and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) NAAQS through the reduction of ozone and $PM_{2.5}$ precursor nitrogen oxides (NOx), as well as through direct control of $PM_{2.5}$. The 2016 AQMP reported that although the population in the Southern California Association of Governments (SCAG) region has increased by more than 20% since 1990, air quality has improved due to air quality control programs at the local, state, and federal levels. In particular, 8-hour ozone levels have been

reduced by more than 40%, 1-hour ozone levels by close to 60%, and annual $PM_{2.5}$ levels by close to 55% since 1990 (SCAQMD 2017).

The AQMP proposes emission-reduction measures designed to bring the Basin into attainment of the national and state Ambient Air Quality Standards (AAQS). AQMP attainment strategies include mobile source control measures and clean fuel programs enforced at the state and federal levels on engine manufacturers and petroleum refiners and retailers. As a result, the proposed Project construction and operational activities would be required to comply with all applicable current local, state, and federal air quality regulations along with any development in the future as part of the AQMP. This would further ensure that the proposed Project's activities would not obstruct implementation of the AQMP.

***San Pedro Bay Ports Clean Air Action Plan.*** The LAHD adopted the San Pedro Bay Ports Clean Air Action Plan (CAAP), designed to reduce the health risks posed by air pollution from all port-related emissions sources, including ships, trains, trucks, terminal equipment, and harbor craft, in 2006 and adopted updates in 2010 and 2017 (LAHD 2006, LAHD 2017a). The CAAP 2017 Update contains strategies to reduce emissions from sources in and around the Ports, plan for zero-emissions infrastructure, encourage freight efficiency, and address energy resources.

***Sustainable Construction Guidelines.*** As part of LAHD's overall environmental goals and CAAP strategies, any construction at the Port must follow the Sustainable Construction Guidelines. The latest Guideline is attached as Appendix C.

***At-Berth Regulation.*** On August 27, 2020, CARB adopted new requirements for their At-Berth Regulation for controlling emissions from ocean-going vessels. The new requirements include controlling emissions from tanker vessels by 2025. Emissions can be controlled in one of three ways: 1) a vessel turns off auxiliary engines and connects to shore power, 2) use of a CARB approved emission control strategy, or 3) use of an innovative concept that reduces emission greater than or equal to emissions reductions achieved by using either control measure 1 or 2. By December 1, 2021, Phillips 66 terminal will be required to submit a terminal plan to CARB on their proposed control strategy to meet the At-Berth Regulation.

As mentioned above, the proposed Project's construction and operational activities would be required to comply with all applicable air quality regulations as they are developed further ensuring that the proposed Project's activities would not obstruct implementation of the AQMP, CAAP, the Sustainable Construction Guidelines, or the At-Berth Regulation. Therefore, a less than significant impact is expected and no mitigation is required.

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard?

**Less-than-Significant Impact with Mitigation.** NAAQS and CAAQS have been established for the following criteria pollutants: CO, ozone, sulfur dioxide, nitrogen dioxide, PM10, PM2.5, and lead. Areas are classified under the federal CAA areas as attainment, nonattainment, or maintenance for each criteria pollutant based on whether the NAAQS have been achieved. The County is designated as a federal nonattainment area for ozone and $PM_{2.5}$ and state nonattainment area for ozone, $PM_{10}$, and $PM_{2.5}$. The Los Angeles

County area of the South Coast Air Basin, which includes the Port, is also in federal nonattainment for lead. SCAQMD has developed maximum daily emissions significance thresholds for all criteria pollutants (see Table 4.3-1) for both the assessment of construction and operational impacts. The proposed Project would not increase lead emissions above baseline; therefore, lead is not a pollutant of concern for the proposed Project.

It should be noted that air quality in the South Coast Air Basin has improved over the last several decades due to emission reductions from industrial sources, introduction of low-emission fuels used in on-road motor vehicles (e.g., low-sulfur fuels, reformulated gasoline, and low-carbon fuel standards), state regulations, implementation of CAAP strategies, and implementation of the AQMPs which identify emission reductions strategies and which are subsequently promulgated as enforceable regulations.

**Table 4.3-1. SCAQMD Air Quality Significance Thresholds**

| Mass Daily Thresholds [a] | | |
|---|---|---|
| **Pollutant** | **Construction [b]** | **Operation [c]** |
| $NO_x$ | 100 lbs/day | 55 lbs/day |
| VOC | 75 lbs/day | 55 lbs/day |
| $PM_{10}$ | 150 lbs/day | 150 lbs/day |
| $PM_{2.5}$ | 55 lbs/day | 55 lbs/day |
| $SO_x$ | 150 lbs/day | 150 lbs/day |
| CO | 550 lbs/day | 550 lbs/day |
| Lead | 3 lbs/day | 3 lbs/day |
| **Toxic Air Contaminants (TACs), Odor, and GHG Thresholds** | | |
| TACs (includes carcinogens and non-carcinogens) | Maximum Incremental Cancer Risk ≥ 10 in 1 million<br>Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million)<br>Chronic & Acute Hazard Index ≥ 1.0 (project increment) | |
| Odor | Project creates an odor nuisance pursuant to SCAQMD Rule 402 | |
| GHG | 10,000 MT/yr $CO_{2eq}$ for industrial facilities | |
| **Ambient Air Quality Standards for Criteria Pollutants [d]** | | |
| $NO_2$<br>1-hour average annual arithmetic mean | SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal) | |
| $PM_{10}$<br>24-hour average<br>annual average | 10.4 µg/m$^3$ (construction)[e] & 2.5 µg/m$^3$ (operation)<br>1.0 µg/m$^3$ | |
| $PM_{2.5}$<br>24-hour average | 10.4 µg/m$^3$ (construction)[e] & 2.5 µg/m$^3$ (operation) | |
| $SO_2$<br>1-hour average<br>24-hour average | 0.25 ppm (state) and 0.075 ppm (federal – 99th percentile)<br>0.04 ppm (state) | |
| Sulfate<br>24-hour average | 25 µg/m$^3$ (state) | |
| CO<br><br>1-hour average<br>8-hour average | SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards:<br>20 ppm (state) and 35 ppm (federal)<br>9.0 ppm (state/federal) | |
| Lead<br>30-day Average<br>Rolling 3-month average | 1.5 µg/m$^3$ (state)<br>0.15 µg/m$^3$ (federal) | |

[a] Source: SCAQMD CEQA Handbook (South Coast AQMD, 1993)

[b] Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).

[c] For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.

[d] Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

[e] Ambient air quality threshold based on SCAQMD Rule 403

| | | |
|---|---|---|
| KEY: lbs/day – pounds per day | ppm – parts per million | µg/$m^3$ – microgram per cubic meter |
| MT/yr $CO_{2eq}$ – metric tons per year of $CO_2$ equivalents | ≥ - greater than or equal to | > greater than |

### *Construction Impacts*

For purposes of this analysis, project construction emissions were calculated for every year of construction, beginning in 2021 through 2026, in accordance with the anticipated Project construction schedule presented in Appendix A. The actual construction schedule may differ from the one used in the analysis, depending on requirements of the Project proponent and construction contractor. The schedule used in the analysis is anticipated to result in conservative emission estimates because assumptions reflect an accelerated schedule and early construction years; postponement of construction activities would result in lower impacts as more stringent regulatory requirements are implemented in later years, when construction may take place, than those assumed in the analysis years.

The proposed Project would include both land-based and in-water construction activities. Land-based construction activities would require the use of off-road construction equipment and on-road vehicles. In-water construction activities would require the use of barges and tugboats. These emission sources would primarily use diesel fuel, resulting in combustion exhaust emissions in the form of volatile organic compounds (VOCs), carbon monoxide (CO), $NO_x$, $SO_x$, and particulate matter. Earth-moving activities, such as excavation/grading and driving over paved and unpaved surfaces, would also generate particulate emissions ($PM_{10}$ and $PM_{2.5}$) in the form of fugitive dust.

Land-based construction-related emissions were quantified using emission factors and construction parameters from CARB's on-road emissions model (EMFAC), CAPCOA's California Emissions Estimator Model (CalEEMod) and fugitive dust emissions from EPA's Compilation of Air Pollutant Emission Factors AP-42 and CARB roadway silt loading values as described in Appendix A. Marine equipment emissions related to construction barges and tugs were quantified using average harbor craft specifications from the 2019 Port of Los Angeles Inventory of Air Emissions (Emissions Inventory) (LAHD, 2020a) and USEPA emission standards for compression ignition marine engines (details provided in Appendix A). Activity related to construction (phasing of activities, hours of operations, days of construction, number of truck trips, equipment requirements) was estimated based on the Project Description (LAHD 2020b) and are detailed in Appendix A.

The year with the largest construction emissions is estimated to be the first year of construction (which was assumed to be 2021 for purposes of these calculations) for PM10 and PM2.5, 2022 for NOx and 2023 for SOx, CO and VOC; these maximum daily emissions were compared to the SCAQMD regional CEQA significance thresholds for construction

activities. Table 4.3-2 presents the proposed Project's regional construction impacts for each source category and shows that peak day construction emissions would not exceed SCAQMD CEQA significance thresholds. Additional details on emission calculations are included in Appendix A.

**Table 4.3-2. Peak Construction Emissions (lbs/day)**

| Source Category | $PM_{10}$ | $PM_{2.5}$ | NOx | SOx | CO | VOC |
|---|---|---|---|---|---|---|
| **2021** | | | | | | |
| Offroad Construction Equipment | 0.0 | 0.0 | 1.0 | 0.0 | 20.7 | 0.5 |
| Onroad Construction Vehicles | 3.4 | 1.2 | 40.2 | 0.2 | 2.3 | 0.1 |
| Marine Equipment | 0.6 | 0.6 | 12.5 | 0.0 | 7.6 | 0.7 |
| Fugitive Emissions | 7.7 | 1.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total Construction Year 2021** | **11.7** | **2.9** | **53.7** | **0.2** | **30.5** | **1.3** |
| **CEQA Impacts** | | | | | | |
| *Significance Threshold* | *150* | *55* | *100* | *150* | *550* | *75* |
| **Significant?** | **No** | **No** | **No** | **No** | **No** | **No** |
| **2022** | | | | | | |
| Offroad Construction Equipment | 0.2 | 0.2 | 21.3 | 0.2 | 99.8 | 2.4 |
| Onroad Construction Vehicles | 2.1 | 0.7 | 18.2 | 0.1 | 4.6 | 0.2 |
| Marine Equipment | 1.2 | 1.1 | 23.4 | 0.0 | 7.6 | 0.7 |
| Fugitive Emissions | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total Construction Year 2022** | **3.6** | **2.0** | **62.9** | **0.3** | **112.0** | **3.2** |
| **CEQA Impacts** | | | | | | |
| *Significance Threshold* | *150* | *55* | *100* | *150* | *550* | *75* |
| **Significant?** | **No** | **No** | **No** | **No** | **No** | **No** |
| **2023** | | | | | | |
| Offroad Construction Equipment | 0.4 | 0.4 | 49.1 | 0.3 | 162.6 | 4.1 |
| Onroad Construction Vehicles | 1.7 | 0.5 | 6.7 | 0.1 | 7.7 | 0.2 |
| Marine Equipment | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Fugitive Emissions | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total Construction Year 2023** | **2.4** | **1.0** | **55.8** | **0.3** | **170.3** | **4.3** |
| **CEQA Impacts** | | | | | | |
| *Significance Threshold* | *150* | *55* | *100* | *150* | *550* | *75* |
| **Significant?** | **No** | **No** | **No** | **No** | **No** | **No** |
| **2024** | | | | | | |
| Offroad Construction Equipment | 0.2 | 0.2 | 52.8 | 0.2 | 132.1 | 3.4 |
| Onroad Construction Vehicles | 1.0 | 0.3 | 0.2 | 0.0 | 3.6 | 0.1 |
| Marine Equipment | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Fugitive Emissions | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Total Construction Year 2024** | **1.2** | **0.5** | **53.0** | **0.2** | **135.7** | **3.5** |
| **CEQA Impacts** | | | | | | |
| *Significance Threshold* | 150 | 55 | 100 | 150 | 550 | 75 |
| **Significant?** | **No** | **No** | **No** | **No** | **No** | **No** |
| **2025** | | | | | | |
| Offroad Construction Equipment | 0.2 | 0.2 | 50.2 | 0.2 | 118.3 | 3.2 |
| Onroad Construction Vehicles | 0.9 | 0.3 | 0.1 | 0.0 | 2.5 | 0.0 |
| Marine Equipment | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Fugitive Emissions | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total Construction Year 2025** | **1.1** | **0.5** | **50.3** | **0.2** | **120.8** | **3.2** |
| **CEQA Impacts** | | | | | | |
| *Significance Threshold* | 150 | 55 | 100 | 150 | 550 | 75 |
| **Significant?** | **No** | **No** | **No** | **No** | **No** | **No** |
| **2026** | | | | | | |
| Offroad Construction Equipment | 0.0 | 0.2 | 22.6 | 0.1 | 69.6 | 1.7 |
| Onroad Construction Vehicles | 0.0 | 0.1 | 0.1 | 0.0 | 2.4 | 0.0 |
| Marine Equipment | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Fugitive Emissions | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total Construction Year 2026** | **0.7** | **0.3** | **22.8** | **0.1** | **72.0** | **1.8** |
| **CEQA Impacts** | | | | | | |
| *Significance Threshold* | 150 | 55 | 100 | 150 | 550 | 75 |
| **Significant?** | **No** | **No** | **No** | **No** | **No** | **No** |

### *Operational Impacts*

Project operational emissions were estimated for the 2019 baseline and the year following Project build-out, which for purposes of emissions estimates was assumed to be 2025.

Marine oil terminal emissions are primarily comprised of in-water sources including OGVs (i.e., tankers), ocean-going barges, bunkering barges, and assist tugboats. Terminal landside emissions sources also include tanker trucks, storage tanks, vapor control unit, and fugitives from tank farm piping. The following analysis describes operational emission sources, general source characteristics, and facility activities. For all sources described below, Appendix A presents product throughput, hours of activity, source characteristics, and emission factors; sections 2.1.2 and 2. 2 present comprehensive descriptions of facility operations for the 2019 baseline period and future Project operational emissions.

**OGVs:** In 2019, product was transported to the terminal via OGV tankers (i.e., Chemical, Handysize, and Panamax), articulated tug barges (ATBs), and tug-pulled ocean-going barges, and transported from the terminals via trucks, ocean-going barges and tug-pulled bunkering barges. This practice would continue during operation of the proposed Project.

ATBs are barges that consist of a tank vessel (barge) and a tug that is positioned in a notch in the stern of the barge, which enables the tug to propel and maneuver the barge. Ocean-going barges are pushed or pulled by separate tugboats. The types of vessels visiting the marine terminal are not expected to change appreciably in the future from the 2019 baseline, except for the introduction of occasional visits from Aframax class OGV tankers. During the baseline period, there were 84 total annual vessel calls (ATBs, OGV barges and tankers) to the terminal. Under future operations, annual vessel calls are estimated to be 117, of which approximately 6 would be by Aframax vessels.

Peak daily emissions of criteria pollutants from OGV tankers, ATBs, and ocean-going barges were calculated using engine characteristics and loads in the 2019 Emissions Inventory (LAHD 2020a) and 2019 terminal call data as presented in Table 2.2-1. Emission factors and calculations followed the methodology described in the 2019 San Pedro Bay Ports Emissions Inventory Methodology Report (LAHD 2019b).

Although implementation of the CARB At-Berth control measure has yet to occur, for purposes of calculating annual Project emissions, hotelling emissions from future OGV tankers visits are assumed to meet requirements of the At-Berth Regulation using a barge-based bonnet emissions capture and treatment system. This is a conservative approach as GHG emissions with this control measure in place would be slightly higher than without it due to the use of barge-mounted generators. However, peak-day hotelling emissions are assumed to be uncontrolled, i.e., the peak day is assumed to be associated with a vessel or terminal Incident Event (VIE/TIE) as accommodated under the CARB rule during which at-berth controls are not used.

**Bunkering Barges:** Bunkering barges are relatively small fuel barges that are loaded with fuel at the terminal, using shore-side pumps, and are then pushed/pulled by a tugboat to fuel other vessels within and near the Port. Emissions associated with bunkering barge activity are from on-board auxiliary engines and tugboats which are used to push/pull the bunkering barges and are discussed below. During the 2019 baseline year, 147 bunkering barges called to the terminal. Under the Project, future annual bunkering barge visits are estimated to total 189 calls.

**Tugboats:** Tugboats are used to assist OGV tankers, ocean-going barges, ATBs, and bunkering barges during transit and maneuvering. Two tugboats are needed to assist each OGV tanker, one to assist each ATB, two to assist each ocean-going barge, and one to assist each bunkering barge. Tugboat criteria pollutant emissions from fuel combustion were calculated using engine characteristics and loads in the 2019 Emissions Inventory (LAHD 2020a), emission factors specified in the CARB Harbor Craft Emissions Inventory Database (CARB 2011), and vessel activity presented in Table 2.2-1.

**Trucks:** Product is loaded to tanker trucks and delivered to destinations within a radius of 15 miles from the marine terminal. Annual trucking days and corresponding annual activity are anticipated to remain constant as compared to the 2019 baseline, as presented in Table 2.2-1. Truck criteria pollutant emission factors were calculated using the CARB's EMFAC 2021 web-based database (CARB 2021).

**Worker Vehicles:** Emissions associated with worker vehicles were calculated using CARB's EMFAC 2021 web-based database and activity presented in Appendix A.

**Landside Stationary Sources:** Emissions from stationary sources associated with landside operations were obtained from the facility permit reports for 2019. Landside operations are not expected to change during the Project. However, emissions from these sources were conservatively scaled upwards based on the estimated increase in annual product throughput listed in Table 2.2-1. Details are provided in Appendix A.

Significance of regional air quality impacts was determined by comparing the proposed Project's reasonable, peak day emissions to the SCAQMD thresholds. The baseline (2019) peak day activity consisted of a Handysize tanker discharging at berth for 18 hours and then leaving, a Panamax tanker arriving from anchorage to take its place at berth, and two vessels (an OGV barge and another Handysize tanker) at anchorage during the 24-hr period. Under the proposed Project, a reasonable future peak day would consist of an Aframax tanker discharging at berth for 18 hours and then leaving, a Handysize tanker that was waiting at the anchorage taking its place for the last 5 hours, and an OGV barge at anchorage for 20 hours, followed by 4 hours of transit. Tug assist emissions in the peak day would be consistent with vessel transit requirements per vessel type, as explained above. Background operations of trucking, worker vehicles, and landside sources are also included in the peak day activities but are not expected to change significantly between the baseline and future operational scenarios.

Criteria pollutant impacts were based on incremental peak day emissions from the proposed Project that would occur within the borders of the South Coast Air Basin compared against SCAQMD's peak day regional emission thresholds for determination of significance. Table 4.3-3 summarizes 2019 baseline operational peak day emissions and the Project peak day operational emissions, which represent the buildout year of the Project (assumed as calendar year 2025 for purposes of these calculations). Emissions from construction phases involving refurbishment of the tank farm (assumed to occur during 2024 – 2026 for purposes of these calculations) which are scheduled to occur after start of Project operations at Berths 150-151 are added to the operational emissions in Table 4.3-3. The table shows that the incremental impacts of the proposed Project and overlapping construction, as calculated by the difference between Project and baseline emissions for all criteria pollutants, would be below SCAQMD significance thresholds for all pollutants except NOx. The increase in NOx emissions is primarily a result of increased vessel transiting emissions from the larger Aframax tanker when compared to the smaller vessels (i.e., Panamax, Handysize, or Chemical) that visited during the baseline period. More details on methodology and assumptions used to prepare the peak day operational emissions calculations can be found in Appendix A.

**Table 4.3-3. Peak Daily Operational Emissions Without Mitigation (lbs/day)**

| Source Category | $PM_{10}$ | $PM_{2.5}$ | NOx | SOx | CO | VOC |
|---|---|---|---|---|---|---|
| ***2019 Baseline*** | | | | | | |
| Ships - at Berth | 29 | 27 | 792 | 104 | 83 | 40 |
| Ships - Transit | 9 | 9 | 713 | 18 | 38 | 23 |
| Ships - Anchorage | 16 | 15 | 674 | 38 | 73 | 33 |
| Tugboats | 2 | 2 | 60 | 0 | 44 | 6 |
| Trucks | 0.03 | 0.01 | 0.75 | 0.00 | 0.05 | 0.02 |
| Worker Vehicles | 0.00 | 0.00 | 0.01 | 0.00 | 0.12 | 0.00 |
| Landside Sources | 0 | 0 | 0 | 0 | 0 | 35 |
| ***2019 Baseline Total*** | ***56*** | ***53*** | ***2240*** | ***160*** | ***238*** | ***137*** |
| ***Future Project*** | | | | | | |
| Ships - at Berth | 41 | 38 | 886 | 157 | 98 | 48 |
| Ships - Transit | 17 | 16 | 1101 | 31 | 70 | 27 |
| Ships - Anchorage | 7 | 7 | 347 | 15 | 36 | 17 |
| Tugboats | 6 | 6 | 158 | 0 | 116 | 17 |
| Trucks | 0.02 | 0.01 | 0.25 | 0.00 | 0.01 | 0.00 |
| Worker Vehicles | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.00 |
| Landside Sources | 0 | 0 | 0 | 0 | 0 | 63 |
| ***Project Total*** | ***71*** | ***67*** | ***2493*** | ***203*** | ***322*** | ***171*** |
| Overlapping Construction | 1 | 0.48 | 53 | 0.23 | 136 | 4 |
| ***Project Total with Overlapping Construction*** | ***72*** | ***67*** | ***2546*** | ***203*** | ***457*** | ***175*** |
| **CEQA Impacts of Project and Overlapping Construction** | | | | | | |
| Project Minus CEQA Baseline | 16 | 14 | 306 | 43 | 219 | 38 |
| SCAQMD Significance Threshold | 150 | 55 | 55 | 150 | 550 | 55 |
| **Significant?** | ***No*** | ***No*** | ***Yes*** | ***No*** | ***No*** | ***No*** |

Notes:

Emissions may not add exactly due to rounding.

Schedule for construction is tentative and overlapping of construction and Project peak day operations may not occur in every year of the 2024-2026 tank farm refurbishment construction period but is conservatively estimated here. Peak day construction emissions used here represent 2024 due to its higher value.

Cumulative impacts may result from individually minor but collectively significant projects. CEQA Guidelines Section 15355 define cumulative impacts as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” CEQA Guidelines Section 15064(h)(4) also state that “the mere existence of cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed Project’s incremental effects are cumulatively considerable.”

The proposed Project would be considered cumulatively significant if its contribution to impacts of related projects in the area would be considerable. Per SCAQMD policy (SCAQMD 2003), a project's contribution is considered cumulatively considerable if the project's impacts exceed SCAQMD project-specific significance thresholds. As discussed above, construction of the proposed Project would not exceed SCAQMD thresholds for regional emissions. However, operation of the proposed Project without mitigation would exceed the SCAQMD project-specific significance threshold for NOx. Therefore, the proposed Project's contribution would be considered cumulatively considerable under SCAQMD's policy, the impact is significant and mitigation is required.

Emissions of NOx during operations and overlapping construction will be reduced by Mitigation Measures MM AQ-1 and MM AQ-2, respectively:

**Mitigation Measures**

**MM AQ-1 Vessel Speed Reduction.** Emissions from visiting vessels will be reduced by requiring all Aframax-class vessels calling on the Phillips 66 marine oil terminal to maintain in-bound and out-bound speeds of no greater than 9 nautical miles per hour (knots) between the terminal and the outer boundary of the South Coast Air Basin, i.e., 40 nautical miles seaward of Point Fermin.

**MM AQ-2 Temporary Construction Restrictions During Project Operations.** Upon commencement of Project operations at the new MOTEMS-compliant Berth 150-151, any remaining on-going Project construction such as refurbishment of petroleum storage tanks or other emissions-generating Project construction work, will be halted whenever a vessel (in particular, an Aframax class vessel) larger than the largest vessel to have called at the Phillips 66 Marine Oil Terminal during the 2019 CEQA baseline period is berthed at the Phillips 66 Marine Oil Terminal.

Peak daily operational emissions with Mitigation Measures MM AQ-1 and MM AQ-2 in place are summarized in Table 4.3-4. Mitigation MM AQ-1 reduces Project operational emissions related to ship transiting, while Mitigation MM AQ-2 nullifies overlapping construction emissions during peak day Project operations, i.e., when an Aframax vessel is berthed at the terminal. Combined mitigated peak day construction and operations emissions would be below the SCAQMD significance thresholds for all pollutants. Therefore, the proposed Project's mitigated contribution would not be cumulatively considerable and the impact of the proposed Project with mitigation is not cumulatively significant.

**Table 4.3-4. Peak Daily Operational Emissions With Mitigation (lbs/day)**

| Source Category | $PM_{10}$ | $PM_{2.5}$ | NOx | SOx | CO | VOC |
|---|---|---|---|---|---|---|
| ***2019 Baseline*** | | | | | | |
| Ships - at Berth | 29 | 27 | 792 | 104 | 83 | 40 |
| Ships - Transit | 9 | 9 | 713 | 18 | 38 | 23 |
| Ships - Anchorage | 16 | 15 | 674 | 38 | 73 | 33 |
| Tugboats | 2 | 2 | 60 | 0 | 44 | 6 |
| Trucks | 0.03 | 0.01 | 0.75 | 0.00 | 0.05 | 0.02 |
| Worker Vehicles | 0.00 | 0.00 | 0.01 | 0.00 | 0.12 | 0.00 |
| Landside Sources | 0 | 0 | 0 | 0 | 0 | 35 |
| ***2019 Baseline Total*** | ***56*** | ***53*** | ***2240*** | ***160*** | ***238*** | ***137*** |

**Table 4.3-4. Peak Daily Operational Emissions With Mitigation (lbs/day)**

| Source Category | $PM_{10}$ | $PM_{2.5}$ | NOx | SOx | CO | VOC |
|---|---|---|---|---|---|---|
| ***Future Project*** | | | | | | |
| Ships - at Berth | 41 | 38 | 886 | 157 | 98 | 48 |
| Ships - Transit | 9 | 8 | 839 | 22 | 56 | 20 |
| Ships - Anchorage | 7 | 7 | 347 | 15 | 36 | 17 |
| Tugboats | 6 | 6 | 158 | 0 | 116 | 17 |
| Trucks | 0.02 | 0.01 | 0.25 | 0.00 | 0.01 | 0.00 |
| Worker Vehicles | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.00 |
| Landside Sources | 0 | 0 | 0 | 0 | 0 | 63 |
| ***Mitigated Project Total*** | ***63*** | ***59*** | ***2230*** | ***193*** | ***307*** | ***165*** |
| Mitigated Overlapping Construction | 0 | 0 | 0 | 0 | 0 | 0 |
| ***Project Total with Overlapping Construction*** | ***63*** | ***59*** | ***2230*** | ***193*** | ***307*** | ***165*** |
| **CEQA Impacts of Project and Overlapping Construction with Mitigation** | | | | | | |
| Project Minus CEQA Baseline | 6 | 6 | -10 | 34 | 70 | 28 |
| SCAQMD Significance Threshold | 150 | 55 | 55 | 150 | 550 | 55 |
| **Significant?** | ***No*** | ***No*** | ***No*** | ***No*** | ***No*** | ***No*** |

Notes:
Emissions may not add exactly due to rounding.
Mitigation MM AQ-1 is applied to Project operational emissions for Ships – Transit emissions.
Mitigation MM AQ-2 is applied to overlapping construction emissions.

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

**Less-than-Significant Impact.** Sensitive receptors include residences, hospitals, or convalescent facilities. The nearest sensitive receptors would be residents of the apartment complex on N. Harbor Blvd. in San Pedro located approximately 3,500 feet (1,067 meters) southwest of the proposed Project site. Impacts to sensitive receptors are typically evaluated in terms of exposure to toxic air contaminants, in accordance with EPA's Office of Environmental Health Hazard Assessment (OEHHA) Guidelines (OEHHA 2015).

Proposed Project construction activities would occur over a period of approximately 67 months and would result in short-term emissions of DPM from the combustion of diesel fuel in off-road construction equipment engines and on-road vehicles.

Although, as shown in Table 4.3-4, mitigated Project operational activities would result in peak daily emissions below significance thresholds, the increase in annual vessel activity would increase annual DPM emissions above baseline emissions from sources such as vessel hotelling at berth. Vessels at anchor and in transit would also result in annual DPM emissions; however, these sources would be sufficiently distant from sensitive receptors such that their impact contribution would not be considerable. SCAQMD has determined

that that toxic air contaminant impacts are localized in nature and that exposure from toxic air contaminants decline by 90% at 300 to 500 feet from the emissions source (SCAQMD 2005). The nearest sensitive residential receptors are more than 3,500 feet (1,067 meters) from the Project site and therefore impacts at these locations can be expected to fall below health-protective significance thresholds for sensitive receptors.

In order to meet AQMP and SIP requirements, the SCAQMD has developed health-protective significance thresholds for emissions for use in CEQA documents[1]. SCAQMD recommends using their regional and localized thresholds to evaluate whether a proposed Project's criteria pollutant emissions would violate any AAQS or contribute substantially to an existing or projected air quality violation. Whereas regional thresholds are mass emission thresholds that are the same for all projects, localized thresholds vary depending on project location. Comparison to the AAQS, which are localized concentration-based standards, requires air dispersion modeling and can be time consuming. To address this, the SCAQMD developed the Localized Significance Thresholds (LST) screening methodology that allows users to determine, in lieu of conducting air dispersion modeling, if a project would cause or contribute to an exceedance of the AAQS (SCAQMD 2015).

LSTs apply to on-site emissions and are dependent upon the location and size of the project area and the separation distance of the emissions from a human receptor. Proposed Project construction would cover approximately 1 acre, in what is considered SCAQMD source-receptor area (SRA) 4: South Coastal LA County. Construction activities would occur more than 500 meters from the closest residential receptor and 50 meters from the closest off-site worker receptor. LSTs used for evaluation of operational emission impacts were conservatively assumed to be for a 5-acre operational area. Table 4.3-5 shows regional and localized thresholds of significance which were applied in evaluating the proposed Project's impacts.

**Table 4.3-5. SCAQMD Localized Significance Thresholds for Daily Emissions and Ambient Pollutant Concentrations**

| Localized Significance Thresholds (lbs/day) | | |
|---|---|---|
| **Air Pollutant** | **Construction** | **Operations** |
| $NO_2$ (residential/worker) | 142 / 58 | 179 / 118 |
| CO (residential/worker) | 7558 / 789 | 10,198 / 1,982 |
| $PM_{10}$ (residential) | 158 | 46 |
| $PM_{2.5}$ (residential) | 93 | 29 |

**Source**: SCAQMD CEQA Thresholds 2015.
Appendix C Mass Lookup Table. SCAQMD LST Thresholds 2008.

**Notes**:

$PM_{10}$ and $PM_{2.5}$ LSTs are relevant to sensitive receptors reasonably likely to be present for 24 hours or more. Since off-site worker receptors are not expected to be present for this duration, significance for particulates have been omitted for off-site worker receptors.

SCAQMD LSTs are based on:

- Daily area disturbed of 1 acre for construction and 5 acres for operational activities.

[1] SCAQMD has determined that toxic air contaminant impacts are localized in nature and that exposure from toxic air contaminants decline by approximately 90% at 300 to 500 feet from the emissions source (SCAQMD 2005).

- 500-meter separation distance to the closest residential/sensitive receptor. This results in a conservative threshold because the actual separation distance is over 1,000 meters at the apartment complex on N. Harbor Blvd in San Pedro.
- 50-meter separation distance to the closest off-site worker receptor to the north, based on Trapac Terminal site location
- Source Receptor Area: 4

Table 4.3-6 presents the proposed Project's localized construction impacts and shows that peak day construction emissions would not exceed SCAQMD's LST significance thresholds. Therefore, construction-related impacts would be less than significant and no mitigation is required.

**Table 4.3-6. Localized Peak Daily Construction Emissions (lbs/day)**

| | Residential Receptors | | | | Off-site Worker Receptors | |
|---|---|---|---|---|---|---|
| **Year** | **$PM_{10}$** | **$PM_{2.5}$** | **$NO_2$** | **CO** | **$NO_2$** | **CO** |
| 2021 | 8.3 | 1.7 | 13.5 | 28.4 | 13.5 | 28.4 |
| 2022 | 1.5 | 1.3 | 44.8 | 107.6 | 44.8 | 107.6 |
| 2023 | 0.8 | 0.5 | 49.1 | 162.8 | 49.1 | 162.8 |
| 2024 | 0.2 | 0.2 | 52.8 | 132.1 | 52.8 | 132.1 |
| 2025 | 0.2 | 0.2 | 50.2 | 118.3 | 50.2 | 118.3 |
| 2026 | 0.6 | 0.2 | 22.6 | 69.6 | 22.6 | 69.6 |
| *LST Threshold* | *158* | *93* | *142* | *7,558* | *58* | *789* |
| **Significant?** | **No** | **No** | **No** | **No** | **No** | **No** |

Notes:

Emissions may not add exactly due to rounding.

$PM_{10}$ and $PM_{2.5}$ LST thresholds are relevant to sensitive receptors reasonably likely to be present for 24 hours or more. Since off-site worker receptors are not expected to be present for this duration, significance for particulates has been omitted for off-site worker receptors.

SCAQMD LST thresholds are based on:

- Daily area disturbed of 1 acre for construction activities.
- 500-meter separation distance to the closest residential/sensitive receptor, residents of the apartment complex on N. Harbor Blvd. in San Pedro located approximately 3,500 feet (1,067 meters) southwest of the proposed Project site.
- 50-meter separation distance to the closest off-site worker receptor.
- Source Receptor Area: 4.

Per SCAQMD guidance, only on-site sources for construction are included, which are marine equipment, off-road construction equipment and on-site fugitive dust.

In addition to evaluating operational emissions against CEQA significance thresholds (Table 4.3-4), the change (Project minus baseline) in on-site operational emissions under the proposed Project was compared to SCAMD's operational LSTs. The overlapping unmitigated construction emissions were conservatively added to the Project onsite emissions and compared to the operational LSTs. Table 4.3-7 shows that the localized emissions of the proposed Project, as calculated by the difference between Project with overlapping construction against the baseline emissions for all criteria pollutants, would be

below LSTs for emissions near residential receptors and for CO for the offsite worker receptor, but above the LST for NOx peak daily emissions at the nearest Offsite Worker receptor.

**Table 4.3-7. Localized Peak Daily Operational Emissions – Onsite Emissions and Unmitigated Overlapping Construction (lbs/day)**

| Operational Source | Peak Day Emissions - Residential Receptors | | | | Peak Day Emissions - Offsite Worker Receptors | |
|---|---|---|---|---|---|---|
| | $PM_{10}$ | $PM_{2.5}$ | $NO_2$ | CO | $NO_2$ | CO |
| ***2019 Baseline*** | | | | | | |
| Ships - at Berth | 29 | 27 | 792 | 83 | 792 | 83 |
| Stationary Sources | 0 | 0 | 0 | 0 | 0 | 0 |
| *Total Onsite 2019* | ***29*** | ***27*** | ***792*** | ***83*** | ***792*** | ***83*** |
| ***Project*** | | | | | | |
| Ships - at Berth | 41 | 38 | 886 | 98 | 886 | 98 |
| Stationary Sources | 0 | 0 | 0 | 0 | 0 | 0 |
| Overlapping Construction | 1 | 0.5 | 53 | 136 | 53 | 136 |
| ***Total Onsite Project*** | **42** | **39** | **939** | **234** | **939** | **234** |
| *CEQA Increment* | 13 | 11 | 147 | 151 | 147 | 151 |
| LST Threshold | 46 | 29 | 179 | 10,198 | 118 | 1,982 |
| **Significant?** | **No** | **No** | **No** | **No** | ***Yes*** | **No** |

Notes:
Emissions may not add exactly due to rounding.

$PM_{10}$ and $PM_{2.5}$ LST thresholds are relevant to sensitive receptors reasonably likely to be present for 24 hours or more. Since off-site worker receptors are not expected to be present for this duration, significance for particulates has been omitted for off-site worker receptors.

SCAQMD LST thresholds are based on:

- Operations area is 5 acres
- 500-meter separation distance to the closest residential/sensitive receptor, residents of the apartment complex on N. Harbor Blvd. in San Pedro located approximately 3,500 feet (1,067 meters) southwest of the proposed Project site.
- 50-meter separation distance to the closest off-site worker receptor, north adjacent Trapac terminal.
- Source Receptor Area: 4.

Per SCAQMD guidance, only on-site sources for operations are included, which consist of ships at berth (hoteling) and landside stationary sources.

Since mitigation measure MM AQ-1 would only affect off-site vessel transit emissions, it would not change emissions from onsite sources evaluated against the LSTs. However, MM AQ-2 would remove overlapping construction emissions during the peak day. As shown in Table 4.3-8, peak-day on-site incremental operational emissions under the Project with Mitigation would not exceed SCAQMD LST significance thresholds. The nearest residential receptors are approximately 3,500 feet (1,067 meters) from the Project site and calculated emissions after mitigation would not exceed the health-protective LST significance

thresholds. Therefore, operational-related impacts would be less than significant after mitigation.

**Table 4.3-8. Localized Peak Daily Operational Emissions – Onsite Emissions and Overlapping Construction with Mitigation (lbs/day)**

| Operational Source | Peak Day Emissions - Residential Receptors | | | | Peak Day Emissions - Offsite Worker Receptors | |
|---|---|---|---|---|---|---|
| | $PM_{10}$ | $PM_{2.5}$ | $NO_2$ | CO | $NO_2$ | CO |
| ***2019 Baseline*** | | | | | | |
| Ships - at Berth | 29 | 27 | 792 | 83 | 792 | 83 |
| Stationary Sources | 0 | 0 | 0 | 0 | 0 | 0 |
| *Total Onsite 2019* | ***29*** | ***27*** | ***792*** | ***83*** | ***792*** | ***83*** |
| ***Project*** | | | | | | |
| Ships - at Berth | 41 | 38 | 886 | 98 | 886 | 98 |
| Stationary Sources | 0 | 0 | 0 | 0 | 0 | 0 |
| Overlapping Construction | 0 | 0 | 0 | 0 | 0 | 0 |
| *Total Onsite Project* | ***41*** | ***38*** | ***886*** | ***98*** | ***886*** | ***98*** |
| *CEQA Increment* | 12 | 11 | 94 | 15 | 94 | 15 |
| LST Threshold | 46 | 29 | 179 | 10,198 | 118 | 1,982 |
| **Significant?** | ***No*** | ***No*** | ***No*** | ***No*** | ***No*** | ***No*** |

Notes:
Emissions may not add exactly due to rounding.

PM10 and PM2.5 LST thresholds are relevant to sensitive receptors reasonably likely to be present for 24 hours or more. Since off-site worker receptors are not expected to be present for this duration, significance for particulates has been omitted for off-site worker receptors.

SCAQMD LST thresholds are based on:

- Operations area is 5 acres
- 500-meter separation distance to the closest residential/sensitive receptor, residents of the apartment complex on N. Harbor Blvd. in San Pedro located approximately 3,500 feet (1,067 meters) southwest of the proposed Project site.
- 50-meter separation distance to the closest off-site worker receptor, north adjacent Trapac terminal.
- Source Receptor Area: 4.

Per SCAQMD guidance, only on-site sources for operations are included, which consist of ships at berth (hoteling) and landside stationary sources.

Mitigation measure MM AQ-1 does not affect onsite operational emissions
Mitigation measure MM AQ-2 is applied to overlapping construction.

As discussed above, the proposed Project construction and operational activities would not expose sensitive receptors to substantial pollutant concentrations. Impacts would be less than significant and no additional mitigation is required.

d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

**Less-than-Significant Impact.** Short-term odors from the use of diesel-powered, heavy-duty equipment and tugs may occur during construction. The existing industrial setting of the proposed Project represents an already complex odor environment. Odors from operation of the proposed Project would be similar to odors produced from existing marine oil terminal operations and related activity and would be primarily associated with vessels berthed at the terminal. Within this context, the proposed Project would not likely result in changes to the overall odor environment in the vicinity

The distances between proposed Project emission sources and the nearest sensitive receptors, residents at the apartment complex on N. Harbor Blvd. in San Pedro located approximately 3,500 feet (1,067 meters) to the southwest are far enough away to allow for adequate dispersion of these emissions to below objectionable odor levels. No new odor sources are anticipated upon final Project buildout. Impacts would be less than significant and no mitigation is required.

In summary, the proposed Project would not exceed SCAQMD thresholds of significance for regional and localized air quality impacts, would not obstruct implementation of the AQMP or the CAAP, and would not result in any other emissions (including odors) affecting a substantial number of people. Therefore, impacts would be less than significant with or without mitigation.

## 4.4 BIOLOGICAL RESOURCES

a) Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

**Less-than-Significant Impact with Mitigation.** The proposed Project involves both in-water and on-land construction. In-water construction would include demolition and pulling of piles, driving new piles, and repairing a portion of the seawall, and on-land construction would include minor trenching and excavation, installation and relocation of utilities and pipelines, and minor grading and repaving. The new concrete vessel unloading facility at Berth 151 would replace the existing treated timber piles with steel and concrete piles and would be substantially smaller than the existing wooden wharf, thereby reducing the amount of shaded water area by approximately 16,000 $ft^2$.

### Special-Status Plants

The land-based portion of the Project site consists largely of paved surfaces surrounding industrial facilities. A small amount of vegetation is present, consisting of common weedy species, patches of grass, and ornamental trees and shrubs. No candidate, sensitive, or special-status plant species are known to occur on the Project site and there is no habitat that would support such species. Accordingly, no impacts would occur to special-status plants.

### Special-Status Wildlife

A number of Federal and state-listed threatened and endangered species are found in Los Angeles Harbor area (Table 4.4-1). As mentioned above, the current Project area is an active marine oil terminal. Given the industrialized and largely paved nature of these berths, the Project site is highly unlikely to serve as nesting habitat for any of the listed bird species, and it is not considered critical foraging habitat for any of the special-status bird species, including the endangered California least tern (*Sternula antillarum brownii*). Furthermore, construction would not remove the small amount of vegetation present that could be nesting habitat for species afforded protection under the Migratory Bird Treaty Act. As operational activity would be similar to existing conditions, operations would not result in increased disruption of bird activity. Accordingly, impacts on listed bird species would be less than significant and no mitigation is required.

Five species of marine mammals are known to forage in the Port (Table 4.4-1), but none breeds there. Sea lions were observed throughout the Port, including near Berth 148-151, in all of the Biosurveys conducted in the Port Complex (MEC 2002, SAIC 2010, MBC 2016, Wood E&IS 2021), while harbor seals, which were far less abundant than sea lions, were largely limited to Outer Harbor waters and have rarely been observed in the vicinity of the Project site. Neither of these species is endangered, and there are no designated significant ecological areas for either species within the Port.

**Table 4.4-1. Special Status Species (Designated by CDFW and USFWS) Observed in the Port Area**

| Species | Agency/Designation | Notes |
|---|---|---|
| | **Birds** | |
| Belding's Savannah Sparrow (*Passerculus sandwichensis*) | CDFW – SE | Inhabits coastal salt marches of southern California. Not observed in POLA and POLB Biosurveys performed from 2000 to present (2018-2019) |
| Black Oystercatcher (*Haematopus palliates*) | USFWS – BCC | Known to nest in the Port Complex. 320 individuals recorded in the Port Complex during the 2018-2019 POLA and POLB Biosurvey. Species observed along Middle Breakwater. |
| Black Skimmer (*Rhyncops niger*) | USFWS – BCC<br>CDFW – SCC | Year-round species. Known to nest annually at Pier 400. 184 individuals recorded in the Port Complex during the 2018-2019 POLA and POLB Biosurvey. Most observations at Cabrillo Beach. |
| Black-crowned Night Heron (*Nycticorax nycticorax*) | CDFW – SA | Year-round species. No nesting was observed during the 2018-2019 POLA and POLB Biosurvey, but 37 individuals sighted in the Port Complex. |
| Brant (*Branta bernicla*) | CDFW – SA | Uncommon in the Port, but found regionally. No known nesting has occurred in the Port Complex. 1 individual observed during the 2018-2019 POLA and POLB Biosurvey. |

**Table 4.4-1. Special Status Species (Designated by CDFW and USFWS) Observed in the Port Area**

| Species | Agency/Designation | Notes |
|---|---|---|
| Brown Pelican (*Pelecanus occidentalis*) | CDFW – FP | No known nesting site in the Port Complex. 2,780 individuals recorded in the Port Complex during the 2018-2019 POLA and POLB Biosurvey. Observation primarily recorded in Outer Harbor along breakwaters and shallow water habitats. |
| Burrowing Owl (*Athene cunicularia*) | USFWS – BCC | Primarily transient. Last observed nesting in Port Complex during the 2008 POLA and POLB Biosurvey. Not observed during the 2018-2019 POLA and POLB Biosurvey. However, they are occasionally observed transiting during their migration season. |
| California Gull (*Larus californicus*) | CDFW – WL | Year-round species. 261 individuals recorded in the Port Complex during the 2018-2019 POLA and POLB Biosurvey. |
| California Least Tern (*Sterna antillarum browni*) | USFWS – FE<br>CDFW – SE, FP | Migratory species. Designated nesting site at Pier 400. 90 individuals recorded in the Port Complex during the 2018-2019 POLA and POLB Biosurvey. Foraging occurs primarily around Pier 400, the breakwater and shallow water habitats. |
| Caspian Tern (*Hydroprogne caspia*) | USFWS – BCC | Migratory species. Known to nest at Pier 400 CLT nesting site. 210 individuals recorded in the Port Complex during the 2018-2019 POLA and POLB Biosurvey. Most observations at Pier 300, Pier 400, and Cabrillo Beach. |
| Common Loon (*Gavia immer*) | CDFW – SCC | Migratory species. Not known to nest in the Port complex. 3 individuals observed roosting in the Port complex during the 2018-2019 POLA and POLB Biosurvey. |
| Double-crested Cormorant (*Phalacrocorax auratus*) | CDFW – WL | Year-round species. Known to nest in Port Complex. 1,894 individuals recorded in the Port Complex during the 2018-2019 POLA and POLB Biosurvey. Observed primarily along the Middle Breakwater. |
| Elegant Tern (*Thalasseus elegans*) | CDFW – WL | Migratory species. Known to nest at the Pier 400 CLT nesting site. 5,127 individuals recorded in the Port Complex during the 2018-2019 POLA and POLB Biosurvey. Observed regularly foraging at the shallow water habitat at Cabrillo Beach and Seaplane Lagoon during the 2018-2019 POLA and POLB Biosurvey. |
| Great Blue Heron (*Ardea herodias*) | CDFW – SA | Resident species. Known to nest in trees near POLA Main Channel Wilmington marinas. 704 individuals recorded |

**Table 4.4-1. Special Status Species (Designated by CDFW and USFWS) Observed in the Port Area**

| Species | Agency/Designation | Notes |
|---|---|---|
| | | throughout the Port Complex during the 2018-2019 POLA and POLB Biosurvey. |
| Great Egret (*Ardea alba*) | CDFW – Sensitive | Resident species but rare in the Port Complex. Not known to nest in the Port Complex. 6 individuals recorded in the Port complex during the 2018-2019 POLA and POLB Biosurvey. |
| Loggerhead Shrike (*Lanius ludovicianus*) | USFWS – BCC | Migratory species. Last observed in Port Complex during 2000 POLA and POLB Biosurvey. Not observed in 2018-2019 POLA and POLB Biosurvey. |
| Long-billed Curlew (*Numenius americanus*) | USFWS – BCC | Migratory species. Not known to nest in the Port Complex. 2 individuals recorded in the Port complex during the 2018-2019 POLA and POLB Biosurvey. |
| Marbled Godwit (*Limosa fedoa*) | USFWS – BCC | Migratory species. 3 individuals recorded in the Port Complex during the 2018-2019 POLA and POLB Biosurvey. Observed primarily at Cabrillo Beach. |
| Osprey (*Pandion halieatus*) | CDFW – WL | Migratory species. Known to nest at Pier E-D in POLB. 43 observations in the Port Complex during the 2018-2019 POLA and POLB Biosurvey. |
| Peregrine Falcon (*Falco occidentalis*) | USFWS – BCC<br>CDFW – FP | Resident species. Known to nest on Schuyler F. Heim Bridge and former Gerald Desmond Bridge in POLB. 1 individual recorded at Pier 400 during the 2018-2019 POLA and POLB Biosurvey. |
| Scripps's Murrelet (*Synthliboramphus scrippsi*) | USFWS – BCC | Ocean-dwelling species rarely observed on land. Not observed in 2018-2019 POLA and POLB Biosurvey. Last observed in Port Complex during 2013-2014 POLA and POLB Biosurvey. |
| Snowy Egret (*Egretta thula*) | CDFW – SA | Known to nest in the Port Complex in 2018-2019. 145 individuals recorded in the Port Complex during the 2018-2019 POLA and POLB Biosurvey, primarily at Cabrillo Beach. |
| Tufted Puffin (*Fratercula cirrhata*) | CDFW – SSC | Not observed in the 2018-2019 POLA and POLB Biosurvey. Last observed in the Port Complex during the 2000 POLA and POLB Biosurvey. |
| Western Snowy Plover (*Charadrius nivosus nivosus*) | USFWS – BCC, ESA Threatened | Migratory. Not observed in POLA and POLB Biosurveys performed from 2000 to present (2018-2019) |

**Table 4.4-1. Special Status Species (Designated by CDFW and USFWS) Observed in the Port Area**

| Species | Agency/Designation | Notes |
|---|---|---|
| Whimbrel (*Numenius phaeopus*) | USFWS – BCC | Migratory species. 42 individuals recorded in the Port Complex during the 2018-2019 POLA and POLB Biosurvey. Observed primarily at Cabrillo Beach. |
| White-faced Ibis (*Plegadis chihi*) | CDFW – WL | Resident species. Not observed in 2018-2019 POLA and POLB Biosurvey. Last observed in the Port Complex during the 2000 POLA and POLB Biosurvey. |
| **Marine Mammals** | | |
| California Sea Lion *(Zalphus californianus)* | USFWS, NMFS – MMPA Protected | Resident species. Common. 587 individuals recorded in the Port Complex during the 2018-2019 POLA and POLB Biosurvey. |
| Common Bottlenose Dolphin *(Tursiops truncatus)* | USFWS, NMFS – MMPA Protected | 18 individuals recorded in the Port Complex during the 2018-2019 POLA and POLB Biosurvey. |
| Common Dolphin (*Delphinus* spp.) | USFWS, NMFS – MMPA Protected | 40 individuals recorded in the Port Complex during the 2018-2019 POLA and POLB Biosurvey. |
| Gray Whale (*Eschrichtius robustus*) | USFWS, NMFS – MMPA Protected | Transitory. 1 observation recorded in the Port Complex during the 2018-2019 POLA and POLB Biosurvey. |
| Harbor Seal *(Phoca vitulina)* | USFWS, NMFS – MMPA Protected | Resident species. Common. 223 individuals recorded in the Port Complex during the 2018-2019 POLA and POLB Biosurvey. |
| **Other** | | |
| Green Sea Turtle *(Chelonia mydas)* | USFWS, NMFS – ESA Protected | Not observed in POLA and POLB Biosurveys performed from 2000 to present (2018-2019). Known in region. |

Notes: USFWS = United States Fish and Wildlife Service; NMFS = National Marine Fisheries Service; CDFW = California Department of Fish and Wildlife; CDF = California Department of Forestry and Fire Protection; MMPA = Marine Mammal Protection Act; ESA = Endangered Species Act; BCC = Bird of Conservation Concern; SA= Special Animal; SSC = Species of Special Concern; FP = Fully Protected; FE = Federally Endangered; WL = Watch List; SE = State Endangered

Outside the breakwater, a variety of marine mammals use nearshore waters. The most common whale species is the gray whale (*Eschrichtius robustus*), which migrates from the Bering Sea to Mexico and back each year, as well as several species of dolphin and porpoises. During the 2018-2019 Biosurvey, a gray whale mother-calf pair was observed in the vicinity of Cabrillo Beach (Wood E&IS 2021), but gray whales have never been observed in the Inner Harbor vicinity of the Project site. Bottlenose and common dolphins are most frequently observed in the open water of the Outer Harbor; however, the 2008 and 2018-2019 Biosurveys also observed bottlenose dolphins in the Main Channel and the East Basin. No cetaceans (i.e., whales or dolphins) have been observed in the West Basin, which is the location of Berths 148-151, during any of the Biosurveys.

Turbidity caused by in-water construction would be temporary and localized and would not substantially reduce foraging by marine mammals (i.e., sea lions) in the vicinity of the construction zone. However, the proposed Project would drive steel pipe piles, and underwater noise from this construction would likely exceed criteria for Level B harassment (i.e., the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns; NOAA Fisheries 2016) of marine mammals that could be present at the Project site, and could potentially result in Level A injury (the potential to injure a marine mammal or marine mammal stock in the wild) if animals were to get very close to the driving operation. This exceedance represents a significant impact on federally-protected marine mammal species, and requires the implementation of mitigation.

Pile-driving could result in temporary avoidance of the construction area and cause mortality of some fish in the Coastal Pelagics Fish Management Plan (FMP), especially smaller fish such as northern anchovy, which are very abundant in the Harbor, as well as Pacific sardine and topsmelt. Although individuals of these species could be adversely affected by pile-driving, the limited area of potential effect and the abundance of Coastal Pelagic species in the Harbor means that populations of these species in the Harbor would not be substantially reduced.

Turbidity and underwater noise from pile driving would affect some individuals of managed fish species. However, due to the limited areal extent and duration of construction, and implementation of a mitigation measure intended to protect marine mammals from underwater noise, construction would not have substantial adverse effects on Essential Fish Habitat (EFH) or managed species, and impacts would be less than significant.

The new loading/unloading platform would have a substantially smaller overwater footprint than the existing wharf and would be of a more open design. Accordingly, potential adverse effects of shading would be reduced compared to baseline conditions. No operational conditions would change from baseline; accordingly, impacts of operation of the proposed Project on EFH and managed species would be less than significant and mitigation is not required.

**Mitigation Measure**

Impacts on marine mammals resulting from noise associated with pile driving would be reduced with implementation of MM-BIO-1. This measure would ensure that marine mammals would be readily able to avoid pile driving areas, and no injury to marine mammals from pile driving sounds would be expected.

> **MM-BIO-1 Protect Marine Mammals.** Although it is expected that marine mammals will voluntarily move away from the area at the commencement of the vibratory or "soft start" of pile driving activities, as a precautionary measure, pile driving activities occurring as part of the pile installation will include establishment of a safety zone, by a qualified marine mammal professional, and the area surrounding the operations (including the safety zones) will be monitored for marine mammals by a qualified

marine mammal observer.[2] The pile driving site will move with each new pile; therefore, the safety zones will move accordingly.

MM BIO-1 is based on available information on animal behavior and the characteristics of underwater noise (e.g., LAHD 2017b). It is expected that marine mammals would voluntarily move away from the construction area at the commencement of pile-driving activities, but the mitigation measure minimizes the chance that animals would be injured or harassed by noise before they could get to a safe distance. The safe distances for injury and harassment would be based on the expected noise level from the size and type of piles to be driven and the assumption of impact hammer pile driving. The safety zone distances may be adjusted once contractor-specific pile-driving parameters and other site-specific factors are available.

The "soft start" of the mitigation measure applies to impact-hammer pile drivers and requires that the initial strikes on a piling are performed at a significantly reduced force and slowly build up to full force over several strikes. In a typical scenario the hammer is operated at approximately 40–60% of full energy over a five-minute period with no less than one minute between strikes.

With implementation of MM BIO-1, impacts of the proposed Project on listed and other sensitive species, including marine mammals, would be less than significant.

b) Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in the City or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

**Less-than-Significant Impact.** There is no riparian habitat at the Project site or in the vicinity. Wharf demolition and construction activities would have temporary adverse effects on marine biota through resuspension of sediments and disturbance of benthic communities. However, the impact would be limited in extent and duration (i.e., the period of construction), and the soft-bottom benthic community would re-establish itself.

Eelgrass (*Zostera marina*), which is identified as a special aquatic site in the Clean Water Act, occurs in several locations of the Los Angeles and Long Beach Harbors, primarily Cabrillo Beach and the Pier 300 Seaplane Lagoon area, that are shallow enough (i.e., less than 14 feet) to support it (MBC, 2016). Eelgrass has not been observed at Berths 148 – 151 during any of the Biosurveys. The nearest eelgrass occurs in small patches (less than one acre total) in Slip 1 and at Berth 170 on the Main Channel, approximately 900 feet east of Berth 151, as observed during the 2018 Biosurvey (Wood E&IS, 2021). Increased turbidity during construction of the proposed Project could have temporary adverse effects on those patches, but their distance from the construction site and the controls that would be placed on in-water

[2] Marine mammal professional qualifications shall be identified based on criteria established by LAHD during the construction bid specification process. Upon selection as part of the construction award winning team, the qualified marine mammal professional shall develop site-specific pile driving safety zone requirements, which shall follow NOAA Fisheries Technical Guidance Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (NOAA Fisheries 2016) in consultation with the acoustic threshold white paper prepared for this purpose by LAHD (LAHD 2017b). Final pile driving safety zone requirements developed by the selected marine mammal professional shall be submitted to LAHD Construction and Environmental Management Divisions prior to the commencement of pile driving.

construction (see Section 4.10 Hydrology and Water Quality) would limit those effects, and impacts would be less than significant.

There are at least 27 non-native aquatic species in the Port Complex and another 95 of uncertain origin (MBC, 2016). Many of these species are present at the Project site in the benthic infauna and riprap community. Construction activities have the potential to redistribute non-native species locally within the Port through disturbance of the bottom sediments and removal of pilings. However, in general, existing non-native species are widely distributed in the Harbor, so that redistribution from the Project site during construction would not adversely affect the natural community throughout the Harbor and elsewhere in Southern California. In addition, the proposed Project would substantially reduce the number of pilings (a potential habitat for non-native species) at the site, thereby reducing the surface area that could be colonized by invasive species.

The invasive algae *Caulerpa* (*C. taxifolia*) is listed as a federal noxious weed under the U.S. Plant Protection Act. In areas outside its native range, it can grow very rapidly, causing ecological devastation by overwhelming local seaweed species and altering fish distributions. Although this species has never been observed in the Port Complex, it is a threat in Southern California, having been found in two Southern California coastal lagoons in 2000 (MBC, 2016). This has prompted regulatory control measures described in the *Caulerpa* Control Protocol prior to specific underwater construction activities such as bulkhead repair, dredging, and pile driving (NOAA Fisheries, 2008). As required by the US Army Corps of Engineers Rivers and Harbors Act Section 10 permit and the *Caulerpa* Control Protocol, a *Caulerpa* survey would be conducted at the Project site prior to the start of construction activities.

The proposed Project also has the potential to introduce invasive non-native species under operational conditions as a result of organisms attached to the hulls and anchors or living in the ballast water of vessels arriving from outside the U.S. Exclusive Economic Zone (EEZ) or other regions of the Pacific Coast. The potential for such an introduction of invasive non-native species exists because the facility would accommodate an approximately 30 percent increase in annual vessel calls (from 229 to 306 vessel calls per year). However, there are numerous regulations in place to regulate ballast water discharges, including the following: the federal Ballast Water Management Programs (one enforced by the U.S. Coast Guard and another enforced by the EPA under the Clean Water Act), EPA's Vessel General Permit, and California's Marine Invasive Species Act (enforced by the California State Lands Commission). In addition, vessel hulls are generally coated with antifouling paints and cleaned at intervals to reduce the frictional drag from growths of organisms on the hull, which would reduce the potential for transport of exotic species. California also has regulations regarding biofouling management, including cleaning management of niche areas and anchor chains. In addition, by 2032, all ships should be meeting performance standards enforced adopted by U.S. Coast Guard and California State Lands Commission. For these reasons, the proposed Project has a low potential to increase the introduction of non-native species into the Harbor that could substantially disrupt local biological communities.

Because operational activities would be similar to baseline conditions, operation of the proposed Project would not have a significant impact on eelgrass. Accordingly, impacts of

operation on sensitive habitats or natural communities would be less than significant and no mitigation is required.

c) Would the Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

**No Impact.** The proposed Project would not affect state or federally protected wetlands during in-water construction activities (i.e., wharf demolition and replacement) because there are no state or federally protected wetlands in the Project area. The only federally protected wetlands in the Los Angeles Harbor are the Anchorage Road Salt Marsh and the Cabrillo Salt Marsh, approximately 1.2 and 3.4 miles from the Project site, respectively. Neither of these wetlands would be affected or otherwise disturbed by the construction or operation of the proposed Project. Therefore, there would be no impacts to state or federally protected wetlands and no mitigation is required.

d) Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

**Less-than-Significant Impact.** There are no known terrestrial or marine mammal migration corridors within the Port Complex, including the Project site, because the Port is not located between natural resource areas that terrestrial wildlife would need to traverse. Therefore, the proposed Project would not interfere with terrestrial wildlife migration.

There are only a few species of fish in southern California with true migrations (salmonids and white sturgeon), and they are not known to occur in the Port Complex (Miller and Lea, 1972; SAIC, 2010; Wood E&IS, 2021). Therefore, the proposed Project would not interfere with migratory fish. Project construction could result in temporary avoidance of the construction areas by resident fish species; however, these effects would be temporary, lasting for a few days at a time. Construction activities within the study area would not block or interfere with migration or movement of any of the species covered under the Migratory Bird Treaty Act (MBTA), because the work would be in a small portion of the Harbor area and any birds present could easily fly around or over the work.

The approximately 14-acre terminal area is developed and offers minimal habitat for wildlife or bird nesting. The nearest wildlife nesting area is the designated California least tern nesting site located three miles southeast of the Project site on Pier 400; the proposed Project would have no direct or indirect impacts to that nesting site.

Given the limited extent of the Project area, the absence of wildlife corridors and nesting habitat, and the short duration of construction activities, the proposed Project's impacts on the movement of any native resident or migratory fish or wildlife species would be less than significant, and no mitigation is required.

e) Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

**No Impact.** The only biological resources protected by City of Los Angeles ordinance (City of Los Angeles 2006b) are certain native tree species, none of which occur on the Project site. The Project site is industrialized, paved, and occupied by existing oil terminals. It does not contain any known protected biological resources. The proposed Project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; therefore, there would be no impact and no mitigation is required.

f) Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

**No Impact.** The Project site is not located within an adopted Natural Communities Conservation Plan (NCCP) or Habitat Conservation Plan (HCP). There is only one NCCP approved near the Port, located approximately four miles to the southwest of the proposed Project in the City of Rancho Palos Verdes, and it was designed to protect coastal scrub habitat (CDFW 2015).

HCPs are administered by the USFWS and are designed to identify how impacts would be mitigated when a project would impact endangered species or designated critical habitat. There are no HCPs in place for the Port. A Memorandum of Understanding (MOU) is in place for the LAHD, California Department of Fish and Wildlife (CDFW), USFWS, and the USACE to protect the California least tern, and requires a 15-acre nesting site to be protected during the annual nesting season (May through October). The nesting site is on Pier 400 and is designated as a Significant Ecological Area (SEA) by the County of Los Angeles (County of Los Angeles, Department of Regional Planning 2015). The Project site is located approximately three miles northwest from the California least tern nesting site and does not contain nesting habitat or foraging habitat.

The proposed Project would have no impact on HCPs, NCCPs, the MOU, or the SEA for California least tern. Therefore, no impact would occur and no mitigation is required.

## 4.5 CULTURAL RESOURCES

a) Would the Project cause a substantial adverse change in the significance of a historical resource as defined in State CEQA Guidelines Section 15064.5?

**No Impact.** To be eligible for listing in the National Register, a property must be at least 50 years of age (unless the property is of "exceptional significance") and possesses significance in American history and culture, architecture, or archaeology. A property of potential significance must meet one or more of the following four established criteria:

A. Association with events that have made a significant contribution to the broad patterns of our history; or
B. Association with the lives of persons significant in our past; or
C. Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic

values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. Yield, or may be likely to yield, information important in prehistory or history. [Title 36 Code of Federal Regulations Part 60.4]

In addition to possessing significance within a historic context, to be eligible for listing in the National Register, a property must have integrity. Integrity is defined as, "the ability of a property to convey its significance." The National Register recognizes the following seven aspects or qualities that define integrity: feeling, association, workmanship, location, design, setting and materials. The significance of a property must be fully established before integrity is analyzed [National Register Bulletin #15, 44-45].

Eligibility for listing in the California Register of Historic Resources (CRHR) is based on the National Register criteria, but they are identified as 1-4 instead of A-D. In California, a property must generally be at least 50 years of age and must possess significance at the local, state, or national level, under one or more of the following four criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; or
2. It is associated with the lives of persons important to local, California or national history; or
3. It embodies the distinctive characteristics of a type, period or method of construction or represents the work of a master or possesses high artistic values; or
4. It has yielded, or has the potential to yield, information important in the prehistory or history of the local area, California, or the nation.

While slightly less stringent on the topic of integrity, California resources should include properties that reflect their appearance during their period of significance [Public Resources Code Section 4852].

GPA Consulting was retained to evaluate the Project site including Berths 148 – 151 and a portion of Los Angeles County Tax Assessor's Parcel Numbers 7440-018-905, 7440-018-908, 7440-018-909, 7440-018-810 as potential historic resources. Their report, entitled, "*Berths 148 – 151, Los Angeles, California Historical Resource Evaluation Report*" (included here as Appendix B) concluded that the berths were ineligible for listing in the National Register of Historic Places, California Register of Historic Resources, or as a Los Angeles Historic Cultural Monument. Neither Berths 148-149 nor Berths 150-151 met the criteria for significance of listing: the marine oil terminal at Berths 150-151 was found to lack sufficient physical integrity to convey its significance, and the terminal at Berths 148-149 is not significant under any of the four criteria listed above. Furthermore, there were no buildings, structures, or objects evaluated as individually eligible as historical resources as defined by CEQA, and the Project site does not contain any properties currently listed under national, state, or local landmark or historic district programs. Accordingly, the proposed Project would have no impacts on historical resources and no mitigation is required.

b) Would the Project cause a substantial adverse change in the significance of an

archaeological resource pursuant to Section 15064.5?

**No Impact**. The Project site is comprised of natural land mass largely covered by artificial fill. The proposed Project would result in minor amounts of ground-disturbing activities (i.e., installation of pipes and topside equipment and minor grading). However, the site is disturbed, and the likelihood that archeological resources are present on the site is extremely remote.

The proposed Project would occur primarily in and over harbor waters. The Project area has been routinely dredged over the history of the Port to create shipping channels and increase or maintain the design depth at the berths. The proposed Project's construction would include driving piles and possibly minor amounts of dredging in those previously dredged sediments and would therefore not encounter undisturbed sediments that could contain archeological resources. Given the absence of known archaeological resources in the Project area and the limited ground-disturbing activities and dredging that would be done, there would be no impact and no mitigation is required.

c) Would the Project disturb any human remains, including those interred outside of dedicated cemeteries?

**No Impact.** No known cemeteries or burials are known to have occurred at the Project site. As discussed above, the Project area is composed of both disturbed natural areas and man-made engineered material constructed in the 20th century. The proposed Project would occur primarily in and over harbor waters. Topside equipment installation would occur on the terminal site, which is not a known burial ground. Therefore, wharf construction, dredging, and topside equipment installation are not expected to encounter human remains. There would be no impact and no mitigation is required.

## 4.6 ENERGY

a) Would the project result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?

**Less-than-Significant Impact.** Energy (primarily as diesel fuel but including minor amounts of gasoline and electricity) would be used during construction of the proposed Project. Table 4.6-1 shows the annual energy consumption in terms of daily fuel usage during the peak construction period (i.e., the second year of construction which is assumed to be 2022 for purposes of these calculations). Fuel consumption during construction would be temporary, lasting for approximately 67 months, and would represent a small fraction (< 0.02%) of the approximately 3.35 billion gallons of distillate fuel oil and 1.6 million gallons of gasoline consumed by California's transportation sector in 2019 (USEIA 2021). This project construction is necessary to achieve the overall project objective of providing a MOTEMS-compliant terminal, and thus does not represent a wasteful or unnecessary use of energy. Construction would be consistent with the policies in the Port of Los Angeles' Sustainable Construction Guidelines (provided in Appendix C), which require minimum engine emission standards for construction equipment in accordance with the San Pedro Bay Ports Clean Air Action Plan.

**Table 4.6-1. Energy Use of Proposed Project Construction**

| Source Category | Fuel | Fuel Use (gal/yr) |
|---|---|---|
| Off-road Construction Equipment | Diesel | 51,914 |
| Marine | Diesel | 11,753 |
| Haul Trucks | Diesel | 5,627 |
| Delivery Trucks | Diesel | 8,128 |
| Pick-Up Trucks | Diesel | 2,517 |
| Worker Vehicles | Gasoline | 14,570 |
| ***Total Diesel Consumption*** | | ***79,940*** |
| ***Total Gasoline Consumption*** | | ***14,570*** |

Notes:
Emissions may not add exactly due to rounding.

During operations, energy in the form of fuels would be used, primarily for the operations of OGVs and harbor craft. Under the future projected maximum activity levels, the terminal could handle a peak annual throughput of 13,724,000 barrels, an 79% increase over the baseline throughput as shown in Table 2.2-1. Table 4.6-2 shows baseline and future year total energy consumption from operations and on a per barrel of product basis. The 79% throughput increase related to the Project would translate into a less than 10% increase in gallons of fuel per barrel of product. In addition, the net increase in fuel consumption for marine diesel (approximately 875,000 gal/year) would represent 0.03% of the California statewide sales of transportation diesel in 2019, which was about 3.35 billion gallons of distillate fuel oil (EIA, 2021). Therefore, fuel consumption related to the Project operations would not result in an excessive or wasteful usage of energy resources, and impacts would be less than significant and no mitigation is required.

**Table 4.6-2. Annual Energy Use of Proposed Project Operations**

| Year | Emissions Source | Fuel Type | Fuel Consumption (gal) | Fuel Consumption (gal/1000 bbl of product) |
|---|---|---|---|---|
| 2019 | OGV | Marine Distillate | 843,203 | 110.1 |
| | Harbor Craft | Marine Distillate | 91,815 | 12.0 |
| | Trucks | Diesel | 9,186 | 1.2 |
| | Worker Vehicles | Gasoline | 2 | 0.0 |
| Project | OGV | Marine Distillate | 1,682,252 | 122.6 |
| | Harbor Craft | Marine Distillate | 127,667 | 9.3 |
| | Trucks | Diesel | 9,039 | 0.7 |
| | Worker Vehicles | Gasoline | 2 | 0.0 |
| Net consumption (Project minus baseline) | | Diesel/Marine Diesel | 874,755 | 9.3 |
| | | Gasoline | 0 | 0 |

Notes:
Emissions may not add exactly due to rounding.

The proposed Project would use electrical energy during construction, but much of it would be supplied by on-site generators, and the total amount, given the scale and duration of construction, would be trivial relative to regional capacity. The Los Angeles Department of Water and Power (LADWP) is charged with maintaining sufficient capability to provide customers with a reliable source of power and will continue to do so with proper planning and development of facilities in accordance with the City Charter, using such mechanisms as the Power Integrated Resources Plan. Based on the LADWP Power Integrated Resources Plan, electricity resources and reserves will adequately provide electricity to all its customers, including the proposed Project (LADWP 2016). There are no expected changes to on-site electrical consumption, used mainly for lighting, during the Project.

Accordingly, because the proposed Project would not use non-renewable resources in a wasteful or inefficient manner, impacts would be less than significant and no mitigation is required.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

**Less-than-Significant Impact.** The proposed Project is not growth-inducing as it does not cause the need for construction of additional public services (i.e. sewer or other infrastructure expansion) or draw additional permanent residents to the area etc., which would be considered growth-inducing, and is required to comply with MOTEMS regulations (Chapter 31F, Title 24, Part 2, California Code of Regulations). These requirements would reduce wasteful, inefficient, and unnecessary consumption of energy over the long term. Other plans and policies pertaining to energy use include the following: Executive Directive No. 10, Sustainable City Plan, Sustainable Construction Guidelines, and San Pedro Bay Clean Air Action Plan. The Port's Development Bureau (Construction and Engineering Divisions) is responsible for design, inspection, management and oversight of construction projects to ensure projects comply with energy efficiency requirements. Energy consumed during construction activities would be used efficiently and would represent a negligible portion of state-wide energy consumption. Therefore, these uses do not conflict with energy plans and impacts would be less than significant. No mitigation is required.

## 4.7 GEOLOGY AND SOILS

a) Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

*i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the state geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.*

**Less-than-Significant Impact.** Southern California is one of the most seismically active areas in the United States. Numerous active faults and fault zones are located within the general region, including the active Palos Verdes Fault that traverses the harbor area, as well as the Newport-Inglewood, Elysian Park, Whittier-Elsinore, and Santa Monica-Raymond faults, which are all within 25 miles of the Project site. The harbor

area, as with the southern California region as a whole, cannot avoid earthquake-related hazards, such as liquefaction, ground rupture, ground acceleration, and ground shaking. Although no faults within the Port area are currently zoned under the Alquist-Priolo Act, potential hazards exist due to seismic activities associated with the Palos Verdes Fault Zone and the presence of man-made engineered fill. The exposure of people to seismic ground shaking is a potential risk with or without the proposed Project.

Construction of the proposed Project is required to adhere to seismic performance requirements specified in the MOTEMS regulations (Chapter 31F, Title 24, Part 2, California Code of Regulations), which includes standards intended to limit the severity of consequences from geological hazards such as earthquakes. The goal of the project is to comply with MOTEMS requirements, engineering standards, and building codes to make the facility more earthquake safe. Although the proposed Project could experience strong seismic ground shaking, the Project site is not likely susceptible to surface rupture. Additionally, the proposed Project would not construct any habitable or large permanent structures that would increase the risk of loss, injury, or death in the event of surface rupture. Therefore, impacts associated with the risk of surface rupture due to faulting would be less than significant and no mitigation is required.

*ii) Strong seismic ground shaking?*

**Less-than-Significant Impact.** Although no faults within the Port area are currently zoned under the Alquist-Priolo Act, potential hazards exist due to seismic activities associated with the Palos Verdes Fault Zone and the presence of man-made engineered fill. The exposure of people to seismic ground shaking is a potential risk with or without the proposed Project. The risk of seismic hazards such as ground shaking cannot be avoided. As discussed in Threshold 4.7(a)(i), compliance with MOTEMS regulations is designed to minimize structural damage resulting from a seismic event. Building and construction design codes are meant to minimize structural damage resulting from a seismic event. The proposed Project would comply with the applicable engineering standards and building codes, including the MOTEMS regulations, Port engineering criteria, and applicable sections of the Los Angeles Building Code. Emergency planning and coordination would also contribute to reducing injuries to on-site personnel during seismic activity. As facilities handling potentially hazardous materials, Phillips 66 maintains comprehensive emergency response plans to be followed during natural disasters (including earthquakes); these plans are required by numerous agencies, notably the US Coast Guard, the LAFD, and the SLC, and are updated periodically as required by those agencies. With incorporation of emergency planning and compliance with current regulations and standard engineering practices, impacts related to seismic ground shaking would be less than significant and no mitigation is required.

*iii) Seismic-related ground failure, including liquefaction?*

**Less-than-Significant Impact.** The harbor area, including the Project site, is identified as an area susceptible to liquefaction in the City of Los Angeles General Plan's Safety Element because of the presence of recent alluvial deposits and groundwater less than 30 feet below ground surface (City of Los Angeles, 1996).

The proposed Project would bring the berthing facilities into compliance with the seismic performance requirements specified in the MOTEMS regulations (Chapter 31F, Title 24, Part 2, California Code of Regulations). This includes standards intended to limit the probability of occurrence and the severity of consequences from geological hazards, such as earthquakes. Accordingly, the proposed Project would decrease risks associated with seismic-related ground failures at the site relative to baseline conditions. Emergency planning and coordination would also contribute to reducing potential injuries on-site resulting from a seismic event. With compliance with appropriate MOTEMS requirements, engineering standards, and building codes, impacts associated with the risk of seismic-related ground failure would be less than significant and no mitigation is required.

*iv) Landslides?*

**No Impact.** The proposed Project would be constructed and operated on land that is relatively flat with no significant natural or graded slopes. The proposed Project is also not located near any landslide hazard areas (City of Los Angeles 1996). Therefore, there would be no impacts related to landslides and no mitigation is required.

b) Would the Project result in substantial soil erosion or the loss of topsoil?

**No Impact.** The entire Project site would be paved prior to operation. Construction of the landside components of the proposed Project would result in only minor and temporary disturbance of the pavement. Pavement would be installed for approximately 2.2 acres and the remaining paved areas would be repaired following construction, which would prevent substantial soil erosion from the site, and operation of the proposed Project would be identical in nature to existing conditions. Therefore, the proposed Project would not result in soil erosion or the loss of topsoil. There would be no impact and no mitigation is required.

c) Is the Project located on a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

**Less-than-Significant Impact.** The Project site is constructed on artificial fill, which could be subject to lateral spreading, subsidence, liquefaction, or collapse. The MOTEMS audits of the Phillips 66 facilities included geotechnical evaluations that identified measures needed to meet seismic requirements. The primary element of the proposed Project is the replacement of the existing timber wharf structures at Berths 150 – 151 with a new loading platform and associated petroleum product handling infrastructure in accordance with the findings of the MOTEMS audits. The proposed Project would not cause or accelerate geologic hazards, but instead would reduce the facility's vulnerability to seismic movement. Potential impacts associated with the risk of unstable soil would be less than significant and no mitigation is required.

d) Is the Project located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

**Less-than-Significant Impact.** Expansive soils generally result from specific clay minerals that expand when saturated and shrink when dry. These expansive clay minerals are common in the geologic deposits in the adjacent Palos Verdes Peninsula and in previously imported fill soils used in the development of the Port. Although the proposed Project could be located on expansive soil, it would not include the construction of any new habitable

structures. Furthermore, the proposed Project would be constructed and operated in accordance with design and engineering criteria, including MOTEMS regulations and applicable building and safety requirements. With the incorporation of modern engineering and safety standards and compliance with current building regulations, no substantial risk to life or property would be present; accordingly, impacts would be less than significant and no mitigation is required.

e) Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

**No Impact.** The Project site is connected by sanitary sewer system to the City of Los Angeles Bureau of Sanitation's Terminal Island Water Reclamation Plant (TIWRP). Therefore, the use of septic tanks would not be necessary. None of the Project improvements would generate wastewater that would be treated by an alternative wastewater disposal system. Therefore, no impacts would occur and no mitigation is required.

f) Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic features?

**No Impact.** The geologic formation at the Project site consists of artificial fill, engineered fill over natural landforms, and disturbed natural landforms constructed in the 20th century. Before improvements were made to the harbor (beginning in the 19th century), the Project area was covered by harbor waters or mudflats. The Project area has been routinely dredged and filled in the 20th century to create shipping channels and increase or maintain the design depth at the berths, thereby destroying any stratigraphy of the Project area, any unique paleontological resources, and any unique geologic features. The proposed Project would occur primarily in and over harbor waters. Landside equipment installation would occur only within an area with deposited fill material and not in any geologic layer that could yield unique paleontological resources. Therefore, there would be no impact to unique paleontological resources or unique geologic features and no mitigation is required.

## 4.8 GREENHOUSE GAS EMISSIONS

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

**Less-than-Significant Impact.** The proposed Project would involve both construction and operational activities that would generate greenhouse gas (GHG) emissions. The methods of analysis for Project GHG emissions are consistent with SCAQMD's guidelines and LAHD's standard protocols.

### CEQA Significance Thresholds

State CEQA Guidelines Section 15064.4(b) sets forth the factors that should be considered by a lead agency when assessing the significance of impacts from GHG emissions on the environment. These factors include:

- The extent to which a project may increase or reduce GHG emissions compared with the existing environmental setting.

- Whether project emissions exceed a threshold of significance that the lead agency determines applicable to a project.
- The extent to which a project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of GHG emissions.

The guidelines do not specify significance thresholds and allow the lead agencies discretion in how to address and evaluate significance based on these criteria. The SCAQMD has adopted a CEQA significance threshold of 10,000 metric tons per year (MT/yr) of carbon dioxide equivalent ($CO_2e$) for industrial projects where SCAQMD is the lead agency (SCAQMD 2008). This IS/MND used this threshold to evaluate the proposed Project's GHG emissions under CEQA. GHG emissions below this threshold would be considered to produce less-than-significant impacts to GHG levels. LAHD has determined the SCAQMD-adopted 10,000 MT/yr $CO_2e$ threshold to be suitable for LAHD projects for the following reasons:

- The SCAQMD used Governor Schwarzenegger's June 1, 2005 Executive Order S-3-05 as the basis for its development. EO S-3-05 set targets of reducing GHG emissions to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. The 2020 target is the core of the California Global Warming Solutions Act of 2006, widely known as Assembly Bill (AB) 32.
- The SCAQMD industrial source threshold is appropriate for projects with future operations continuing as far out as 2050. The SCAQMD threshold development methodology used the Governor's Executive Order (EO) #S-3-05 emission reduction targets as the basis in developing the threshold, with the Assembly Bill (AB) 32, 2020 reduction requirements incorporated as a subset of Governor's EO #S-3-05 (SCAQMD 2016). EO S-3-05 sets an emission reduction target of 80% below 1990 levels by 2050. AB 32 requires California to reduce its GHG emissions to 1990 levels by 2020 (SCAQMD 2016). AB 32 has the goal of achieving 1990 GHG levels by 2020.
- The SCAQMD industrial source threshold is appropriate for projects with both stationary and mobile sources, such as the proposed Project. California Air Pollution Control Officers Association (CAPCOA) guidance considers industrial projects to include substantial GHG emissions associated with mobile sources (CAPCOA 2008). SCAQMD, on industrial projects for which it is the lead agency, uses the 10,000 MT/yr threshold to determine CEQA significance by combining a project's stationary source and mobile source emissions. Although the threshold was originally developed for stationary sources, SCAQMD staff views the threshold as conservative for projects with both stationary and mobile sources because it is applied to a larger set of emissions and therefore captures a greater percentage of projects than would be captured if the threshold was only used for stationary sources (SCAQMD 2008).

- The SCAQMD industrial source threshold is appropriate for projects with sources that use primarily diesel fuel. Although most of the sources that were considered by the SCAQMD in the development of the 10,000 MT/yr threshold are natural gas-fueled, both natural gas and diesel combustion produce $CO_2$ as the dominant GHG (TCR, 2016). Furthermore, the conversion of all GHG species into a $CO_2e$ ensures that the GHG emissions from any source, regardless of fuel type, can be evaluated equitably.

Projects would create a significant GHG impact if annual GHG emissions between the future year and the baseline exceeds the significance threshold of 10,000 MT/yr $CO_2e$.

**Project GHG Emissions**

Sources contributing to GHG emissions during construction are described in detail in Section 4.3, Air Quality. The construction contractor shall be required to comply with the LAHD's Sustainable Construction Guidelines (Appendix C). The proposed Project's GHG emissions were calculated using the same project construction and operation assumptions used to estimate the proposed Project's air pollutant emissions. These assumptions are listed in the Section 4.3, Air Quality, and in the air quality appendix (Appendix A). GHG emissions from the entire construction period are summed and amortized over the life of the proposed Project (assumed to be 30 years which represents the mid-point between the initial 20 year entitlement and the two additional 10-year options) and evaluated in combination with the annual operational emissions.

Based on criteria set by the SCAQMD, a proposed project would have the potential to generate greenhouse gas emissions that may have a significant impact on the environment if the emissions exceed the threshold of significance in Table 4.8-1 of 10,000 metric tons per year. Impacts are determined by comparing the combined amortized construction and future operational emissions to baseline emissions. The proposed Project would not affect growth at the Port Complex. For purposes of preparing the estimates of GHG emissions, the future scenario assumes a barge-based bonnet emission capture and control system will be used to meet the requirements of the CARB At-Berth Rule. This results in a more conservative estimate of GHG emissions given the additional greenhouse gases produced by the bonnet generator and vessel engines as compared to the use of shore power. Estimates of GHG operational emissions take into account air quality mitigation MM AQ-1 which results in decreased main engine load during vessel transit and therefore, a decrease in related transit emissions. Table 4.8-1 shows the proposed Project's estimated GHG emissions with application of mitigation measure MM AQ-1. The table shows that GHG emissions from amortized construction and annual operations would be 9,873 MT/yr $CO_2e$, which is below the SCAQMD significance threshold of 10,000 MT/yr $CO_2e$. GHG emissions without mitigation measure MM AQ-1 (9,953 MT/ yr $CO_2e$) are also estimated to fall below the significance threshold and are summarized in Appendix A.

Based on the calculations summarized in Table 4.8-1, impacts of emissions of GHGs associated with the proposed Project would be less than significant and no additional mitigation is required.

**Table 4.8-1. Annual GHG Emissions of Proposed Project with MM AQ-1**

| Source Category | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
|---|---|---|---|---|
| ***2019 Baseline Operations*** | | | | |
| Ships - at Berth | 5,331 | 0 | 0 | 5,433 |
| Ships – Transit | 3,630 | 0 | 0 | 3,684 |
| Ships – Anchorage | 101 | 0 | 0 | 102 |
| Tugboats | 1,387 | 0 | 0 | 1,408 |
| Trucks | 45 | 0 | 0 | 47 |
| Worker Vehicles | 6 | 0 | 0 | 6 |
| Onsite Equipment | 0 | 0 | 0 | 0 |
| *2019 Baseline Total* | ***10,499*** | ***0*** | ***1*** | ***10,680*** |
| ***Project Operations*** | | | | |
| Ships - at Berth | 11,729 | 0 | 1 | 11,971 |
| Ships – Transit | 6,177 | 0 | 0 | 6,271 |
| Ships – Anchorage | 215 | 0 | 0 | 219 |
| Tugboats | 1,929 | 0 | 0 | 1,957 |
| Trucks | 44 | 0 | 0 | 46 |
| Worker Vehicles | 5 | 0 | 0 | 5 |
| Onsite Equipment | 0 | 0 | 0 | 0 |
| ***Project Total*** | ***20,100*** | ***0*** | ***1*** | ***20,469*** |
| *Amortized Annual Construction* | ***84*** | ***0*** | ***0*** | ***84*** |
| *Project Total (Operations and Amortized Construction)* | ***20,184*** | ***0*** | ***1*** | ***20,553*** |
| **CEQA Impacts** | | | | |
| Project Minus CEQA Baseline | 9,685 | 0 | 1 | 9,873 |
| Significance Threshold | | | | 10,000 |
| **Significant?** | | | | ***No*** |

Notes:
Emissions may not add exactly due to rounding.
Mitigation measure MM AQ-1 reduces GHG emissions during ship transit.
Mitigation measure MM AQ-2 does not affect annual GHG emissions.

b) Would the project conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

**Less-than-Significant Impact.** The State of California is leading the way in the United States with respect to GHG reductions. Several legislative and municipal targets for reducing GHG emissions below 1990 levels have been established. Key examples include, but are not limited to:

- Senate Bill 32 (SB 32)
    - 1990 GHG emissions levels by 2020
    - 40 percent below 1990 GHG emissions levels by 2030

- Assembly Bill 32 (AB 32)
    - 80 percent below 1990 GHG emissions levels by 2050
- San Pedro Bay Ports CAAP
    - 40 percent below 1990 GHG emissions levels by 2030
    - 80 percent below 1990 GHG emissions levels by 2050
- City of Los Angeles Green New Deal (4-Year Update to the Sustainable City pLAn)
    - Reduce Port-related GHG emissions by 80 percent by 2050

Several state, regional, and local plans have been developed which set goals for the reduction of GHG emissions over the next few years and decades, but no regulations or requirements have been adopted by relevant public agencies to implement those plans for specific projects, within the meaning of CEQA Guidelines Section 15064.4(b)(3)[3]. However, there are GHG emissions reduction measures contained in state and local plans, strategies, policies, and regulations that directly or indirectly affect the proposed Project's construction and operation emissions source sectors or specific types. A summary of proposed Project compliance with all potentially applicable GHG emissions reductions measures is provided in Table 4.8-2.

**Table 4.8-2. Applicable GHG Emissions Reduction Strategies**

| Strategy | Project compliance with Strategy |
|---|---|
| **State AB 32 Plan Strategies (CARB, 2017)** | |
| Vehicle Climate Change Standards | These are CARB enforced standards; vehicles that access the Project site and are required to comply with the standards and would comply with these strategies. |
| Limit Idling Time for Commercial Vehicles (13 CCR § 2485) and Off-Road Equipment (13 CCR § 2449) | The Project applicant, construction contractor, and drayage (liquid bulk) truck operators would be required to comply with applicable idling regulations for on-road vehicles during project construction and operation. |
| Use of Low Carbon or Alternative Fuels (Low Carbon Fuel Standard) | The proposed Project's primary source of GHG emissions is from transportation fuel use, the majority for marine transport. The facility and facility users would use California fuels that are subject to the Low Carbon Fuel Standard regulations. While these regulations are new and have not yet caused a large penetration of low carbon/renewable fuels, over the project life the proposed Project's GHG emissions from transportation and onsite equipment would be reduced as low carbon fuel availability use increases statewide. |
| Waste Reduction/Increase Recycling (including construction and demolition waste reduction) | Solid waste generated during construction of the proposed Project would be minimal and would be disposed of in accordance with the City of Los Angeles requirements discussed below under the Construction and Demolition (C and D) Waste Recycling Ordinance. |
| Electricity Use/Renewables Performance Standard | The proposed Project's electricity would come from Los Angeles Department of Water and Power, a California publicly owned utility that is subject to the Renewables Performance Standard that requires increasing renewable energy procurement targets over time and so reduces GHG emissions from electricity generation. Therefore, the electricity used at the site would comply with state electricity sector GHG reduction strategies. |

[3] Center for Biological Diversity v. Cal. Dept. of Fish and Wildlife [Newhall Ranch] [2015] 62 Cal.4th 204, 223

**Table 4.8-2. Applicable GHG Emissions Reduction Strategies**

| Strategy | Project compliance with Strategy |
|---|---|
| **Port of Los Angeles and City of Los Angeles Plans and Strategies** | |
| LA's Green New Deal Sustainable City pLAn (City of Los Angeles, 2019a) | The City of Los Angeles' Sustainable City pLAn is intended to guide operational, policy, and financial decisions to create a more sustainable Los Angeles. Although the Plan is mostly focused on city property, buildings, and public transportation, the plan includes the 80 percent from baseline emissions reduction goal and notes three primary GHG emissions reduction initiatives, two of which would apply to Port emissions sources:<br><br>1) 100% zero emissions cargo handling equipment (CHE) by 2030<br>2) 100% zero emissions on-road drayage trucks by 2035<br><br>The facility does not have control of the liquid bulk drayage trucks that access the site; however, as this initiative is implemented Port-wide the facilities truck trip related emissions would also be reduced.<br>The proposed Project operations do not involve cargo handling equipment. LAHD will address the implementation of this port-wide cargo handling equipment emissions reduction initiative for all affected tenants. |
| San Pedro Bay Ports CAAP (LAHD, 2017a) | The CAAP has several policy initiatives related to GHG emissions reductions. The 2017 CAAP Update incorporates new emission reduction targets to deduce GHGs from port-related sources to 40% below 1990 levels by 2030 and to 80% below 1990 levels by 2050. Four of the CAAP strategies apply to the facility operations:<br><br>1) Clean Trucks Program: Starting in 2023, or when the state's near-zero-emission heavy-duty engine standard is required for new truck engine manufacturers, new trucks entering the PDTR must have engines that meet this near-zero emissions standard or better. Existing trucks already registered in the PDTR can continue to operate. Modify the truck rate so that by 2035 only trucks that are certified to meet zero-emissions will be exempt from the rate.<br><br>The facility does not have control of the liquid bulk drayage trucks that access the site; however, as this initiative is implemented Port-wide the facilities truck trip related emissions would also be reduced.<br><br>2) Vessel Speed Reduction Program: Maximize participation in VSR for all vessels transiting within 40 nm of Point Fermin through an incentive program.<br><br>The facility operations would not conflict with this program. As this initiative is implemented Port-wide the facilities transit vessel related emissions would also be reduced. Moreover, mitigation measure MM AQ-1 would require certain vessels to transit at 9 nautical miles per hour or lower, which is below the 12 nautical miles per hour typical VSRP limit.<br><br>3) Clean Ship Program: Implement a variable rate on ships according to engine tier level to encourage calls by cleaner ships and to discourage older ship.<br><br>The facility does not have control of the tier-level of the vessels that access the site; however, as this initiative is implemented Port-wide the vessel related emissions would also be reduced.<br><br>4) Harbor Craft: various strategies, including reduce operational wait times, incentivize turnover through grants. |

**Table 4.8-2. Applicable GHG Emissions Reduction Strategies**

| Strategy | Project compliance with Strategy |
|---|---|
| | The facility does not have control of the harbor craft that access the site; however, as this initiative is implemented Port-wide the harbor craft emissions would also be reduced.<br><br>The proposed Project operations would not conflict the strategies in the CAAP. |
| City of Los Angeles Construction and Demolition (C and D) Waste Recycling Ordinance | The City of Los Angeles approved a Citywide construction and demolition waste recycling ordinance in 2010. This ordinance that requires ALL mixed C&D waste generated within city limits be taken to City-certified C&D waste processors. LA Sanitation (LASAN) is responsible for the C&D waste recycling policy. All haulers and contractors responsible for handling C&D waste must obtain a Private Waste Hauler Permit from LASAN prior to collecting, hauling and transporting C&D waste, and C&D waste can only be taken to City certified C&D processing facilities. |
| City of Los Angeles General Plan – Mobility Element (City of Los Angeles, 2016) | The City of Los Angeles General Plan, Mobility Element was developed to improve the way people, goods, and resources are moved in Los Angeles. The proposed Project would be consistent with this General Plan Element. |

In summary, the proposed Project would conform to state and local GHG emissions/climate change regulations, policies, and strategies; therefore, the proposed Project would have less-than-significant GHG impacts and no mitigation is required.

## 4.9 HAZARDS AND HAZARDOUS MATERIALS

a) Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

**Less-than-Significant Impact.** Construction activities associated with the proposed Project are not likely to involve the use of substantial quantities of hazardous materials and the most likely source of hazardous materials would be from vehicles and construction equipment at the site. However, there could be small amounts of hazardous materials, principally fuels, solvents, and lubricants used in construction equipment, at the site during construction. The storage and use of those hazardous materials would comply with Federal and state regulations, the State General Permit for Storm Water Discharges Associated with Construction Activity, and a Project-specific Storm Water Pollution Prevention Plan. SWPPP requirements could include, but are not limited to, controls for vehicle and equipment fueling and maintenance; material delivery, storage, and use; spill prevention and control; and solid and hazardous waste management. Implementation of these construction standards would minimize the potential for an accidental release of petroleum products, hazardous materials, and/or explosion that could create a significant hazard during construction activities at the Project site. Demolition of the existing timber wharf would generate several tons of creosote- and/or other-treated wood. That material would be handled in accordance with applicable regulations and disposed of at a landfill approved to receive such material.

As construction would comply with applicable laws and regulations governing hazardous materials, construction would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Operation of the proposed Project is expected to remain substantially the same as existing conditions, i.e., the loading and unloading of petroleum products to and from barges and ships. The proposed Project would accommodate approximately 77 additional vessels per year compared to baseline conditions, or less than two additional vessel calls per week. However, as described below, the additional vessel traffic would not substantially increase the risk of hazardous materials releases because of the numerous measures in place to ensure safe operation of marine vessel traffic and reduce the potential for releases should accidents occur. Furthermore, operation of the marine oil terminal would take place in a MOTEMS-compliant facility, which would be a safer context than baseline conditions. Accordingly, the proposed Project would not substantially increase hazards to people or property through the release of hazardous materials.

Accidental releases or explosions of hazardous materials could occur from vessels in transit to and from the terminal as a result of collisions with other vessels or allisions with fixed structures, or while at berth as a result of accidental releases during vessel loading and unloading. Factors that reduce the probability and consequences of accidental releases include, but are not limited to:

- Spill prevention and response measures;
- Double-hulled tank vessels;
- Vessel traffic separation and control systems; and
- Petroleum product handling measures.

Spill prevention and response measures are included in Phillips 66 facilities' Spill Prevention, Control, and Countermeasure (SPCC) Plans, as required under the Oil Pollution Act of 1990 (OPA; 33 CFR 157.10d), and would ensure that any release is handled quickly and results in minimal adverse effects (Phillips 66 2020).

The existing regulatory framework described above and the navigational procedures in place at the Port (see below) would continue to minimize the proposed Project's potential for accidents that could result in a release of product during transport. For example, the vessel traffic lanes that have been established off the coast of California are separated by a zone where vessel transit is to be avoided, thereby minimizing the potential for collisions between vessels traveling in opposite directions. As tank vessels approach the Port Complex, they leave the established traffic lanes and enter the Precautionary Area, where speed limits are in effect, and as the vessels approach within two nautical miles of Point Fermin even lower speed limits apply. In addition, Port Pilots navigate the vessels within the breakwater, and tank vessels must be tug assisted. These navigational safety requirements and practices minimize the potential for collisions, allisions, or groundings that could result in a product spill. Thus, although the proposed Project would increase vessel traffic, with the existing navigational safety requirements and practices, the Project is not expected to substantially increase the likelihood or consequences of a release during navigation.

Spills of petroleum products from barges and tank vessels at berth and from marine oil terminals in the Los Angeles Harbor are infrequent and their consequences have been minor. Furthermore, the continued use of double-hulled tank vessels (mandated by the International Maritime Organization's regulation 19 of MARPOL Annex 1) and the spill response systems that are in place would limit the potential sizes and consequences of any spills that do occur.

The purpose of the proposed Project is to increase the safety of product transfer operations at marine oil terminals. The new loading platform, mooring dolphins, and berthing dolphins would be more capable of withstanding vessel movements and seismic events than the existing wharf and dolphins, as they would incorporate components of the mooring systems advocated by the CSLC for MOT projects under MOTEMS, including tension-monitoring systems and triple quick-release hooks. The proposed Project would replace existing loading hoses, pipelines with modern articulated arms that would reduce the potential for rupture or leakage during product transfer. In addition, when tankers are being unloaded at the terminal, inert gas systems are used to prevent explosive conditions from forming in the vessel tanks. During loading, the vapor control unit (VCU) would capture any vapors that are displaced from the vessel tanks, thereby preventing explosive conditions. Accordingly, although the proposed Project would handle larger quantities of hazardous materials than under baseline conditions (see Table 2.2-1), the additional safety and control measures in place under the proposed Project as described above would prevent an increase in the risk of releases, fires, or explosions.

The proposed Project would not result in an increase in the number of tanker trucks transporting product to and from the Project site. Accordingly, the proposed Project would not substantially increase the likelihood of accidents during truck transport.

In summary, construction and operation of the proposed Project would not substantially increase the frequency or severity, relative to the CEQA baseline, of releases of hazardous materials. Therefore, the proposed Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts would be less than significant and no mitigation is required.

b) Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

**Less-than-Significant Impact**. The goal of the MOTEMS requirements is to improve safety at California's marine oil terminals. The purpose of the proposed Project is to increase the safety of product transfer operations at marine oil terminals. The new loading platform, mooring dolphins, and berthing dolphins would be more capable of withstanding vessel movements and loads, wave action, and seismic events than the existing timber wharf, and would be non-flammable, unlike the timber structure. The proposed Project would replace existing loading/unloading hoses and pipelines with modern articulated arms that would further reduce the potential for rupture or leakage during product transfer.

Soils and groundwater beneath the Project site are known to be contaminated with various hydrocarbon products and volatile organic compounds including chlorinated solvents. Los Angeles Regional Water Quality Control Board is the oversight agency. One of the groundwater monitoring wells closest to the Berth 150 contains light non-aqueous phase liquid (LNAPL) sheen. It is unknown how far this sheen extends towards the Berth 150. If contaminated soils were to be encountered, they would be managed in accordance with standard removal and disposal/treatment protocols. Furthermore, the construction contractor would be required by the construction documents to maintain an oil spill response capability (i.e., containment booms, adsorbent materials, and deployment equipment) at the

construction site and to respond appropriately in the event hydrocarbon contamination reaches harbor waters at Berth 150.

Contaminated groundwater beneath the Project site is not expected to pose a risk to the public from proposed Project construction due to the minimal potential for exposure. Construction of the proposed Project would involve driving steel piles on the waterside of the terminal, but open excavation to groundwater would not occur, groundwater would not be drawn or extracted to the surface, and the piles would be capped. Accordingly, installation of piles would not create a significant hazard to the public or the environment related to the release of groundwater contaminants. Landside work would not involve excavation sufficiently deep to encounter groundwater, although if contaminated groundwater were to be encountered, it would be managed in accordance with standard removal and disposal/treatment protocols. With implementation of these measures, impacts of construction would be less than significant, and no mitigation is required.

Operation of the proposed Project would allow the Project site to continue to accommodate vessels and the Phillips 66 Terminal to continue to accommodate trucks transporting hazardous materials (i.e., liquid bulk cargo). Because the new loading platform would increase the safety of vessel operations and those operations would be essentially the same as under baseline conditions, operation of the proposed Project would not increase the risk of an accidental spill or upset. Truck traffic will not increase under the proposed Project. While the number of vessel calls may increase over the 2019 baseline in the future, this is not anticipated to increase the risk of an accidental spill or risk of upset incident to a significant level.

Accordingly, the proposed Project would not create a significant hazard to the public or the environment through upset and accident conditions involving the release of hazardous materials. The impact would be less than significant and no mitigation is required.

c) Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

**No Impact.** There is no existing or proposed school within 0.25 mile of the Project site. All schools are at least one mile away. Therefore, there would be no impact and no mitigation is required.

d) Is the Project located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

**Less-than-Significant Impact.** The provisions in Government Code Section 65962.5 are commonly referred to as the "Cortese List" (after the Legislator who authored the legislation that enacted it). Because this statute was enacted over twenty years ago, some of the provisions refer to agency activities that were conducted many years ago and are no longer being implemented; and, in some cases, the information to be included in the Cortese List does not exist. While Government Code Section 65962.5 makes reference to the preparation of a “list,” many changes have occurred related to web-based information access since 1992

and this information is now largely available on the Internet sites of the responsible organizations. The California Environmental Protection Agency (CalEPA) has identified the following data resources that provide information regarding facilities or sites identified as meeting the "Cortese List" requirements (CalEPA, 2012).

- List of Hazardous Waste and Substances sites from Department of Toxic Substances Control (DTSC) EnviroStor database;
- List of Leaking Underground Storage Tank Sites by County and Fiscal Year from State Water Board GeoTracker database;
- List of solid waste disposal sites identified by the State Water Resources Control Board (SWRCB) with waste constituents above hazardous waste levels outside the waste management unit;
- List of "active" Cease and Desist Orders and Cleanup and Abatement Orders from the State Water Board; and
- List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by DTSC.

The Project site is not listed in any of these databases (CalEPA, 2021). Accordingly, construction and operation of the proposed Project would not create a significant hazard to the public or the environment as a result of being included on the Cortese list. Therefore, the impact would be less than significant and no mitigation is required.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

**No Impact.** The Project site is not located within an airport land use plan or within two miles of a public airport or a public use airport. The closest airport is Zamperini Field in Torrance, approximately five miles from the Project site. The Long Beach Airport and Los Angeles International Airport are approximately eight miles and 15 miles, respectively, from the Project site. The proposed Project would have no effect related to public airports. Accordingly, there would be no impact and no mitigation is required.

f) Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

**Less-than-Significant Impact.** The Project site is currently used for the handling and transport of oil and fuel products. Proposed Project construction would occur within the Project site boundaries and is not expected to affect emergency response or evacuations. As part of standard procedure for activities occurring on Port property, as well as within the Port area, the contractor would coordinate with the Port Police, Los Angeles Police Department, and fire protection/service providers, as appropriate, on traffic management issues and any Port improvement plans occurring in the vicinity. Traffic control equipment would be in place to direct local traffic around the work area if necessary.

An emergency response action plan (Phillips 66 2019) has been prepared for the existing Phillips 66 MOT that provides detailed procedures, including evacuation as necessary, to be followed in the event of an emergency at either terminal. Procedures include:

- Sounding an alarm.
- Following terminal emergency notification processes.
- Dispatching on-call emergency responders to the marine terminal.
- Notifying regulatory agencies as required based on type of emergency (i.e., spill, fire, etc.).
- Calling 911.
- Shutting down loading, unloading, pipeline, and marine operations.
- Evacuating trucks from the facility.
- Diverting incoming trucks or vessels to a safe distance from the facility.
- Evacuating all personnel to a safe distance.

During operation of the proposed Project, the terminal's emergency response plans and those of U.S. Coast Guard, Port Police, and Los Angeles Fire are employed as necessary in accordance with the Port's Risk Management Plan and MOTEMS requirements. The proposed Project would implement the most recent engineering standards required by MOTEMS for the design and maintenance of marine oil terminals to better protect public health, safety and the environment. Because operational activities would closely resemble existing operations, they would not impede land-based emergency responses to the terminal nor would they necessitate changes to the terminal's emergency response plan. As a consequence, operations under the proposed Project would not result in adverse physical impacts on the environment that could interfere with emergency responses.

The proposed Project would comply with MOTEMS requirements and would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Accordingly, impacts would be less than significant and no mitigation is required.

g) Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

**No Impact.** There are no wildlands at or near the Project site (City of Los Angeles 1996). The majority of the site and surrounding area is industrial in nature and paved, and no increase wildland fire hazard would occur as a result of the proposed Project. Therefore, there would be no impact and no mitigation is required.

## 4.10 HYDROLOGY AND WATER QUALITY

a) Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

**Less-than-Significant Impact.** Construction of the proposed Project could result in sediment resuspension during wharf demolition, pile installation, platform construction, and

possible clean-up dredging. The construction contractor must comply with water quality requirements in permits issued from the LARWQCB (such as Waste Discharge Requirements/Section 401 Water Quality Certification). Demolition of the existing timber wharf is not expected to result in a substantial release of contaminants to the water column: although creosote- or other-treated timber debris would be produced, routine precautions would prevent a significant quantity from falling into or remaining in the water. The existing timber piles would either be pulled or cut at the mud line (for piles that cannot be extracted via pulling), which could re-suspend some bottom sediments and create localized and temporary turbidity plumes and associated water quality issues.

In addition to turbidity, re-suspended sediments could result in slightly reduced dissolved oxygen (DO) and pH levels. Those reductions would be brief and localized and would therefore not be expected to cause substantial detrimental effects to biological resources. Existing sediment contaminants (e.g., metals and pesticides) and plant nutrients could be re-suspended into the water column. As with turbidity, however, any increases in concentrations would be localized and of short duration. The release of nutrients could promote short-term nuisance growths of phytoplankton, which has occurred during previous dredging projects, including the Deep Draft Navigation Improvement Project (USACE and LAHD 1992). The Los Angeles Basin Plan defines biostimulatory substances such as nutrients as "…concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses" (LARWQCB 1994). Given the limited spatial and temporal extent of construction activities with the potential for releasing nutrients from bottom sediments, substantial adverse effects on beneficial uses of Harbor waters would not be expected to occur.

The new steel piles would be lowered through the water column and then driven into the seafloor with vibratory and hammer methods. Pile installation could re-suspend some bottom sediments, thereby creating localized and temporary turbidity plumes and associated water quality issues similar to those discussed above. As discussed above, any such increases in turbidity, sediment contaminants, or nutrients would not result in substantial adverse effects on beneficial uses of harbor waters or result in violations of water quality standards.

There is a potential for sediment along the existing slope to slough off and settle along the harbor bottom. No clean-up dredging would be needed if the authorized -35 feet MLLW elevation is met; however, the construction would include a determination of whether high spots exist, and if that occurs, up to 2,000 cubic yards of sediments could require removal. The following analysis addresses the water quality issues that would arise if dredging were to be conducted.

All of the dredged material would be disposed of at a suitable licensed upland disposal facility. The dredging would re-suspend some bottom sediments, create localized and temporary turbidity plumes, and re-suspend sediments over a relatively small area. Receiving water monitoring studies at other dredge sites in the harbor and other water bodies have documented a relatively small turbidity dredge plume that dissipates rapidly with distance from dredging operations (MBC 2001a, b; Anchor Environmental, 2003; USACE and LAHD, 2009; POLA 2009, 2010). Suspension of sediments during clamshell

dredging occurs during bucket impact, penetration, and removal of the bucket from the sediment, as well as during bucket retrieval through the water column.

Sediments were tested in November 2018 per standard USEPA/USACE protocol to determine their suitability to be placed at the Berths 243–245 Confined Disposal Facility and to evaluate potential water quality impacts during dredging and disposal activities. This standard protocol is a requirement of the USEPA/USACE permitting process and therefore considered a project feature. Sediments were determined by the Dredge Material Management Team to be suitable for placement in the Berths 243-245. Results indicated that elutriate concentrations were well below Total Threshold Limit Concentration regulatory limits. Therefore, it is likely that dredge material may be suitable for upland disposal. However, final determination on suitability and any additional testing requirements will be made by the USACE as well as the landfill selected to receive the material.

Clean-up dredging for the proposed Project would require a Section 404 permit from the USACE and a Clean Water Act Section 401 Water Quality Certification, including Waste Discharge Requirements (WDRs), from the LARWQCB. The Water Quality Certification would be required to include monitoring requirements necessary to assure compliance with applicable effluent limitations, or any other Clean Water Act limitation, or with any State laws or regulations. Monitoring requirements typically include measurements of water quality parameters such as DO, light transmittance (turbidity), pH, and suspended solids at varying distances from the dredging operations. During dredging, as a standard practice, if turbidity levels exceed the threshold established in the WDRs, water chemistry analysis would be conducted and the LAHD would immediately meet with the construction manager to discuss modifications of dredging operations to keep turbidity to acceptable levels. Analyses of contaminant concentrations (such as metals, pesticides, and polycyclic aromatic hydrocarbons [PAHs]) in waters during the dredging operations may also be required in the WDRs if turbidity levels are elevated above certain established thresholds. Monitoring data would be used by the Port to ensure that water quality limits specified in the permit are not exceeded. Actions to be taken would include alteration of dredging methods and/or implementation of additional BMPs to limit the size and extent of the dredge plume. Given the limited area that would be affected by dredging activities and the controls in place to minimize adverse effects on water quality, impacts would be less than significant and no mitigation is required.

In addition to water quality effects related to re-suspended sediments, construction could result in spills of fuel, lubricants, or hydraulic fluid from construction equipment and releases of soils and construction debris. However, experience with this type of work in the harbor indicates that such incidences have a very low probability of occurring. Large volumes of chemicals are not used or stored at construction sites. Furthermore, their storage and use would be controlled by the BMPs specified in the Project-specific SWPPP that would be prepared in accordance with the Construction General Permit (CGP), and by standard Port construction contract requirements and the USACE and LARWQCB permits. The SWPPP would be submitted to the Port by the construction contractor prior to the notice to proceed with construction operations. In addition to specifying BMPs for construction activities, the SWPPP would establish efficient responses to spill events to minimize the magnitude of the spill and extent of impacts. Accordingly, spills and other releases of contaminants during

proposed Project construction would not substantially affect beneficial uses of harbor waters or result in violations of water quality standards.

The onshore storm drain systems of the Project site would not be modified, and the proposed Project would not increase the amount of impervious surface area of the terminal. Stormwater from the wharf and access trestle would continue to be managed as under baseline conditions, including percolation into the ground in the unpaved areas and conveyance to the Port's storm drain system from paved areas. The storm drain system at the terminal would continue to comply with National Pollutant Discharge Elimination System (NPDES) requirements regarding discharges and the City's Low Impact Development (LID) requirements. The facility's SWPPPs, with the associated BMPs, would continue to be implemented to manage runoff and prevent impacts to water quality.

Ocean-going vessels utilize hull coatings to prevent algal growth, which can result in leaching of contaminants to harbor waters. Proposed Project operations also have the potential to result in discharges related to risk of upset, accidental discharges, or ballast water discharges to harbor waters, which could be significant. However, the proposed Project's operations would be similar to current operations and will adhere to the Vessel General Permit to reduce the potential of accidental or incidental discharges to harbor waters. Future maintenance at the Project site such as fender and pile replacement or repair could involve minor in-water work that would generate turbidity, but the effects would be localized and of very short duration.

Given the small scale and short duration of construction and with the controls that would be implemented during construction and operation, impacts would be less than significant and no mitigation is required.

b) Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

**Less-than-Significant Impact.** Groundwater at the Project site is affected by saltwater intrusion (high salinity) and is therefore unsuitable for use as drinking water. Construction would occur primarily in and over harbor waters; the limited landside activities would not adversely affect groundwater recharge because the terminal is not used as a recharge site. They would not adversely affect drinking water supplies because there are none on or near the site. An approximately 2.2-acre parcel would be paved with an impervious surface, which is not anticipated to substantially interfere with groundwater recharge. The proposed Project would not install any new groundwater wells, and groundwater extraction would not occur as part of the proposed Project. Accordingly, the proposed Project would not affect the existing groundwater supplies, drinking water supplies, groundwater recharge facilities, or aquifers. The impact of the proposed Project with respect to groundwater would be less than significant and no mitigation is required.

c) Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

   *i) result in substantial erosion or siltation on- or off-site?*

**No Impact.** There are no streams or rivers located nearby that would be affected by the proposed Project. The proposed Project would not alter the existing drainage pattern of the site in a manner that would cause substantial erosion. The additional paving of the approximately 2.2-acre site would follow existing drainage patterns and utilize existing drains. Because more than 500 square feet of paving would occur, the proposed Project would also comply with applicable LID requirements that would minimize off-site erosion and siltation. The majority of the Project site is currently developed and paved and, as such, is impervious. The management of storm water at the two terminals would not change. Construction would comply with the storm water-related requirements in the NPDES Permit, including the use of BMPs, which would minimize the amount of runoff and the potential for substantial erosion or siltation to occur. Therefore, no impacts related to alteration of drainage patterns resulting in erosion or siltation would occur and no mitigation is required.

*ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;*

**Less-than-Significant Impact.** By decreasing the amount of wharf surface at Berths 150-151, the proposed Project would decrease the amount of rainwater runoff from constructed surfaces to harbor waters. Of the Project site's total area of approximately 15.7 acres, approximately 2.2 acres are proposed to be graded and paved. Although the unimproved dirt surface would be paved over with an impervious surface, the proposed amount of paving would be consistent with the rest of the area that is already paved. On- or off-site flooding would not increase substantially with this additional impervious surface, as paving would tie in with the existing storm drain system. Impacts would be less than significant and no mitigation is required.

*iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;*

**Less-than-Significant Impact**. The existing storm drain system for the land portion of the terminal would not be affected by the proposed Project and would continue to comply with all discharge requirements imposed by LARWQCB permits. Implementation of the proposed Project includes paving of approximately 2.2 acres. As such, the proposed Project would increase the area of impervious surfaces by approximately 14 percent. The added pavement would connect to existing drainage. The proposed Project would not alter the existing drainage pattern or result in a substantial increase in surface runoff resulting in flooding. Therefore, impacts would be less than significant and no mitigation is required.

*iv) impede or redirect flood flows?*

**No Impact.** According to the Federal Emergency Management Agency's (FEMA's) Flood Hazard Map FM06037C1944G,[4] the Project site is located in Zone AE, which is identified as a Special Flood Hazard Area subject to inundation by the one percent annual chance flood (also known as the base flood), which has a one percent chance of being equaled or exceeded in any given year. The new loading/unloading platform at

[4] https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd

Berth 150-151 would be located at the same location and height as the existing wharf and would not impede or redirect flood flows. No structures would be built on land that would alter the site's performance in floods with respect to flood flows. The grading of the unimproved surface would not substantially affect flood flows. As discussed in Section 4.10(c)(ii), new pavement would connect to the existing storm drainage system, maintaining existing drainage patterns of the site. Therefore, the proposed Project would neither impede nor redirect flood flows and no mitigation is required.

d) Would the Project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

**Less-than-Significant Impact.** Tsunamis are high, long-period sea waves caused by earthquakes, submarine landslides, or other large disturbances that, when they reach land, cause water level rise and can cause devastating flooding. Seiches are water waves that surge back and forth in an enclosed basin; seiches can result from earthquakes or other disturbances such as high winds. A computer model of Los Angeles-Long Beach harbor that assessed tsunami and seiche scenarios determined that in each case modeled, impacts from a tsunami were equal to or more severe than those from a seiche (Moffatt and Nichol, 2007). As a result, the discussion below refers to tsunamis as the worst case of potential impacts; potential impacts related to seiches would be the same as or less than those identified below. In addition, this discussion considers the impacts of 100-year storm tides combined with projected sea level rise.

According to the City of Los Angeles Safety Element of the General Plan (City of Los Angeles, 1996), the Project site is within an area susceptible to impacts from a tsunami and subject to possible inundation. However, the Tsunami Hazard Assessment for the Ports of Los Angeles and Long Beach (Moffatt and Nichol, 2007) concluded on the basis of modeling that, based on seismicity, geodetics, and geology, a large, locally generated tsunami affecting the Port Complex would likely not occur more than once every 10,000 years. Under the maximum future tsunami scenarios, the Port Complex model predicts a maximum tsunami wave height of 9.1 feet along the East Basin Channel near the Project site (Moffatt and Nichol, 2007, Table 4-1).

With respect to potential flood hazard due to potential sea level rise, Assembly Bill (AB) 691 required POLA, as a local trustee of the lands granted by the State Lands Commission, to address the impacts of Sea Level Rise (SLR) for all of its granted public trust lands. Per that requirement, POLA's Engineering Division developed a Sea Level Rise Adaptation Study (LAHD 2018d). The study identifies all areas of port property and estimates potential increased water intrusion/flooding due to SLR in 2030, 2050 and in 80 years from now (i.e., in 2100).

According to the National Oceanic and Atmospheric Administration (NOAA), sea level rise of approximately 4 inches has occurred in Los Angeles County over the past 100 years.[5] The Port's report estimates that sea level could rise above the level observed in 2000 by up to an additional 12 inches between 2000 and 2030 and between 37 inches (the mid-point estimate) to as much as 66 inches by 2100. The area specifically referenced for Berths 148-

[5] National Oceanic and Atmospheric Administration (NOAA) Mean Sea Level Trend: 9410660 Los Angeles, California. Accessed October 19, 2016. http://tidesandcurrents.noaa.gov/sltrends/ sltrends_station.shtml?stnid=9410660

151 indicates that SLR alone would not cause permanent inundation or shoreline overtopping until it reaches 66 inches (the high-range prediction for 2100). Accordingly, SLR alone would not threaten the landside facilities at the Project site during the projected service life of 50 years. However, under 100-year storm tide conditions, shoreline overtopping and temporary flooding could occur with 24 inches of SLR (the prediction for the year 2050; see LAHD 2018d, Section 4 figures, page 28). The Port's study (LAHD, 2018b) predicts a maximum storm tide would raise water levels approximately 2.6 feet above Mean Higher High Water (MHHW). Accordingly, extreme storm events coupled with projected SLR could cause temporary flooding of backland facilities, with concomitant interruption of terminal activities. Access roads on Pier A would not be very sensitive to damage as a result of temporary flooding unless high flood water velocities occurred. Furthermore, although traffic would be blocked by water depths of more than a few inches, vehicle movement should be able to resume quickly after waters have receded.

The construction of facilities at adequate elevations and the incorporation of emergency planning in accordance with current state and City regulations minimizes damage to structures and injury to personnel from flooding or inundation. A Port-wide emergency notification system provides phone/text/email notification of tsunami warnings or other emergency situations. Furthermore, the existing terminals have emergency response plans that mention natural disasters, including tsunamis, to identify necessary procedures in the event a tsunami warning is issued. The plan directs terminal staff to drain and disconnect cargo lines, secure the terminal, and if time permits, allow berthed vessels to depart prior to the arrival of a tsunami. The procedures identify priorities including the safety of life for terminal and vessel staff, limitation/mitigation of environmental impact from oil spills, and limitation/mitigation of damage to the marine oil terminal. The tsunami plan would remain in effect under the proposed Project.

Construction and operation of the proposed Project would not increase the potential for release of pollutants due to tsunami or storm tide flooding damage. Under the proposed Project, the vessel berthing and loading/unloading facilities would be improved to meet MOTEMS safety standards, thereby further reducing the risk of product release in the very unlikely event of inundation. The terminals' product-handling facilities would remain largely as under existing conditions, so that the risk of product release would not be increased. Therefore, the proposed Project would not increase risks associated with the release of pollutants due to tsunami or seiche.

As described above, the proposed Project would not increase the potential for a tsunami, seiche, or storm tide to cause inundation at the Phillips 66 marine oil terminal that could increase the risk of a release of pollutants. Accordingly, impacts would be less than significant and no mitigation is required.

e) Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

**No Impact.** Responsibility for the protection of surface water and groundwater quality in California rests with the SWRCB and nine Regional Water Quality Control Boards (RWQCB). Region-specific water quality regulations are contained in Water Quality Control Plans that recognize regional beneficial uses, water quality characteristics, and water quality problems. The Project area is not located in an area designated for a water quality control

plan or sustainable groundwater management plan. Therefore, the proposed Project would not interfere with any water quality or groundwater management plan. No impacts would occur, and no mitigation is required.

## 4.11 LAND USE AND PLANNING

a) Would the Project physically divide an established community?

**No Impact.** The proposed Project is located in a heavy industrial area of the Port that does not contain any established communities. The nearest residential receptor community is an apartment complex on N. Harbor Blvd. in San Pedro, approximately 3,500 feet south-west of the Project site. The proposed Project would be confined to the existing marine oil terminals at the Project site and would not physically divide an established community. Therefore, no impacts involving physically dividing an established community would occur with the implementation of the proposed Project and no mitigation is required.

b) Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

**No Impact.** The location of the Project site is described in Section 2.1. Land uses in the vicinity of the Project site consist of marine cargo terminals and access roads.

As noted in Section 2.1.3, the Project site is governed by two land use plans: the Port of Los Angeles Master Plan, developed in conformance with the California Coastal Act, and the Port of Los Angeles Plan portion of the City of Los Angeles General Plan.

The Port of Los Angeles Plan is part of the City of Los Angeles General Plan Land Use Element, which serves as the guide for the continued development and operation of the Port (City of Los Angeles, 1982). The Project site has a Non-Hazard Industrial and Commercial land use designation and is zoned [Q] M3-1 (Qualified-Heavy Industrial) by the City of Los Angeles Zoning Ordinance. The [Q] designation restricts uses to General Cargo, limited Port-related commercial, industrial, and support uses. The proposed Project would provide for the continuation of the existing use, which is consistent with the [Q] M3-1 zoning of the site. The continuation of the site as marine oil terminals would be consistent with the surrounding uses, which are also port-related.

Because the continuation of the marine oil terminal use would not represent a change in use and would be consistent with applicable land use plans and land use designations, including the Port Master Plan, Port of Los Angeles Plan, and zoning code, the proposed Project would not conflict with any applicable land use plan, policy, or regulation. Therefore, there would be no impact and no mitigation is required.

## 4.12 MINERAL RESOURCES

a) Would the Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

**No Impact.** The proposed Project is located within the Port of Los Angeles. According to the California Department of Conservation Division of Mines and Geology mineral resource

maps, the nearest mineral resources area is located over 25 miles away in the San Gabriel Valley (California Department of Conservation, 2011a).

According to the City of Los Angeles General Plan Safety Element and the California Department of Conservation, Geologic Energy Management Division (CalGEM), the Project site is located just beyond the southwestern border of the Wilmington Oil Field but over a mile from the edge of the major drilling area (California Department of Conservation, 2021). There are no active oil wells on the Project site. Because the proposed Project would not be located within an active oil drilling area and because construction would be at the surface or shallow depths relative to the oil field, no impacts to mineral resources are anticipated. Therefore, no impacts related to the loss of availability of a known valued mineral resource would occur with the implementation of the proposed Project and no mitigation is required.

b) Would the Project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

**No Impact.** According to the City of Los Angeles General Plan Safety Element and the California Department of Conservation, Geological Energy Management Division, the Project site is located just beyond the southwestern border of the Wilmington Oil Field but over a mile from the edge of the major drilling area (California Department of Conservation, 2021). The proposed Project would be entirely confined to the Project site and would therefore not result in the loss of availability of a mineral resource recovery site. Therefore, no impact to the availability of a mineral resource would result from construction and operation of the proposed Project and no mitigation is required.

## 4.13 NOISE

a) Would the Project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

**Less-than-Significant Impact.** The City regulates construction noise via the Los Angeles Municipal Code (LAMC, Chapter IV, Article 1, Section 41.40; Chapter XI, Article 2, Section 112.05). Under the noise provisions, construction equipment noise levels are limited to a maximum noise level of 75 dBA (A-weighted decibel) if located within 500 feet of any residential zone of the City, if technically feasible, and construction is limited to Monday through Saturday exclusive of holidays. However, major public works projects conducted by the City are exempt from this Sunday and holiday restriction, and construction in districts zoned for industrial uses, as is the Project site, is exempt from all noise provisions. The nearest residential area (apartment complex on N. Harbor Blvd. in San Pedro) to the wharf construction site is approximately 3,500 feet away. Therefore, the proposed Project would not be subject to the maximum noise limits or time restrictions in the LAMC.

The L.A. CEQA Thresholds Guide (2006) does not require a full noise evaluation if construction is not located within 500 feet of a residential zone. Since no residential area is located within 500 feet of the Project site, no quantitative analysis was completed.

Although the proposed Project could accommodate an increase in the annual number of vessel calls to the Phillips 66 terminal, only a single vessel could berth at the terminal at any given time as is the case under current operating conditions. Accordingly, noise from vessel operations would not increase above baseline levels. The proposed Project would not increase the number of trucks visiting the Project site during operations, and the closest residential receptors are located two-thirds of a mile away. Therefore, there would be no increase in operational truck noise and in any case, truck noise across that distance would be attenuated to below local noise ordinance thresholds. Accordingly, impacts would be less than significant and no mitigation is required.

b) Would the Project generate excessive groundborne vibration or groundborne noise levels?

**Less-than-Significant Impact.** Construction equipment and activities associated with the proposed Project, such as drill rigs, pile installation and driving equipment, compaction equipment, and haul trucks, would generate vibrations that could result in groundborne noise or vibration. Transient vibration levels greater than 0.5 inches per second (in/sec) and continuous/frequent intermittent vibration levels greater than 0.3 in/sec have the potential to damage older residential structures. Transient vibration levels greater than 2.0 in/sec, or continuous sources greater than 0.4 in/sec, would cause severe annoyance to a human (Caltrans, 2013b). In addition, continuous vibration levels of 0.08 in/sec would be "readily perceptible" to humans, whereas transient vibration levels of 0.035 in/sec would be "barely perceptible" to humans.

A quantitative analysis of vibration levels was not conducted for the proposed Project because relevant data are available from an analysis performed for a nearly identical project located at Berths 168-169, approximately 0.2 miles west of the proposed Project (LAHD 2018c). That analysis showed that construction of that project would produce vibration levels up to approximately 0.02 in/sec at the closest residences. That level is well below the thresholds established by Caltrans (2013b). Given its similarity and proximity to the project at Berths 168-169, the proposed Project's construction would produce virtually identical vibration levels. Accordingly, impacts would be less than significant, and no mitigation is required.

Operation of the proposed Project would not result in a substantial increase in groundborne vibrations or noise levels. The number of trucks would not increase from baseline and, because of the site's distance from sensitive and residential receptors, operations would not result in vibration that would exceed local ordinance thresholds. Therefore, impacts of operations would be less than significant and no mitigation is required.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

**No Impact.** The proposed Project is not located within two miles of a public airport or public use airport. Accordingly, the proposed Project would not expose people residing or working in the area of the Project site to excessive noise related to a public or private airport or

airstrip. There would be no impact from implementation of the proposed Project and no mitigation is required.

## 4.14 POPULATION AND HOUSING

a) Would the Project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

**No Impact.** The proposed Project would not establish new residential uses within the Port, require extension of roads or other growth-accommodating infrastructure, or result in the relocation of substantial numbers of people from outside of the region. Therefore, the proposed Project would not directly or indirectly induce substantial population growth through extension of roads or other infrastructure. There would be no impacts associated with population growth inducement and no mitigation is required.

b) Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

**No Impact.** There is no housing within the proposed Project boundaries that would be displaced as a result of the proposed Project. No replacement housing would be needed associated with the implementation of the proposed Project. No impact would occur and no mitigation is required.

## 4.15 PUBLIC SERVICES

Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:

a) Fire protection?

**Less-than-Significant Impact.** The City of Los Angeles Fire Department (LAFD) provides fire protection and emergency services to the Project site and surrounding area. LAFD facilities in the Port include land-based fire stations and fireboat companies. The nearest station with direct fireboat access is Fire Station No. 112, located about one mile south-southwest of the Project site. This station is equipped with a single engine company and one boat (Fire Boat No. 2). The next closest station is Fire Station No. 49, a travel distance of approximately 1.4 miles to the terminal. This station is equipped with a single engine company and two boats (Fire Boats Nos. 3 and 4) at Berth 194. Fire Station No. 38, located at 124 East I Street, approximately 2.2 miles north of the site, would provide fire service by land.

Construction of the proposed Project would not increase the need for expanded services. Further, construction would occur within the Project site and harbor and would not affect service ratios, response times, or other performance objectives of the LAFD.

The proposed Project would implement the most recent engineering standards related to fire suppression equipment in compliance with MOTEMS High Fire Hazard Classification requirements. Further, the proposed Project improvements would, as a standard practice, be reviewed by the LAFD, and any recommendations would be incorporated into proposed Project design. Operation of the proposed Project would not result in a substantial increase in demand for LAFD personnel, equipment, facilities, or firefighting capabilities, nor would it affect response times that could lead to a substantial adverse physical impact.

Construction activities would include implementation of standard safety requirements, including preparation of an emergency response plan and coordination with emergency service providers, including the LAFD. Accordingly, construction of the proposed Project is not expected to result in an increase in demand for LAFD personnel, equipment, facilities, or firefighting capabilities, nor would it affect response times which could lead to a substantial adverse physical impact.

Operation of the proposed Project would comply with MOTEMS fire safety requirements and the state and city fire codes, standards and regulations, and would not increase the demand for fire protection services. Therefore, impacts associated with fire protection services would be less than significant and no mitigation is required.

b) Police protection?

**Less-than-Significant Impact.** The Los Angeles Harbor Department Port Police (Port Police) and the Los Angeles Police Department (LAPD) both provide police services to the Port. The Port Police is the primary law enforcement agency within the Port of Los Angeles and is responsible for patrol and surveillance within the Port property boundaries, including Port-owned properties within the communities of Wilmington, San Pedro, and Harbor City. The Port Police maintains 24-hour land and water patrols and enforces federal, state, and local public safety statutes, Port tariff regulations, as well as environmental and maritime safety regulations. The LAPD Harbor Division is located at 2175 John S. Gibson Boulevard in San Pedro, which is approximately 1.1 miles east of the proposed Project.

The proposed Project would not substantially alter terminal activities and would not increase long-term employment or result in indirect growth that would result in need for additional police protection. Accordingly, the proposed Project would not increase the demand for additional law enforcement officers and/or facilities such that the Port Police or LAPD would not be able to maintain an adequate level of service without additional facilities. Therefore, impacts on police protection services from implementation of the proposed Project would be less than significant and no mitigation is required.

c) Schools?

**No Impact.** The demand for new schools is generally associated with increases in the school-aged population or decreases in the accessibility and availability of existing schools. The proposed Project would not involve schools or include residential development that could increase school age population. Therefore, no impacts to existing schools, or need for new school facilities, would occur and no mitigation is required.

d) Parks?

**No Impact.** The proposed Project would not include the creation of new parks or reduction in existing park facilities. In addition, proposed Project improvements would be confined to the Project site within the Port and would not induce population growth that could result in increased demand for parks beyond that which currently exists. Therefore, no impacts to existing parks, or need for new parks would occur from implementation of the proposed Project, and no mitigation is required.

e) Other public facilities?

**Less-than-Significant Impact.** The USCG is a federal agency responsible for a broad range of regulatory, law-enforcement, humanitarian, and emergency-response duties. The USCG mission includes maritime safety, maritime law enforcement, protection of natural resources, maritime mobility, national defense, and homeland security. The USCG's primary responsibility is to ensure the safety of vessel traffic in the channels of the Port and in coastal waters. The 11th USCG District maintains a post on Terminal Island, south of the Project site. The proposed Project would implement the most recent engineering standards required by MOTEMS for the design and maintenance of marine oil terminals to better protect public health, safety and the environment at an existing marine oil terminal and would not result in impacts to USCG facilities or operations.

The proposed Project would potentially result in an increase in annual vessel calls from a baseline of 229 calls to 306 calls. This increase of 77 vessel calls is minor compared to year-to-year fluctuations in the total number of vessel calls to the Port in recent years. Between 2015 and 2020, annual vessel calls to the Port ranged from a low of 1,533 to a high of 1,880 (LAHD 2021, LAHD 2020a, LAHD 2019a, LAHD 2018b, LAHD 2017, LAHD 2016). The difference of 347 is 4.5 times greater than the potential 77 vessel call increase associated with the Project, meaning that the proposed Project's increase in vessel traffic would not actually result in a substantial increase in total traffic to the Port. No expansion of the Vessel Traffic Information System or other vessel safety systems and programs in the USCG's purview would be needed. Therefore, the proposed Project would not result in an increase in demand for other public facilities that could lead to a substantial adverse physical impact. Impacts would be less than significant and no mitigation is required.

## 4.16 RECREATION

a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

**No Impact.** The proposed Project would not directly or indirectly result in physical deterioration of parks or other recreational facilities because it is not near any such facilities and would not induce population increases that would increase use of recreational facilities. Therefore, no impact would occur and no mitigation is required.

b) Would the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

**No Impact.** The proposed Project would not include recreational facilities or new residential development that would require construction or expansion of existing recreational facilities. Therefore, no impact would occur and no mitigation is required.

## 4.17 TRANSPORTATION

a) Would the Project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

**No Impact**. The 2020 Los Angeles Department of Transportation (LADOT) Transportation Assessment Guidelines state that a project that "generally conforms with and does not obstruct the City's development policies and standards will generally be considered to be consistent" and not in conflict. The 2020 LADOT Transportation Assessment Guidelines include three screening criteria questions that are answered in order to help guide whether the project conflicts with City circulation system policies. If the answer is "no" to all of the following questions, a "no impact" determination can be made (LADOT 2020).

(1) Does the project the project require a discretionary action that requires the decision maker to find that the project would substantially conform to the purpose, intent, and provisions of the general plan?

The proposed Project requires approval by the Board of Harbor Commissioners which is by definition a discretionary action. However, this discretionary action does not require the decision maker to amend any project component to conform to the purpose, intent, or provision of any existing general plan. Therefore, the proposed project would comply with all required City circulation system policies and does not deviate from any known general plan.

(2) Is the project known to directly conflict with a transportation plan, policy, or program adopted to support multimodal transportation options or public safety?

The proposed Project would not alter existing transportation routes or transportation options, nor would it alter access to public safety. Direct landside access to the Project site is provided via Pier "A" Street. The proposed Project would not require any modifications or closures to the public right-of-way. There would be no in-street construction activities. Therefore, the proposed Project would not directly conflict with a transportation plan, policy or program adopted to support multimodal transportation options or public safety.

(3) Is the project required to or proposing to make any voluntary modifications to the public right-of-way (e.g., dedications and/or improvements in the right-of-way, reconfigurations of curb line)?

The proposed Project does not include any modifications to existing roadways that support current or future bike lanes or bus stops and is not required to make any voluntary or required modifications to the public right-of-way. The proposed Project does not propose to include dedications or physical modifications to the public right-of-way, nor is it required.

b) Would the Project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

**No Impact.** CEQA Guidelines Section 15064.3 subdivision (b), provides criteria for analyzing transportation impacts. The guidelines state that a significant impact may occur if vehicle miles traveled (VMT) exceed an applicable threshold of significance.

The intent of State CEQA Guidelines Section 15064.3, subdivision (b)(1) and Threshold T-2.1 in the 2020 LADOT Transportation Assessment Guidelines is to assess whether a land use or office project would have a potential impact. The guidelines include two screening criteria questions that must be answered in order to determine consistency with State CEQA Guidelines Section 15063.3, subdivision (b)(1); the 2020 LADOT Transportation Assessment Guidelines state that if the answer is "no" to either question, then further analysis will not be required for this threshold, and a "no impact" determination can be made.

(1) Would the land use project generate a net increase of 250 or more daily vehicle trips?

(2) Would the project generate a net increase in daily VMT?

The LADOT threshold of 250 daily vehicle trips was proposed for automobiles (as OPR does not require VMT analysis of commercial trucks in CEQA documents). Therefore, based on OPR verbal guidance, heavy-duty truck trips are not included in this transportation analysis, but are analyzed in other resource areas, such as Air Quality, Greenhouse Gas Emissions, Noise, and Energy. (OPR, 2020).

Construction of the proposed Project would generate approximately 54 vehicle trips during a peak day, and operation would not generate more trips than under baseline conditions because there would be no additional employees. Therefore, the proposed Project would not generate a net increase of 250 or more daily vehicle trips during construction or operation. Therefore, there are no impacts and no mitigation is required.

c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

**No Impact.** The 2020 LADOT Transportation Assessment Guidelines provide two screening criteria questions that must be answered in order to determine assess whether the Project would result in impacts due to geometric design hazards or incompatible uses.

(1) Is the project proposing new driveways, or introducing new vehicle access to the property from the public right-of-way?

(2) Is the project proposing to, or required to make any voluntary or required, modifications to the public right-of-way (e.g., street dedications, reconfigurations of curb line)?

The Project is not proposing new driveways or introducing new vehicle access to the property from the public right-of-way. Also, as previously discussed above, the Project is not proposing or required to make any voluntary or required modifications to the public right-of-way. Therefore, there are no impacts and no mitigation is required.

d) Would the project result in inadequate emergency access?

**No Impact.** The proposed Project would not alter or close existing roadways or emergency access ways. Because the number of daily truck trips to and from the terminal would not change above baseline levels, traffic patterns would not be altered, and emergency access would remain adequate. Accordingly, no impact would occur and no mitigation is required.

## 4.18 TRIBAL AND CULTURAL RESOURCES

This section evaluates impacts to tribal cultural resources associated with the implementation of the proposed Project. Pursuant to Assembly Bill (AB) 52, a lead agency is required to consult with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the Project if the tribe requested to the lead agency, in writing, to be informed by the lead agency of proposed projects in that geographic area. As part of Native American consultation associated with the proposed Project, the Native American Heritage Commission (NAHC) was contacted, and a consultation list received, of tribes that are traditionally and culturally affiliated with the geographic area of the proposed Project.

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?

**No Impact.** As discussed in Section 4.5 (Cultural Resources), the potential to discover an unknown tribal cultural resource within the Project site is highly unlikely as the site is underlain by manmade fill. Consultation under AB 52 was conducted during November of 2017. There was no request for a formal consultation during that time. Responses from consultation indicate that there are no known tribal cultural resources in the Project site or vicinity. Therefore, the proposed Project would have a less than significant impact on tribal cultural resources.

The proposed Project would also occur in and over harbor waters and could include minor clean-up dredging. The Project area has been routinely dredged over the history of the Port to create shipping channels and increase or maintain the design depth at the berths. Given the absence of known tribal resources in the Project area and the limited ground-disturbing activities that would be done, the proposed Project would have no impact and no mitigation is required.

ii) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

**No Impact.** As described in Section 4.18(a), the Project site has undergone approximately 100 years of development, including dredging and filling, and tribal

cultural resources are not likely present. Given the absence of known tribal resources in the Project area and the limited ground-disturbing activities that would be performed, the proposed Project would have no impact on a California Native American tribe resource, and no mitigation is required.

## 4.19 UTILITIES AND SERVICE SYSTEMS

a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

**No Impact.** The Project site is located in a developed area that is served by existing utilities. The proposed Project would not relocate or construct new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities. Furthermore, because the proposed Project would not result in an increased number of employees on-site during operations there would be no need for new or expanded utilities. Therefore, construction and operation of the proposed Project would not require any new or expanded wastewater treatment, stormwater drainage, electrical power, natural gas, or telecommunications facilities. Accordingly, there would be no impacts and no mitigation is required.

b) Would the Project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

**No Impact.** The proposed Project would have sufficient water supplies for the foreseeable future. The proposed Project would not construct any major facilities that would require or result in additional water consumption. There would likely be a slight increase in water demand during construction as a result of worker consumption and other uses such as dust control, but that would be temporary. Once operations begin, water demand would remain similar to current levels as the number of employees would not increase. Accordingly, there would be no impacts related to water supplies and no mitigation is required.

c) Would the Project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

**No Impact.** The City of Los Angeles Department of Public Works, Bureau of Sanitation, provides sewer service to all areas within its jurisdiction, including the Project site. Wastewater from the Phillips 66 terminal flows through existing sewer and wastewater infrastructure to the Bureau of Sanitation's Terminal Island Water Reclamation Plant (TIWRP). The TIWRP currently operates at approximately 50 percent of its capacity of 30 million gallons per day (LASAN, 2020). A small increase in on-site personnel associated with construction (estimated at up to 30 per day) would generate temporary, minor increases in wastewater flows. Accordingly, the existing system has excess capacity and any increases in wastewater and stormwater inputs to the City's sewer and treatment systems as a result of construction and operation of the proposed Project would be insubstantial. Therefore, no impacts would occur with the implementation of the proposed Project and no mitigation is required.

d) Would the Project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

**Less-than-Significant Impact.** The demolition and removal of the existing wharf structures and their shoreline connecting structures would generate debris, primarily treated timber but also including concrete and steel, that would be recycled and disposed of, as described below. A small amount of additional debris would be generated by construction of the new loading/unloading platform and associated facilities. If clean-up dredging is necessary, up to 2,000 cubic yards of dredged material could be generated.

The generation of landfill waste would be reduced by recycling of demolition debris to the extent feasible. The LAHD maintains an asphalt/concrete recycling facility at Navy Way, south of Reeves Avenue, on Terminal Island. The asphalt/concrete debris would be crushed at the facility or elsewhere in the Port for construction reuse within the Port. Metal debris would be salvaged for scrap by the construction contractor. Dredged material, if any, would be disposed of at a suitable upland disposal facility.

Solid waste requiring disposal at a landfill is not expected to be substantial relative to the permitted landfill capacity at Chiquita Canyon Landfill, Sunshine Canyon Landfill, or other local or regional disposal facilities that could accept construction waste from the proposed Project. There is currently sufficient solid waste disposal capacity available in Los Angeles County (City of Los Angeles 2013). Further, there are a number of operations within Los Angeles County that recycle construction and demolition material, and the Port, as standard conditions of permit approval, requires recycling of construction materials and use of materials with recycled content where feasible to minimize impacts to solid waste. Demolition debris would not exceed landfill capacity. Disposal of up to 2,000 cubic yards of dredged material in a suitable upland facility would have a negligible effect on overall landfill capacity and would therefore not affect solid waste disposal facilities.

In summary, construction is anticipated to generate relatively small amounts of waste requiring disposal in a landfill, and construction would comply with applicable waste reduction requirements. Operation of the proposed Project would not result in a substantial increase in solid waste generation relative to baseline conditions because the number of personnel would remain small and activity levels would be similar to baseline conditions. Therefore, this impact would be less than significant, and no mitigation is required.

e) Would the Project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

**No Impact.** The proposed Project would be required to conform to the policies and programs of the City of Los Angeles' Solid Waste Integrated Resources Plan (SWIRP). Compliance with the SWIRP would ensure sufficient capacity to service the proposed Project (City of Los Angeles, 2013). Construction activities are anticipated to generate a nominal amount of solid waste. The proposed Project would comply with all applicable codes and requirements pertaining to solid waste disposal. These include but are not limited to: Chapter VI Article 6 Garbage, Refuse Collection of the City of Los Angeles Municipal Code, Part 13 Title 42 – Public Health and Welfare of the California Health and Safety Code, and Chapter 39 Solid Waste Disposal – of the United States Code. The proposed Project

would also be compliant with AB 939, the California Solid Waste Management Act, and AB 341, which establish waste stream diversion and recycling goals. Because the proposed Project would implement and be consistent with the procedures and policies detailed in the codes and requirements identified above, Port-wide standard conditions of approval requiring recycling of construction materials, the City's recycling and solid waste diversion efforts, and related laws pertaining to solid waste disposal, there would be no impacts related to compliance with solid waste statutes and regulations and no mitigation is required.

## 4.20 WILDFIRE

If located in or near State responsibility areas or lands classified as very high fire hazard severity zones, would the project:

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire?

c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

**No Impact.** Public Resources Code sections 4201-4204 direct the California Department of Forestry and Fire Protection to map fire hazard based on relevant factors such as fuels, terrain, and weather. The Port is not located in or near a state responsibility area or lands classified as a Very High Fire Severity Zone within its Local Responsibility Area (California Department of Forestry and Fire Protection, 2021; LAFD, 2021). Therefore, the Project site is not located in or near State responsibility areas or lands classified as very high fire hazard severity zones. As such, no impacts would occur and no mitigation is required.

## 4.21 MANDATORY FINDINGS OF SIGNIFICANCE

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

**Less-than-Significant Impact with Mitigation Incorporated.** As discussed in Section 4.4, Biological Resources, implementation of MM BIO-1 would reduce potentially significant impacts of underwater noise on biological resources (i.e., marine mammals and managed

fish species) to less than significant. As discussed in sections 4.4 and 4.5, all other potential impacts related to biological and cultural resources would be less than significant, and no mitigation is required.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

**Less-than-Significant Impact.** The proposed Project would not result in any cumulatively considerable impacts. Several other development projects are currently under construction, are planned, or have recently been completed within the Port. These projects include container terminal developments, industrial developments, and other waterfront plans. Future projects would be evaluated in a separate future environmental document. These types of projects and other present and/or probable future projects are required to comply with CEQA requirements, including implementation of mitigation measures to reduce or avoid environmental impacts, as well as with applicable laws and regulations at the federal, state and local level, including but not limited to the Los Angeles City Municipal Code and local ordinances governing land use and development.

As discussed in Sections 4.1 through 4.20 of this IS/MND, the proposed Project would not result in significant impacts to aesthetics, agricultural and forestry resources, air quality, biological resources, cultural resources, energy, geology and soils, GHG emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, tribal cultural resources, utilities and services systems, or wildfires that could not be mitigated to below significance.

The proposed Project would require three mitigation measures (MM AQ-1 and MM AQ-2 related to air quality and MM BIO-1 related to biological resources). The Project site is currently developed with industrial uses similar to the proposed Project. Because of the small scale and localized effects of the proposed Project, the potential incremental contribution from the proposed Project would not be cumulatively considerable. Operational activity (vessels and trucks) would be consistent with baseline conditions and retrofits would be incorporated to bring the facility into compliance with seismic codes and safety regulations. The proposed Project allows for a slight increase in vessel calls but would still only accommodate berthing of one vessel at a time. Accordingly, operational impacts of the proposed Project would not contribute to a cumulative impact. This analysis has further determined that the proposed Project would not have any individually limited but cumulatively considerable impacts.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

**Less-than-Significant Impact.** Based on the analysis in Section 4, substantial adverse impacts on human beings would not occur as a result of the proposed Project. The proposed Project's impacts related to aesthetics, air quality, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, public services, and utilities and service systems would be less than significant (after mitigation in the case of air

quality), and the proposed Project would have no impacts related to land use and planning, population and housing, recreation, transportation, tribal cultural resources, or wildfires. Furthermore, the proposed Project would continue an existing use with similar activity levels but improved safety compared to baseline conditions. Accordingly, impacts on human beings related to the proposed Project would be less than significant.

# 5. PROPOSED FINDING

LAHD has prepared this IS/MND to address the environmental effects of the proposed Project. Based on the analysis provided in this IS/MND, LAHD finds that the proposed Project would not have a significant effect on the environment with the incorporation of the mitigation measures described in this document.

# 6. PREPARERS AND CONTRIBUTORS

LAHD, Environmental Management Division

- Christopher Cannon, Director of Environmental Management
- Lisa Wunder, Marine Environmental Manager
- Nicole Enciso, Acting Marine Environmental Supervisor, CEQA
- Leah Kohler, Project Manager, Environmental Specialist
- Kat Prickett, Marine Environmental Supervisor, Water
- Jose Robledo, Engineer, Engineering Division
- Pauling Sun, Environmental Specialist, Site Restoration
- Derek Jordan, Assistant Director of Planning and Strategy
- Kevin Kim, Senior Real Estate Officer, Waterfront and Commercial Real Estate

Ramboll

- Till Stoeckenius, Project Manager and Principal Author
- Yesica Alvarez, Air Quality, Energy, Greenhouse Gases
- Thomas D. Johnson, Ph.D., Co-Author

iLanco Environmental

- Lora Granovsky, Air Quality Analyst

# 7. ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AAQS | ambient air quality standards |
| AB | Assembly Bill |
| APN | Assessor’s parcel number |

| | |
|---|---|
| Air Basin | South Coast Air Basin |
| AQMP | Air Quality Management Plan |
| ATB | Articulated Tug Barge |
| BMP | best management practice |
| CAA | Clean Air Act |
| CAAP | Clean Air Action Plan |
| CAPCOA | California Air Pollution Control Officers Association |
| CalEEMod | California Emissions Estimator Model |
| CalEPA | California Environmental Protection Agency |
| CalGEM | California Dept. of Conservation, Geologic Energy Management Division |
| CalGreen | California Green Build Standards |
| Caltrans | California Department of Transportation |
| CARB | California Air Resources Board |
| CBC | California Building Code |
| CCR | California Code of Regulations |
| CDF | Confined disposal facility |
| CDFW | California Department of Fish and Wildlife |
| CDOC | California Department of Conservation |
| CEQA | California Environmental Quality Act |
| CGP | Construction General Permit |
| CHE | Cargo Handling Equipment |
| City | City of Los Angeles |
| CNEL | community noise equivalent level |
| CO | carbon monoxide |
| $CO_2e$ | carbon dioxide equivalent |
| CRHR | California Register of Historical Resources |
| CSLC | California State Lands Commission |
| dBA | A-weighted decibel |
| DO | dissolved oxygen |
| DPM | diesel particulate matter |
| DTSC | Department of Toxic Substances Control |
| DWT | deadweight tons |
| EFH | Essential Fish Habitat |
| EI | emissions inventory |
| EIA | Energy Information Agency |
| EMD | Environmental Management Division |

| | |
|---|---|
| EO | Executive Order |
| EPA | U.S. Environmental Protection Agency |
| EEZ | Exclusive Economic Zone |
| FEMA | Federal Emergency Management Agency |
| FMP | Fish Management Plan |
| FMMP | Farmland Mapping and Monitoring Plan |
| GAL | Gallons |
| GHG | greenhouse gas |
| GWP | global warming potential |
| HCP | Habitat Conservation Plan |
| I | Interstate |
| IS | Initial Study |
| LACSD | Los Angeles County Sanitation District |
| LADBS | Los Angeles Department of Building and Safety |
| LADOT | Los Angeles Department of Transportation |
| LADWP | Los Angeles Department of Water and Power |
| LAFD | Los Angeles Fire Department |
| LAGBC | Los Angeles Green Building Code |
| LAHD | Los Angeles Harbor Department |
| LAMC | Los Angeles Municipal Code |
| LAPD | Los Angeles Police Department |
| LARWQCB | Los Angeles Regional Water Quality Control Board |
| LASAN | Los Angeles Bureau of Sanitation |
| LBS | Pounds |
| LID | Low Impact Development |
| LNAPL | Light non-aqueous phase liquid |
| LOP | Letter of Permission |
| LST | Localized Significance Threshold |
| M | Magnitude |
| MBTA | Migratory Bird Treaty Act |
| MD | mooring dolphin |
| MHHW | Mean Higher High Water |
| MM | mitigation measure |
| MMPA | Marine Mammal Protection Act |
| MND | Mitigated Negative Declaration |
| MOTEMS | Marine Oil Terminal Engineering and Maintenance Standards |

| | |
|---|---|
| MOT | Marine Oil Terminal |
| MOU | Memorandum of understanding |
| MSL | mean sea level |
| MT/yr | metric tons per year |
| MWD | Metropolitan Water District of Southern California |
| NAAQS | National Ambient Air Quality Standards |
| NAHC | Native American Heritage Commission |
| NCCP | Natural Community Conservation Plan |
| NOAA | National Oceanic and Atmospheric Administration |
| $NO_X$ | nitrogen oxides |
| NPDES | National Pollutant Discharge Elimination System |
| NRHP | National Register of Historic Places |
| OEHHA | Office of Environmental Health Hazard Assessment |
| OGV | ocean-going vessel |
| OPA | Oil Pollution Act |
| OPR | Office of Planning and Research |
| $PM_{10}$ | particulate matter less than or equal to 10 microns in diameter |
| $PM_{2.5}$ | particulate matter less than 2.5 microns in diameter |
| PMP | Port Master Plan |
| Port or POLA | Port of Los Angeles |
| POTW | Publicly owned treatment works |
| SB | Senate Bill |
| SCAG | Southern California Association of Governments |
| SCAQMD | South Coast Air Quality Management District |
| SEA | Significant Ecological Area |
| SHPO | State Historic Preservation Officer |
| SIP | State Implementation Plan |
| SLR | Sea Level Rise |
| $SO_X$ | sulfur oxide |
| SPCC | Spill Prevention Control and Countermeasure Plan |
| SR | State Route |
| SRA | source receptor area |
| SWIRP | Solid Waste Integrated Resources Plan |
| SWPPP | Storm Water Pollution Prevention Plan |
| SWRCB | State Water Resources Control Board |
| TAC | Toxic Air Contaminant |

| | |
|---|---|
| TCR | The Climate Registry |
| TIE | Terminal Incident Event |
| TIWRP | Terminal Island Wastewater Reclamation Plant |
| USACE | U.S. Army Corps of Engineers |
| USCG | U.S. Coast Guard |
| USEIA | U.S. Energy Information Agency |
| USFWS | U.S. Fish and Wildlife Service |
| UWMP | Urban Water Management Plan |
| VCU | vapor control unit |
| VIE | Vessel Incident Event |
| VMT | Vehicle Miles Traveled |
| VOC | volatile organic compound |
| WDR | Waste Discharge Requirements |
| ZIMAS | Zone Information and Map Access System |

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# APPENDIX A
# Construction and Operational Emission Calculation Summary

## Appendix A

## Berths 148-151 [Phillips 66] Marine Oil Terminal Wharf Improvements Project

# Air Emissions

# Contents

# 1.0 Introduction

This appendix describes in detail the regulatory background, estimation methodology and resulting calculated criteria pollutant and greenhouse gas (GHG) emissions from construction and operation of the Berth 148-151 [Phillips 66] Marine Oil Terminal Wharf Improvements Project (the proposed Project). Emissions were estimated for the CEQA baseline (2019) and full Project operations, as well as emissions for every year during the construction period.

# 2.0 Methodology for Determining Operational Emissions

Operational emissions are associated with the following sources: (1) ocean-going vessels (OGV), which consist of tanker vessels, articulated tug-barges (ATB), and ocean-going barges; (2) bunkering barges; (3) assist tugboats; (4) hauling trucks; (5) onsite sources in the terminals and tank farms; and (6) worker vehicles. These sources generate emissions in the form of CO, VOC, NOx, SOx, $PM_{10}$, $PM_{2.5}$, and diesel PM (DPM) as well as GHGs ($CO_2$, $CH_4$, and $N_2O$). DPM represents particulate exhaust emissions from diesel-fueled internal combustion engines.

Information regarding the activity and characteristics of proposed operational emission sources was obtained primarily from POLA staff, Phillips 66 ("the Tenant") representatives, the 2019 Port Emissions Inventory (LAHD 2020) and the San Pedro Bay Ports Emissions Inventory Methodology Report (LAHD 2019). Peak activity and utilization assumptions used to estimate peak daily operational emissions for comparison to SCAQMD emission thresholds represent upper-bound estimates of activity levels; these levels would occur infrequently, and, therefore, represent a conservative set of assumptions. Annual total activity for 2019 and future annual activity forecasts by project design were used to estimate annual total emissions which are used for GHGs and energy consumption estimates.

Table A-1 summarizes the regulations assumed in the future operational emissions calculations for all scenarios. Current in-place regulations are treated as default project elements rather than mitigation because they represent enforceable rules, with or without proposed project approval.

**Table A-1: Regulations and Agreements Assumed as Part of the Operational Emissions[a]**

| Ocean Going Vessels | Tugboats | Trucks | Miscellaneous Sources[b] |
|---|---|---|---|
| **MARPOL Annex VI:** 0.1% sulfur limit for fuels, beginning in 2015 (200 nm of CA coast). $NO_X$ engine emission limits for new engines.[a] | **EPA Engine Standards for Marine Diesel Engines:** $NO_X$, HC, and CO engine emission standards for new engines. **CARB Regulation to Reduce Emissions** | **EPA Emission Standards for On-Road Trucks**: Increasingly stringent engine standards phased in due to truck turnover. **CARB Heavy Duty** | **SCAQMD Rules and Regulations:** Rule 463 – Organic Liquid Storage. Rule 466.1 – Valves and Flanges. |

| Ocean Going Vessels | Tugboats | Trucks | Miscellaneous Sources[b] |
|---|---|---|---|
| **EPA Engine Standards for Marine Diesel Engines:** $NO_X$, HC, and CO engine emission standards for new engines.[b]<br>**CARB Airborne Toxic Control Measure for Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels Within California Waters and 24 Nautical Miles of the California Coast:** Limits sulfur content for marine gas oil or marine diesel oil to 0.1% sulfur by January 2014.<br>**CAAP Vessel Speed Reduction Program:** 95% compliance to 20 nm.<br>**CARB OGV At-Berth Rule:** Requires controlling emissions from tanker auxiliary engines while hoteling at berth by 2025 for POLA and POLB. | **from Diesel Engines on Commercial Harbor Craft:** Requires that harbor craft engines meet EPA's most stringent emission standards per an accelerated, rule-specified compliance schedule.<br>**California Diesel Fuel Regulation:** 15 ppm sulfur. | **Diesel Vehicle Idling Emission Reduction**: Diesel trucks are subject to idling limits when not being used.<br>**CARB Statewide Truck and Bus Regulation**: Trucks less than 26,000 GVWR are required to replace engines with 2010+ engines by January 2023. Trucks with GVWR greater than 26,000 must meet PM BACT and upgrade to a 2010+ model year emissions equivalent engine pursuant to the rule compliance schedule.<br>**California Diesel Fuel Regulation**: 15-ppm sulfur. | Rule 466.1 – Pressure Relief Devices.<br>Rule 1173 – Control of VOC Leaks and Releases from Components at Petroleum Facilities and Chemical Plants.<br>Rule 1178 – Further Reduction of VOC Emissions from Storage Tanks at Petroleum Facilities. |

[a]This table is not a comprehensive list of all applicable regulations; rather, the table lists key regulations and agreements that substantially affect the emission calculations for the proposed Project.
[b]Emissions from miscellaneous stationary sources at the terminal were obtained from SCAQMD annual emission reports. It is assumed that these sources comply with all applicable SCAQMD stationary source regulations although not all of the listed regulations are necessarily applicable to sources located at the terminals.

## 2.1 Ocean Going Vessels

OGVs operating at the Berths 148-151 terminal consist of tanker vessels of different sizes (Handymax, Panamax, Aframax, etc.), ATBs, ocean-going barges and bunkering barges. ATBs are barges that consist of a tank vessel (barge) and a tug that is positioned in a notch in the stern of the barge, which enables the tug to propel and maneuver the barge. Ocean-going barges are not self-propelled (no main engine) but are instead pushed or pulled by separate tugboats. Bunkering barges are small fuel barges, used at the Berths 148-151 terminal. These barges are loaded with fuel at the terminal, using terminal pumps, and are then pushed/pulled by a tugboat to a vessel in the Port that requires fueling.

OGV emissions were calculated for each engine type in the vessels (boiler, main propulsion engine, auxiliary engine and pumps) and by activity and location where emissions take place. Tankers generate emissions associated with main engine, auxiliary engines and boilers; ATBs generate emissions from main engine (in the articulated tug), auxiliary engines and pumps. OGV barges generate emissions from auxiliary engines and pump. Project emissions associated with bunkering barge activity result from on-board auxiliary engines and the tugboats used to pull/push the barges, bunker pumps are not used during loading at the terminal; instead, the terminal's shore-side pumps are used. Emissions for all vessels were calculated during transit, hoteling at berth, and anchorage. Vessel emissions were analyzed for the 2019 baseline and one future year, assumed 2025 for purposes of the calculation. Exact opening year will depend on actual construction schedule and 2025 would be the earliest possible opening year.

Activity assumptions for the CEQA baseline were based on actual 2019 vessel call records for Berths 148-151. These records provide vessel characteristics, including type of vessel, main engine horsepower, model years, engine tier levels, anchorage information, vessel cruising speeds, etc. Any missing parameters in the call data were backfilled with data from the 2019 Port Emissions Inventory (LAHD 2020).

Information on 2019 vessel calls is based on Wharfingers annual call data and additional input from the Tenant (Phillips 66), while Project forecasted activity was provided by Tenant and is based on the Project Description. OGV activity in 2019 consisted of 229 vessel calls to berth; the annual vessel fleet mix in 2019 included 25 tankers, 57 OGV Barges and ATBs, and 147 bunkering barge visits. During the Project, annual vessel calls are projected to potentially increase, and the mix of vessel will remain similar but will include occasional visits by Aframax class tanker vessels. The forecasted annual activity for the Project includes 40 tankers, 77 OGV Barges and ATBs, and 189 bunkering barge visits. OGV tables section of this appendix includes more detail on annual vessel call characteristics during the baseline and Project.

The baseline (2019) peak day activity consisted of a Handysize tanker discharging at berth for 18 hours and then leaving, a Panamax tanker arriving from anchorage to take its place at berth, and two vessels (an OGV barge and another Handysize tanker) at anchorage during the 24-hr period. Under the proposed Project, a reasonable future peak day would consist of an Aframax tanker discharging at berth for 18 hours and then leaving, a Handysize tanker that was waiting at the anchorage taking its place for the last 5 hours, and an OGV barge at anchorage for 20 hours, followed by 4 hours of transit. This peak day OGV activity during the Project is conservative because it assumes the largest possible tanker at berth and in transit, a tanker and OGV barge at anchorage, and assumes peak-day hoteling emissions are uncontrolled, i.e., the peak day is assumed to be associated with a vessel or terminal Incident Event (VIE/TIE) during which at-berth controls are not used as accommodated under the CARB rule during (CARB, 2020). Activity inputs for OGV calculations are summarized in detail in OGV tables section.

### 2.1.1 Emission Factor Assumptions

- Emission factors for propulsion engines, auxiliary engines, and auxiliary boilers were obtained from the San Pedro Bay Ports Emission Inventory Methodology Report Version 1-2019 (LAHD 2019), which includes criteria pollutant and greenhouse gas emission factors by tier level, fuel sulfur content, and engine type

(medium vs slow speed) for auxiliary engines and propulsion engines, along with boiler emission factors.

- Based on Port's inventory guidance, it was assumed that propulsion engines on tankers are slow speed diesels and medium speed on ATBs; auxiliary engines on tankers and ocean-going barges are medium speed diesels and high speed on ATBs. Ocean-going barges do not have propulsion engines and are pulled by tugboats.
- Emission factors for propulsion and auxiliary engines are dependent upon engine tier, which in turn is dependent upon engine model year. Call records for 2019 include engine tier information for tankers and ATBs and were used to represent the age of vessels calling during the 2019 baseline. In cases where engine tier information was not provided, the age of vessels was determined from keel dates or model year information in the vessel call data records in 2019. It was assumed that the main engine tier is the same as the auxiliary engine tier.
- Per the Project Description, Aframax tankers, not present during 2019 baseline, will visit during the Project. The vessel characteristics for Aframax (propulsion engine size, rated speed, auxiliary engine loads) were obtained from the 2019 Port Emissions Inventory (LAHD 2020). Due to the limited number of Aframax vessel visiting the Port of Los Angeles in the past two years (4 visits between 2018 and 2029), the tier mix for Aframax vessels was obtained from a worldwide vessel database (IHS Fairplay, 2020) to better represent the potential tier mix of future Aframax vessels visits. This approach is conservative as the vessels that have visited the Port in the last two years have all been Tier 2, while the worldwide market mix combines a mixture of older and newer vessels.
- Due to the short time window between the 2019 baseline and start of Project operations (assumed to be 2025), the analysis conservatively assumed that there would be no turnover of older to newer OGVs as of 2025.
- For both baseline and future years, 0.1% fuel sulfur content was assumed for peak day and annual ship calls as per CARB regulation (CARB 2011a).
- Slide valve information (% of vessels with slide valves) was obtained from Wharfingers data for 2019 and assumed constant during the Project. Percent of slide valves in Aframax vessels was assumed to be the same as in Panamax vessels.
- Adjustment factors by percentile load were applied to the Main Engine emission factors to account for different transit speeds; and therefore, propulsion engine loads. Per CARB guidance, load adjustments used represent engines of manufacturer MAN (CARB 2016b). MAN engine load adjustments take into consideration the effects of slide valves. The adjustment factors are summarized in Tables A-15 through A-18 and were obtained from the San Pedro Bay Ports Emission Inventory Methodology Report Version 1-2019 (LAHD 2019).

### 2.1.2 Engine and Boiler Load Assumptions

- 2019 and 2025 maximum main engine power ratings for tankers and ATBs were obtained from 2019 call records and gap-filled with 2019 Port inventory data when necessary.

- 2019 and 2025 average maximum rated speed for all tankers and ATBs was obtained from 2019 Port Inventory data.
- Auxiliary engine and boiler loads for tankers and ATBs during transit, hoteling, and anchorage were obtained from the 2019 Port Inventory.
- ATB pump loads from Berth 167-169 Shell Marine Oil Terminal Wharf Improvement Project DEIR, Appendix B, Table B1.27 (LAHD 2018).
- OGV barge auxiliary engine and pump rated power (kw) were obtained from Berth163-164 [NuStar-Valero] Marine Oil Terminal Wharf Improvements Project Draft IS/MND (LAHD, 2021). Bunkering barge auxiliary engine power (kw) are assumed to be the same as assist tugboats (2019 Port Emissions Inventory, Table 4.2).
- Load factors from CARB's Barge and Dredge Off-road Model (CARB 2011c) were applied to auxiliary engine and pumps in OGV barges, and auxiliary engines in bunkering barges.
- During transit, main engine load factors were determined using the propeller law, which states that the engine load factor is proportional to the speed of the ship cubed, as shown in Equation 1.

$$Load\ [kw] = \left(\frac{Vessel\ speed\ in\ zone}{Max\ Rated\ Speed}\right)^3 x\ Max.Power\ Rating\ [kW] \quad \text{(eq. 1)}$$

  - For the 2019 and 2025 analyses without mitigation, speeds by for zones "40-20 nautical miles" and "20 nm to precautionary zone" were obtained from the POLA VSRP Compliance Reports for 2019. Speeds for other zones, such as precautionary zone and during maneuvering were obtained from similar Port Projects (LAHD 2021).
  - Vessel transit speeds were used to calculate the duration of the transit and the energy consumed in kw-hrs. Energy consumed was combined with the appropriate emission factor to calculate emissions.
  - A mitigated scenario was calculated to account for mitigation measure MM AQ-1 which affects transit speeds from PZ and 40nm and therefore, transit emissions from main engine and transit durations. Emissions were adjusted accordingly based on revised speed-based loads.

    *MM AQ-1 Vessel Speed Reduction*. Emissions from visiting vessels will be reduced by requiring all Aframax-class vessels calling on the Phillips 66 marine oil terminal to maintain in-bound and out-bound speeds of no greater than 9 nautical miles per hour (knots) between the terminal and the outer boundary of the South Coast Air Basin, i.e., 40 nautical miles seaward of Point Fermin

## 2.1.3 Hoteling Assumptions

- In 2019 operations, during hoteling at berth, ships were assumed to turn off main engines but leave the auxiliary engines and boilers running for all visits.
- Hoteling durations used in the calculation of annual emissions were estimated from vessel departure and arrival time stamps in the 2019 call records provided by the Tenant. It was assumed the arrival time stamp indicates the start of hoteling. The departure or shift time stamps indicate when the vessel stops hoteling and starts to move towards the new location, whether that is an anchorage site or leaving the Port. The average hoteling durations at berth or anchorage per specific ship category were calculated by using the provided call data from calls that have complete calls. The averages were weighted by the number of calls. For ship categories for which no valid data are available from call records, the average hoteling durations from the 2019 Port Inventory were used (LAHD 2020).
- The future year 2025 hoteling and anchorage durations at berth or anchorage per specific ship category were assumed equivalent to those in the baseline. Aframax average hoteling duration obtained from Berth163-164 [NuStar-Valero] Marine Oil Terminal Wharf Improvements Project Draft IS/MND (LAHD 2021).
- Peak day hoteling during the Project is conservatively assumed uncontrolled per the CARB At-Berth Rule's Vessel or Terminal Incident Event (VIE/TIE) exemptions, during which at-berth controls are not used.
- For annual GHG emissions estimates, bonnet controls are assumed to be used during hoteling, per the CARB At-Berth Rule. This is a conservative assumption for GHGs because bonnet controls do not reduce vessel GHG emissions and GHG emissions associated with the bonnet generator are added to the annual totals.
- Additional activity inputs for OGV calculations are summarized in detail in the OGV tables section.

## 2.1.4 Additional Assumptions

- Unlike tanker vessels, it was assumed that ATBs have no boilers, per 2019 Port Inventory, but instead have two pumps which are used for loading or unloading product while hoteling at berth.
- Ship transit criteria pollutant emissions were calculated from berth to the edge of the South Coast Air Basin (SCAB) over-water boundary (roughly a 52 nautical-mile one-way trip). Greenhouse gas transit emissions were calculated from berth out to the state over-water boundary, about 180 nautical miles from shore.
- Some arriving vessels are unable to proceed directly to the berth but instead must wait at a designated anchorage point either inside or outside the breakwater until given clearance to proceed to the berth. Average anchorage frequency and duration was based on 2019 call records. When data were missing from call records, anchorage durations were backfilled from average anchorage duration from available calls. Similar to hoteling, the main engine is assumed to be turned off during anchorage while the auxiliary engines and boilers are assumed to remain running.

- The distances of each of the 4 transit zones were taken from the Port methodology guidance (LAHD 2019). ATBs and ocean-going barges are assumed to take the same routes as tankers. These distances are unlikely to change with time and were assumed to remain the same during the Project.
- Bunkering barges, used for fueling vessels, are assumed to remain within the Port boundaries and not to go beyond the precautionary zone
- 2019 peak day emissions were derived by analyzing emissions for the consecutive 24-hour period with a reasonable high activity level within the harbor based on 2019 call records. 2025 peak day emissions were based on Project design basis and anticipated activity.

## 2.2 Tugboats (Harbor Craft)

During operations, tugboats are used to assist tankers, ATBs, and ocean-going barges while maneuvering and transiting in certain zones. The assumptions below were applied to estimate peak day and annual emissions. Activity and emission factors for assist tugboats are summarized in OGV tables section.

- Tugboats are used to assist OGVs and ATBs during transit in the precautionary zone and harbor and during maneuvering
- In general, two tugboats are needed in maneuvering/harbor transit for tankers; ATBs only need one tugboat because another tug is already attached to the ATB; bunkering barges are pushed short distances in the Port and only require one tugboat. One tugboat is needed in the Precautionary zone for all vessels; one tugboat is needed beyond the Precautionary zone out to 40nm for OGV Barge transit.
- Tugboat transit time was assumed to equal the average of vessel call transit times in the harbor which are a function of distance over speed, multiplied by 1.3 factor to account for tug movement to and from base (LAHD 2019).
- Assist tugboat main and auxiliary average engine sizes and load factors were obtained from the 2019 Port Emissions Inventory (LAHD 2020). The average model year of auxiliary engine and main engine in the Port's assist tug fleet is from the 2019 Port Emissions Inventory.
- Tugboat emission factors are based CARB harbor craft emissions inventory database (CARB 2011b). The applicable engine zero hour and deterioration rate were determined based on average model year, age, and size of engine (kw) operating in the Port, as well as the CARB harbor craft compliance schedule (CARB 2009). It should be noted that the analysis conservatively assumes that tugboat model years would not change from 2019 to 2025, unless required by the existing CARB harbor craft compliance schedule. Based on this, a 2007 main propulsion engine is assumed to turn over in 2020 based on the CARB rule schedule.
- $CO_2$ and $N_20$ emission factors are from IVL: Methodology for Calculating Emissions from Ships: Update on Emission Factors, 2004, also summarized in POLA 2019 Emissions Inventory, Appendix B. CH4 is 2% of HC, per IVL study.

- The fuel sulfur content was assumed to be 15 ppm for all analysis years, in accordance with California Diesel Fuel Regulation (CARB 2010).
- Peak day activity for tugs is based on vessel maneuvering transit durations during the selected peak day as described above.

## 2.3 Trucks and Worker Vehicles

Tanker trucks are used to transport product from the terminal to local destinations (i.e., within 15 miles of the terminal). Truck activity and emission factors are summarized in Truck tables section of this appendix. Other assumptions regarding on-road trucks include:

- The average on-way trip travel distance for tanker trucks was assumed to be 15 miles off-site. Number of annual truck trips in 2019 was provided by Tenant and represents 3-year average operations (2017-2019). Trucks operate year around. Peak day number of truck trips is assumed the same as an average day. Number of truck trips is not expected to change during the Project.

- Worker vehicle emissions consist of light duty on-road vehicles used by workers commuting to and from the terminal. Worker trips consist of one employee that visits the site daily. It is assumed a commute distance of 50 miles each way. 2025 activity is not anticipated to change from the 2019 baseline. Emission factors were obtained from EMFAC2021. The South Coast basin default light duty vehicle fleet mix was used to represent worker vehicle.

- Criteria pollutant and GHG emissions from tanker trucks were calculated using composite emission factors from EMFAC2021 model represent diesel heavy diesel trucks. The EMFAC fleet mix distributions for Port of Los Angeles trucks (T7 POLA vehicle category) for years 2019 (baseline) and 2025 (Project) were used. Project emissions reflect CARB's Truck and Bus Rule, describe in Table A-1.

- $PM_{10}$ and $PM_{2.5}$ emissions from brake wear and tire wear were calculated and added to the exhaust emissions. Brake and tire wear emissions were calculated using EMFAC2021. Road dust emissions were not estimated as number of truck trips are not expected to change during the Project and paved road dust emission factors would not change as a result of the Project or upcoming regulations.

## 2.4 On-Site Sources

Miscellaneous landside sources used at the terminal consist of evaporative sources, particularly in the tank farm, that generate VOC emissions. These sources include:

- Tank degassing;
- Fugitive emissions from components in tank farm piping;
- Evaporative emissions from storage tanks; and
- Other minor process sources.

The criteria pollutant annual mass emissions in 2019 for these sources were taken directly from the B148-151 SCAQMD Annual Emission Report (AER) 2019 (Phillips 66 2020a). The AER does not identify GHG emissions, any fraction of methane in evaporative emissions is expected to be negligeable. 2025 future year emissions were scaled from 2019 emissions based on the change in barrels of product throughput between the baseline and the Project.

# 3.0 Methodology for Determining Construction Emissions

Demolition and reconstruction of Berths 148-151 Phillips 66 wharf structures in compliance with the State of California's Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS) as described in the Project Description of this MND, would result in emissions from: 1) Engine exhaust from off-road construction equipment; 2) Engine exhaust from harbor craft (assist tugs and crew boats) used to position in-water construction equipment; 3) Engine exhaust from construction and worker vehicles; 4) Road dust from construction vehicles; and 5) Fugitive dust associated with on-site handling of demolition debris and soil.

Table A-2 summarizes regulations affecting construction equipment emission factors. Current in-place regulations are treated as default project elements rather than mitigation because they represent enforceable rules, with or without proposed project approval.

**Table A-2: Regulations and Agreements Assumed in the Construction Emissions Calculations**

| Off-road Construction Equipment | On-Road Trucks | Tugboats/Harbor Craft | Fugitive Dust |
|---|---|---|---|
| **EPA Emission Standards for Nonroad Diesel Engines**: Tier 1, 2, 3, and 4 standards gradually phased in over all years due to normal construction equipment fleet turnover.<br>**CARB In-Use Off-road Diesel Vehicle Regulation:** Off-road mobile equipment powered by diesel engines 25 hp or larger are required to meet the fleet average or BACT requirements for $NO_X$ and PM emissions.<br>**California Diesel Fuel Regulation**: 15-ppm sulfur.<br>**CARB Portable Diesel-Fueled Engines Air Toxic Control Measure (ATCM)**: Portable engines having a maximum rated horsepower of 50 bhp and greater and fueled with diesel must meet weighted fleet average PM emission standards. | **EPA Emission Standards for On-Road Trucks**: Increasingly stringent engine standards phased in due to truck turnover.<br>**CARB Heavy Duty Diesel Vehicle Idling Emission Reduction**: Diesel trucks are subject to idling limits when not being used to power concrete mixing, water pumps, etc.<br>**CARB Statewide Truck and Bus Regulation**: Trucks less than 26,000 GVWR are required to replace engines with 2010+ engines by January 2023. Trucks with GVWR greater than 26,000 must meet PM BACT and upgrade to a 2010+ model year emissions equivalent engine pursuant to the rule compliance schedule.<br>**California Diesel Fuel Regulation**: 15-ppm sulfur. | **California Diesel Fuel Regulation:** 15-ppm sulfur.<br>**CARB Regulation to Reduce Emissions from Diesel Engines on Commercial Harbor Craft**: Harbor craft are subject to engine replacement/retrofit schedule set forth by CARB. | **SCAQMD Rule 403 Compliance**: 61% reduction in fugitive dust via watering two to three times per day. |

Note: This table is not a comprehensive list of all applicable regulations; rather, the table lists key regulations and agreements that substantially affect the emission calculations for the proposed Project.

The construction of the Phillips 66 Marine Oil Terminal Wharf Improvements Project is projected to consist of the phases and tasks shown in the construction data section at the end of this Appendix, based on construction design information provided by the Tenant and POLA. For each phase, a list of equipment and vehicles was estimated to be required to complete tasks comprising the phase. The list of equipment and vehicles for every task make up the sources of emissions analyzed here as described in sections 3.1 through 3.4. Parameters needed to calculate emissions for each source type are explained below.

# 3.1 Off-road equipment

Off-road equipment used during construction of the Project includes diesel-fueled cranes, forklifts, generators, and excavators, among many other equipment types. These equipment pieces are assumed to be diesel-fueled as is most common. The list of equipment, hours of operation, and equipment size (horsepower) assumed for each construction task was primarily derived from the project design information provided by Tenant per the Project Description and POLA Engineering planning documents. Other activity parameters such load factors were obtained for equivalent equipment from Appendix D, of CAPCOA's California Emissions Estimator Model (CalEEMod) (CAPCOA 2017). Tabular data and assumptions used are summarized at the end of this Appendix.

Emissions of VOC, $NO_X$, CO, SOx, $PM_{10}$, and $PM_{2.5}$ from diesel-powered construction equipment were calculated using emission factors for specific USEPA off-road equipment engine tiers (CAPCOA 2017). The analysis assumes all Tier 4 land-based off-road engines and Tier 3 marine-based engines (LAHD 2019). These emission factors in grams (of a specific pollutant or fuel) per horsepower hours were used to calculate peak daily equipment emissions by multiplying the emission factors by the estimated daily hours of activity and the horsepower and load factor of each piece of equipment.

# 3.2 Harbor Craft

Tugboats would be used during construction to assist in pile driving and construction of structures in or near the water. Tugboat main and auxiliary engine sizes were provided by the Tenant (Phillips 66, 2020b). Engine model year and load factors were obtained from the 2019 Port Emissions Inventory (LAHD 2020). Tugboat emission factors for all criteria pollutants except SOx were based on USEPA Marine Compression-Ignition Engine Standards (USEPA 2020); the use of these emission factors is conservative because the factors reflect the highest allowable emission factors.

SOx emissions are dependent on the sulfur content of fuel. Fuel sulfur content limits for California harbor craft are specified in the California Diesel Fuel Regulation (CARB 2010). The required fuel sulfur content for Port tugboats has been 15 ppm since September 1, 2006. Brake-specific fuel consumption rates were used to estimate fuel consumption and SOx emissions for tugboats (CARB 2012).

# 3.3 Construction Trucks and Worker Vehicles

Construction trucks are used for hauling materials and equipment to/from the construction site. Exhaust emissions from on-road, heavy-duty diesel trucks during Project construction were calculated using emission factors generated by CARB's

EMFAC2017 on-road mobile source emission factor model, housed within CalEEMod model, for "T7 CAIRP construction" heavy duty diesel trucks representative of the SCAB fleet (CAPCOA 2017, CARB 2018), activity provided by the Tenant, and transit distances provided by the Tenant.

Exhaust emissions from vendor and delivery trucks during Project construction were calculated using EMFAC2017 emission factors for "MDV" vehicles representative of the SCAB fleet (CARB 2018), activity provided by the Tenant, and transit distances provided by the Tenant.

Worker vehicle emissions consist of light duty on-road vehicles used by workers commuting to and from the terminal. Emissions associated with off-site transit of worker vehicles were also quantified using EMFAC2017 emission factors, activity provided by the Tenant, and an average transit distance identified in CalEEMod (CAPCOA 2017). On-site transit and on-site idling from worker vehicles were assumed to be negligible.

The EMFAC2017 model output shows that, on a per-mile basis, emission factors will steadily decline in future years as older vehicles are replaced with newer, cleaner vehicles that meet the required state and federal on-road engine emission standards, more substantially so in 2023 due to the California's Truck and Bus Rule.

In addition to engine exhaust emissions, $PM_{10}$ and $PM_{2.5}$ emissions from paved road dust were calculated and added to the exhaust emissions. Road dust emission factors for on-terminal driving, off-terminal local streets, and freeways followed CARB's methodology to estimate entrained road dust emission factors using EPA's Compilation of Air Pollutant Emission Factors AP-42 (USEPA 2011) and CARB silt loading values for Los Angeles county roadways in its November 2016 methodology document for estimating entrained road dust emissions from paved roads (CARB 2016).

Activity parameters and emission factors for construction vehicle emission calculations are summarized at the end of this Appendix.

## 3.4 On-Site Fugitive Emissions

Emissions associated with demolition debris, soil handling, and grading activities were quantified using debris and soil volumes anticipated by the tenant during construction activities. Fugitive dust emission factors associated with demolition debris handling were obtained from CalEEMod, Appendix A (CAPCOA 2021). AP-42, Chapter 13.2.4 was used to calculate emission factors for soil handling (USEPA 2006). Grading emission factors were obtained from Ap-42, Chapter 11.9 (USEPA 1998) and CalEEMod (CAPCOA 2021). The analysis accounts for watering three times per day, per SCAQMD Rule 403 requirements, which would result in control of fugitive dust on site by 61%, per WRAP Fugitive Dust Handbook (WRAP 2006).

VOC emissions associated with asphalt paving were obtained from CalEEMod, Appendix A (CAPCOA 2021).

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# Construction Emissions Assumptions and Calculation Tables

## Phillips66 MOTEMS Construction Emissions

**Project:** **Phillips66 MOTEMS**
**Year:** 2021-2026

**Key tables**

**Table 1. Peak Daily Construction Emissions Without Mitigation - Proposed Project**

| Source Category | PM10 total (lb/day) | PM2.5 total (lb/day) | NOX (lb/day) | SOX (lb/day) | CO (lb/day) | VOC (lb/day) |
|---|---|---|---|---|---|---|
| **2021** | | | | | | |
| Offroad Construction Equipment | 0.0 | 0.0 | 1.0 | 0.0 | 20.7 | 0.5 |
| Onroad Construction Vehicles | 3.4 | 1.2 | 40.2 | 0.2 | 2.3 | 0.1 |
| Marine Equipment | 0.6 | 0.6 | 12.5 | 0.0 | 7.6 | 0.7 |
| Fugitive Emissions | 7.7 | 1.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total Construction Year 2021** | **11.7** | **2.9** | **53.7** | **0.2** | **30.5** | **1.3** |
| **CEQA Impacts** | | | | | | |
| *Significance Threshold* | *150* | *55* | *100* | *150* | *550* | *75* |
| **Significant?** | **No** | **No** | **No** | **No** | **No** | **No** |
| **2022** | | | | | | |
| Offroad Construction Equipment | 0.2 | 0.2 | 21.3 | 0.2 | 99.8 | 2.4 |
| Onroad Construction Vehicles | 2.1 | 0.7 | 18.2 | 0.1 | 4.6 | 0.2 |
| Marine Equipment | 1.2 | 1.1 | 23.4 | 0.0 | 7.6 | 0.7 |
| Fugitive Emissions | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total Construction Year 2022** | **3.6** | **2.0** | **62.9** | **0.3** | **112.0** | **3.2** |
| **CEQA Impacts** | | | | | | |
| *Significance Threshold* | *150* | *55* | *100* | *150* | *550* | *75* |
| **Significant?** | **No** | **No** | **No** | **No** | **No** | **No** |
| **2023** | | | | | | |
| Offroad Construction Equipment | 0.4 | 0.4 | 49.1 | 0.3 | 162.6 | 4.1 |
| Onroad Construction Vehicles | 1.7 | 0.5 | 6.7 | 0.1 | 7.7 | 0.2 |
| Marine Equipment | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Fugitive Emissions | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total Construction Year 2023** | **2.4** | **1.0** | **55.8** | **0.3** | **170.3** | **4.3** |
| **CEQA Impacts** | | | | | | |
| *Significance Threshold* | *150* | *55* | *100* | *150* | *550* | *75* |
| **Significant?** | **No** | **No** | **No** | **No** | **No** | **No** |
| **2024** | | | | | | |
| Offroad Construction Equipment | 0.2 | 0.2 | 52.8 | 0.2 | 132.1 | 3.4 |
| Onroad Construction Vehicles | 1.0 | 0.3 | 0.2 | 0.0 | 3.6 | 0.1 |
| Marine Equipment | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Fugitive Emissions | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total Construction Year 2024** | **1.2** | **0.5** | **53.0** | **0.2** | **135.7** | **3.5** |
| **CEQA Impacts** | | | | | | |
| *Significance Threshold* | *150* | *55* | *100* | *150* | *550* | *75* |
| **Significant?** | **No** | **No** | **No** | **No** | **No** | **No** |
| **2025** | | | | | | |
| Offroad Construction Equipment | 0.2 | 0.2 | 50.2 | 0.2 | 118.3 | 3.2 |
| Onroad Construction Vehicles | 0.9 | 0.3 | 0.1 | 0.0 | 2.5 | 0.0 |
| Marine Equipment | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Fugitive Emissions | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **2025** | **1.1** | **0.5** | **50.3** | **0.2** | **120.8** | **3.2** |
| **CEQA Impacts** | | | | | | |
| *Significance Threshold* | *150* | *55* | *100* | *150* | *550* | *75* |
| **Significant?** | **No** | **No** | **No** | **No** | **No** | **No** |
| **2026** | | | | | | |
| Offroad Construction Equipment | 0.0 | 0.2 | 22.6 | 0.1 | 69.6 | 1.7 |
| Onroad Construction Vehicles | 0.0 | 0.1 | 0.1 | 0.0 | 2.4 | 0.0 |
| Fugitive Emissions | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Marine Equipment | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total Construction Year 2026** | **0.7** | **0.3** | **22.8** | **0.1** | **72.0** | **1.8** |
| **CEQA Impacts** | | | | | | |
| *Significance Threshold* | *150* | *55* | *100* | *150* | *550* | *75* |
| **Significant?** | **No** | **No** | **No** | **No** | **No** | **No** |

**Notes:**

[1] Onroad Construction Vehicle emissions include exhaust, road dust, tire wear and brake wear emissions.

[2] Fugitive emissions include construction dust.

[3] Emissions might not add precisely due to rounding.

[4] Emissions might not add precisely due to rounding.

**Table 2. Onsite Peak Daily Construction Emissions Without Mitigation - Proposed Project**

| Year | Peak Day Emissions (lb/day) - Residendtial | | | | Peak Day Emissions (lb/day) - Occupational | |
|---|---|---|---|---|---|---|
| | PM10 | PM2.5 | NO2 | CO | NO2 | CO |
| 2021 | 8.3 | 1.7 | 13.5 | 28.4 | 13.5 | 28.4 |
| 2022 | 1.5 | 1.3 | 44.8 | 107.6 | 44.8 | 107.6 |
| 2023 | 0.8 | 0.5 | 49.1 | 162.8 | 49.1 | 162.8 |
| 2024 | 0.2 | 0.2 | 52.8 | 132.1 | 52.8 | 132.1 |
| 2025 | 0.2 | 0.2 | 50.2 | 118.3 | 50.2 | 118.3 |
| 2026 | 0.6 | 0.2 | 22.6 | 69.6 | 22.6 | 69.6 |
| *LST Threshold* | *158* | *75* | *142* | *7,558* | *57* | *585* |
| **Significance Determination** | No | No | No | No | No | No |

**Notes:**

[1] PM10 and PM2.5 LST thresholds are relevant to sensitive receptors reasonably likely to be present for 24 hours or more. Since off-site worker receptors are not expected to be present for this duration, significance for particulates has been omitted for off-site worker receptors.

[2] SCAQMD LST thresholds are based on:

Daily area disturbed of 1 acre for constructionactivities.

500-meter separation distance to the closest residential/sensitive receptor. This results in a conservative threshold because the actual separation distance is over 1,000 meters at the California Yacht Marina to the northeast.

25-meter separation distance to the closest off-site worker receptor.

Source Receptor Area: 4.

**Table 3. Annual GHG Emissions Without Mitigation - Proposed Project**

| Source Category | CO2e (mty) |
|---|---|
| **2021** | |
| Offroad Construction Equipment | 49 |
| Onroad Construction Vehicles | 94 |
| Marine Equipment | 79 |
| Fugitive Emissions | 0 |
| **Total Construction Year 2021** | **222** |
| **2022** | |
| Offroad Construction Equipment | 534 |
| Onroad Construction Vehicles | 301 |
| Marine Equipment | 121 |
| Fugitive Emissions | 0 |
| **Total Construction Year 2022** | **956** |
| **2023** | |
| Offroad Construction Equipment | 537 |
| Onroad Construction Vehicles | 171 |
| Marine Equipment | 6 |
| Fugitive Emissions | 0 |
| **Total Construction Year 2023** | **714** |
| **2024** | |
| Offroad Construction Equipment | 237 |
| Onroad Construction Vehicles | 51 |
| Marine Equipment | 0 |
| Fugitive Emissions | 0 |
| **Total Construction Year 2024** | **288** |
| **2025** | |
| Offroad Construction Equipment | 207 |
| Onroad Construction Vehicles | 40 |
| Marine Equipment | 0 |
| Fugitive Emissions | 0 |
| **Total Construction Year 2025** | **247** |
| **2026** | |
| Offroad Construction Equipment | 90 |
| Onroad Construction Vehicles | 16 |
| Marine Equipment | 0 |
| Fugitive Emissions | 0 |
| **Total Construction Year 2026** | **105** |
| *Amortized Construction* | *84* |
| *Significance Threshold* | *10,000* |
| **Significant?** | **No** |

**Notes:**

[1] Ammortized over 30 years (life of project).

**Table 4. Construction Schedule**

| Task ID | Proposed Project | Start Date | End Date | Duration (days) | Days/Week |
|---|---|---|---|---|---|
| **1** | **Phase 1 - Berths 148-149 Berthing System Upgrade & Structural Repairs** | | | | |
| 1a | | 1/1/2021 | 3/1/2021 | 42 | 5 |
| 1b | | 1/15/2021 | 1/29/2021 | 11 | 5 |
| 1c | | 1/1/2021 | 3/1/2021 | 42 | 5 |
| **2** | **Phase 2 - Berth 150-151 Onshore Piping Demolition** | | | | |
| 2a | | 2/1/2021 | 3/8/2021 | 26 | 5 |
| **3** | **Phase 3 - Berth 150-151 Demolition** | | | | |
| 3a | | 7/1/2021 | 12/31/2021 | 132 | 5 |
| **4** | **Phase 4 - Berth 150-151 Marine Construction** | | | | |
| 4a | | 1/1/2022 | 12/31/2022 | 260 | 5 |
| **5** | **Phase 5 - Shoreside Construction** | | | | |
| 5a | Site Prep - Remove/Relocate Subsurface Structures | 1/3/2022 | 1/24/2022 | 16 | 5 |
| 5b | Site Prep - Tie-ins and Temporary Piping | 1/3/2022 | 1/24/2022 | 16 | 5 |
| 5c | Backland Excavation (Pipe Trench) | 2/15/2022 | 4/26/2022 | 51 | 5 |
| 5d | Concrete Trench Install | 3/15/2022 | 5/17/2022 | 46 | 5 |
| 5e | Landside Piles | 5/1/2022 | 5/16/2022 | 11 | 5 |
| 5f | Misc. Foundations | 6/1/2022 | 6/22/2022 | 16 | 5 |
| 5g | Pipe Bridge Assembly | 11/1/2022 | 11/29/2022 | 21 | 5 |
| 5h | Shoreside Piping Install | 6/1/2022 | 9/21/2022 | 81 | 5 |
| 5i | Hose Tower Assembly | 2/1/2023 | 3/1/2023 | 21 | 5 |
| 5j | Hose Tower Piping | 4/1/2023 | 5/20/2023 | 35 | 5 |
| 5k | Firewater System | 12/1/2022 | 12/31/2023 | 282 | 5 |
| 5l | Electrical and Controls | 2/1/2023 | 7/15/2023 | 118 | 5 |
| 5m | Shoreside Piping Demo (Decommission B148/149) | 8/15/2023 | 1/23/2024 | 116 | 5 |
| **6** | **Phase 6 - Berth 150-151 Clean-up Dredging (2,000 CY)** | | | | |
| 6a | | 12/1/2022 | 12/8/2022 | 7 | 7 |
| **7** | **Phase 7 - Marine Terminal Electrical Infrastructure Project** | | | | |
| 7a | Site Prep & Civil (Foundations) | 4/1/2022 | 5/30/2022 | 42 | 5 |
| 7b | Electrical Install w/ Supports | 6/1/2022 | 12/30/2022 | 153 | 5 |
| **8** | **Phase 8 - Berth 148-149 Bulkhead Wall Repair** | | | | |
| 8a | | 1/1/2023 | 4/1/2023 | 65 | 5 |
| **9** | **Phase 9 - Tank Farm Capacity Restoration (Tanks 218, 267, 268, 216)** | | | | |
| 9a | Demolition / Hauling | 7/1/2023 | 7/7/2023 | 4 | 4 |
| 9b | Site Preparation / Ring Wall | 7/8/2023 | 7/22/2023 | 8 | 4 |
| 9c | Demolition / Hauling | 7/22/2023 | 8/5/2023 | 8 | 4 |
| 9d | Tank Refurbishment | 7/22/2023 | 9/2/2023 | 24 | 4 |
| 9e | Site Preparation / Ring Wall | 8/5/2023 | 9/2/2023 | 16 | 4 |
| 9f | Tank Refurbishment | 9/3/2023 | 3/20/2024 | 115 | 4 |
| 9g | Demolition / Hauling | 9/17/2023 | 10/1/2023 | 8 | 4 |
| 9h | Site Preparation / Ring Wall | 9/30/2023 | 10/28/2023 | 16 | 4 |
| 9i | Demolition / Hauling | 11/26/2023 | 12/10/2023 | 8 | 4 |
| 9j | Site Preparation / Ring Wall | 12/23/2023 | 1/27/2024 | 20 | 4 |
| 9k | Tank Refurbishment | 3/21/2024 | 6/13/2024 | 49 | 4 |
| **10** | **Phase 10 - Tank Farm Capacity Restoration (Tanks 375, 379, 413, 259)** | | | | |
| 10a | Demolition / Hauling | 7/1/2024 | 7/7/2024 | 4 | 4 |
| 10b | Site Preparation / Ring Wall | 7/8/2024 | 7/22/2024 | 9 | 4 |
| 10c | Tank Refurbishment | 7/22/2024 | 10/7/2024 | 45 | 4 |
| 10d | Demolition / Hauling | 9/16/2024 | 9/22/2024 | 4 | 4 |
| 10e | Site Preparation / Ring Wall | 9/16/2024 | 9/30/2024 | 9 | 4 |
| 10f | Tank Refurbishment | 10/7/2024 | 10/28/2024 | 13 | 4 |
| 10g | Tank Refurbishment | 11/1/2024 | 12/25/2024 | 31 | 4 |
| 10h | Demolition / Hauling | 12/2/2024 | 12/8/2024 | 4 | 4 |
| 10i | Site Preparation / Ring Wall | 12/9/2024 | 12/23/2024 | 9 | 4 |
| 10j | Tank Refurbishment | 12/23/2024 | 1/13/2025 | 13 | 4 |
| 10k | Tank Refurbishment | 1/13/2025 | 3/10/2025 | 33 | 4 |
| 10l | Demolition / Hauling | 2/17/2025 | 2/23/2025 | 4 | 4 |
| 10m | Site Preparation / Ring Wall | 2/24/2025 | 3/10/2025 | 9 | 4 |
| 10n | Tank Refurbishment | 3/10/2025 | 3/31/2025 | 13 | 4 |
| 10o | Tank Refurbishment | 4/1/2025 | 6/17/2025 | 45 | 4 |
| **11** | **Phase 11 - Tank Farm Capacity Restoration (Tanks 260, 346, 347)** | | | | |
| 11a | Demolition / Hauling | 7/1/2025 | 7/7/2025 | 4 | 4 |
| 11b | Site Preparation / Ring Wall | 7/8/2025 | 7/22/2025 | 9 | 4 |
| 11c | Tank Refurbishment | 7/22/2025 | 10/28/2025 | 57 | 4 |
| 11d | Demolition / Hauling | 10/28/2025 | 11/4/2025 | 5 | 4 |
| 11e | Site Preparation / Ring Wall | 11/4/2025 | 11/18/2025 | 9 | 4 |
| 11f | Tank Refurbishment | 11/18/2025 | 2/24/2026 | 57 | 4 |
| 11g | Demolition / Hauling | 2/24/2026 | 3/3/2026 | 5 | 4 |
| 11h | Site Preparation / Ring Wall | 3/2/2026 | 3/16/2026 | 9 | 4 |
| 11i | Tank Refurbishment | 3/16/2026 | 6/22/2026 | 57 | 4 |
| **12** | **Phase 12 - Sliver Lots Grading and Paving** | | | | |
| 12a | Grading | 6/23/2026 | 6/28/2026 | 4 | |
| 12b | Paving | 7/1/2026 | 7/14/2026 | 10 | |

**Table 5. Construction Equipment, Tasks ID 1-11**

| | | | | Construction Equipment | | | | Vehicles | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Task ID | Equipment | General Equip Type | Type (offroad/onroad /marine) | Number of Pieces (haul truck total loads, delivery truck total loads, workers/day) | Utilization (hr/day) | Total days | Horsepower (hp) | Demolition Debris (ton) | Soil Import/Export (ton) | Vehicle Trips (1-way trips/day) | Vehicle Trips Total (1-way trips) | Transit Distance (1-way miles) - Offsite | VMT (mi/day) - Offsite | VMT (total) - Offsite |
| **1** | **Phase 1 - Berths 148-149 Berthing System Upgrade & Structural Repairs** | | | | | | | | | | | | | |
| 1a | 200T Crane- Manitowoc 777 | Cranes | offroad | 1 | 8 | 42 | 253 | | | | | | | |
| 1b | Vibratory Hammer- HPSI500 | Other Construction Equipment | offroad | 1 | 1 | 11 | 400 | | | | | | | |
| 1b | Impact Hammer- D46 | Other Construction Equipment | offroad | 1 | 1 | 11 | 90 | | | | | | | |
| 1c | Tugboat Generator | Tugboat Auxiliary | marine | 1 | 8 | 42 | 60 | | | | | | | |
| 1c | Tugboat Deck Winch | Tugboat Auxiliary | marine | 1 | 1 | 42 | 160 | | | | | | | |
| 1c | Tugboat Propulsion | Tugboat Propulsion | marine | 1 | 1 | 42 | 1200 | | | | | | | |
| 1c | Crew Boat / Skiff Auxiliary | Crew Boat Auxiliary | marine | 1 | 4 | 42 | 50 | | | | | | | |
| 1c | Crew Boat / Skiff Propulsion | Crew Boat Propulsion | marine | 1 | 1 | 42 | 564 | | | | | | | |
| 1c | 185 CFM Air Compressor | Air Compressors | offroad | 1 | 2 | 42 | 50 | | | | | | | |
| 1c | Barge Deck Winch (Spuds) | Other Construction Equipment | offroad | 1 | 1 | 42 | 250 | | | | | | | |
| 1c | 400A Welding Machine | Welders | offroad | 1 | 4 | 42 | 20 | | | | | | | |
| 1c | Haul Trucks | Haul Trucks | onroad | 6 | | 2 | | 112 | | 6 | 12 | 200 | 1,200 | 2,400 |
| 1c | Delivery Trucks | Delivery Trucks | onroad | 20 | | 5 | | | | 8 | 40 | 50 | 400 | 2,000 |
| 1c | Workers | Workers | onroad | 15 | | 42 | | | | 30 | 1,260 | 14.7 | 441 | 18,522 |
| **2** | **Phase 2 - Berth 150-151 Onshore Piping Demolition** | | | | | | | | | | | | | |
| 2a | air compressor | Air Compressors | offroad | 1 | 6 | 26 | 75 | | | | | | | |
| 2a | 45-ton crane | Cranes | offroad | 1 | 5 | 26 | 200 | | | | | | | |
| 2a | diesel generator | Generator Sets | offroad | 1 | 6 | 26 | 200 | | | | | | | |
| 2a | dump truck | Off-Highway Trucks | offroad | 1 | 4 | 26 | 380 | | | | | | | |
| 2a | vacuum truck | Off-Highway Trucks | offroad | 1 | 2 | 26 | 380 | | | | | | | |
| 2a | forklift/backhoe | Tractors/Loaders/Backhoes | offroad | 2 | 6 | 26 | 100 | | | | | | | |
| 2a | welding truck/rig | Welders | offroad | 1 | 7 | 26 | 50 | | | | | | | |
| 2a | pick-up truck | pick-up truck | onroad | 5 | 2 | 26 | 280 | | | | | | 250 | 6,500 |
| 2a | Haul Trucks | Haul Trucks | onroad | 4 | | 10 | | 36 | | 1 | 8 | 30 | 30 | 240 |
| 2a | Delivery Trucks | Delivery Trucks | onroad | | | 1 | | | | 0 | 0 | | 0 | 0 |
| 2a | Workers | Workers | onroad | 10 | | 26 | | | | 20 | 520 | 14.7 | 294 | 7,644 |
| **3** | **Phase 3 - Berth 150-151 Demolition** | | | | | | | | | | | | | |
| 3a | Tugboat Generator | Tugboat Auxiliary | marine | 1 | 8 | 132 | 60 | | | | | | | |
| 3a | Tugboat Deck Winch | Tugboat Auxiliary | marine | 1 | 1 | 132 | 160 | | | | | | | |
| 3a | Tugboat Propulsion | Tugboat Propulsion | marine | 1 | 1 | 132 | 1200 | | | | | | | |
| 3a | Crew Boat / Skiff Auxiliary | Crew Boat Auxiliary | marine | 1 | 4 | 132 | 50 | | | | | | | |
| 3a | Crew Boat / Skiff Propulsion | Crew Boat Propulsion | marine | 1 | 1 | 132 | 564 | | | | | | | |
| 3a | 185 CFM Air Compressor | Air Compressors | offroad | 1 | 2 | 132 | 50 | | | | | | | |
| 3a | Diver Air Compressor | Air Compressors | offroad | 1 | 1 | 132 | 10 | | | | | | | |
| 3a | 200T Crane- Manitowoc 777 | Cranes | offroad | 1 | 8 | 132 | 253 | | | | | | | |
| 3a | Vibratory Hammer- HPSI500 | Other Construction Equipment | offroad | 1 | 1 | 132 | 400 | | | | | | | |
| 3a | Barge Deck Winch (Spuds) | Other Construction Equipment | offroad | 1 | 1 | 132 | 250 | | | | | | | |
| 3a | 400A Welding Machine | Welders | offroad | 1 | 4 | 132 | 20 | | | | | | | |
| 3a | Haul Trucks | Haul Trucks | onroad | 95 | | 5 | | 1895 | | 38 | 190 | 200 | 7,600 | 38,000 |
| 3a | Delivery Trucks | Delivery Trucks | onroad | | | 1 | | | | 0 | 0 | | 0 | 0 |
| 3a | Workers | Workers | onroad | 20 | | 132 | | | | 40 | 5,280 | 14.7 | 588 | 77,616 |
| **4** | **Phase 4 - Berth 150-151 Marine Construction** | | | | | | | | | | | | | |
| 4a | Tugboat Generator | Tugboat Auxiliary | marine | 1 | 8 | 260 | 60 | | | | | | | |
| 4a | Tugboat Deck Winch | Tugboat Auxiliary | marine | 1 | 1 | 260 | 160 | | | | | | | |
| 4a | Tugboat Propulsion | Tugboat Propulsion | marine | 1 | 1 | 260 | 1200 | | | | | | | |
| 4a | Crew Boat / Skiff Auxiliary | Crew Boat Auxiliary | marine | 1 | 4 | 260 | 50 | | | | | | | |
| 4a | Crew Boat / Skiff Propulsion | Crew Boat Propulsion | marine | 1 | 1 | 260 | 564 | | | | | | | |
| 4a | 185 CFM Air Compressor | Air Compressors | offroad | 1 | 2 | 260 | 50 | | | | | | | |
| 4a | 300T Crane- Manitowoc 2250 | Cranes | offroad | 1 | 8 | 260 | 320 | | | | | | | |
| 4a | Vibratory Hammer- HPSI500 | Other Construction Equipment | offroad | 1 | 1 | 260 | 400 | | | | | | | |
| 4a | Impact Hammer- D80 | Other Construction Equipment | offroad | 1 | 1 | 260 | 245 | | | | | | | |
| 4a | Barge Deck Winch (Spuds) | Other Construction Equipment | offroad | 1 | 1 | 260 | 250 | | | | | | | |
| 4a | Carpenter Barge | Other Construction Equipment | offroad | 2 | 8 | 260 | 150 | | | | | | | |
| 4a | 400A Welding Machine | Welders | offroad | 1 | 4 | 260 | 20 | | | | | | | |
| 4a | Haul Trucks | Haul Trucks | onroad | | | 1 | | | | 0 | 0 | | 0 | 0 |
| 4a | Delivery Trucks | Delivery Trucks | onroad | 260 | | 260 | | | | 2 | 520 | 50 | 100 | 26,000 |
| 4a | Workers | Workers | onroad | 25 | | 260 | | | | 50 | 13,000 | 14.7 | 735 | 191,100 |
| **5** | **Phase 5 - Shoreside Construction** | | | | | | | | | | | | | |
| 5a | air compressor | Air Compressors | offroad | 1 | 6 | 16 | 75 | | | | | | | |
| 5a | 45-ton crane | Cranes | offroad | 1 | 3 | 16 | 200 | | | | | | | |
| 5a | diesel generator | Generator Sets | offroad | 1 | 6 | 16 | 200 | | | | | | | |
| 5a | dump truck | Off-Highway Trucks | offroad | 2 | 2 | 16 | 380 | | | | | | | |
| 5a | vacuum truck | Off-Highway Trucks | offroad | 1 | 2 | 16 | 380 | | | | | | | |
| 5a | forklift/backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 16 | 100 | | | | | | | |
| 5a | welding truck/rig | Welders | offroad | 1 | 6 | 16 | 50 | | | | | | | |
| 5a | pick-up truck | pick-up truck | onroad | 2 | 6 | 16 | 280 | | | | | | 300 | 4,800 |
| 5a | Haul Trucks | Haul Trucks | onroad | 30 | | 15 | | 5 | 609 | 4 | 60 | 30 | 120 | 1,800 |
| 5a | Delivery Trucks | Delivery Trucks | onroad | | | 1 | | | | 0 | 0 | | 0 | 0 |
| 5a | Workers | Workers | onroad | 10 | | 16 | | | | 20 | 320 | 14.7 | 294 | 4,704 |
| 5b | air compressor | Air Compressors | offroad | 1 | 6 | 16 | 75 | | | | | | | |
| 5b | 45-ton crane | Cranes | offroad | 1 | 6 | 16 | 200 | | | | | | | |
| 5b | diesel generator | Generator Sets | offroad | 1 | 6 | 16 | 200 | | | | | | | |
| 5b | forklift/backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 16 | 100 | | | | | | | |
| 5b | welding truck/rig | Welders | offroad | 1 | 6 | 16 | 50 | | | | | | | |
| 5b | pick-up truck | pick-up truck | onroad | 2 | 1 | 16 | 280 | | | | | | 50 | 800 |
| 5b | Haul Trucks | Haul Trucks | onroad | 1 | | 1 | | 2 | | 2 | 2 | 30 | 60 | 60 |
| 5b | Delivery Trucks | Delivery Trucks | onroad | 1 | | 2 | | | | 1 | 2 | 30 | 30 | 60 |
| 5b | Workers | Workers | onroad | 10 | | 16 | | | | 20 | 320 | 14.7 | 294 | 4,704 |
| 5c | air compressor | Air Compressors | offroad | 1 | 6 | 51 | 75 | | | | | | | |
| 5c | excavator | Excavators | offroad | 2 | 6 | 51 | 220 | | | | | | | |
| 5c | diesel generator | Generator Sets | offroad | 1 | 6 | 51 | 100 | | | | | | | |
| 5c | dump truck | Off-Highway Trucks | offroad | 10 | 2 | 51 | 380 | | | | | | | |
| 5c | backhoe | Tractors/Loaders/Backhoes | offroad | 3 | 6 | 51 | 100 | | | | | | | |
| 5c | pick-up truck | pick-up truck | onroad | 4 | 1 | 51 | 280 | | | | | | 100 | 5,100 |
| 5c | Haul Trucks | Haul Trucks | onroad | 400 | | 40 | | | 8120 | 20 | 800 | 30 | 600 | 24,000 |
| 5c | Delivery Trucks | Delivery Trucks | onroad | | | 1 | | | | 0 | 0 | | 0 | 0 |
| 5c | Workers | Workers | onroad | 10 | | 51 | | | | 20 | 1,020 | 14.7 | 294 | 14,994 |
| 5d | air compressor | Air Compressors | offroad | 2 | 6 | 46 | 75 | | | | | | | |
| 5d | 45-ton crane | Cranes | offroad | 2 | 6 | 46 | 200 | | | | | | | |
| 5d | diesel generator | Generator Sets | offroad | 2 | 6 | 46 | 200 | | | | | | | |
| 5d | concrete pumper | Pumps | offroad | 2 | 6 | 46 | 500 | | | | | | | |
| 5d | forklift/backhoe | Tractors/Loaders/Backhoes | offroad | 2 | 4 | 46 | 100 | | | | | | | |
| 5d | welding truck/rig | Welders | offroad | 2 | 6 | 46 | 50 | | | | | | | |
| 5d | pick-up truck | pick-up truck | onroad | 10 | 1 | 46 | 280 | | | | | | 250 | 11,500 |
| 5d | concrete truck | Delivery Trucks | onroad | 10 | 2 | 46 | 380 | | | | | | | |
| 5d | Haul Trucks | Haul Trucks | onroad | | | 1 | | | | 0 | 0 | | 0 | 0 |
| 5d | Delivery Trucks | Delivery Trucks | onroad | 400 | | 40 | | | | 20 | 800 | 30 | 600 | 24,000 |
| 5d | Workers | Workers | onroad | 24 | | 46 | | | | 48 | 2,208 | 14.7 | 706 | 32,458 |
| 5e | air compressor | Air Compressors | offroad | 1 | 6 | 11 | 75 | | | | | | | |
| 5e | 140 ton crane | Cranes | offroad | 1 | 6 | 11 | 320 | | | | | | | |
| 5e | diesel generator | Generator Sets | offroad | 1 | 6 | 11 | 100 | | | | | | | |
| 5e | diesel pile hammer | Other Construction Equipment | offroad | 1 | 6 | 11 | 400 | | | | | | | |
| 5e | backhoe | Tractors/Loaders/Backhoes | offroad | 2 | 4 | 11 | 100 | | | | | | | |
| 5e | pick-up truck | pick-up truck | onroad | 3 | 1 | 11 | 280 | | | | | | 75 | 825 |
| 5e | Haul Trucks | Haul Trucks | onroad | | | 1 | | | | 0 | 0 | | 0 | 0 |
| 5e | Delivery Trucks | Delivery Trucks | onroad | 1 | | 2 | | | | 1 | 2 | 30 | 30 | 60 |
| 5e | Workers | Workers | onroad | 6 | | 11 | | | | 12 | 132 | 14.7 | 176 | 1,940 |
| 5f | air compressor | Air Compressors | offroad | 1 | 6 | 16 | 75 | | | | | | | |
| 5f | 45-ton crane | Cranes | offroad | 1 | 6 | 16 | 200 | | | | | | | |
| 5f | diesel generator | Generator Sets | offroad | 1 | 6 | 16 | 200 | | | | | | | |
| 5f | dump truck | Off-Highway Trucks | offroad | 10 | 2 | 16 | 380 | | | | | | | |
| 5f | concrete pumper | Pumps | offroad | 1 | 4 | 16 | 500 | | | | | | | |

**Table 5. Construction Equipment, Tasks ID 1-11**

| | | | | Construction Equipment | | | | | | Vehicles | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Task ID | Equipment | General Equip Type | Type (offroad/onroad /marine) | Number of Pieces (haul truck total loads, delivery truck total loads, workers/day) | Utilization (hr/day) | Total days | Horsepower (hp) | Demolition Debris (ton) | Soil Import/Export (ton) | Vehicle Trips (1-way trips/day) | Vehicle Trips Total (1-way trips) | Transit Distance (1-way miles) - Offsite | VMT (mi/day) - Offsite | VMT (total) - Offsite |
| 5f | forklift/backhoe | Tractors/Loaders/Backhoes | offroad | 2 | 4 | 16 | 100 | | | | | | | |
| 5f | pick-up truck | pick-up truck | onroad | 6 | 1 | 16 | 280 | | | | | | 150 | 2,400 |
| 5f | concrete truck | Delivery Trucks | onroad | 3 | 2 | 16 | 380 | | | | | | | |
| 5f | Haul Trucks | Haul Trucks | onroad | 9 | | 2 | | | 173 | 9 | 18 | 30 | 270 | 540 |
| 5f | Delivery Trucks | Delivery Trucks | onroad | 1 | | 3 | | | | 1 | 2 | 30 | 30 | 60 |
| 5f | Workers | Workers | onroad | 10 | | 16 | | | | 20 | 320 | 14.7 | 294 | 4,704 |
| | | | | | | | | | | | | | | |
| 5g | air compressor | Air Compressors | offroad | 1 | 6 | 21 | 75 | | | | | | | |
| 5g | 140 ton crane | Cranes | offroad | 1 | 6 | 21 | 320 | | | | | | | |
| 5g | manlift | Cranes | offroad | 3 | 4 | 21 | 100 | | | | | | | |
| 5g | Forklift | Forklifts | offroad | 1 | 6 | 21 | 150 | | | | | | | |
| 5g | diesel generator | Generator Sets | offroad | 1 | 6 | 21 | 200 | | | | | | | |
| 5g | welding rig | Welders | offroad | 1 | 6 | 21 | 50 | | | | | | | |
| 5g | pick-up truck | pick-up truck | onroad | 4 | 1 | 21 | 280 | | | | | | 100 | 2,100 |
| 5g | Haul Trucks | Haul Trucks | onroad | | | 1 | | | | 0 | 0 | | 0 | 0 |
| 5g | Delivery Trucks | Delivery Trucks | onroad | 10 | | 2 | | | | 10 | 20 | 30 | 300 | 600 |
| 5g | Workers | Workers | onroad | 12 | | 21 | | | | 24 | 504 | 14.7 | 353 | 7,409 |
| | | | | | | | | | | | | | | |
| 5h | air compressor | Air Compressors | offroad | 4 | 6 | 81 | 75 | | | | | | | |
| 5h | 140 ton crane | Cranes | offroad | 1 | 4 | 81 | 320 | | | | | | | |
| 5h | 45 ton crane | Cranes | offroad | 1 | 6 | 81 | 200 | | | | | | | |
| 5h | diesel generator | Generator Sets | offroad | 4 | 6 | 81 | 200 | | | | | | | |
| 5h | welding rig | Welders | offroad | 4 | 6 | 81 | 50 | | | | | | | |
| 5h | pick-up truck | pick-up truck | onroad | 6 | 1 | 81 | 280 | | | | | | 150 | 12,150 |
| 5h | Haul Trucks | Haul Trucks | onroad | | | 1 | | | | 0 | 0 | | 0 | 0 |
| 5h | Delivery Trucks | Delivery Trucks | onroad | 150 | | 10 | | | | 30 | 300 | 30 | 900 | 9,000 |
| 5h | Workers | Workers | onroad | 26 | | 81 | | | | 52 | 4,212 | 14.7 | 764 | 61,916 |
| | | | | | | | | | | | | | | |
| 5i | air compressor | Air Compressors | offroad | 2 | 6 | 21 | 75 | | | | | | | |
| 5i | 140 ton crane | Cranes | offroad | 1 | 4 | 21 | 320 | | | | | | | |
| 5i | 45 ton crane | Cranes | offroad | 1 | 4 | 21 | 200 | | | | | | | |
| 5i | manlift | Cranes | offroad | 2 | 4 | 21 | 100 | | | | | | | |
| 5i | diesel generator | Generator Sets | offroad | 2 | 6 | 21 | 200 | | | | | | | |
| 5i | welding rig | Welders | offroad | 3 | 6 | 21 | 50 | | | | | | | |
| 5i | pick-up truck | pick-up truck | onroad | 4 | 1 | 21 | 280 | | | | | | 100 | 2,100 |
| 5i | Haul Trucks | Haul Trucks | onroad | | | 1 | | | | 0 | 0 | | 0 | 0 |
| 5i | Delivery Trucks | Delivery Trucks | onroad | 30 | | 5 | | | | 12 | 60 | 30 | 360 | 1,800 |
| 5i | Workers | Workers | onroad | 10 | | 21 | | | | 20 | 420 | 14.7 | 294 | 6,174 |
| | | | | | | | | | | | | | | |
| 5j | air compressor | Air Compressors | offroad | 2 | 6 | 35 | 75 | | | | | | | |
| 5j | 140 ton crane | Cranes | offroad | 1 | 4 | 35 | 320 | | | | | | | |
| 5j | 45 ton crane | Cranes | offroad | 1 | 4 | 35 | 200 | | | | | | | |
| 5j | diesel generator | Generator Sets | offroad | 2 | 6 | 35 | 200 | | | | | | | |
| 5j | welding rig | Welders | offroad | 3 | 6 | 35 | 50 | | | | | | | |
| 5j | pick-up truck | pick-up truck | onroad | 4 | 1 | 35 | 280 | | | | | | 100 | 3,500 |
| 5j | Haul Trucks | Haul Trucks | onroad | | | 1 | | | | 0 | 0 | | 0 | 0 |
| 5j | Delivery Trucks | Delivery Trucks | onroad | 24 | | 4 | | | | 12 | 48 | 30 | 360 | 1,440 |
| 5j | Workers | Workers | onroad | 12 | | 35 | | | | 24 | 840 | 14.7 | 353 | 12,348 |
| | | | | | | | | | | | | | | |
| 5k | air compressor | Air Compressors | offroad | 2 | 6 | 282 | 75 | | | | | | | |
| 5k | 140 ton crane | Cranes | offroad | 1 | 4 | 282 | 320 | | | | | | | |
| 5k | 45 ton crane | Cranes | offroad | 2 | 4 | 282 | 200 | | | | | | | |
| 5k | diesel generator | Generator Sets | offroad | 2 | 6 | 282 | 200 | | | | | | | |
| 5k | welding rig | Welders | offroad | 3 | 6 | 282 | 50 | | | | | | | |
| 5k | pick-up truck | pick-up truck | onroad | 4 | 1 | 282 | 280 | | | | | | 100 | 28,200 |
| 5k | Haul Trucks | Haul Trucks | onroad | | | 1 | | | | 0 | 0 | | 0 | 0 |
| 5k | Delivery Trucks | Delivery Trucks | onroad | 150 | | 15 | | | | 20 | 300 | 30 | 600 | 9,000 |
| 5k | Workers | Workers | onroad | 24 | | 282 | | | | 48 | 13,536 | 14.7 | 706 | 198,979 |
| | | | | | | | | | | | | | | |
| 5l | air compressor | Air Compressors | offroad | 3 | 6 | 118 | 75 | | | | | | | |
| 5l | 45 ton crane | Cranes | offroad | 1 | 4 | 118 | 200 | | | | | | | |
| 5l | diesel generator | Generator Sets | offroad | 3 | 6 | 118 | 200 | | | | | | | |
| 5l | pick-up truck | pick-up truck | onroad | 6 | 1 | 118 | 280 | | | | | | 150 | 17,700 |
| 5l | Haul Trucks | Haul Trucks | onroad | | | 1 | | | | 0 | 0 | | 0 | 0 |
| 5l | Delivery Trucks | Delivery Trucks | onroad | 40 | | 10 | | | | 8 | 80 | 30 | 240 | 2,400 |
| 5l | Workers | Workers | onroad | 15 | | 118 | | | | 30 | 3,540 | 14.7 | 441 | 52,038 |
| | | | | | | | | | | | | | | |
| 5m | air compressor | Air Compressors | offroad | 3 | 6 | 116 | 75 | | | | | | | |
| 5m | 140 ton crane | Cranes | offroad | 1 | 2 | 116 | 320 | | | | | | | |
| 5m | 45 ton crane | Cranes | offroad | 2 | 4 | 116 | 200 | | | | | | | |
| 5m | diesel generator | Generator Sets | offroad | 2 | 6 | 116 | 200 | | | | | | | |
| 5m | welding rig | Welders | offroad | 1 | 3 | 116 | 50 | | | | | | | |
| 5m | pick-up truck | pick-up truck | onroad | 6 | 1 | 116 | 280 | | | | | | 150 | 17,400 |
| 5m | Haul Trucks | Haul Trucks | onroad | 25 | | 20 | | 280 | | 3 | 50 | 30 | 90 | 1,500 |
| 5m | Delivery Trucks | Delivery Trucks | onroad | | | 1 | | | | 0 | 0 | | 0 | 0 |
| 5m | Workers | Workers | onroad | 20 | | 116 | | | | 40 | 4,640 | 14.7 | 588 | 68,208 |
| | | | | | | | | | | | | | | |
| **6** | **Phase 6 - Berth 150-151 Clean-up Dredging (2,000 CY)** | | | | | | | | | | | | | |
| 6a | Tugboat Generator | Tugboat Auxiliary | marine | 1 | 8 | 7 | 60 | | | | | | | |
| 6a | Tugboat Deck Winch | Tugboat Auxiliary | marine | 1 | 1 | 7 | 160 | | | | | | | |
| 6a | Tugboat Propulsion | Tugboat Propulsion | marine | 1 | 1 | 7 | 1200 | | | | | | | |
| 6a | Survey Boat Auxiliary | Crew Boat Auxiliary | marine | 1 | 8 | 7 | 50 | | | | | | | |
| 6a | Survey Boat Propulsion | Crew Boat Propulsion | marine | 1 | 1 | 7 | 150 | | | | | | | |
| 6a | Clamshell Dredge (150T derrick barge) | Other Construction Equipment | offroad | 1 | 8 | 7 | 800 | | | | | | | |
| 6a | Haul Trucks | Haul Trucks | onroad | 135 | | 5 | | | 4060 | 54 | 270 | 50 | 2,700 | 13,500 |
| 6a | Delivery Trucks | Delivery Trucks | onroad | | | 1 | | | | 0 | 0 | | 0 | 0 |
| 6a | Workers | Workers | onroad | 12 | | 7 | | | | 24 | 168 | 14.7 | 353 | 2,470 |
| | | | | | | | | | | | | | | |
| **7** | **Phase 7 - Marine Terminal Electrical Infrastructure Project** | | | | | | | | | | | | | |
| 7a | air compressor | Air Compressors | offroad | 2 | 6 | 42 | 75 | | | | | | | |
| 7a | 45-ton crane | Cranes | offroad | 1 | 3 | 42 | 200 | | | | | | | |
| 7a | diesel generator | Generator Sets | offroad | 1 | 6 | 42 | 200 | | | | | | | |
| 7a | concrete pumper | Pumps | offroad | 1 | 2 | 42 | 500 | | | | | | | |
| 7a | forklift/backhoe | Tractors/Loaders/Backhoes | offroad | 2 | 3 | 42 | 100 | | | | | | | |
| 7a | pick-up truck | pick-up truck | onroad | 4 | 1 | 42 | 280 | | | | | | 100 | 4,200 |
| 7a | concrete truck | Delivery Trucks | onroad | 1 | 2 | 42 | 380 | | | | | | | |
| 7a | Haul Trucks | Haul Trucks | onroad | 50 | | 15 | | 10 | 1015 | 7 | 100 | 30 | 210 | 3,000 |
| 7a | Delivery Trucks | Delivery Trucks | onroad | 20 | | 20 | | | | 2 | 40 | 30 | 60 | 1,200 |
| 7a | Workers | Workers | onroad | 12 | | 42 | | | | 24 | 1,008 | 14.7 | 353 | 14,818 |
| | | | | | | | | | | | | | | |
| 7b | air compressor | Air Compressors | offroad | 3 | 3 | 153 | 75 | | | | | | | |
| 7b | 45 ton crane | Cranes | offroad | 2 | 2 | 153 | 200 | | | | | | | |
| 7b | manlift | Cranes | offroad | 3 | 5 | 153 | 100 | | | | | | | |
| 7b | diesel generator | Generator Sets | offroad | 2 | 6 | 153 | 200 | | | | | | | |
| 7b | welding rig | Welders | offroad | 1 | 4 | 153 | 50 | | | | | | | |
| 7b | pick-up truck | pick-up truck | onroad | 6 | 1 | 153 | 280 | | | | | | 150 | 22,950 |
| 7b | Haul Trucks | Haul Trucks | onroad | | | 1 | | | | 0 | 0 | | 0 | 0 |
| 7b | Delivery Trucks | Delivery Trucks | onroad | 5 | | 20 | | | | 1 | 10 | 30 | 30 | 300 |
| 7b | Workers | Workers | onroad | 20 | | 153 | | | | 40 | 6,120 | 14.7 | 588 | 89,964 |
| | | | | | | | | | | | | | | |
| **8** | **Phase 8 - Berth 148-149 Bulkhead Wall Repair** | | | | | | | | | | | | | |
| 8a | Survey Boat Auxiliary | Crew Boat Auxiliary | marine | 1 | 8 | 65 | 50 | | | | | | | |
| 8a | Survey Boat Propulsion | Crew Boat Propulsion | marine | 1 | 1 | 65 | 150 | | | | | | | |
| 8a | 185 CFM Air Compressor | Air Compressors | offroad | 1 | 2 | 65 | 50 | | | | | | | |
| 8a | Forklift / Mobile Crane | Cranes | offroad | 1 | 8 | 65 | 125 | | | | | | | |
| 8a | Carpenter Barge | Other Construction Equipment | offroad | 2 | 8 | 65 | 150 | | | | | | | |
| 8a | Concrete Mixer/Pump | Pumps | offroad | 1 | 8 | 65 | 90 | | | | | | | |
| 8a | 400A Welding Machine | Welders | offroad | 1 | 4 | 65 | 20 | | | | | | | |
| 8a | Haul Trucks | Haul Trucks | onroad | 4 | | 2 | | 75 | | 4 | 8 | 50 | 200 | 400 |
| 8a | Delivery Trucks | Delivery Trucks | onroad | 10 | | 90 | | | | 1 | 20 | 50 | 50 | 1,000 |
| 8a | Workers | Workers | onroad | | | 65 | | | | 0 | 0 | 14.7 | 0 | 0 |
| | | | | | | | | | | | | | | |
| **9** | **Phase 9 - Tank Farm Capacity Restoration (Tanks 218, 267, 268, 216)** | | | | | | | | | | | | | |
| 9a | Air Compresor | Air Compressors | offroad | 1 | 8 | 4 | 75 | | | | | | | |
| 9a | Man Lift | Cranes | offroad | 1 | 8 | 4 | 100 | | | | | | | |
| 9a | Fork Lift | Forklifts | offroad | 1 | 8 | 4 | 100 | | | | | | | |
| 9a | Diesel Generator | Generator Sets | offroad | 1 | 8 | 4 | 50 | | | | | | | |
| 9a | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 4 | 120 | | | | | | | |
| 9a | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 4 | 120 | | | | | | | |
| 9a | Haul Trucks | Haul Trucks | onroad | 5 | | 3 | | | 112 | 4 | 10 | 30 | 120 | 300 |
| 9a | Delivery Trucks | Delivery Trucks | onroad | 15 | | 3 | | | | 10 | 30 | 30 | 300 | 900 |
| 9a | Workers | Workers | onroad | 20 | | 4 | | | | 40 | 160 | 14.7 | 588 | 2,352 |

**Table 5. Construction Equipment, Tasks ID 1-11**

| | | | | Construction Equipment | | | | Vehicles | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Task ID | Equipment | General Equip Type | Type (offroad/onroad /marine) | Number of Pieces (haul truck total loads, delivery truck total loads, workers/day) | Utilization (hr/day) | Total days | Horsepower (hp) | Demolition Debris (ton) | Soil Import/Export (ton) | Vehicle Trips (1-way trips/day) | Vehicle Trips Total (1-way trips) | Transit Distance (1-way miles) - Offsite | VMT (mi/day) - Offsite | VMT (total) - Offsite |
| 9b | Air Compresor | Air Compressors | offroad | 1 | 8 | 8 | 75 | | | | | | | |
| 9b | Fork Lift | Forklifts | offroad | 1 | 4 | 8 | 100 | | | | | | | |
| 9b | Diesel Generator | Generator Sets | offroad | 1 | 8 | 8 | 50 | | | | | | | |
| 9b | Grader | Graders | offroad | 1 | 4 | 8 | 500 | | | | | | | |
| 9b | Concrete Pump Truck | Off-Highway Trucks | offroad | 1 | 8 | 8 | 370 | | | | | | | |
| 9b | Roller | Rollers | offroad | 1 | 8 | 8 | 120 | | | | | | | |
| 9b | Scraper | Scrapers | offroad | 1 | 4 | 8 | 250 | | | | | | | |
| 9b | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 8 | 120 | | | | | | | |
| 9b | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 8 | 120 | | | | | | | |
| 9b | Ditch Witch | Trenchers | offroad | 1 | 8 | 8 | 50 | | | | | | | |
| 9b | Haul Trucks | Haul Trucks | onroad | 4 | | 6 | | | 166 | 2 | 8 | 30 | 60 | 240 |
| 9b | Delivery Trucks | Delivery Trucks | onroad | 20 | | 4 | | | | 10 | 40 | 30 | 300 | 1,200 |
| 9b | Workers | Workers | onroad | 20 | | 8 | | | | 40 | 320 | 14.7 | 588 | 4,704 |
| | | | | | | | | | | | | | | |
| 9c | Air Compresor | Air Compressors | offroad | 1 | 8 | 8 | 75 | | | | | | | |
| 9c | Man Lift | Cranes | offroad | 1 | 8 | 8 | 100 | | | | | | | |
| 9c | Fork Lift | Forklifts | offroad | 1 | 8 | 8 | 100 | | | | | | | |
| 9c | Diesel Generator | Generator Sets | offroad | 1 | 8 | 8 | 50 | | | | | | | |
| 9c | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 8 | 120 | | | | | | | |
| 9c | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 8 | 120 | | | | | | | |
| 9c | Haul Trucks | Haul Trucks | onroad | | | 3 | | | | 0 | 0 | | 0 | 0 |
| 9c | Delivery Trucks | Delivery Trucks | onroad | | | 3 | | | | 0 | 0 | | 0 | 0 |
| 9c | Workers | Workers | onroad | 20 | | 8 | | | | 40 | 320 | 14.7 | 588 | 4,704 |
| | | | | | | | | | | | | | | |
| 9d | Air Compresor | Air Compressors | offroad | 2 | 8 | 24 | 75 | | | | | | | |
| 9d | Man Lift | Cranes | offroad | 1 | 4 | 24 | 100 | | | | | | | |
| 9d | 100-Ton Crane | Cranes | offroad | 1 | 4 | 24 | 500 | | | | | | | |
| 9d | Fork Lift | Forklifts | offroad | 1 | 4 | 24 | 100 | | | | | | | |
| 9d | Diesel Generator | Generator Sets | offroad | 4 | 8 | 24 | 50 | | | | | | | |
| 9d | Light Plant | Other General Industrial Equipmen | offroad | 3 | 8 | 24 | 50 | | | | | | | |
| 9d | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 24 | 120 | | | | | | | |
| 9d | Semi-Tractor | Tractors/Loaders/Backhoes | offroad | 1 | 2 | 24 | 500 | | | | | | | |
| 9d | Welding Truck/Rig | Welders | offroad | 4 | 8 | 24 | 50 | | | | | | | |
| 9d | Haul Trucks | Haul Trucks | onroad | 30 | | 8 | | | 6090 | 8 | 60 | 30 | 240 | 1,800 |
| 9d | Delivery Trucks | Delivery Trucks | onroad | 25 | | 5 | | | | 10 | 50 | 30 | 300 | 1,500 |
| 9d | Workers | Workers | onroad | 20 | | 24 | | | | 40 | 960 | 14.7 | 588 | 14,112 |
| | | | | | | | | | | | | | | |
| 9e | Air Compresor | Air Compressors | offroad | 1 | 8 | 16 | 75 | | | | | | | |
| 9e | Fork Lift | Forklifts | offroad | 1 | 4 | 16 | 100 | | | | | | | |
| 9e | Diesel Generator | Generator Sets | offroad | 1 | 8 | 16 | 50 | | | | | | | |
| 9e | Grader | Graders | offroad | 1 | 4 | 16 | 500 | | | | | | | |
| 9e | Concrete Pump Truck | Off-Highway Trucks | offroad | 1 | 8 | 16 | 370 | | | | | | | |
| 9e | Roller | Rollers | offroad | 1 | 8 | 16 | 120 | | | | | | | |
| 9e | Scraper | Scrapers | offroad | 1 | 4 | 16 | 250 | | | | | | | |
| 9e | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 16 | 120 | | | | | | | |
| 9e | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 16 | 120 | | | | | | | |
| 9e | Ditch Witch | Trenchers | offroad | 1 | 8 | 16 | 50 | | | | | | | |
| 9e | Haul Trucks | Haul Trucks | onroad | | | 6 | | | | 0 | 0 | | 0 | 0 |
| 9e | Delivery Trucks | Delivery Trucks | onroad | | | 4 | | | | 0 | 0 | | 0 | 0 |
| 9e | Workers | Workers | onroad | 20 | | 16 | | | | 40 | 640 | 14.7 | 588 | 9,408 |
| | | | | | | | | | | | | | | |
| 9f | Air Compresor | Air Compressors | offroad | 2 | 8 | 115 | 75 | | | | | | | |
| 9f | Man Lift | Cranes | offroad | 1 | 4 | 115 | 100 | | | | | | | |
| 9f | 100-Ton Crane | Cranes | offroad | 1 | 4 | 115 | 500 | | | | | | | |
| 9f | Fork Lift | Forklifts | offroad | 1 | 4 | 115 | 100 | | | | | | | |
| 9f | Diesel Generator | Generator Sets | offroad | 4 | 8 | 115 | 50 | | | | | | | |
| 9f | Light Plant | Other General Industrial Equipmen | offroad | 3 | 8 | 115 | 50 | | | | | | | |
| 9f | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 115 | 120 | | | | | | | |
| 9f | Semi-Tractor | Tractors/Loaders/Backhoes | offroad | 1 | 2 | 115 | 500 | | | | | | | |
| 9f | Welding Truck/Rig | Welders | offroad | 4 | 8 | 115 | 50 | | | | | | | |
| 9f | Haul Trucks | Haul Trucks | onroad | | | 5 | | | | 0 | 0 | | 0 | 0 |
| 9f | Delivery Trucks | Delivery Trucks | onroad | | | 5 | | | | 0 | 0 | | 0 | 0 |
| 9f | Workers | Workers | onroad | 20 | | 115 | | | | 40 | 4,600 | 14.7 | 588 | 67,620 |
| | | | | | | | | | | | | | | |
| 9g | Air Compresor | Air Compressors | offroad | 1 | 8 | 8 | 75 | | | | | | | |
| 9g | Man Lift | Cranes | offroad | 1 | 8 | 8 | 100 | | | | | | | |
| 9g | Fork Lift | Forklifts | offroad | 1 | 8 | 8 | 100 | | | | | | | |
| 9g | Diesel Generator | Generator Sets | offroad | 1 | 8 | 8 | 50 | | | | | | | |
| 9g | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 8 | 120 | | | | | | | |
| 9g | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 8 | 120 | | | | | | | |
| 9g | Haul Trucks | Haul Trucks | onroad | | | 3 | | | | 0 | 0 | | 0 | 0 |
| 9g | Delivery Trucks | Delivery Trucks | onroad | | | 3 | | | | 0 | 0 | | 0 | 0 |
| 9g | Workers | Workers | onroad | 20 | | 8 | | | | 40 | 320 | 14.7 | 588 | 4,704 |
| | | | | | | | | | | | | | | |
| 9h | Air Compresor | Air Compressors | offroad | 1 | 8 | 16 | 75 | | | | | | | |
| 9h | Fork Lift | Forklifts | offroad | 1 | 4 | 16 | 100 | | | | | | | |
| 9h | Diesel Generator | Generator Sets | offroad | 1 | 8 | 16 | 50 | | | | | | | |
| 9h | Grader | Graders | offroad | 1 | 4 | 16 | 500 | | | | | | | |
| 9h | Concrete Pump Truck | Off-Highway Trucks | offroad | 1 | 8 | 16 | 370 | | | | | | | |
| 9h | Roller | Rollers | offroad | 1 | 8 | 16 | 120 | | | | | | | |
| 9h | Scraper | Scrapers | offroad | 1 | 4 | 16 | 250 | | | | | | | |
| 9h | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 16 | 120 | | | | | | | |
| 9h | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 16 | 120 | | | | | | | |
| 9h | Ditch Witch | Trenchers | offroad | 1 | 8 | 16 | 50 | | | | | | | |
| 9h | Haul Trucks | Haul Trucks | onroad | | | 6 | | | | 0 | 0 | | 0 | 0 |
| 9h | Delivery Trucks | Delivery Trucks | onroad | | | 4 | | | | 0 | 0 | | 0 | 0 |
| 9h | Workers | Workers | onroad | 20 | | 16 | | | | 40 | 640 | 14.7 | 588 | 9,408 |
| | | | | | | | | | | | | | | |
| 9i | Air Compresor | Air Compressors | offroad | 1 | 8 | 8 | 75 | | | | | | | |
| 9i | Man Lift | Cranes | offroad | 1 | 8 | 8 | 100 | | | | | | | |
| 9i | Fork Lift | Forklifts | offroad | 1 | 8 | 8 | 100 | | | | | | | |
| 9i | Diesel Generator | Generator Sets | offroad | 1 | 8 | 8 | 50 | | | | | | | |
| 9i | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 8 | 120 | | | | | | | |
| 9i | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 8 | 120 | | | | | | | |
| 9i | Haul Trucks | Haul Trucks | onroad | | | 3 | | | | 0 | 0 | | 0 | 0 |
| 9i | Delivery Trucks | Delivery Trucks | onroad | | | 3 | | | | 0 | 0 | | 0 | 0 |
| 9i | Workers | Workers | onroad | 20 | | 8 | | | | 40 | 320 | 14.7 | 588 | 4,704 |
| | | | | | | | | | | | | | | |
| 9j | Air Compresor | Air Compressors | offroad | 1 | 8 | 20 | 75 | | | | | | | |
| 9j | Fork Lift | Forklifts | offroad | 1 | 4 | 20 | 100 | | | | | | | |
| 9j | Diesel Generator | Generator Sets | offroad | 1 | 8 | 20 | 50 | | | | | | | |
| 9j | Grader | Graders | offroad | 1 | 4 | 20 | 500 | | | | | | | |
| 9j | Concrete Pump Truck | Off-Highway Trucks | offroad | 1 | 8 | 20 | 370 | | | | | | | |
| 9j | Roller | Rollers | offroad | 1 | 8 | 20 | 120 | | | | | | | |
| 9j | Scraper | Scrapers | offroad | 1 | 4 | 20 | 250 | | | | | | | |
| 9j | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 20 | 120 | | | | | | | |
| 9j | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 20 | 120 | | | | | | | |
| 9j | Ditch Witch | Trenchers | offroad | 1 | 8 | 20 | 50 | | | | | | | |
| 9j | Haul Trucks | Haul Trucks | onroad | | | 6 | | | | 0 | 0 | | 0 | 0 |
| 9j | Delivery Trucks | Delivery Trucks | onroad | | | 4 | | | | 0 | 0 | | 0 | 0 |
| 9j | Workers | Workers | onroad | 20 | | 20 | | | | 40 | 800 | 14.7 | 588 | 11,760 |
| | | | | | | | | | | | | | | |
| 9k | Air Compresor | Air Compressors | offroad | 2 | 8 | 49 | 75 | | | | | | | |
| 9k | Man Lift | Cranes | offroad | 1 | 4 | 49 | 100 | | | | | | | |
| 9k | 100-Ton Crane | Cranes | offroad | 1 | 4 | 49 | 500 | | | | | | | |
| 9k | Fork Lift | Forklifts | offroad | 1 | 4 | 49 | 100 | | | | | | | |
| 9k | Diesel Generator | Generator Sets | offroad | 4 | 8 | 49 | 50 | | | | | | | |
| 9k | Light Plant | Other General Industrial Equipmen | offroad | 3 | 8 | 49 | 50 | | | | | | | |
| 9k | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 49 | 120 | | | | | | | |
| 9k | Semi-Tractor | Tractors/Loaders/Backhoes | offroad | 1 | 2 | 49 | 500 | | | | | | | |
| 9k | Welding Truck/Rig | Welders | offroad | 4 | 8 | 49 | 50 | | | | | | | |
| 9k | Haul Trucks | Haul Trucks | onroad | | | 2 | | | | 0 | 0 | 30 | 0 | 0 |
| 9k | Delivery Trucks | Delivery Trucks | onroad | | | 5 | | | | 0 | 0 | 30 | 0 | 0 |
| 9k | Workers | Workers | onroad | 20 | | 49 | | | | 40 | 1,960 | 14.7 | 588 | 28,812 |
| | | | | | | | | | | | | | | |
| **10** | **Phase 10 - Tank Farm Capacity Restoration (Tanks 375, 379, 413, 259)** | | | | | | | | | | | | | |
| 10a | Air Compresor | Air Compressors | offroad | 1 | 8 | 4 | 75 | | | | | | | |
| 10a | Man Lift | Cranes | offroad | 1 | 8 | 4 | 100 | | | | | | | |
| 10a | Fork Lift | Forklifts | offroad | 1 | 8 | 4 | 100 | | | | | | | |
| 10a | Diesel Generator | Generator Sets | offroad | 1 | 8 | 4 | 50 | | | | | | | |
| 10a | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 4 | 120 | | | | | | | |
| 10a | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 4 | 120 | | | | | | | |
| 10a | Haul Trucks | Haul Trucks | onroad | 5 | | 3 | | | 112 | 4 | 10 | 30 | 120 | 300 |

**Table 5. Construction Equipment, Tasks ID 1-11**

| | | | | Construction Equipment | | | | Vehicles | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Task ID | Equipment | General Equip Type | Type (offroad/onroad /marine) | Number of Pieces (haul truck total loads, delivery truck total loads, workers/day) | Utilization (hr/day) | Total days | Horsepower (hp) | Demolition Debris (ton) | Soil Import/Export (ton) | Vehicle Trips (1-way trips/day) | Vehicle Trips Total (1-way trips) | Transit Distance (1-way miles) - Offsite | VMT (mi/day) - Offsite | VMT (total) - Offsite |
| 10a | Delivery Trucks | Delivery Trucks | onroad | 15 | | 3 | | | | 10 | 30 | 30 | 300 | 900 |
| 10a | Workers | Workers | onroad | 20 | | 4 | | | | 40 | 160 | 14.7 | 588 | 2,352 |
| | | | | | | | | | | | | | | |
| 10b | Air Compresor | Air Compressors | offroad | 1 | 8 | 9 | 75 | | | | | | | |
| 10b | Fork Lift | Forklifts | offroad | 1 | 4 | 9 | 100 | | | | | | | |
| 10b | Diesel Generator | Generator Sets | offroad | 1 | 8 | 9 | 50 | | | | | | | |
| 10b | Grader | Graders | offroad | 1 | 4 | 9 | 500 | | | | | | | |
| 10b | Concrete Pump Truck | Off-Highway Trucks | offroad | 1 | 8 | 9 | 370 | | | | | | | |
| 10b | Roller | Rollers | offroad | 1 | 8 | 9 | 120 | | | | | | | |
| 10b | Scraper | Scrapers | offroad | 1 | 4 | 9 | 250 | | | | | | | |
| 10b | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 9 | 120 | | | | | | | |
| 10b | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 9 | 120 | | | | | | | |
| 10b | Ditch Witch | Trenchers | offroad | 1 | 8 | 9 | 50 | | | | | | | |
| 10b | Haul Trucks | Haul Trucks | onroad | 4 | | 6 | | | 166 | 2 | 8 | 30 | 60 | 240 |
| 10b | Delivery Trucks | Delivery Trucks | onroad | 20 | | 4 | | | | 10 | 40 | 30 | 300 | 1,200 |
| 10b | Workers | Workers | onroad | 20 | | 9 | | | | 40 | 360 | 14.7 | 588 | 5,292 |
| | | | | | | | | | | | | | | |
| 10c | Air Compresor | Air Compressors | offroad | 2 | 8 | 45 | 75 | | | | | | | |
| 10c | Man Lift | Cranes | offroad | 1 | 4 | 45 | 100 | | | | | | | |
| 10c | 100-Ton Crane | Cranes | offroad | 1 | 4 | 45 | 500 | | | | | | | |
| 10c | Fork Lift | Forklifts | offroad | 1 | 4 | 45 | 100 | | | | | | | |
| 10c | Diesel Generator | Generator Sets | offroad | 4 | 8 | 45 | 50 | | | | | | | |
| 10c | Light Plant | Other General Industrial Equipmen | offroad | 3 | 8 | 45 | 50 | | | | | | | |
| 10c | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 45 | 120 | | | | | | | |
| 10c | Semi-Tractor | Tractors/Loaders/Backhoes | offroad | 1 | 2 | 45 | 500 | | | | | | | |
| 10c | Welding Truck/Rig | Welders | offroad | 4 | 8 | 45 | 50 | | | | | | | |
| 10c | Haul Trucks | Haul Trucks | onroad | 30 | | 8 | | | 6090 | 8 | 60 | 30 | 240 | 1,800 |
| 10c | Delivery Trucks | Delivery Trucks | onroad | 25 | | 5 | | | | 10 | 50 | 30 | 300 | 1,500 |
| 10c | Workers | Workers | onroad | 20 | | 45 | | | | 40 | 1,800 | 14.7 | 588 | 26,460 |
| | | | | | | | | | | | | | | |
| 10d | Air Compresor | Air Compressors | offroad | 1 | 8 | 4 | 75 | | | | | | | |
| 10d | Man Lift | Cranes | offroad | 1 | 8 | 4 | 100 | | | | | | | |
| 10d | Fork Lift | Forklifts | offroad | 1 | 8 | 4 | 100 | | | | | | | |
| 10d | Diesel Generator | Generator Sets | offroad | 1 | 8 | 4 | 50 | | | | | | | |
| 10d | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 4 | 120 | | | | | | | |
| 10d | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 4 | 120 | | | | | | | |
| 10d | Haul Trucks | Haul Trucks | onroad | | | 3 | | | | 0 | 0 | | 0 | 0 |
| 10d | Delivery Trucks | Delivery Trucks | onroad | | | 3 | | | | 0 | 0 | | 0 | 0 |
| 10d | Workers | Workers | onroad | 20 | | 4 | | | | 40 | 160 | 14.7 | 588 | 2,352 |
| | | | | | | | | | | | | | | |
| 10e | Air Compresor | Air Compressors | offroad | 1 | 8 | 9 | 75 | | | | | | | |
| 10e | Fork Lift | Forklifts | offroad | 1 | 4 | 9 | 100 | | | | | | | |
| 10e | Diesel Generator | Generator Sets | offroad | 1 | 8 | 9 | 50 | | | | | | | |
| 10e | Grader | Graders | offroad | 1 | 4 | 9 | 500 | | | | | | | |
| 10e | Concrete Pump Truck | Off-Highway Trucks | offroad | 1 | 8 | 9 | 370 | | | | | | | |
| 10e | Roller | Rollers | offroad | 1 | 8 | 9 | 120 | | | | | | | |
| 10e | Scraper | Scrapers | offroad | 1 | 4 | 9 | 250 | | | | | | | |
| 10e | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 9 | 120 | | | | | | | |
| 10e | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 9 | 120 | | | | | | | |
| 10e | Ditch Witch | Trenchers | offroad | 1 | 8 | 9 | 50 | | | | | | | |
| 10e | Haul Trucks | Haul Trucks | onroad | | | 6 | | | | 0 | 0 | | 0 | 0 |
| 10e | Delivery Trucks | Delivery Trucks | onroad | | | 4 | | | | 0 | 0 | | 0 | 0 |
| 10e | Workers | Workers | onroad | 20 | | 9 | | | | 40 | 360 | 14.7 | 588 | 5,292 |
| | | | | | | | | | | | | | | |
| 10f | Air Compresor | Air Compressors | offroad | 4 | 8 | 13 | 75 | | | | | | | |
| 10f | Man Lift | Cranes | offroad | 2 | 4 | 13 | 100 | | | | | | | |
| 10f | 100-Ton Crane | Cranes | offroad | 2 | 4 | 13 | 500 | | | | | | | |
| 10f | Fork Lift | Forklifts | offroad | 2 | 4 | 13 | 100 | | | | | | | |
| 10f | Diesel Generator | Generator Sets | offroad | 8 | 8 | 13 | 50 | | | | | | | |
| 10f | Light Plant | Other General Industrial Equipmen | offroad | 6 | 8 | 13 | 50 | | | | | | | |
| 10f | Front End Loader | Tractors/Loaders/Backhoes | offroad | 2 | 4 | 13 | 120 | | | | | | | |
| 10f | Semi-Tractor | Tractors/Loaders/Backhoes | offroad | 2 | 2 | 13 | 500 | | | | | | | |
| 10f | Welding Truck/Rig | Welders | offroad | 8 | 8 | 13 | 50 | | | | | | | |
| 10f | Haul Trucks | Haul Trucks | onroad | | | 8 | | | | 0 | 0 | | 0 | 0 |
| 10f | Delivery Trucks | Delivery Trucks | onroad | | | 5 | | | | 0 | 0 | | 0 | 0 |
| 10f | Workers | Workers | onroad | 20 | | 13 | | | | 40 | 520 | 14.7 | 588 | 7,644 |
| | | | | | | | | | | | | | | |
| 10g | Air Compresor | Air Compressors | offroad | 2 | 8 | 31 | 75 | | | | | | | |
| 10g | Man Lift | Cranes | offroad | 1 | 4 | 31 | 100 | | | | | | | |
| 10g | 100-Ton Crane | Cranes | offroad | 1 | 4 | 31 | 500 | | | | | | | |
| 10g | Fork Lift | Forklifts | offroad | 1 | 4 | 31 | 100 | | | | | | | |
| 10g | Diesel Generator | Generator Sets | offroad | 4 | 8 | 31 | 50 | | | | | | | |
| 10g | Light Plant | Other General Industrial Equipmen | offroad | 3 | 8 | 31 | 50 | | | | | | | |
| 10g | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 31 | 120 | | | | | | | |
| 10g | Semi-Tractor | Tractors/Loaders/Backhoes | offroad | 1 | 2 | 31 | 500 | | | | | | | |
| 10g | Welding Truck/Rig | Welders | offroad | 4 | 8 | 31 | 50 | | | | | | | |
| 10g | Haul Trucks | Haul Trucks | onroad | | | 8 | | | | 0 | 0 | | 0 | 0 |
| 10g | Delivery Trucks | Delivery Trucks | onroad | | | 5 | | | | 0 | 0 | | 0 | 0 |
| 10g | Workers | Workers | onroad | 20 | | 31 | | | | 40 | 1,240 | 14.7 | 588 | 18,228 |
| | | | | | | | | | | | | | | |
| 10h | Air Compresor | Air Compressors | offroad | 1 | 8 | 4 | 75 | | | | | | | |
| 10h | Man Lift | Cranes | offroad | 1 | 8 | 4 | 100 | | | | | | | |
| 10h | Fork Lift | Forklifts | offroad | 1 | 8 | 4 | 100 | | | | | | | |
| 10h | Diesel Generator | Generator Sets | offroad | 1 | 8 | 4 | 50 | | | | | | | |
| 10h | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 4 | 120 | | | | | | | |
| 10h | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 4 | 120 | | | | | | | |
| 10h | Haul Trucks | Haul Trucks | onroad | | | 3 | | | | 0 | 0 | | 0 | 0 |
| 10h | Delivery Trucks | Delivery Trucks | onroad | | | 3 | | | | 0 | 0 | | 0 | 0 |
| 10h | Workers | Workers | onroad | 20 | | 4 | | | | 40 | 160 | 14.7 | 588 | 2,352 |
| | | | | | | | | | | | | | | |
| 10i | Air Compresor | Air Compressors | offroad | 1 | 8 | 9 | 75 | | | | | | | |
| 10i | Fork Lift | Forklifts | offroad | 1 | 4 | 9 | 100 | | | | | | | |
| 10i | Diesel Generator | Generator Sets | offroad | 1 | 8 | 9 | 50 | | | | | | | |
| 10i | Grader | Graders | offroad | 1 | 4 | 9 | 500 | | | | | | | |
| 10i | Concrete Pump Truck | Off-Highway Trucks | offroad | 1 | 8 | 9 | 370 | | | | | | | |
| 10i | Roller | Rollers | offroad | 1 | 8 | 9 | 120 | | | | | | | |
| 10i | Scraper | Scrapers | offroad | 1 | 4 | 9 | 250 | | | | | | | |
| 10i | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 9 | 120 | | | | | | | |
| 10i | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 9 | 120 | | | | | | | |
| 10i | Ditch Witch | Trenchers | offroad | 1 | 8 | 9 | 50 | | | | | | | |
| 10i | Haul Trucks | Haul Trucks | onroad | | | 6 | | | | 0 | 0 | | 0 | 0 |
| 10i | Delivery Trucks | Delivery Trucks | onroad | | | 4 | | | | 0 | 0 | | 0 | 0 |
| 10i | Workers | Workers | onroad | 20 | | 9 | | | | 40 | 360 | 14.7 | 588 | 5,292 |
| | | | | | | | | | | | | | | |
| 10j | Air Compresor | Air Compressors | offroad | 4 | 8 | 13 | 75 | | | | | | | |
| 10j | Man Lift | Cranes | offroad | 2 | 4 | 13 | 100 | | | | | | | |

**Table 5. Construction Equipment, Tasks ID 1-11**

| | | | | Construction Equipment | | | | | | Vehicles | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Task ID | Equipment | General Equip Type | Type (offroad/onroad /marine) | Number of Pieces (haul truck total loads, delivery truck total loads, workers/day) | Utilization (hr/day) | Total days | Horsepower (hp) | Demolition Debris (ton) | Soil Import/Export (ton) | Vehicle Trips (1-way trips/day) | Vehicle Trips Total (1-way trips) | Transit Distance (1-way miles) - Offsite | VMT (mi/day) - Offsite | VMT (total) - Offsite |
| 10j | 100-Ton Crane | Cranes | offroad | 2 | 4 | 13 | 500 | | | | | | | |
| 10j | Fork Lift | Forklifts | offroad | 2 | 4 | 13 | 100 | | | | | | | |
| 10j | Diesel Generator | Generator Sets | offroad | 8 | 8 | 13 | 50 | | | | | | | |
| 10j | Light Plant | Other General Industrial Equipmen | offroad | 6 | 8 | 13 | 50 | | | | | | | |
| 10j | Front End Loader | Tractors/Loaders/Backhoes | offroad | 2 | 4 | 13 | 120 | | | | | | | |
| 10j | Semi-Tractor | Tractors/Loaders/Backhoes | offroad | 2 | 2 | 13 | 500 | | | | | | | |
| 10j | Welding Truck/Rig | Welders | offroad | 8 | 8 | 13 | 50 | | | | | | | |
| 10j | Haul Trucks | Haul Trucks | onroad | | | 8 | | | | 0 | 0 | | 0 | 0 |
| 10j | Delivery Trucks | Delivery Trucks | onroad | | | 5 | | | | 0 | 0 | | 0 | 0 |
| 10j | Workers | Workers | onroad | 20 | | 13 | | | | 40 | 520 | 14.7 | 588 | 7,644 |
| | | | | | | | | | | | | | | |
| 10k | Air Compresor | Air Compressors | offroad | 2 | 8 | 33 | 75 | | | | | | | |
| 10k | Man Lift | Cranes | offroad | 1 | 4 | 33 | 100 | | | | | | | |
| 10k | 100-Ton Crane | Cranes | offroad | 1 | 4 | 33 | 500 | | | | | | | |
| 10k | Fork Lift | Forklifts | offroad | 1 | 4 | 33 | 100 | | | | | | | |
| 10k | Diesel Generator | Generator Sets | offroad | 4 | 8 | 33 | 50 | | | | | | | |
| 10k | Light Plant | Other General Industrial Equipmen | offroad | 3 | 8 | 33 | 50 | | | | | | | |
| 10k | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 33 | 120 | | | | | | | |
| 10k | Semi-Tractor | Tractors/Loaders/Backhoes | offroad | 1 | 2 | 33 | 500 | | | | | | | |
| 10k | Welding Truck/Rig | Welders | offroad | 4 | 8 | 33 | 50 | | | | | | | |
| 10k | Haul Trucks | Haul Trucks | onroad | | | 8 | | | | 0 | 0 | 30 | 0 | 0 |
| 10k | Delivery Trucks | Delivery Trucks | onroad | | | 5 | | | | 0 | 0 | 30 | 0 | 0 |
| 10k | Workers | Workers | onroad | 20 | | 33 | | | | 40 | 1,320 | 14.7 | 588 | 19,404 |
| | | | | | | | | | | | | | | |
| 10l | Air Compresor | Air Compressors | offroad | 1 | 8 | 4 | 75 | | | | | | | |
| 10l | Man Lift | Cranes | offroad | 1 | 8 | 4 | 100 | | | | | | | |
| 10l | Fork Lift | Forklifts | offroad | 1 | 8 | 4 | 100 | | | | | | | |
| 10l | Diesel Generator | Generator Sets | offroad | 1 | 8 | 4 | 50 | | | | | | | |
| 10l | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 4 | 120 | | | | | | | |
| 10l | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 4 | 120 | | | | | | | |
| 10l | Haul Trucks | Haul Trucks | onroad | | | 3 | | | | 0 | 0 | | 0 | 0 |
| 10l | Delivery Trucks | Delivery Trucks | onroad | | | 3 | | | | 0 | 0 | | 0 | 0 |
| 10l | Workers | Workers | onroad | 20 | | 4 | | | | 40 | 160 | 14.7 | 588 | 2,352 |
| | | | | | | | | | | | | | | |
| 10m | Air Compresor | Air Compressors | offroad | 1 | 8 | 9 | 75 | | | | | | | |
| 10m | Fork Lift | Forklifts | offroad | 1 | 4 | 9 | 100 | | | | | | | |
| 10m | Diesel Generator | Generator Sets | offroad | 1 | 8 | 9 | 50 | | | | | | | |
| 10m | Grader | Graders | offroad | 1 | 4 | 9 | 500 | | | | | | | |
| 10m | Concrete Pump Truck | Off-Highway Trucks | offroad | 1 | 8 | 9 | 370 | | | | | | | |
| 10m | Roller | Rollers | offroad | 1 | 8 | 9 | 120 | | | | | | | |
| 10m | Scraper | Scrapers | offroad | 1 | 4 | 9 | 250 | | | | | | | |
| 10m | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 9 | 120 | | | | | | | |
| 10m | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 9 | 120 | | | | | | | |
| 10m | Ditch Witch | Trenchers | offroad | 1 | 8 | 9 | 50 | | | | | | | |
| 10m | Haul Trucks | Haul Trucks | onroad | | | 6 | | | | 0 | 0 | | 0 | 0 |
| 10m | Delivery Trucks | Delivery Trucks | onroad | | | 4 | | | | 0 | 0 | | 0 | 0 |
| 10m | Workers | Workers | onroad | 20 | | 9 | | | | 40 | 360 | 14.7 | 588 | 5,292 |
| | | | | | | | | | | | | | | |
| 10n | Air Compresor | Air Compressors | offroad | 4 | 8 | 13 | 75 | | | | | | | |
| 10n | Man Lift | Cranes | offroad | 2 | 4 | 13 | 100 | | | | | | | |
| 10n | 100-Ton Crane | Cranes | offroad | 2 | 4 | 13 | 500 | | | | | | | |
| 10n | Fork Lift | Forklifts | offroad | 2 | 4 | 13 | 100 | | | | | | | |
| 10n | Diesel Generator | Generator Sets | offroad | 8 | 8 | 13 | 50 | | | | | | | |
| 10n | Light Plant | Other General Industrial Equipmen | offroad | 6 | 8 | 13 | 50 | | | | | | | |
| 10n | Front End Loader | Tractors/Loaders/Backhoes | offroad | 2 | 4 | 13 | 120 | | | | | | | |
| 10n | Semi-Tractor | Tractors/Loaders/Backhoes | offroad | 2 | 2 | 13 | 500 | | | | | | | |
| 10n | Welding Truck/Rig | Welders | offroad | 8 | 8 | 13 | 50 | | | | | | | |
| 10n | Haul Trucks | Haul Trucks | onroad | | | 8 | | | | 0 | 0 | | 0 | 0 |
| 10n | Delivery Trucks | Delivery Trucks | onroad | | | 5 | | | | 0 | 0 | | 0 | 0 |
| 10n | Workers | Workers | onroad | 20 | | 13 | | | | 40 | 520 | 14.7 | 588 | 7,644 |
| | | | | | | | | | | | | | | |
| 10o | Air Compresor | Air Compressors | offroad | 2 | 8 | 45 | 75 | | | | | | | |
| 10o | Man Lift | Cranes | offroad | 1 | 4 | 45 | 100 | | | | | | | |
| 10o | 100-Ton Crane | Cranes | offroad | 1 | 4 | 45 | 500 | | | | | | | |
| 10o | Fork Lift | Forklifts | offroad | 1 | 4 | 45 | 100 | | | | | | | |
| 10o | Diesel Generator | Generator Sets | offroad | 4 | 8 | 45 | 50 | | | | | | | |
| 10o | Light Plant | Other General Industrial Equipmen | offroad | 3 | 8 | 45 | 50 | | | | | | | |
| 10o | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 45 | 120 | | | | | | | |
| 10o | Semi-Tractor | Tractors/Loaders/Backhoes | offroad | 1 | 2 | 45 | 500 | | | | | | | |
| 10o | Welding Truck/Rig | Welders | offroad | 4 | 8 | 45 | 50 | | | | | | | |
| 10o | Haul Trucks | Haul Trucks | onroad | | | 8 | | | | 0 | 0 | | 0 | 0 |
| 10o | Delivery Trucks | Delivery Trucks | onroad | | | 5 | | | | 0 | 0 | | 0 | 0 |
| 10o | Workers | Workers | onroad | 20 | | 45 | | | | 40 | 1,800 | 14.7 | 588 | 26,460 |
| | | | | | | | | | | | | | | |
| **11** | **Phase 11 - Tank Farm Capacity Restoration (Tanks 260, 346, 347)** | | | | | | | | | | | | | |
| 11a | Air Compresor | Air Compressors | offroad | 1 | 8 | 4 | 75 | | | | | | | |
| 11a | Man Lift | Cranes | offroad | 1 | 8 | 4 | 100 | | | | | | | |
| 11a | Fork Lift | Forklifts | offroad | 1 | 8 | 4 | 100 | | | | | | | |
| 11a | Diesel Generator | Generator Sets | offroad | 1 | 8 | 4 | 50 | | | | | | | |
| 11a | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 4 | 120 | | | | | | | |
| 11a | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 4 | 120 | | | | | | | |
| 11a | Haul Trucks | Haul Trucks | onroad | 4 | | 3 | | | 81 | 3 | 8 | 30 | 90 | 240 |
| 11a | Delivery Trucks | Delivery Trucks | onroad | 12 | | 3 | | | | 8 | 24 | 30 | 240 | 720 |
| 11a | Workers | Workers | onroad | 20 | 8 | 4 | | | | 40 | 160 | 14.7 | 588 | 2,352 |
| | | | | | | | | | | | | | | |
| 11b | Air Compresor | Air Compressors | offroad | 1 | 8 | 9 | 75 | | | | | | | |
| 11b | Fork Lift | Forklifts | offroad | 1 | 4 | 9 | 100 | | | | | | | |
| 11b | Diesel Generator | Generator Sets | offroad | 1 | 8 | 9 | 50 | | | | | | | |
| 11b | Grader | Graders | offroad | 1 | 4 | 9 | 500 | | | | | | | |
| 11b | Concrete Pump Truck | Off-Highway Trucks | offroad | 1 | 8 | 9 | 370 | | | | | | | |
| 11b | Roller | Rollers | offroad | 1 | 8 | 9 | 120 | | | | | | | |
| 11b | Scraper | Scrapers | offroad | 1 | 4 | 9 | 250 | | | | | | | |
| 11b | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 9 | 120 | | | | | | | |
| 11b | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 9 | 120 | | | | | | | |
| 11b | Ditch Witch | Trenchers | offroad | 1 | 8 | 9 | 50 | | | | | | | |
| 11b | Haul Trucks | Haul Trucks | onroad | 4 | | 5 | | | 122 | 2 | 8 | 30 | 60 | 240 |
| 11b | Delivery Trucks | Delivery Trucks | onroad | 16 | | 4 | | | | 8 | 32 | 30 | 240 | 960 |
| 11b | Workers | Workers | onroad | 20 | 8 | 9 | | | | 40 | 360 | 14.7 | 588 | 5,292 |
| | | | | | | | | | | | | | | |
| 11c | Air Compresor | Air Compressors | offroad | 2 | 8 | 57 | 75 | | | | | | | |
| 11c | Man Lift | Cranes | offroad | 1 | 4 | 57 | 100 | | | | | | | |
| 11c | 100-Ton Crane | Cranes | offroad | 1 | 4 | 57 | 500 | | | | | | | |
| 11c | Fork Lift | Forklifts | offroad | 1 | 4 | 57 | 100 | | | | | | | |
| 11c | Diesel Generator | Generator Sets | offroad | 4 | 8 | 57 | 50 | | | | | | | |
| 11c | Light Plant | Other General Industrial Equipmen | offroad | 3 | 8 | 57 | 50 | | | | | | | |
| 11c | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 57 | 120 | | | | | | | |
| 11c | Semi-Tractor | Tractors/Loaders/Backhoes | offroad | 1 | 2 | 57 | 500 | | | | | | | |
| 11c | Welding Truck/Rig | Welders | offroad | 4 | 8 | 57 | 50 | | | | | | | |
| 11c | Haul Trucks | Haul Trucks | onroad | 23 | | 6 | | | 4568 | 8 | 46 | 30 | 240 | 1,380 |
| 11c | Delivery Trucks | Delivery Trucks | onroad | 16 | | 4 | | | | 8 | 32 | 30 | 240 | 960 |
| 11c | Workers | Workers | onroad | 20 | 8 | 57 | | | | 40 | 2,280 | 14.7 | 588 | 33,516 |
| | | | | | | | | | | | | | | |
| 11d | Air Compresor | Air Compressors | offroad | 1 | 8 | 5 | 75 | | | | | | | |
| 11d | Man Lift | Cranes | offroad | 1 | 8 | 5 | 100 | | | | | | | |
| 11d | Fork Lift | Forklifts | offroad | 1 | 8 | 5 | 100 | | | | | | | |
| 11d | Diesel Generator | Generator Sets | offroad | 1 | 8 | 5 | 50 | | | | | | | |
| 11d | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 5 | 120 | | | | | | | |
| 11d | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 5 | 120 | | | | | | | |
| 11d | Haul Trucks | Haul Trucks | onroad | | | 3 | | | | 0 | 0 | | 0 | 0 |
| 11d | Delivery Trucks | Delivery Trucks | onroad | | | 3 | | | | 0 | 0 | | 0 | 0 |
| 11d | Workers | Workers | onroad | 20 | | 5 | | | | 40 | 200 | 14.7 | 588 | 2,940 |
| | | | | | | | | | | | | | | |
| 11e | Air Compresor | Air Compressors | offroad | 1 | 8 | 9 | 75 | | | | | | | |
| 11e | Fork Lift | Forklifts | offroad | 1 | 4 | 9 | 100 | | | | | | | |
| 11e | Diesel Generator | Generator Sets | offroad | 1 | 8 | 9 | 50 | | | | | | | |
| 11e | Grader | Graders | offroad | 1 | 4 | 9 | 500 | | | | | | | |
| 11e | Concrete Pump Truck | Off-Highway Trucks | offroad | 1 | 8 | 9 | 370 | | | | | | | |
| 11e | Roller | Rollers | offroad | 1 | 8 | 9 | 120 | | | | | | | |
| 11e | Scraper | Scrapers | offroad | 1 | 4 | 9 | 250 | | | | | | | |
| 11e | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 9 | 120 | | | | | | | |
| 11e | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 9 | 120 | | | | | | | |
| 11e | Ditch Witch | Trenchers | offroad | 1 | 8 | 9 | 50 | | | | | | | |
| 11e | Haul Trucks | Haul Trucks | onroad | | | 5 | | | | 0 | 0 | | 0 | 0 |

**Table 5. Construction Equipment, Tasks ID 1-11**

| | | | | Construction Equipment | | | | Vehicles | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Task ID | Equipment | General Equip Type | Type (offroad/onroad /marine) | Number of Pieces (haul truck total loads, delivery truck total loads, workers/day) | Utilization (hr/day) | Total days | Horsepower (hp) | Demolition Debris (ton) | Soil Import/Export (ton) | Vehicle Trips (1-way trips/day) | Vehicle Trips Total (1-way trips) | Transit Distance (1-way miles) - Offsite | VMT (mi/day) - Offsite | VMT (total) - Offsite |
| 11e | Delivery Trucks | Delivery Trucks | onroad | | | 4 | | | | 0 | 0 | | 0 | 0 |
| 11e | Workers | Workers | onroad | 20 | 8 | 9 | | | | 40 | 360 | 14.7 | 588 | 5,292 |
| | | | | | | | | | | | | | | |
| 11f | Air Compresor | Air Compressors | offroad | 2 | 8 | 57 | 75 | | | | | | | |
| 11f | Man Lift | Cranes | offroad | 1 | 4 | 57 | 100 | | | | | | | |
| 11f | 100-Ton Crane | Cranes | offroad | 1 | 4 | 57 | 500 | | | | | | | |
| 11f | Fork Lift | Forklifts | offroad | 1 | 4 | 57 | 100 | | | | | | | |
| 11f | Diesel Generator | Generator Sets | offroad | 4 | 8 | 57 | 50 | | | | | | | |
| 11f | Light Plant | Other General Industrial Equipmen | offroad | 3 | 8 | 57 | 50 | | | | | | | |
| 11f | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 57 | 120 | | | | | | | |
| 11f | Semi-Tractor | Tractors/Loaders/Backhoes | offroad | 1 | 2 | 57 | 500 | | | | | | | |
| 11f | Welding Truck/Rig | Welders | offroad | 4 | 8 | 57 | 50 | | | | | | | |
| 11f | Haul Trucks | Haul Trucks | onroad | | | 6 | | | | 0 | 0 | | 0 | 0 |
| 11f | Delivery Trucks | Delivery Trucks | onroad | | | 4 | | | | 0 | 0 | | 0 | 0 |
| 11f | Workers | Workers | onroad | 20 | 8 | 57 | | | | 40 | 2,280 | 14.7 | 588 | 33,516 |
| | | | | | | | | | | | | | | |
| 11g | Air Compresor | Air Compressors | offroad | 1 | 8 | 5 | 75 | | | | | | | |
| 11g | Man Lift | Cranes | offroad | 1 | 8 | 5 | 100 | | | | | | | |
| 11g | Fork Lift | Forklifts | offroad | 1 | 8 | 5 | 100 | | | | | | | |
| 11g | Diesel Generator | Generator Sets | offroad | 1 | 8 | 5 | 50 | | | | | | | |
| 11g | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 5 | 120 | | | | | | | |
| 11g | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 8 | 5 | 120 | | | | | | | |
| 11g | Haul Trucks | Haul Trucks | onroad | | | 3 | | | | 0 | 0 | | 0 | 0 |
| 11g | Delivery Trucks | Delivery Trucks | onroad | | | 3 | | | | 0 | 0 | | 0 | 0 |
| 11g | Workers | Workers | onroad | 20 | | 5 | | | | 40 | 200 | 14.7 | 588 | 2,940 |
| | | | | | | | | | | | | | | |
| 11h | Air Compresor | Air Compressors | offroad | 1 | 8 | 9 | 75 | | | | | | | |
| 11h | Fork Lift | Forklifts | offroad | 1 | 4 | 9 | 100 | | | | | | | |
| 11h | Diesel Generator | Generator Sets | offroad | 1 | 8 | 9 | 50 | | | | | | | |
| 11h | Grader | Graders | offroad | 1 | 4 | 9 | 500 | | | | | | | |
| 11h | Concrete Pump Truck | Off-Highway Trucks | offroad | 1 | 8 | 9 | 370 | | | | | | | |
| 11h | Roller | Rollers | offroad | 1 | 8 | 9 | 120 | | | | | | | |
| 11h | Scraper | Scrapers | offroad | 1 | 4 | 9 | 250 | | | | | | | |
| 11h | Backhoe | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 9 | 120 | | | | | | | |
| 11h | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 9 | 120 | | | | | | | |
| 11h | Ditch Witch | Trenchers | offroad | 1 | 8 | 9 | 50 | | | | | | | |
| 11h | Haul Trucks | Haul Trucks | onroad | | | 5 | | | | 0 | 0 | | 0 | 0 |
| 11h | Delivery Trucks | Delivery Trucks | onroad | | | 4 | | | | 0 | 0 | | 0 | 0 |
| 11h | Workers | Workers | onroad | 20 | 8 | 9 | | | | 40 | 360 | 14.7 | 588 | 5,292 |
| | | | | | | | | | | | | | | |
| 11i | Air Compresor | Air Compressors | offroad | 2 | 8 | 57 | 75 | | | | | | | |
| 11i | Man Lift | Cranes | offroad | 1 | 4 | 57 | 100 | | | | | | | |
| 11i | 100-Ton Crane | Cranes | offroad | 1 | 4 | 57 | 500 | | | | | | | |
| 11i | Fork Lift | Forklifts | offroad | 1 | 4 | 57 | 100 | | | | | | | |
| 11i | Diesel Generator | Generator Sets | offroad | 4 | 8 | 57 | 50 | | | | | | | |
| 11i | Light Plant | Other General Industrial Equipmen | offroad | 3 | 8 | 57 | 50 | | | | | | | |
| 11i | Front End Loader | Tractors/Loaders/Backhoes | offroad | 1 | 4 | 57 | 120 | | | | | | | |
| 11i | Semi-Tractor | Tractors/Loaders/Backhoes | offroad | 1 | 2 | 57 | 500 | | | | | | | |
| 11i | Welding Truck/Rig | Welders | offroad | 4 | 8 | 57 | 50 | | | | | | | |
| 11i | Haul Trucks | Haul Trucks | onroad | | | 6 | | | | 0 | 0 | | 0 | 0 |
| 11i | Delivery Trucks | Delivery Trucks | onroad | | | 4 | | | | 0 | 0 | | 0 | 0 |
| 11i | Workers | Workers | onroad | 20 | 8 | 57 | | | | 40 | 2,280 | 14.7 | 588 | 33,516 |

**Notes:**

[1] Haul and delivery vehicle counts reflect truck loads. These are multiplied by 2 to reflect 1-way trips in the calculations.

[2] Pickup truck trips were not provided. Assumed 25 mph and used utilization (hr/day) to calculate VMT.

[3] Workers transit 1-way (miles) 14.7 CalEEMod, Appendix D, 2017.

[4] Haul truck and delivery truck information was provided as a total for each of the following broad categories: Demolition/Hauling, Site Preparation/Ring Wall, and Tank Refurbishment. Since each of these categories has several subtasks taking place during different time periods, the haul truck and delivery truck activity was assigned to the first category in the list.

**Table 6. Construction Equipment, Task ID 12**

| Task ID | Task | Phase Length (days) | Equipment Count | Equipment Type | Utilization (hr/day) | HP | Load | VMT (1-way trips) |
|---|---|---|---|---|---|---|---|---|
| **12** | | | | | | | | |
| 12a | Grading | 4 | 1 | Rubber Rired Dozers | 8 | 247 | 0.4 | |
| 12a | | 4 | 2 | Tractor/Loader/Backhoes | 7 | 97 | 0.37 | |
| 12a | | 4 | 1 | Graders | 8 | 187 | 0.41 | |
| 12a | | 4 | 5 | Workers | | | | 29.4 |
| 12b | Asphalt Paving | 10 | 1 | Pavers | 8 | 130 | 0.42 | |
| 12b | | 10 | 1 | Cement and Mortar Mixers | 6 | 9 | 0.56 | |
| 12b | | 10 | 2 | Rollers | 6 | 80 | 0.38 | |
| 12b | | 10 | 1 | Tractor/Loader/Backhoes | 8 | 97 | 0.37 | |
| 12b | | 10 | 1 | Paving Equipment | 6 | 132 | 0.36 | |
| 12b | | 10 | 8 | Workers | | | | 29.4 |

**Source:**
[1] CalEEMod Appendix D, Table 3.1 for Phase Length.
[2] CalEEMod, Appendix D, Table 3.2 for equipment count, type, and utilization.
[3] CalEEMod, Appendix D, Table 3.3 for horsepower and load.
[4] CalEEMod, Appendix A, Section 4.5 for number of workers per equpment:
[5] Workers transit 1-way (miles)
**Notes:**
[1] No import/export of soil.
[2] Assumptions confirmed by Port via e-mail from Leah Kohler on 10/4/2021.

**Table 7. Construction Equipment, Load Factors**

| Equipment | CalEEMod HP | CalEEMod LF |
|---|---|---|
| Aerial Lifts | 63 | 0.31 |
| Air Compressors | 78 | 0.48 |
| Bore/Drill Rigs | 221 | 0.5 |
| Cement and Mortar Mixers | 9 | 0.56 |
| Concrete/Industrial Saws | 81 | 0.73 |
| Cranes | 231 | 0.29 |
| Crawler Tractors | 212 | 0.43 |
| Crushing/Proc. Equipment | 85 | 0.78 |
| Dumpers/Tenders | 16 | 0.38 |
| Excavators | 158 | 0.38 |
| Forklifts | 89 | 0.2 |
| Generator Sets | 84 | 0.74 |
| Graders | 187 | 0.41 |
| Off-Highway Tractors | 124 | 0.44 |
| Off-Highway Trucks | 402 | 0.38 |
| Other Construction Equipment | 172 | 0.42 |
| Equipment | 88 | 0.34 |
| Equipment | 168 | 0.4 |
| Pavers | 130 | 0.42 |
| Paving Equipment | 132 | 0.36 |
| Plate Compactors | 8 | 0.43 |
| Pressure Washers | 13 | 0.3 |
| Pumps | 84 | 0.74 |
| Rollers | 80 | 0.38 |
| Rough Terrain Forklifts | 100 | 0.4 |
| Rubber Tired Dozers | 247 | 0.4 |
| Rubber Tired Loaders | 203 | 0.36 |
| Scrapers | 367 | 0.48 |
| Signal Boards | 6 | 0.82 |
| Skid Steer Loaders | 65 | 0.37 |
| Surfacing Equipment | 263 | 0.3 |
| Sweepers/Scrubbers | 64 | 0.46 |
| Tractors/Loaders/Backhoes | 97 | 0.37 |
| Trenchers | 78 | 0.5 |
| Welders | 46 | 0.45 |
| **Additional Non-Default Equipment** | | |
| | | 0.42 |

**Source:**

[1] CalEEMod 2017, Appendix D.

**Table 8. Offroad Engine Emission Factors**

| | | Emission Factor (g/hp-hr) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Tier** | **High HP** | **PM10** | **PM2.5** | **DPM** | **NOX** | **SOX** | **CO** | **HC** | **VOC** | **CO2** | **CH4** | **N2O** |
| Tier 1 | 2000 | 0.108 | 0.108 | 0.108 | 5.93 | 0.005 | 6.9 | | 0.38 | | | |
| | 750 | 0.108 | 0.108 | 0.108 | 5.93 | 0.005 | 6.9 | | 0.38 | | | |
| | 599 | 0.108 | 0.108 | 0.108 | 5.93 | 0.005 | 6.9 | | 0.38 | | | |
| | 299 | 0.108 | 0.108 | 0.108 | 5.93 | 0.005 | 6.9 | | 0.38 | | | |
| | 174 | 0.274 | 0.274 | 0.274 | 6.54 | 0.005 | 6.9 | | 0.82 | | | |
| | 119 | 0.552 | 0.552 | 0.552 | 6.54 | 0.005 | 6.9 | | 1.19 | | | |
| | 74 | 0.552 | 0.552 | 0.552 | 6.54 | 0.006 | 6.9 | | 1.19 | | | |
| | 49 | 0.48 | 0.48 | 0.48 | 5.26 | 0.006 | 4.1 | | 1.74 | | | |
| Tier 2 | 2000 | 0.088 | 0.088 | 0.088 | 3.79 | 0.005 | 2.6 | | 0.12 | | | |
| | 750 | 0.088 | 0.088 | 0.088 | 3.79 | 0.005 | 2.6 | | 0.12 | | | |
| | 599 | 0.088 | 0.088 | 0.088 | 3.79 | 0.005 | 2.6 | | 0.12 | | | |
| | 299 | 0.088 | 0.088 | 0.088 | 4.15 | 0.005 | 2.6 | | 0.12 | | | |
| | 174 | 0.128 | 0.128 | 0.128 | 4.17 | 0.005 | 3.7 | | 0.19 | | | |
| | 119 | 0.192 | 0.192 | 0.192 | 4.75 | 0.005 | 3.7 | | 0.23 | | | |
| | 74 | 0.192 | 0.192 | 0.192 | 4.75 | 0.006 | 3.7 | | 0.23 | | | |
| | 49 | 0.28 | 0.28 | 0.28 | 4.63 | 0.006 | 4.1 | | 0.29 | | | |
| Tier 3 | 2000 | 0.088 | 0.088 | 0.088 | 2.32 | 0.005 | 2.6 | | 0.12 | 208.44 | 0.01 | 0.01 |
| | 750 | 0.088 | 0.088 | 0.088 | 2.32 | 0.005 | 2.6 | | 0.12 | 208.44 | 0.01 | 0.01 |
| | 599 | 0.088 | 0.088 | 0.088 | 2.32 | 0.005 | 2.6 | | 0.12 | 208.44 | 0.01 | 0.01 |
| | 299 | 0.088 | 0.088 | 0.088 | 2.32 | 0.005 | 2.6 | | 0.12 | 208.44 | 0.01 | 0.01 |
| | 174 | 0.112 | 0.112 | 0.112 | 2.32 | 0.005 | 3.7 | | 0.12 | 208.44 | 0.01 | 0.01 |
| | 119 | 0.192 | 0.192 | 0.192 | 2.74 | 0.005 | 3.7 | | 0.12 | 208.44 | 0.01 | 0.01 |
| | 74 | 0.192 | 0.192 | 0.192 | 2.74 | 0.006 | 3.7 | | 0.12 | 208.44 | 0.01 | 0.01 |
| | 49 | 0.28 | 0.28 | 0.28 | 4.63 | 0.006 | 4.1 | | 0.29 | 208.44 | 0.01 | 0.01 |
| Tier 4 Interim | 2000 | 0.048 | 0.048 | 0.048 | 2.24 | 0.005 | 2.6 | | 0.12 | | | |
| | 750 | 0.008 | 0.008 | 0.008 | 1.29 | 0.005 | 2.6 | | 0.08 | | | |
| | 599 | 0.008 | 0.008 | 0.008 | 1.29 | 0.005 | 2.6 | | 0.08 | | | |
| | 299 | 0.008 | 0.008 | 0.008 | 1.29 | 0.005 | 2.6 | | 0.08 | | | |
| | 174 | 0.008 | 0.008 | 0.008 | 2.15 | 0.005 | 3.7 | | 0.06 | | | |
| | 119 | 0.008 | 0.008 | 0.008 | 2.14 | 0.005 | 3.7 | | 0.11 | | | |
| | 74 | 0.112 | 0.112 | 0.112 | 2.74 | 0.006 | 3.7 | | 0.12 | | | |
| | 49 | 0.128 | 0.128 | 0.128 | 4.55 | 0.006 | 4.1 | | 0.12 | | | |
| Tier 4 Final | 2000 | 0.016 | 0.016 | 0.016 | 2.24 | 0.005 | 2.6 | | 0.06 | 208.44 | 0.01 | 0.01 |
| | 750 | 0.008 | 0.008 | 0.008 | 0.26 | 0.005 | 2.2 | | 0.06 | 208.44 | 0.01 | 0.01 |
| | 599 | 0.008 | 0.008 | 0.008 | 0.26 | 0.005 | 2.2 | | 0.06 | 208.44 | 0.01 | 0.01 |
| | 299 | 0.008 | 0.008 | 0.008 | 0.26 | 0.005 | 2.2 | | 0.06 | 208.44 | 0.01 | 0.01 |
| | 174 | 0.008 | 0.008 | 0.008 | 0.26 | 0.005 | 3.7 | | 0.06 | 208.44 | 0.01 | 0.01 |
| | 119 | 0.008 | 0.008 | 0.008 | 0.26 | 0.005 | 3.7 | | 0.06 | 208.44 | 0.01 | 0.01 |
| | 74 | 0.008 | 0.008 | 0.008 | 2.74 | 0.006 | 3.7 | | 0.12 | 208.44 | 0.01 | 0.01 |
| | 49 | 0.008 | 0.008 | 0.008 | 2.75 | 0.006 | 4.1 | | 0.12 | 208.44 | 0.01 | 0.01 |

**Notes:**

[1] Per Port direction (e-mail 1/31/2019 from Erin Sheehy), the unmitigated analysis assumes that all land-based off-road engines are Tier 4 and all marine-based off-road engines are Tier 3.

**Source:**

[1] Criteria Air Pollutants:

PM, Nox , CO and VOC are from CalEEMod, Appendix D, Table 3.5 OFFROAD Emission Factor Based on Engine Tier.

SOx is a function of fuel sulfur content and does not change with Tier.

[2] Greenhouse Gases:

CARB Offroad2017 model was used to obtain fuel utilization. Fuel utilization was used in conjunction with The Climate Registry GHG emission factors.

**Table 9. SOx Emission Factor, Construction Equipment**

| | | | |
|---|---|---|---|
| Offroad Construction | | | |
| Equipment less than 100 hp | 0.0056 g/hp-hr | | |
| | | | |
| Offroad Construction | | | |
| Equipment greater than 100 hp | 0.0050 g/hp-hr | | |
| SOx (gms/hp-hr) = (S content in X/1,000,000) x (MW SO2/ MW S) x BSF = | | | |
| Where: | | | |
| X = S content in parts per million (ppm) | | 15 | ppm |
| S MW = Molecular Weight | | 32 | |
| SO2 MW = Molecular Weight | | 64 | |
| BSFC for offroad construction equipment less than 100 hp (per CARB OFFROAD 2017 Diesel Emission Factors excel spreadsheet) | | 0.408 | (lb/hp-hr) |
| BSFC for offroad construction equipment greater than 100 hp (per CARB OFFROAD 2017 Diesel Emission Factors excel spreadsheet) | | 0.367 | (lb/hp-hr) |
| BSFC for offroad construction equipment less than 100 hp | | 185.1 | (g/hp-hr) |
| BSFC for offroad construction equipment greater than 100 hp | | 166.5 | (g/hp-hr) |

**Table 10. Onroad Vehicles Emission Factors, Offiste Transit**

| Year | Vehicle Type | Units | PM10 brake wear | PM10 tire wear | PM2.5 brake wear | PM2.5 tire wear | PM10 | PM2.5 | DPM | NOX | SOX | CO | VOC | CO2 | CH4 | N2O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021 | Trucks | g/mi | 0.062 | 0.036 | 0.026 | 0.009 | 0.023 | 0.022 | 0.023 | 2.396 | 0.013 | 0.199 | 0.026 | 1359.013 | 0.001 | 0.214 |
| 2021 | Pick-Up Trucks | g/mi | 0.037 | 0.008 | 0.016 | 0.002 | 0.006 | 0.005 | 0.006 | 0.056 | 0.004 | 0.259 | 0.016 | 382.670 | 0.001 | 0.060 |
| 2021 | Workers | g/mi | 0.037 | 0.008 | 0.016 | 0.002 | 0.002 | 0.002 | | 0.061 | 0.003 | 0.875 | 0.016 | 294.984 | 0.004 | 0.006 |
| 2022 | Trucks | g/mi | 0.062 | 0.036 | 0.026 | 0.009 | 0.023 | 0.022 | 0.023 | 2.365 | 0.013 | 0.197 | 0.024 | 1337.217 | 0.001 | 0.210 |
| 2022 | Pick-Up Trucks | g/mi | 0.037 | 0.008 | 0.016 | 0.002 | 0.005 | 0.005 | 0.005 | 0.048 | 0.004 | 0.251 | 0.014 | 371.983 | 0.001 | 0.058 |
| 2022 | Workers | g/mi | 0.037 | 0.008 | 0.016 | 0.002 | 0.002 | 0.002 | | 0.054 | 0.003 | 0.802 | 0.014 | 285.783 | 0.003 | 0.005 |
| 2023 | Trucks | g/mi | 0.062 | 0.036 | 0.026 | 0.009 | 0.022 | 0.021 | 0.022 | 2.234 | 0.012 | 0.186 | 0.018 | 1305.753 | 0.001 | 0.205 |
| 2023 | Pick-Up Trucks | g/mi | 0.037 | 0.008 | 0.016 | 0.002 | 0.005 | 0.004 | 0.005 | 0.042 | 0.003 | 0.246 | 0.013 | 361.646 | 0.001 | 0.057 |
| 2023 | Workers | g/mi | 0.037 | 0.008 | 0.016 | 0.002 | 0.002 | 0.002 | | 0.047 | 0.003 | 0.740 | 0.012 | 276.528 | 0.003 | 0.005 |
| 2024 | Trucks | g/mi | 0.062 | 0.036 | 0.026 | 0.009 | 0.021 | 0.020 | 0.021 | 2.234 | 0.012 | 0.188 | 0.018 | 1284.748 | 0.001 | 0.202 |
| 2024 | Pick-Up Trucks | g/mi | 0.037 | 0.008 | 0.016 | 0.002 | 0.004 | 0.004 | 0.004 | 0.038 | 0.003 | 0.249 | 0.013 | 353.121 | 0.001 | 0.056 |
| 2024 | Workers | g/mi | 0.037 | 0.008 | 0.016 | 0.002 | 0.002 | 0.001 | | 0.042 | 0.003 | 0.692 | 0.011 | 268.353 | 0.003 | 0.005 |
| 2025 | Trucks | g/mi | 0.062 | 0.036 | 0.026 | 0.009 | 0.021 | 0.020 | 0.021 | 2.196 | 0.012 | 0.187 | 0.018 | 1256.159 | 0.001 | 0.197 |
| 2025 | Pick-Up Trucks | g/mi | 0.037 | 0.008 | 0.016 | 0.002 | 0.004 | 0.004 | 0.004 | 0.033 | 0.003 | 0.245 | 0.012 | 343.014 | 0.001 | 0.054 |
| 2025 | Workers | g/mi | 0.037 | 0.008 | 0.016 | 0.002 | 0.002 | 0.001 | | 0.038 | 0.003 | 0.647 | 0.009 | 259.078 | 0.002 | 0.004 |
| 2026 | Trucks | g/mi | 0.062 | 0.036 | 0.026 | 0.009 | 0.021 | 0.020 | 0.021 | 2.163 | 0.012 | 0.185 | 0.018 | 1225.868 | 0.001 | 0.193 |
| 2026 | Pick-Up Trucks | g/mi | 0.037 | 0.008 | 0.016 | 0.002 | 0.003 | 0.003 | 0.003 | 0.030 | 0.003 | 0.243 | 0.011 | 334.270 | 0.001 | 0.053 |
| 2026 | Workers | g/mi | 0.037 | 0.008 | 0.016 | 0.002 | 0.001 | 0.001 | | 0.034 | 0.002 | 0.611 | 0.008 | 251.048 | 0.002 | 0.004 |

**Source:**

[1] Calculated from EMFAC2017.

**Table 11. Marine Engine Characteristics and Emission Factors**

| Year | HC Classification | Equipment | HC Characteristics | | | | | Unmitigated Emission Factors (g/kW-hr) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Engine Count per HC | Average Model Year | HC Average Power (hp) | HC Average Power (kW) | Load Factor | Engine Tier | PM10 | PM2.5 | DPM | NOX | SOX | CO | VOC | CO2 | CH4 | N2O |
| 2021+ | Crew Boat Auxiliary | Crew Boat / Skiff Auxiliary | 1 | 2010 | 50 | 37 | 0.32 | Tier 2 | 0.40 | 0.36 | 0.40 | 7.13 | 0.01 | 5.00 | 0.38 | 652.00 | 0.01 | 0.03 |
| | Crew Boat Auxiliary | Survey Boat Auxiliary | 1 | 2010 | 50 | 37 | 0.32 | Tier 2 | 0.40 | 0.36 | 0.40 | 7.13 | 0.01 | 5.00 | 0.38 | 652.00 | 0.01 | 0.03 |
| | Crew Boat Propulsion | Crew Boat / Skiff Propulsion | 1 | 2010 | 564 | 421 | 0.38 | Tier 2 | 0.44 | 0.39 | 0.44 | 8.86 | 0.01 | 5.00 | 0.47 | 652.00 | 0.01 | 0.03 |
| | Crew Boat Propulsion | Survey Boat Propulsion | 1 | 2010 | 150 | 112 | 0.38 | Tier 2 | 0.44 | 0.39 | 0.44 | 8.86 | 0.01 | 5.00 | 0.47 | 652.00 | 0.01 | 0.03 |
| | Tugboat Auxiliary | Tugboat Generator | 1 | 2010 | 60 | 45 | 0.43 | Tier 2 | 0.40 | 0.36 | 0.40 | 7.13 | 0.01 | 5.00 | 0.38 | 652.00 | 0.01 | 0.03 |
| | Tugboat Auxiliary | Tugboat Deck Winch | 1 | 2010 | 160 | 119 | 0.43 | Tier 2 | 0.30 | 0.27 | 0.30 | 6.84 | 0.01 | 5.00 | 0.36 | 652.00 | 0.01 | 0.03 |
| | Tugboat Propulsion | Tugboat Propulsion | 2 | 2010 | 1200 | 895 | 0.31 | Tier 2 | 0.44 | 0.39 | 0.44 | 8.86 | 0.01 | 5.00 | 0.47 | 652.00 | 0.01 | 0.03 |

**Source:**

[1] HC average model year, load factors, and emission factors: 2019 POLA Emissions Inventory, Tables 4.1 and 4.2.

[2] HC engine hp was provided by the P66: Copy of 2020-09-11 AQ ConstructionNeedsTemplate_P66 MNIQA (version 1).xlsx

**Table 12. Harbor Craft Tier Designation**

| Model Year | HP Range | Tier |
|---|---|---|
| <1999 | all | Tier 0 |
| 2000-2003 | <500 | Tier 1 |
| 2000-2006 | >500 | Tier 1 |
| >2004 | <500 | Tier 2 |
| >2007 | >500 | Tier 2 |
| >2009 | 25-120 | Tier 3 |
| >2013 | 120-175 | Tier 3 |
| >2014 | 175-500 | Tier 3 |
| >2013 | 500-750 | Tier 3 |
| 2012-2017 | 750-1900 | Tier 3 |
| 2013-2016 | 1900-3000 | Tier 3 |
| 2014-2016 | >3000 | Tier 3 |

**Source:**

[1] POLA 2016 Emissions Inventory, Table 4.3.

**Table 13. Harbor Craft Emission Factors - EPA Standards, g/kw-hr**

| Engine Displacement | (kW) | EPA Tier | MY | NMHC+NOx | PM10 | PM2.5 | DPM | NOx | SOX | CO | HC | VOC | CO2 | CH4 | N2O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Category 1** | **HC auxiliary engines** | | | | | | | | | | | | | | |
| >2.5 | >37 | Tier 1 | 2004 | | **0.54** | 0.48 | 0.54 | **17.00** | 0.007 | **11.40** | **1.30** | **1.37** | 652 | 0.026 | 0.031 |
| <0.9 | ≥37 | Tier 2 | 2005 | **7.50** | **0.40** | 0.36 | 0.40 | 7.1 | 0.007 | **5.00** | 0.38 | 0.39 | 652 | 0.008 | 0.031 |
| 0.9 < displ < 1.2 | all | Tier 2 | 2004 | **7.20** | **0.30** | 0.27 | 0.30 | 6.8 | 0.007 | **5.00** | 0.36 | 0.38 | 652 | 0.007 | 0.031 |
| 1.2 < displ < 2.5 | all | Tier 2 | 2004 | **7.20** | **0.20** | 0.18 | 0.20 | 6.8 | 0.007 | **5.00** | 0.36 | 0.38 | 652 | 0.007 | 0.031 |
| 2.5 < displ < 5 | >560 | Tier 2 | 2007 | **7.20** | **0.20** | 0.18 | 0.20 | 6.8 | 0.007 | **5.00** | 0.36 | 0.38 | 652 | 0.007 | 0.031 |
| <0.9 | <19 | Tier 3 | 2012+ | **5.4** | **0.14** | 0.12 | 0.14 | 5.1 | 0.007 | **6.60** | 0.27 | 0.28 | 652 | 0.005 | 0.031 |
| <0.9 | 19-37 | Tier 3 | 2012+ | **5.4** | **0.14** | 0.12 | 0.14 | 5.1 | 0.007 | **5.50** | 0.27 | 0.28 | 652 | 0.005 | 0.031 |
| <0.9 | >37 | Tier 3 | 2014+ | **5.4** | **0.14** | 0.12 | 0.14 | 5.1 | 0.007 | **5.00** | 0.27 | 0.28 | 652 | 0.005 | 0.031 |
| 0.9 < displ < 1.2 | <19 | Tier 3 | 2013+ | **5.4** | **0.12** | 0.11 | 0.12 | 5.1 | 0.007 | **6.60** | 0.27 | 0.28 | 652 | 0.005 | 0.031 |
| 0.9 < displ < 1.2 | 19-37 | Tier 3 | 2013+ | **5.4** | **0.12** | 0.11 | 0.12 | 5.1 | 0.007 | **5.50** | 0.27 | 0.28 | 652 | 0.005 | 0.031 |
| 0.9 < displ < 1.2 | >37 | Tier 3 | 2013+ | **5.4** | **0.12** | 0.11 | 0.12 | 5.1 | 0.007 | **5.00** | 0.27 | 0.28 | 652 | 0.005 | 0.031 |
| 1.2 < displ < 2.5 | <600 | Tier 3 | 2014-2017 | **5.6** | **0.11** | 0.10 | 0.11 | 5.3 | 0.007 | **5.00** | 0.28 | 0.29 | 652 | 0.006 | 0.031 |
| 1.2 < displ < 2.5 | <600 | Tier 3 | 2018+ | **5.6** | **0.10** | 0.09 | 0.10 | 5.3 | 0.007 | **5.00** | 0.28 | 0.29 | 652 | 0.006 | 0.031 |
| 1.2 < displ < 2.5 | ≥600 | Tier 3 | 2014+ | **5.6** | **0.11** | 0.10 | 0.11 | 5.3 | 0.007 | **5.00** | 0.28 | 0.29 | 652 | 0.006 | 0.031 |
| 2.5 < displ < 3.5 | <600 | Tier 3 | 2013-2017 | **5.6** | **0.11** | 0.10 | 0.11 | 5.3 | 0.007 | **5.00** | 0.28 | 0.29 | 652 | 0.006 | 0.031 |
| 2.5 < displ < 3.5 | <600 | Tier 3 | 2018+ | **5.6** | **0.10** | 0.09 | 0.10 | 5.3 | 0.007 | **5.00** | 0.28 | 0.29 | 652 | 0.006 | 0.031 |
| 2.5 < displ < 3.5 | ≥600 | Tier 3 | 2013+ | **5.6** | **0.11** | 0.10 | 0.11 | 5.3 | 0.007 | **5.00** | 0.28 | 0.29 | 652 | 0.006 | 0.031 |
| 3.5 ≤ D < 7 | <600 | Tier 3 | 2012-2017 | **5.8** | **0.11** | 0.10 | 0.11 | 5.5 | 0.007 | **5.00** | 0.29 | 0.31 | 652 | 0.006 | 0.031 |
| 3.5 ≤ D < 7 | <600 | Tier 3 | 2018+ | **5.8** | **0.10** | 0.09 | 0.10 | 5.5 | 0.007 | **5.00** | 0.29 | 0.31 | 652 | 0.006 | 0.031 |
| 3.5 ≤ D < 7 | ≥600 | Tier 3 | 2012+ | **5.8** | **0.11** | 0.10 | 0.11 | 5.5 | 0.007 | **5.00** | 0.29 | 0.31 | 652 | 0.006 | 0.031 |
| <7 | 600-1400 | Tier 4 | 2017+ | **0.19** | **0.04** | 0.04 | 0.04 | **1.8** | 0.007 | **5.00** | 0.01 | 0.01 | 652 | 0.000 | 0.031 |
| <7 | 1400-2000 | Tier 4 | 2016+ | **0.19** | **0.04** | 0.04 | 0.04 | **1.8** | 0.007 | **5.00** | 0.01 | 0.01 | 652 | 0.000 | 0.031 |
| <7 | 2000-3700 | Tier 4 | 2014+ | **0.19** | **0.04** | 0.04 | 0.04 | **1.8** | 0.007 | **5.00** | 0.01 | 0.01 | 652 | 0.000 | 0.031 |
| <7 | >3700 | Tier 4 | 2014-2015 | **0.19** | **0.12** | 0.11 | 0.12 | **1.8** | 0.007 | **5.00** | 0.01 | 0.01 | 652 | 0.000 | 0.031 |
| <7 | >3700 | Tier 4 | 2016+ | **0.19** | **0.06** | 0.05 | 0.06 | **1.8** | 0.007 | **5.00** | 0.01 | 0.01 | 652 | 0.000 | 0.031 |
| **Category 2** | **HC propulsion engines** | | | | | | | | | | | | | | |
| >2.5 | >37 | Tier 1 | 2004 | | **0.54** | 0.48 | 0.54 | **17.00** | 0.007 | **11.40** | **1.30** | **1.37** | 652 | 0.026 | 0.031 |
| 5.0 ≤ D < 15 | all | Tier 2 | 2007 | **7.8** | **0.27** | 0.24 | 0.27 | 7.4 | 0.007 | **5.00** | 0.39 | 0.41 | 652 | 0.008 | 0.031 |
| 15 ≤ D < 20 | < 3300 kW | Tier 2 | 2007 | **8.7** | **0.50** | 0.45 | 0.50 | 8.3 | 0.007 | **5.00** | 0.44 | 0.46 | 652 | 0.009 | 0.031 |
| 15 ≤ D < 20 | ≥ 3300 kW | Tier 2 | 2007 | **9.8** | **0.50** | 0.45 | 0.50 | 9.3 | 0.007 | **5.00** | 0.49 | 0.52 | 652 | 0.010 | 0.031 |
| 20 ≤ D < 25 | all | Tier 2 | 2007 | **9.8** | **0.50** | 0.45 | 0.50 | 9.3 | 0.007 | **5.00** | 0.49 | 0.52 | 652 | 0.010 | 0.031 |
| 25 ≤ D < 30 | all | Tier 2 | 2007 | **11.0** | **0.50** | 0.45 | 0.50 | 10.5 | 0.007 | **5.00** | 0.55 | 0.58 | 652 | 0.011 | 0.031 |
| 7 ≤ D < 15 | <2000 | Tier 3 | 2013+ | **6.2** | **0.14** | 0.12 | 0.14 | 5.9 | 0.007 | **5.00** | 0.31 | 0.33 | 652 | 0.006 | 0.031 |
| 7 ≤ D < 15 | 2000-3700 | Tier 3 | 2013+ | **7.8** | **0.14** | 0.12 | 0.14 | 7.4 | 0.007 | **5.00** | 0.39 | 0.41 | 652 | 0.008 | 0.031 |
| 15 ≤ D < 20 | <2000 | Tier 3 | 2014+ | **7.0** | **0.34** | 0.30 | 0.34 | 6.7 | 0.007 | **5.00** | 0.35 | 0.37 | 652 | 0.007 | 0.031 |
| 20 ≤ D < 25 | <2000 | Tier 3 | 2014+ | **9.8** | **0.27** | 0.24 | 0.27 | 9.3 | 0.007 | **5.00** | 0.49 | 0.52 | 652 | 0.010 | 0.031 |
| 25 ≤ D < 30 | <2000 | Tier 3 | 2014+ | **11.0** | **0.27** | 0.24 | 0.27 | 10.5 | 0.007 | **5.00** | 0.55 | 0.58 | 652 | 0.011 | 0.031 |
| all | 2000-3700 | Tier 4 | 2014 | | **0.04** | 0.04 | 0.04 | **1.8** | 0.007 | 5.00 | **0.19** | **0.20** | 652 | 0.004 | 0.031 |
| <15 | >3700 | Tier 4 | 2014 | | **0.12** | 0.11 | 0.12 | **1.8** | 0.007 | 5.00 | **0.19** | **0.20** | 652 | 0.004 | 0.031 |
| 15 ≤ D < 30 | >3700 | Tier 4 | 2014 | | **0.25** | 0.22 | 0.25 | **1.8** | 0.007 | 5.00 | **0.19** | **0.20** | 652 | 0.004 | 0.031 |
| all | >3700 | Tier 4 | 2016 | | **0.06** | 0.05 | 0.06 | **1.8** | 0.007 | 5.00 | **0.19** | **0.20** | 652 | 0.004 | 0.031 |
| all | 1400-2000 | Tier 4 | 2016 | | **0.04** | 0.04 | 0.04 | **1.8** | 0.007 | 5.00 | **0.19** | **0.20** | 652 | 0.004 | 0.031 |
| all | 600-1400 | Tier 4 | 2017 | | **0.04** | 0.04 | 0.04 | **1.8** | 0.007 | 5.00 | **0.19** | **0.20** | 652 | 0.004 | 0.031 |
| | 600-1400 | Tier 4 | 2017+ | | **0.04** | 0.04 | 0.04 | **1.8** | 0.007 | 5.00 | **0.19** | **0.20** | 652 | 0.004 | 0.031 |
| | 1400-2000 | Tier 4 | 2016+ | | **0.04** | 0.04 | 0.04 | **1.8** | 0.007 | 5.00 | **0.19** | **0.20** | 652 | 0.004 | 0.031 |
| | 2000-3700 | Tier 4 | 2014+ | | **0.04** | 0.04 | 0.04 | **1.8** | 0.007 | 5.00 | **0.19** | **0.20** | 652 | 0.004 | 0.031 |
| <15.0 | >3700 | Tier 4 | 2014-2015 | | **0.12** | 0.11 | 0.12 | **1.8** | 0.007 | 5.00 | **0.19** | **0.20** | 652 | 0.004 | 0.031 |
| 15 < displ < 30 | >3700 | Tier 4 | 2014-2015 | | **0.25** | 0.22 | 0.25 | **1.8** | 0.007 | 5.00 | **0.19** | **0.20** | 652 | 0.004 | 0.031 |
| all | >3700 | Tier 4 | 2016+ | | **0.06** | 0.05 | 0.06 | **1.8** | 0.007 | 5.00 | **0.19** | **0.20** | 652 | 0.004 | 0.031 |

**Source:**

[1] Federal Marine Compression-Ignition Engines - Exhaust Emission Standards. EPA-420-B-20-021. July 2020. Last accessed 10/2021 at https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100ZP4H.pdf.

[2] EPA Tier 1 emissions standards for marine engines do not specify restrictions to PM, SOx, CO, or VOC. NOx reflects Marpol Annex VI (17 g/kW-hr). PM10, SOX, CO, and VOC emissions factors were obtained from EPA offroad emission engine standards for Tier 1 engines.

[3] EPA Tier 2 and Tier 3 emission standards are reported as NOx+THC. 5% is HC per Carl Moyer Program guidelines. 95% is NOx.

[4] SOx emission factor is based on 15 ppm fuel sulfur content.

[5] PM2.5 is 89% of PM10, per SCAQMD 2006 Final Methodology to Calculate PM2.5 and PM 2.5 Significance Thresholds, Table 5.

[6] CO2 and N20 emission factors are from IVL: Methodology for Calculating Emissions from Ships: Update on Emission Factors, 2004, also summarized in POLA 2009 Emissions Inventory, Appendix B. CH4 is 2% of HC, per IVL study.

**Notes:**

[1] Bold numbers represent actual emission standards.

**Table 14. SOx Emission Factor**

| | | |
|---|---|---|
| Harbor Craft | 0.0074 g/kw-hr | |
| Dredging Equipment | use OFFROAD BSCF and convert to g SOx /hp-hr | |
| SOx (gms/hp-hr) = (S content in X/1,000,000) x (MW SO2/ MW S) x BSF = | | |
| Where: | | |
| X = S content in parts per million (ppm) | | 15 ppm |
| S MW = Molecular Weight | | 32 |
| SO2 MW = Molecular Weight | | 64 |
| BSFC for harbor craft = Brake Specific Fuel Consumption (per CARB 2007 Harbor Craft Methodology) | | 184 (g/hp-hr) |

**Source:**

[1] CARB, 2012. Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California. Available at https://ww3.arb.ca.gov/msei/chc-appendix-b-emission-estimates-ver02-27-2012.pdf

**Table 15. Harbor Craft Load Factor**

| Type | Main Engine | Auxiliary Engine |
|---|---|---|
| Assist tugboat | 0.31 | 0.43 |
| Commercial fishing | 0.27 | 0.43 |
| Crew boat | 0.38 | 0.32 |
| Excursion | 0.42 | 0.43 |
| Ferry | 0.42 | 0.43 |
| Government | 0.51 | 0.43 |
| Ocean tug | 0.68 | 0.43 |
| Tugboat | 0.31 | 0.43 |
| Workboat/Diveboat | 0.38 | 0.32 |

**Source:**

[1] 2013 POLA Emissions Inventory, Table 4.7.

**Table 16. Paved Road Dust Emission Factors**

| CARB Roadway Category | (sL) Silt Loading (g/m2) | PM10 Particle Size Multiplier (g/mi) | PM2.5 Particle Size Multiplier (g/mi) | Average Vehicle Weight (tons) | (E) Uncontrolled PM10 Emission Factor (g/VMT) | (E) Uncontrolled PM2.5 Emission Factor (g/VMT) |
|---|---|---|---|---|---|---|
| Onsite Trucks | 0.135 | 1.00 | 0.15 | 25.0 | 4.31 | 0.65 |
| Onsite Autos | 0.135 | 1.00 | 0.15 | 2.4 | 0.39 | 0.06 |
| Local | 0.135 | 1.00 | 0.15 | 2.4 | 0.39 | 0.06 |
| Collector | 0.013 | 1.00 | 0.15 | 2.4 | 0.05 | 0.01 |
| Major | 0.013 | 1.00 | 0.15 | 2.4 | 0.05 | 0.01 |
| Freeway | 0.015 | 1.00 | 0.15 | 2.4 | 0.05 | 0.01 |

**Notes:**
[1] Emission factors exclude engine exhaust, tire wear, and brake wear.
[2] The equation is: Emission Factor = (Particle Size Multiplier) x (sL)^0.91 x (Vehicle Weight)^1.02
[3] The silt loading value of 0.135 g/m2 for local roadways was assumed to be representative of onsite conditions because of the relatively low number of onsite truck and automobile trips.
[4] The average vehicle weight for onsite trucks is based on a modern tanker truck that holds 9,000 gal diesel fuel (approx. 31.7 tons fuel) and has a GVWR of 80,000 lbs (40 tons) (GVWR includes the weight of cargo). Therefore, a loaded fuel truck would weigh 40 tons and an empty fuel truck would weight 8.3 tons. The average weight is therefore assumed to be approximately 25 tons. Trucks and autos would generally take different routes onsite.
**Source:**
[1] CARB Emission Inventory Chapter 7.9: Miscellaneous Process Methodology. Entrained Road Travel, Paved Road Dust.

**Summary of Daily VMT by Roadway Type**
**Los Angeles - Long Beach - Santa Ana Metro Area**

| Metropolitan Area | Interstate/ Other Fwy/ Exprwy | Other Principal Arterial | Minor Arterial | Collector | Local |
|---|---|---|---|---|---|
| Daily Vehicle-Miles Travelled (Thousands) | 132,796 | 67,118 | 49,528 | 15,304 | 14,481 |
| Travel Fraction | 0.48 | 0.24 | 0.18 | 0.05 | 0.05 |

**Source:**
[1] Federal Highway Adminstration. Highway Statistics 2016 - Urbanized Areas - 2016 Miles and Daily Vehicle Miles Traveled. Table HM-71. Last accessed February 2019. https://www.fhwa.dot.gov/policyinformation/statistics/2016/

**Composite Paved Road Dust Emission Factors for Project Trips**

| Road Type | Fraction of Travel by Roadway Type | | | | | Composite EF | |
|---|---|---|---|---|---|---|---|
| | Interstate/ Other Fwy/ Exprwy | Other Principal Arterial | Minor Arterial | Collector | Local | PM10 (g/VMT) | PM2.5 (g/VMT) |
| Vehicle Trips in Los Angeles - Long Beach - Santa Ana Metro Area | 0.48 | 0.24 | 0.18 | 0.05 | 0.05 | **0.071** | **0.011** |

**Table 17. Grading Dust Emission Factors**

| | | | |
|---|---|---|---|
| PM10 (lb/VMT) | 1.543 | PM10 (lb/acre) | 1.06 |
| PM2.5 (lb/VMT) | 0.167 | PM2.5 (lb/acre) | 0.11 |
| E (lb/VMT) = k x 0.051 x (S)2.0 for PM10 and k x 0.040 x (S)2.5 for PM2.5 | | | |
| k = Scaling Constant (0.60 for PM10 and 0.031 for PM2.5) | | | |
| S = Mean Vehicle Speed assumed to be 7.1 mph | | | |
| Assumes VMT = 3 x hours in use | | | |
| E = EF * VMT | | | |
| VMT = Acres graded / Wb * 43560(sft/acre) / 5280(ft/mi | 0.6875 | VMT/acre | |
| Wb = blade width of grading equipment = 12 ft | | | |

**Source:**
[1] AP-42 Chapter 11.9 & CalEEMod 2021, Appendix A, Section 4.3.

**Table 18. Material Loading/Handling Dust Emision Factors**

| | |
|---|---|
| PM10 (lb/ton) | 0.0560274 |
| PM2.5 (lb/ton) | 0.0084841 |
| EF = (k)(0.0032)[(U/5)1.3]/[(M/2)1.4] | |
| EF = lb/ton | |
| k = Particle Size Constant (0.35 for PM10 and 0.053 for PM2.5) | |
| U = average wind speed = 2.2 m/s (CalEEMod), 4.9 mph | |
| M = moisture content = 12% (CalEEMod) | |
| Soil density (ton/cyd): | 1.26 |
| Truck capacity (cyd) | 20 |
| Truck capacity (ton) | 25.28 |

**Source:**
[1] AP-42 13.2.4 & CalEEMod

**Table 19. Debris Loading Dust Emission Factors**

| | |
|---|---|
| PM10 (lb/ton) | 0.0203 |
| PM2.5 (lb/ton) | 0.0031 |
| EF = k*0.058 | |
| EF = lb/ton of debris | |
| k = Particle Size Constant (0.35 for PM10 and 0.053 for PM2.5) | |

**Source:**

[1] CalEEMod 2021, Appendix A.

**Table 20. Asphalt Paving**

| | | | |
|---|---|---|---|
| VOC (lb/acre) | 2.62 | (lb/ft2) | 6.01469E-05 |

**Source:**

[1] CalEEMod, Appendix A, Section 4.8.

**Table 21. Fugitive Dust Control**

| |
|---|
| Regulatory Requirement |
| 61% Water disturbed areas within the construction site: 2xday (3.2-hour watering interval). SCAQMD Rule 403 |

**Source:**

[1] SCAQMD Rule 403, as applicable for Small Projects (<50 acres disturbed, <5,000 yd3 3 times per year).

[2] 2006 WRAP Fugitive Dust Handbook.

**Table 22. GHG Emission Factors**

| Source | CO2 | CH4 | N2O | Fuel |
|---|---|---|---|---|
| | (kg CO2/gal fuel) | (kg CH4/gal fuel) | (kg N2O/gal fuel) | |
| offroad construction equipment[1],[2] | 10.21 | 0.000576 | 0.000256 | diesel |
| | (kg CO2/gal fuel) | (g CH4/mile) | (g N2O/mile) | |
| onroad medium and heavy duty vehicles[1],[3] | 10.21 | 0.0051 | 0.0048 | diesel |
| onroad light duty vehicles[1],[3] | 8.78 | 0.2024 | 0.022 | gasoline |
| | kg CO2/gal | kg/MMBtu | kg/MMBtu | |
| non-transport fuel combustion[4],[5] | 5.72 | 0.003 | 0.0006 | propane |
| | kg CO2/MMBtu | kg/MMBtu | kg/MMBtu | |
| non-transport fuel combustion[4],[5] | 53.06 | 0.001 | 0.0001 | natural gas |

**Notes:**

[1] CO2 emission factors: 2016 Climate Registry Default Emission Factors, Table 13.1, US Default CO2 Emission Factors for Transport Fuels.

[2] N2O and CH4 emission factors: 2016 Climate Registry Default Emission Factors, Table 13.7, Default CH4 and N2O Emission Factors for Non-Highway Vehicles.

[3] N2O and CH4 emission factors: 2016 Climate Registry Default Emission Factors, Table 13.4, Default CH4 and N2O Emission Factors for Highway Vehicles by Technology Type.

[4] CO2 emission factors: 2016 Climate Registry Default Emission Factors, Table 12.1, Default Factors for Calculating CO2 Emissions from Fossil Fuel and Biomass Combustion.

[5] CH4 and N2O emission factors: 2016 Climate Registry Default Emission Factors, Table 12.9.1, Default CH4 and N2O Emission Factors by Fuel Type, Industrial and Energy Sectors.

**Table 23. Energy Use**

| Emission Source | Emissions (MT CO2/yr) | Fuel | CO2 Emission Factor (kg CO2/MMBtu) | High Heat Value (MMBtu/gal) | Fuel Use (gal/yr) |
|---|---|---|---|---|---|
| **Year 2022** | | | | | |
| Offroad Construction Equipment | 529 | diesel | 73.96 | 0.138 | 51,914 |
| Marine | 120 | diesel | 73.96 | 0.138 | 11,753 |
| Haul Trucks | 57 | diesel | 73.96 | 0.138 | 5,627 |
| Delivery Trucks | 83 | diesel | 73.96 | 0.138 | 8,128 |
| Pick-Up Trucks | 26 | diesel | 73.96 | 0.138 | 2,517 |
| Worker Vehicles | 128 | gasoline | 70.22 | 0.125 | 14,570 |
| ***Total Diesel Consumption*** | | | | | ***79,940*** |
| ***Total Gasoline Consumption*** | | | | | ***14,570*** |

**Notes:**

[1] Year 2022 reflects the maximum construction year.

**Source:**

[2] Fuel consumption calculated from quantified CO2 emissions and from The Climate Registry 2021 Emission Factors, Table 1.1.

| | |
|---|---|
| CO2 emission factor diesel (kg CO2/gal): | 10.21 |
| CO2 emission factor gasoline (kg CO2/gal): | 8.78 |
| Diesel carbon content (kg C/MMBTU): | 20.2 |
| Gasoline carbon content (kg C/MMBTU): | 19.2 |
| C/CO2 ratio: | 0.27 |

# Operational Emissions Assumptions and Calculation Tables

## Phillips66 MOTEMS Operational Emissions

**Project: Phillips66 MOTEMS**
**Year:** 2019, 2025

**Key tables**



*Note: Year 2025 assumed as earliest possible start of the Project. Actual Project start date would depend on construction schedule.*

**Table 1. OGV Main Engine Rated Power**

| Year | Vessel Type | Peak Day [1] Main Eng Avg (kW) | Annual Average Main Eng Avg (kW) |
|---|---|---|---|
| 2019 | OGV Barge | 0 | 0 |
| 2019 | ATB | | 5,999 |
| 2019 | Tanker - Handysize | 8,116 | 8,116 |
| 2019 | Tanker - Chemical | | 8,831 |
| 2019 | Tanker - Panamax | 11,067 | 11,067 |
| 2019 | Tanker - Aframax | 13,500 | 13,500 |
| 2019 | Bunkering Barge | 0 | 0 |
| 2025 | OGV Barge | 0 | 0 |
| 2025 | ATB | | 5,999 |
| 2025 | Tanker - Handysize | 8,116 | 8,116 |
| 2025 | Tanker - Chemical | | 8,831 |
| 2025 | Tanker - Panamax | 11,067 | 11,067 |
| 2025 | Tanker - Aframax | 13,500 | 13,500 |
| 2025 | Bunkering Barge | 0 | 0 |

**Source:**

[1] Updated based on average 2019 Wharfingers data.

[2] Barges are not self-propelled; no propulsion engines.

[3] OGV Barge do not have propulsion engines, only auxiliary and pump engines.

[4] Aframax characteristics from 2019 POLA Inventory Table 3.9.

**Table 2. OGV Average Aux Engine & Aux Boiler Loads**

| Vessel Type | Engine Type | Average Loads (kW) | | | |
|---|---|---|---|---|---|
| | | Transit | Maneuvering | Berthing | Anchorage |
| ATB | Auxiliary Engine | 79 | 208 | 102 | 79 |
| ATB | Pump Generator | | | 390 | |
| Tanker - Chemical | Auxiliary Engine | 658 | 890 | 816 | 402 |
| Tanker - Chemical | Auxiliary Boiler | 59 | 136 | 568 | 255 |
| Tanker - Handysize | Auxiliary Engine | 537 | 601 | 820 | 560 |
| Tanker - Handysize | Auxiliary Boiler | 144 | 144 | 2,586 | 144 |
| Tanker - Panamax | Auxiliary Engine | 561 | 763 | 623 | 379 |
| Tanker - Panamax | Auxiliary Boiler | 167 | 351 | 3,421 | 451 |
| Tanker - Aframax | Auxiliary Engine | 576 | 719 | 724 | 474 |
| Tanker - Aframax | Auxiliary Boiler | 179 | 438 | 5,030 | 375 |
| OGV Barge | Auxiliary Engine | 38 | 38 | 67 | 67 |
| OGV Barge | Pump Generator | | | 520 | |
| Bunkering Barge | Auxiliary Engine | 79 | 79 | 137 | |
| Bunkering Barge | Pump Generator | | | | |

**Source:**

[1] ATB pump load at berth: Berth 167-169 Shell Marine Oil Terminal Wharf Improvement Project DEIR, Appendix B, Table B1.27. FEIR certified August 2018.

[2] Tanker loads: 2019 Port Emissions Inventory, Auxiliary Engines Table 3.2 and Auxiliary Boiler Table 3.5.

[3] OGV barge auxiliary engine size (kw) at berth and anchorage from LAHD, 2021. BERTH 163-164 [NuStar-Valero] MARINE OIL TERMINAL WHARF IMPROVEMENTS PROJECT Draft IS/MND

[4] Bunkering barge aux engine kw are assumed to be the same as assist tugboats (2019 Port Emissions Inventory, Table 4.2). Bunkering barges do not use their pumps during loading at the terminal; the terminal's shore-side pumps are used

[5] Bunkering barge aux engine kw are multiplied by load factors from Barge and Dredge CARB Model

**Table 3. OGV Maximum Rated Vessel Speed**

| Category | Speed (knots) |
|---|---|
| Tanker - Chemical | 14.6 |
| Tanker - Handysize | 15.1 |
| Tanker - Panamax | 14.9 |
| Tanker - Aframax | 14.4 |
| ATB | 15 |
| OGV Barge | |
| Bunkering Barge | |

**Source:**

[1] 2019 Port Emissions Inventory, Table 3.9.

**Table 4. OGV Transit Speed (knots)**

| Year | Vessel Type | Anchorage | Berthing | Maneuvering | Precautionary Area | 20-Nautical Miles to Precautionary Area | 40 to 20 Nautical Miles | State Boundary to 40-Nautical Miles |
|---|---|---|---|---|---|---|---|---|
| any | OGV Barge | 0 | 0 | 6 | 9 | 12.18 | 12.26 | 14 |
| any | ATB | 0 | 0 | 6 | 9 | 12.18 | 12.26 | 14 |
| any | Tanker - Handysize | 0 | 0 | 6 | 9 | 12.18 | 12.26 | 14 |
| any | Tanker - Chemical | 0 | 0 | 6 | 9 | 12.18 | 12.26 | 14 |
| any | Tanker - Panamax | 0 | 0 | 6 | 9 | 12.18 | 12.26 | 14 |
| any | Tanker - Aframax | 0 | 0 | 6 | 9 | 12.18 | 12.26 | 14 |
| any | Bunkering Barge | 0 | 0 | 6 | 9 | | | |

**Note:**

[1] 2019 speed at 20nm and 40 nm mark (12.18 and 12.26 knots respectively) based on 2019 VSRP compliance rates reports from Port of Los Angeles.

[2] Mitigation speed 8.5 knots or lower only applies to future scenario in zones 3 and 4.

**Table 5. OGV Transit Distance (nm)**

| Year | Vessel Type | Anchorage | Berthing | Maneuvering | Precautionary Area | 20-Nautical Miles to Precautionary Area | 40 to 20 Nautical Miles | State Boundary to 40-Nautical Miles |
|---|---|---|---|---|---|---|---|---|
| any | OGV Barge | 0 | 0 | 4 | 8 | 16 | 24 | 130 |
| any | ATB | 0 | 0 | 4 | 8 | 16 | 24 | 130 |
| any | Tanker - Handysize | 0 | 0 | 4 | 8 | 16 | 24 | 130 |
| any | Tanker - Chemical | 0 | 0 | 4 | 8 | 16 | 24 | 130 |
| any | Tanker - Panamax | 0 | 0 | 4 | 8 | 16 | 24 | 130 |
| any | Tanker - Aframax | 0 | 0 | 4 | 8 | 16 | 24 | 130 |
| any | Bunkering Barge | 0 | 0 | 4 | 8 | | | |

**Table 6. OGV Propulsion/Boiler Engine Emission Factors for 0.1% S MGO Fuel (g/kW-hr)**

| Engine | IMO Tier | Model Year | PM10 | PM2.5 | DPM | NOx | SOx | CO | HC | VOC | CO2 | CH4 | N2O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Slow Speed Diesel | Tier 0 | ≤1999 | 0.255 | 0.240 | 0.255 | 17.01 | 0.389 | 1.4 | 0.6 | 0.63 | 589 | 0.012 | 0.029 |
| Medium Speed Diesel | Tier 0 | ≤1999 | 0.255 | 0.240 | 0.255 | 13.16 | 0.426 | 1.1 | 0.5 | 0.53 | 649 | 0.01 | 0.029 |
| Slow Speed Diesel | Tier 1 | 2000-2010 | 0.255 | 0.240 | 0.255 | 15.98 | 0.389 | 1.4 | 0.6 | 0.63 | 589 | 0.012 | 0.029 |
| Medium Speed Diesel | Tier 1 | 2000-2010 | 0.255 | 0.240 | 0.255 | 12.22 | 0.426 | 1.1 | 0.5 | 0.53 | 649 | 0.01 | 0.029 |
| Slow Speed Diesel | Tier 2 | 2011-2015 | 0.255 | 0.240 | 0.255 | 14.38 | 0.389 | 1.4 | 0.6 | 0.63 | 589 | 0.012 | 0.029 |
| Medium Speed Diesel | Tier 2 | 2011-2015 | 0.255 | 0.240 | 0.255 | 10.53 | 0.426 | 1.1 | 0.5 | 0.53 | 649 | 0.01 | 0.029 |
| Slow Speed Diesel | Tier 3 | ≥2016 | 0.255 | 0.240 | 0.255 | 3.38 | 0.389 | 1.4 | 0.6 | 0.63 | 589 | 0.012 | 0.029 |
| Medium Speed Diesel | Tier 3 | ≥2016 | 0.255 | 0.240 | 0.255 | 2.63 | 0.426 | 1.1 | 0.5 | 0.53 | 649 | 0.01 | 0.029 |
| Gas Turbine | na | all | 0.050 | 0.040 | 0.000 | 5.73 | 0.611 | 0.2 | 0.1 | 0.11 | 922 | 0.002 | 0.075 |
| Steam Engine and Boiler | na | all | 0.136 | 0.128 | 0.000 | 1.97 | 0.611 | 0.2 | 0.1 | 0.11 | 922 | 0.002 | 0.075 |
| Steam Engine and Boiler | na | all | 0.136 | 0.128 | 0.000 | 1.97 | 0.611 | 0.2 | 0.1 | 0.11 | 922 | 0.002 | 0.075 |

**Notes:**

[1] Slow speed diesel: engine speed < 150 rpm; assumed as default for propulsion engines.

[2] Bonnet control is assumed in future years, Compliance with reduced rates per At-Berth Rule for tanker boilers is not necessary due to Bonnet control in future scenario

**Source:**

[1] San Pedro Bay Ports Emission Inventory Methodology Report Version 1-2019, Tables 2.3 and 2.4. April 2019.

**Table 7. OGV Auxiliary Engine Emission Factors for 0.1% MGO Fuel (g/kW-hr)**

| Engine | IMO Tier | Model Year | | PM10 | PM2.5 | DPM | NOx | SOx | CO | HC | VOC | CO2 | CH4 | N2O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High Speed Diesel | Tier 0 | ≤1999 | | 0.255 | 0.24 | 0.255 | 10.90 | 0.455 | 1.10 | 0.50 | 0.53 | 656 | 0.010 | 0.029 |
| Medium Speed Diesel | Tier 0 | ≤1999 | | 0.255 | 0.24 | 0.255 | 13.82 | 0.455 | 1.40 | 0.60 | 0.63 | 686 | 0.012 | 0.029 |
| High Speed Diesel | Tier 1 | 2000-2010 | | 0.255 | 0.24 | 0.255 | 9.78 | 0.455 | 1.10 | 0.50 | 0.53 | 656 | 0.010 | 0.029 |
| Medium Speed Diesel | Tier 1 | 2000-2010 | | 0.255 | 0.24 | 0.255 | 12.22 | 0.455 | 1.40 | 0.60 | 0.63 | 686 | 0.012 | 0.029 |
| High Speed Diesel | Tier 2 | 2011-2015 | | 0.255 | 0.24 | 0.255 | 7.71 | 0.455 | 1.10 | 0.50 | 0.53 | 656 | 0.010 | 0.029 |
| Medium Speed Diesel | Tier 2 | 2011-2015 | | 0.255 | 0.24 | 0.255 | 10.53 | 0.455 | 1.40 | 0.60 | 0.63 | 686 | 0.012 | 0.029 |
| High Speed Diesel | Tier 3 | ≥2016 | | 0.255 | 0.24 | 0.255 | 1.97 | 0.455 | 1.10 | 0.50 | 0.53 | 656 | 0.010 | 0.029 |
| Medium Speed Diesel | Tier 3 | ≥2016 | | 0.255 | 0.24 | 0.255 | 2.63 | 0.455 | 1.40 | 0.60 | 0.63 | 686 | 0.012 | 0.029 |

**Notes:**

[1] Tanker auxiliary engines are medium speed.

[2] Calculations assume that auxiliary and propulsion engines are the same model year.

[3] Tanker auxiliary engines are conservatively assumed to be Tier 1 for peak day future years.

**Source:**

[1] San Pedro Bay Ports Emission Inventory Methodology Report Version 1-2019, Tables 2.9 and 2.10. April 2019.

**Table 8. OGV Emission Factor Adjustment (EFA) for Propulsion Engines**

| Vessel Category | PM | PM2.5 | DPM | NOx | SOx | CO | HC | VOC | CO2 | CH4 | N2O |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vessels without Slide Valves | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.44 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Vessels with Slide Valves | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.59 | 0.43 | 0.4 | 1.0 | 1.0 | 1.0 |

**Notes:**

[1] Factors apply to pollutants for which test results were significantly different in magnitude than the base emission factors used in the SP Bay Inventory.

**Source:**

[1] San Pedro Bay Ports Emission Inventory Methodology Repo

**Table 9. OGV Emission Factor Adjustments (LAF*EFA) for MAN 2-Stroke Propulsion Engines without Slide Valves**

| Load | PM10 | PM2.5 | DPM | NOx | SOx | CO | HC | VOC | CO2 | CH4 | N2O |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1% | 0.83 | 0.83 | 0.83 | 1.90 | 1.00 | 0.61 | 2.53 | 2.53 | 1.00 | 2.53 | 1.90 |
| 2% | 0.83 | 0.83 | 0.83 | 1.86 | 1.00 | 0.60 | 2.45 | 2.45 | 1.00 | 2.45 | 1.86 |
| 3% | 0.83 | 0.83 | 0.83 | 1.82 | 1.00 | 0.59 | 2.37 | 2.37 | 1.00 | 2.37 | 1.82 |
| 4% | 0.82 | 0.82 | 0.82 | 1.77 | 1.00 | 0.59 | 2.30 | 2.30 | 1.00 | 2.30 | 1.77 |
| 5% | 0.82 | 0.82 | 0.82 | 1.72 | 1.00 | 0.58 | 2.23 | 2.23 | 1.00 | 2.23 | 1.72 |
| 6% | 0.81 | 0.81 | 0.81 | 1.68 | 1.00 | 0.57 | 2.16 | 2.16 | 1.00 | 2.16 | 1.68 |
| 7% | 0.81 | 0.81 | 0.81 | 1.64 | 1.00 | 0.56 | 2.10 | 2.10 | 1.00 | 2.10 | 1.64 |
| 8% | 0.80 | 0.80 | 0.80 | 1.60 | 1.00 | 0.55 | 2.03 | 2.03 | 1.00 | 2.03 | 1.60 |
| 9% | 0.80 | 0.80 | 0.80 | 1.56 | 1.00 | 0.55 | 1.97 | 1.97 | 1.00 | 1.97 | 1.56 |
| 10% | 0.79 | 0.79 | 0.79 | 1.52 | 1.00 | 0.55 | 1.91 | 1.91 | 1.00 | 1.91 | 1.52 |
| 11% | 0.79 | 0.79 | 0.79 | 1.49 | 1.00 | 0.54 | 1.86 | 1.86 | 1.00 | 1.86 | 1.49 |
| 12% | 0.78 | 0.78 | 0.78 | 1.45 | 1.00 | 0.53 | 1.80 | 1.80 | 1.00 | 1.80 | 1.45 |
| 13% | 0.78 | 0.78 | 0.78 | 1.42 | 1.00 | 0.53 | 1.75 | 1.75 | 1.00 | 1.75 | 1.42 |
| 14% | 0.78 | 0.78 | 0.78 | 1.39 | 1.00 | 0.52 | 1.70 | 1.70 | 1.00 | 1.70 | 1.39 |
| 15% | 0.77 | 0.77 | 0.77 | 1.36 | 1.00 | 0.52 | 1.65 | 1.65 | 1.00 | 1.65 | 1.36 |
| 16% | 0.77 | 0.77 | 0.77 | 1.33 | 1.00 | 0.51 | 1.61 | 1.61 | 1.00 | 1.61 | 1.33 |
| 17% | 0.77 | 0.77 | 0.77 | 1.30 | 1.00 | 0.51 | 1.56 | 1.56 | 1.00 | 1.56 | 1.30 |
| 18% | 0.77 | 0.77 | 0.77 | 1.28 | 1.00 | 0.51 | 1.52 | 1.52 | 1.00 | 1.52 | 1.28 |
| 19% | 0.76 | 0.76 | 0.76 | 1.25 | 1.00 | 0.50 | 1.48 | 1.48 | 1.00 | 1.48 | 1.25 |
| 20% | 0.76 | 0.76 | 0.76 | 1.23 | 1.00 | 0.50 | 1.44 | 1.44 | 1.00 | 1.44 | 1.23 |
| 21% | 0.76 | 0.76 | 0.76 | 1.20 | 1.00 | 0.50 | 1.41 | 1.41 | 1.00 | 1.41 | 1.20 |
| 22% | 0.76 | 0.76 | 0.76 | 1.18 | 1.00 | 0.49 | 1.37 | 1.37 | 1.00 | 1.37 | 1.18 |
| 23% | 0.76 | 0.76 | 0.76 | 1.16 | 1.00 | 0.49 | 1.34 | 1.34 | 1.00 | 1.34 | 1.16 |
| 24% | 0.75 | 0.75 | 0.75 | 1.14 | 1.00 | 0.48 | 1.31 | 1.31 | 1.00 | 1.31 | 1.14 |
| 25% | 0.75 | 0.75 | 0.75 | 1.12 | 1.00 | 0.48 | 1.28 | 1.28 | 1.00 | 1.28 | 1.12 |
| 26% | 0.75 | 0.75 | 0.75 | 1.11 | 1.00 | 0.48 | 1.25 | 1.25 | 1.00 | 1.25 | 1.11 |
| 27% | 0.75 | 0.75 | 0.75 | 1.09 | 1.00 | 0.48 | 1.22 | 1.22 | 1.00 | 1.22 | 1.09 |
| 28% | 0.75 | 0.75 | 0.75 | 1.07 | 1.00 | 0.48 | 1.20 | 1.20 | 1.00 | 1.20 | 1.07 |
| 29% | 0.75 | 0.75 | 0.75 | 1.06 | 1.00 | 0.47 | 1.17 | 1.17 | 1.00 | 1.17 | 1.06 |
| 30% | 0.75 | 0.75 | 0.75 | 1.05 | 1.00 | 0.47 | 1.15 | 1.15 | 1.00 | 1.15 | 1.05 |
| 31% | 0.75 | 0.75 | 0.75 | 1.03 | 1.00 | 0.47 | 1.13 | 1.13 | 1.00 | 1.13 | 1.03 |
| 32% | 0.75 | 0.75 | 0.75 | 1.02 | 1.00 | 0.47 | 1.11 | 1.11 | 1.00 | 1.11 | 1.02 |
| 33% | 0.75 | 0.75 | 0.75 | 1.01 | 1.00 | 0.46 | 1.09 | 1.09 | 1.00 | 1.09 | 1.01 |
| 34% | 0.75 | 0.75 | 0.75 | 1.00 | 1.00 | 0.46 | 1.08 | 1.08 | 1.00 | 1.08 | 1.00 |
| 35% | 0.76 | 0.76 | 0.76 | 0.99 | 1.00 | 0.46 | 1.06 | 1.06 | 1.00 | 1.06 | 0.99 |
| 36% | 0.76 | 0.76 | 0.76 | 0.98 | 1.00 | 0.46 | 1.05 | 1.05 | 1.00 | 1.05 | 0.98 |
| 37% | 0.76 | 0.76 | 0.76 | 0.98 | 1.00 | 0.45 | 1.04 | 1.04 | 1.00 | 1.04 | 0.98 |
| 38% | 0.76 | 0.76 | 0.76 | 0.97 | 1.00 | 0.45 | 1.02 | 1.02 | 1.00 | 1.02 | 0.97 |
| 39% | 0.76 | 0.76 | 0.76 | 0.96 | 1.00 | 0.45 | 1.01 | 1.01 | 1.00 | 1.01 | 0.96 |
| 40% | 0.76 | 0.76 | 0.76 | 0.96 | 1.00 | 0.45 | 1.00 | 1.00 | 1.00 | 1.00 | 0.96 |
| 41% | 0.77 | 0.77 | 0.77 | 0.95 | 1.00 | 0.44 | 0.99 | 0.99 | 1.00 | 0.99 | 0.95 |
| 42% | 0.77 | 0.77 | 0.77 | 0.95 | 1.00 | 0.44 | 0.99 | 0.99 | 1.00 | 0.99 | 0.95 |
| 43% | 0.77 | 0.77 | 0.77 | 0.94 | 1.00 | 0.44 | 0.98 | 0.98 | 1.00 | 0.98 | 0.94 |
| 44% | 0.78 | 0.78 | 0.78 | 0.94 | 1.00 | 0.44 | 0.97 | 0.97 | 1.00 | 0.97 | 0.94 |
| 45% | 0.78 | 0.78 | 0.78 | 0.94 | 1.00 | 0.44 | 0.97 | 0.97 | 1.00 | 0.97 | 0.94 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 46% | 0.78 | 0.78 | 0.78 | 0.94 | 1.00 | 0.44 | 0.96 | 0.96 | 1.00 | 0.96 | 0.94 |
| 47% | 0.79 | 0.79 | 0.79 | 0.94 | 1.00 | 0.44 | 0.96 | 0.96 | 1.00 | 0.96 | 0.94 |
| 48% | 0.79 | 0.79 | 0.79 | 0.93 | 1.00 | 0.43 | 0.96 | 0.96 | 1.00 | 0.96 | 0.93 |
| 49% | 0.79 | 0.79 | 0.79 | 0.93 | 1.00 | 0.43 | 0.96 | 0.96 | 1.00 | 0.96 | 0.93 |
| 50% | 0.80 | 0.80 | 0.80 | 0.93 | 1.00 | 0.43 | 0.96 | 0.96 | 1.00 | 0.96 | 0.93 |
| 51% | 0.80 | 0.80 | 0.80 | 0.94 | 1.00 | 0.43 | 0.95 | 0.95 | 1.00 | 0.95 | 0.94 |
| 52% | 0.81 | 0.81 | 0.81 | 0.94 | 1.00 | 0.43 | 0.95 | 0.95 | 1.00 | 0.95 | 0.94 |
| 53% | 0.81 | 0.81 | 0.81 | 0.94 | 1.00 | 0.42 | 0.95 | 0.95 | 1.00 | 0.95 | 0.94 |
| 54% | 0.82 | 0.82 | 0.82 | 0.94 | 1.00 | 0.42 | 0.95 | 0.95 | 1.00 | 0.95 | 0.94 |
| 55% | 0.82 | 0.82 | 0.82 | 0.94 | 1.00 | 0.42 | 0.96 | 0.96 | 1.00 | 0.96 | 0.94 |
| 56% | 0.83 | 0.83 | 0.83 | 0.94 | 1.00 | 0.42 | 0.96 | 0.96 | 1.00 | 0.96 | 0.94 |
| 57% | 0.84 | 0.84 | 0.84 | 0.95 | 1.00 | 0.42 | 0.96 | 0.96 | 1.00 | 0.96 | 0.95 |
| 58% | 0.84 | 0.84 | 0.84 | 0.95 | 1.00 | 0.42 | 0.96 | 0.96 | 1.00 | 0.96 | 0.95 |
| 59% | 0.85 | 0.85 | 0.85 | 0.95 | 1.00 | 0.41 | 0.96 | 0.96 | 1.00 | 0.96 | 0.95 |
| 60% | 0.86 | 0.86 | 0.86 | 0.95 | 1.00 | 0.41 | 0.97 | 0.97 | 1.00 | 0.97 | 0.95 |
| 61% | 0.86 | 0.86 | 0.86 | 0.96 | 1.00 | 0.41 | 0.97 | 0.97 | 1.00 | 0.97 | 0.96 |
| 62% | 0.87 | 0.87 | 0.87 | 0.96 | 1.00 | 0.41 | 0.97 | 0.97 | 1.00 | 0.97 | 0.96 |
| 63% | 0.88 | 0.88 | 0.88 | 0.96 | 1.00 | 0.41 | 0.98 | 0.98 | 1.00 | 0.98 | 0.96 |
| 64% | 0.89 | 0.89 | 0.89 | 0.97 | 1.00 | 0.41 | 0.98 | 0.98 | 1.00 | 0.98 | 0.97 |
| 65% | 0.89 | 0.89 | 0.89 | 0.97 | 1.00 | 0.40 | 0.98 | 0.98 | 1.00 | 0.98 | 0.97 |
| 66% | 0.90 | 0.90 | 0.90 | 0.98 | 1.00 | 0.40 | 0.99 | 0.99 | 1.00 | 0.99 | 0.98 |
| 67% | 0.91 | 0.91 | 0.91 | 0.98 | 1.00 | 0.40 | 0.99 | 0.99 | 1.00 | 0.99 | 0.98 |
| 68% | 0.92 | 0.92 | 0.92 | 0.98 | 1.00 | 0.40 | 0.99 | 0.99 | 1.00 | 0.99 | 0.98 |
| 69% | 0.93 | 0.93 | 0.93 | 0.99 | 1.00 | 0.40 | 1.00 | 1.00 | 1.00 | 1.00 | 0.99 |
| 70% | 0.94 | 0.94 | 0.94 | 0.99 | 1.00 | 0.40 | 1.00 | 1.00 | 1.00 | 1.00 | 0.99 |
| 71% | 0.94 | 0.94 | 0.94 | 0.99 | 1.00 | 0.40 | 1.00 | 1.00 | 1.00 | 1.00 | 0.99 |
| 72% | 0.95 | 0.95 | 0.95 | 1.00 | 1.00 | 0.40 | 1.01 | 1.01 | 1.00 | 1.01 | 1.00 |
| 73% | 0.96 | 0.96 | 0.96 | 1.00 | 1.00 | 0.40 | 1.01 | 1.01 | 1.00 | 1.01 | 1.00 |
| 74% | 0.97 | 0.97 | 0.97 | 1.00 | 1.00 | 0.40 | 1.01 | 1.01 | 1.00 | 1.01 | 1.00 |
| 75% | 0.98 | 0.98 | 0.98 | 1.01 | 1.00 | 0.40 | 1.01 | 1.01 | 1.00 | 1.01 | 1.01 |
| 76% | 0.99 | 0.99 | 0.99 | 1.01 | 1.00 | 0.40 | 1.01 | 1.01 | 1.00 | 1.01 | 1.01 |
| 77% | 1.00 | 1.00 | 1.00 | 1.01 | 1.00 | 0.40 | 1.01 | 1.01 | 1.00 | 1.01 | 1.01 |
| 78% | 1.01 | 1.01 | 1.01 | 1.01 | 1.00 | 0.40 | 1.01 | 1.01 | 1.00 | 1.01 | 1.01 |
| 79% | 1.03 | 1.03 | 1.03 | 1.02 | 1.00 | 0.40 | 1.01 | 1.01 | 1.00 | 1.01 | 1.02 |
| 80% | 1.04 | 1.04 | 1.04 | 1.02 | 1.00 | 0.40 | 1.01 | 1.01 | 1.00 | 1.01 | 1.02 |
| 81% | 1.05 | 1.05 | 1.05 | 1.02 | 1.00 | 0.40 | 1.01 | 1.01 | 1.00 | 1.01 | 1.02 |
| 82% | 1.06 | 1.06 | 1.06 | 1.02 | 1.00 | 0.40 | 1.01 | 1.01 | 1.00 | 1.01 | 1.02 |
| 83% | 1.07 | 1.07 | 1.07 | 1.02 | 1.00 | 0.40 | 1.01 | 1.01 | 1.00 | 1.01 | 1.02 |
| 84% | 1.08 | 1.08 | 1.08 | 1.02 | 1.00 | 0.40 | 1.00 | 1.00 | 1.00 | 1.00 | 1.02 |
| 85% | 1.10 | 1.10 | 1.10 | 1.02 | 1.00 | 0.40 | 1.00 | 1.00 | 1.00 | 1.00 | 1.02 |
| 86% | 1.11 | 1.11 | 1.11 | 1.02 | 1.00 | 0.41 | 0.99 | 0.99 | 1.00 | 0.99 | 1.02 |
| 87% | 1.12 | 1.12 | 1.12 | 1.02 | 1.00 | 0.41 | 0.99 | 0.99 | 1.00 | 0.99 | 1.02 |
| 88% | 1.13 | 1.13 | 1.13 | 1.02 | 1.00 | 0.41 | 0.98 | 0.98 | 1.00 | 0.98 | 1.02 |
| 89% | 1.15 | 1.15 | 1.15 | 1.01 | 1.00 | 0.42 | 0.97 | 0.97 | 1.00 | 0.97 | 1.01 |
| 90% | 1.16 | 1.16 | 1.16 | 1.01 | 1.00 | 0.42 | 0.97 | 0.97 | 1.00 | 0.97 | 1.01 |
| 91% | 1.17 | 1.17 | 1.17 | 1.01 | 1.00 | 0.42 | 0.96 | 0.96 | 1.00 | 0.96 | 1.01 |
| 92% | 1.19 | 1.19 | 1.19 | 1.00 | 1.00 | 0.43 | 0.94 | 0.94 | 1.00 | 0.94 | 1.00 |
| 93% | 1.20 | 1.20 | 1.20 | 1.00 | 1.00 | 0.43 | 0.93 | 0.93 | 1.00 | 0.93 | 1.00 |
| 94% | 1.22 | 1.22 | 1.22 | 0.99 | 1.00 | 0.44 | 0.92 | 0.92 | 1.00 | 0.92 | 0.99 |
| 95% | 1.23 | 1.23 | 1.23 | 0.99 | 1.00 | 0.44 | 0.91 | 0.91 | 1.00 | 0.91 | 0.99 |
| 96% | 1.24 | 1.24 | 1.24 | 0.98 | 1.00 | 0.45 | 0.89 | 0.89 | 1.00 | 0.89 | 0.98 |
| 97% | 1.26 | 1.26 | 1.26 | 0.97 | 1.00 | 0.45 | 0.87 | 0.87 | 1.00 | 0.87 | 0.97 |
| 98% | 1.28 | 1.28 | 1.28 | 0.97 | 1.00 | 0.46 | 0.86 | 0.86 | 1.00 | 0.86 | 0.97 |
| 99% | 1.29 | 1.29 | 1.29 | 0.96 | 1.00 | 0.47 | 0.84 | 0.84 | 1.00 | 0.84 | 0.96 |
| 100% | 1.31 | 1.31 | 1.31 | 0.95 | 1.00 | 0.48 | 0.82 | 0.82 | 1.00 | 0.82 | 0.95 |

**Notes:**

[1] Emission factor adjustments are used to adjust standard emission factors, for MAN engines without slide valves. EF = fuel corrected EF*LAF*EFA.

[2] Emission factor adjustments are used in peak day calculations, where the type of engine has been identified or can be assumed.

**Table 10. OGV Emission Factor Adjustments (LAF*EFA) for MAN 2-Stroke Propulsion Engines with Slide Valves**

| Load | PM10 | PM2.5 | DPM | NOx | SOx | CO | HC | VOC | CO2 | CH4 | N2O |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1% | 0.36 | 0.36 | 0.36 | 1.90 | 1.00 | 0.07 | 0.58 | 0.58 | 1.00 | 1.36 | 1.90 |
| 2% | 0.37 | 0.37 | 0.37 | 1.86 | 1.00 | 0.07 | 0.57 | 0.57 | 1.00 | 1.32 | 1.86 |
| 3% | 0.38 | 0.38 | 0.38 | 1.82 | 1.00 | 0.07 | 0.55 | 0.55 | 1.00 | 1.28 | 1.82 |
| 4% | 0.38 | 0.38 | 0.38 | 1.78 | 1.00 | 0.07 | 0.53 | 0.53 | 1.00 | 1.24 | 1.78 |
| 5% | 0.39 | 0.39 | 0.39 | 1.74 | 1.00 | 0.07 | 0.52 | 0.52 | 1.00 | 1.20 | 1.74 |
| 6% | 0.40 | 0.40 | 0.40 | 1.70 | 1.00 | 0.07 | 0.50 | 0.50 | 1.00 | 1.17 | 1.70 |
| 7% | 0.41 | 0.41 | 0.41 | 1.67 | 1.00 | 0.07 | 0.49 | 0.49 | 1.00 | 1.14 | 1.67 |
| 8% | 0.41 | 0.41 | 0.41 | 1.63 | 1.00 | 0.07 | 0.48 | 0.48 | 1.00 | 1.11 | 1.63 |
| 9% | 0.42 | 0.42 | 0.42 | 1.60 | 1.00 | 0.07 | 0.46 | 0.46 | 1.00 | 1.08 | 1.60 |
| 10% | 0.43 | 0.43 | 0.43 | 1.57 | 1.00 | 0.07 | 0.45 | 0.45 | 1.00 | 1.05 | 1.57 |
| 11% | 0.44 | 0.44 | 0.44 | 1.53 | 1.00 | 0.15 | 0.44 | 0.44 | 1.00 | 1.02 | 1.53 |
| 12% | 0.45 | 0.45 | 0.45 | 1.50 | 1.00 | 0.23 | 0.43 | 0.43 | 1.00 | 0.99 | 1.50 |
| 13% | 0.45 | 0.45 | 0.45 | 1.47 | 1.00 | 0.31 | 0.42 | 0.42 | 1.00 | 0.97 | 1.47 |
| 14% | 0.46 | 0.46 | 0.46 | 1.45 | 1.00 | 0.38 | 0.40 | 0.40 | 1.00 | 0.94 | 1.45 |
| 15% | 0.47 | 0.47 | 0.47 | 1.42 | 1.00 | 0.44 | 0.40 | 0.40 | 1.00 | 0.92 | 1.42 |
| 16% | 0.48 | 0.48 | 0.48 | 1.39 | 1.00 | 0.50 | 0.39 | 0.39 | 1.00 | 0.90 | 1.39 |
| 17% | 0.49 | 0.49 | 0.49 | 1.37 | 1.00 | 0.56 | 0.38 | 0.38 | 1.00 | 0.88 | 1.37 |
| 18% | 0.49 | 0.49 | 0.49 | 1.34 | 1.00 | 0.61 | 0.37 | 0.37 | 1.00 | 0.86 | 1.34 |
| 19% | 0.50 | 0.50 | 0.50 | 1.32 | 1.00 | 0.66 | 0.36 | 0.36 | 1.00 | 0.84 | 1.32 |
| 20% | 0.51 | 0.51 | 0.51 | 1.30 | 1.00 | 0.71 | 0.35 | 0.35 | 1.00 | 0.82 | 1.30 |
| 21% | 0.52 | 0.52 | 0.52 | 1.28 | 1.00 | 0.75 | 0.35 | 0.35 | 1.00 | 0.81 | 1.28 |
| 22% | 0.53 | 0.53 | 0.53 | 1.26 | 1.00 | 0.79 | 0.34 | 0.34 | 1.00 | 0.79 | 1.26 |
| 23% | 0.54 | 0.54 | 0.54 | 1.24 | 1.00 | 0.83 | 0.34 | 0.34 | 1.00 | 0.78 | 1.24 |
| 24% | 0.54 | 0.54 | 0.54 | 1.22 | 1.00 | 0.86 | 0.33 | 0.33 | 1.00 | 0.76 | 1.22 |
| 25% | 0.55 | 0.55 | 0.55 | 1.20 | 1.00 | 0.89 | 0.32 | 0.32 | 1.00 | 0.75 | 1.20 |
| 26% | 0.56 | 0.56 | 0.56 | 1.19 | 1.00 | 0.91 | 0.32 | 0.32 | 1.00 | 0.74 | 1.19 |
| 27% | 0.57 | 0.57 | 0.57 | 1.17 | 1.00 | 0.94 | 0.31 | 0.31 | 1.00 | 0.73 | 1.17 |
| 28% | 0.58 | 0.58 | 0.58 | 1.16 | 1.00 | 0.96 | 0.31 | 0.31 | 1.00 | 0.72 | 1.16 |
| 29% | 0.59 | 0.59 | 0.59 | 1.14 | 1.00 | 0.98 | 0.31 | 0.31 | 1.00 | 0.71 | 1.14 |
| 30% | 0.60 | 0.60 | 0.60 | 1.13 | 1.00 | 0.99 | 0.30 | 0.30 | 1.00 | 0.70 | 1.13 |
| 31% | 0.60 | 0.60 | 0.60 | 1.12 | 1.00 | 1.00 | 0.30 | 0.30 | 1.00 | 0.70 | 1.12 |
| 32% | 0.61 | 0.61 | 0.61 | 1.10 | 1.00 | 1.01 | 0.30 | 0.30 | 1.00 | 0.69 | 1.10 |
| 33% | 0.62 | 0.62 | 0.62 | 1.09 | 1.00 | 1.03 | 0.30 | 0.30 | 1.00 | 0.69 | 1.09 |
| 34% | 0.63 | 0.63 | 0.63 | 1.08 | 1.00 | 1.03 | 0.29 | 0.29 | 1.00 | 0.68 | 1.08 |
| 35% | 0.64 | 0.64 | 0.64 | 1.07 | 1.00 | 1.03 | 0.29 | 0.29 | 1.00 | 0.68 | 1.07 |
| 36% | 0.65 | 0.65 | 0.65 | 1.06 | 1.00 | 1.03 | 0.29 | 0.29 | 1.00 | 0.68 | 1.06 |
| 37% | 0.66 | 0.66 | 0.66 | 1.05 | 1.00 | 1.03 | 0.29 | 0.29 | 1.00 | 0.67 | 1.05 |
| 38% | 0.67 | 0.67 | 0.67 | 1.05 | 1.00 | 1.03 | 0.29 | 0.29 | 1.00 | 0.67 | 1.05 |
| 39% | 0.68 | 0.68 | 0.68 | 1.04 | 1.00 | 1.03 | 0.29 | 0.29 | 1.00 | 0.67 | 1.04 |
| 40% | 0.69 | 0.69 | 0.69 | 1.03 | 1.00 | 1.02 | 0.29 | 0.29 | 1.00 | 0.67 | 1.03 |
| 41% | 0.70 | 0.70 | 0.70 | 1.03 | 1.00 | 1.01 | 0.29 | 0.29 | 1.00 | 0.67 | 1.03 |
| 42% | 0.70 | 0.70 | 0.70 | 1.02 | 1.00 | 1.01 | 0.29 | 0.29 | 1.00 | 0.68 | 1.02 |
| 43% | 0.71 | 0.71 | 0.71 | 1.02 | 1.00 | 1.00 | 0.29 | 0.29 | 1.00 | 0.68 | 1.02 |
| 44% | 0.72 | 0.72 | 0.72 | 1.01 | 1.00 | 0.99 | 0.29 | 0.29 | 1.00 | 0.68 | 1.01 |
| 45% | 0.73 | 0.73 | 0.73 | 1.01 | 1.00 | 0.97 | 0.30 | 0.30 | 1.00 | 0.69 | 1.01 |
| 46% | 0.74 | 0.74 | 0.74 | 1.00 | 1.00 | 0.96 | 0.30 | 0.30 | 1.00 | 0.69 | 1.00 |
| 47% | 0.75 | 0.75 | 0.75 | 1.00 | 1.00 | 0.94 | 0.30 | 0.30 | 1.00 | 0.70 | 1.00 |
| 48% | 0.76 | 0.76 | 0.76 | 1.00 | 1.00 | 0.93 | 0.30 | 0.30 | 1.00 | 0.70 | 1.00 |
| 49% | 0.77 | 0.77 | 0.77 | 0.99 | 1.00 | 0.91 | 0.31 | 0.31 | 1.00 | 0.71 | 0.99 |
| 50% | 0.78 | 0.78 | 0.78 | 0.99 | 1.00 | 0.89 | 0.31 | 0.31 | 1.00 | 0.71 | 0.99 |
| 51% | 0.79 | 0.79 | 0.79 | 0.99 | 1.00 | 0.87 | 0.31 | 0.31 | 1.00 | 0.72 | 0.99 |
| 52% | 0.80 | 0.80 | 0.80 | 0.99 | 1.00 | 0.86 | 0.31 | 0.31 | 1.00 | 0.73 | 0.99 |
| 53% | 0.81 | 0.81 | 0.81 | 0.99 | 1.00 | 0.83 | 0.32 | 0.32 | 1.00 | 0.74 | 0.99 |
| 54% | 0.82 | 0.82 | 0.82 | 0.99 | 1.00 | 0.81 | 0.32 | 0.32 | 1.00 | 0.75 | 0.99 |
| 55% | 0.83 | 0.83 | 0.83 | 0.98 | 1.00 | 0.80 | 0.32 | 0.32 | 1.00 | 0.75 | 0.98 |
| 56% | 0.84 | 0.84 | 0.84 | 0.98 | 1.00 | 0.77 | 0.33 | 0.33 | 1.00 | 0.76 | 0.98 |
| 57% | 0.85 | 0.85 | 0.85 | 0.98 | 1.00 | 0.75 | 0.33 | 0.33 | 1.00 | 0.77 | 0.98 |
| 58% | 0.86 | 0.86 | 0.86 | 0.98 | 1.00 | 0.73 | 0.34 | 0.34 | 1.00 | 0.78 | 0.98 |
| 59% | 0.87 | 0.87 | 0.87 | 0.98 | 1.00 | 0.71 | 0.34 | 0.34 | 1.00 | 0.80 | 0.98 |
| 60% | 0.88 | 0.88 | 0.88 | 0.98 | 1.00 | 0.68 | 0.35 | 0.35 | 1.00 | 0.81 | 0.98 |
| 61% | 0.89 | 0.89 | 0.89 | 0.98 | 1.00 | 0.67 | 0.35 | 0.35 | 1.00 | 0.82 | 0.98 |
| 62% | 0.90 | 0.90 | 0.90 | 0.98 | 1.00 | 0.64 | 0.36 | 0.36 | 1.00 | 0.83 | 0.98 |
| 63% | 0.91 | 0.91 | 0.91 | 0.99 | 1.00 | 0.63 | 0.36 | 0.36 | 1.00 | 0.84 | 0.99 |
| 64% | 0.92 | 0.92 | 0.92 | 0.99 | 1.00 | 0.60 | 0.37 | 0.37 | 1.00 | 0.85 | 0.99 |
| 65% | 0.93 | 0.93 | 0.93 | 0.99 | 1.00 | 0.58 | 0.37 | 0.37 | 1.00 | 0.87 | 0.99 |
| 66% | 0.94 | 0.94 | 0.94 | 0.99 | 1.00 | 0.56 | 0.38 | 0.38 | 1.00 | 0.88 | 0.99 |
| 67% | 0.95 | 0.95 | 0.95 | 0.99 | 1.00 | 0.54 | 0.38 | 0.38 | 1.00 | 0.89 | 0.99 |
| 68% | 0.97 | 0.97 | 0.97 | 0.99 | 1.00 | 0.52 | 0.39 | 0.39 | 1.00 | 0.91 | 0.99 |
| 69% | 0.98 | 0.98 | 0.98 | 0.99 | 1.00 | 0.50 | 0.40 | 0.40 | 1.00 | 0.92 | 0.99 |
| 70% | 0.99 | 0.99 | 0.99 | 0.99 | 1.00 | 0.48 | 0.40 | 0.40 | 1.00 | 0.93 | 0.99 |
| 71% | 1.00 | 1.00 | 1.00 | 0.99 | 1.00 | 0.47 | 0.41 | 0.41 | 1.00 | 0.95 | 0.99 |
| 72% | 1.01 | 1.01 | 1.01 | 0.99 | 1.00 | 0.45 | 0.41 | 0.41 | 1.00 | 0.96 | 0.99 |
| 73% | 1.02 | 1.02 | 1.02 | 0.99 | 1.00 | 0.44 | 0.42 | 0.42 | 1.00 | 0.98 | 0.99 |
| 74% | 1.03 | 1.03 | 1.03 | 0.99 | 1.00 | 0.42 | 0.43 | 0.43 | 1.00 | 0.99 | 0.99 |
| 75% | 1.04 | 1.04 | 1.04 | 0.99 | 1.00 | 0.41 | 0.43 | 0.43 | 1.00 | 1.00 | 0.99 |
| 76% | 1.05 | 1.05 | 1.05 | 0.99 | 1.00 | 0.39 | 0.44 | 0.44 | 1.00 | 1.02 | 0.99 |
| 77% | 1.06 | 1.06 | 1.06 | 0.99 | 1.00 | 0.38 | 0.44 | 0.44 | 1.00 | 1.03 | 0.99 |
| 78% | 1.07 | 1.07 | 1.07 | 0.99 | 1.00 | 0.37 | 0.45 | 0.45 | 1.00 | 1.05 | 0.99 |
| 79% | 1.09 | 1.09 | 1.09 | 0.99 | 1.00 | 0.36 | 0.46 | 0.46 | 1.00 | 1.06 | 0.99 |
| 80% | 1.10 | 1.10 | 1.10 | 0.99 | 1.00 | 0.35 | 0.46 | 0.46 | 1.00 | 1.08 | 0.99 |
| 81% | 1.11 | 1.11 | 1.11 | 0.99 | 1.00 | 0.34 | 0.47 | 0.47 | 1.00 | 1.09 | 0.99 |
| 82% | 1.12 | 1.12 | 1.12 | 0.99 | 1.00 | 0.34 | 0.47 | 0.47 | 1.00 | 1.10 | 0.99 |
| 83% | 1.13 | 1.13 | 1.13 | 0.98 | 1.00 | 0.34 | 0.48 | 0.48 | 1.00 | 1.12 | 0.98 |
| 84% | 1.14 | 1.14 | 1.14 | 0.98 | 1.00 | 0.33 | 0.49 | 0.49 | 1.00 | 1.13 | 0.98 |
| 85% | 1.15 | 1.15 | 1.15 | 0.98 | 1.00 | 0.33 | 0.49 | 0.49 | 1.00 | 1.15 | 0.98 |
| 86% | 1.16 | 1.16 | 1.16 | 0.98 | 1.00 | 0.33 | 0.50 | 0.50 | 1.00 | 1.16 | 0.98 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 87% | 1.18 | 1.18 | 1.18 | 0.97 | 1.00 | 0.33 | 0.51 | 0.51 | 1.00 | 1.18 | 0.97 |
| 88% | 1.19 | 1.19 | 1.19 | 0.97 | 1.00 | 0.34 | 0.51 | 0.51 | 1.00 | 1.19 | 0.97 |
| 89% | 1.20 | 1.20 | 1.20 | 0.96 | 1.00 | 0.34 | 0.52 | 0.52 | 1.00 | 1.20 | 0.96 |
| 90% | 1.21 | 1.21 | 1.21 | 0.96 | 1.00 | 0.35 | 0.52 | 0.52 | 1.00 | 1.22 | 0.96 |
| 91% | 1.22 | 1.22 | 1.22 | 0.95 | 1.00 | 0.36 | 0.53 | 0.53 | 1.00 | 1.23 | 0.95 |
| 92% | 1.23 | 1.23 | 1.23 | 0.95 | 1.00 | 0.37 | 0.53 | 0.53 | 1.00 | 1.24 | 0.95 |
| 93% | 1.25 | 1.25 | 1.25 | 0.94 | 1.00 | 0.38 | 0.54 | 0.54 | 1.00 | 1.25 | 0.94 |
| 94% | 1.26 | 1.26 | 1.26 | 0.93 | 1.00 | 0.40 | 0.55 | 0.55 | 1.00 | 1.27 | 0.93 |
| 95% | 1.27 | 1.27 | 1.27 | 0.93 | 1.00 | 0.41 | 0.55 | 0.55 | 1.00 | 1.28 | 0.93 |
| 96% | 1.28 | 1.28 | 1.28 | 0.92 | 1.00 | 0.43 | 0.55 | 0.55 | 1.00 | 1.29 | 0.92 |
| 97% | 1.29 | 1.29 | 1.29 | 0.91 | 1.00 | 0.45 | 0.56 | 0.56 | 1.00 | 1.30 | 0.91 |
| 98% | 1.31 | 1.31 | 1.31 | 0.90 | 1.00 | 0.48 | 0.56 | 0.56 | 1.00 | 1.31 | 0.90 |
| 99% | 1.32 | 1.32 | 1.32 | 0.89 | 1.00 | 0.50 | 0.57 | 0.57 | 1.00 | 1.32 | 0.89 |
| 100% | 1.33 | 1.33 | 1.33 | 0.88 | 1.00 | 0.53 | 0.58 | 0.58 | 1.00 | 1.34 | 0.88 |

**Notes:**

[1] Emission factor adjustments are used to adjust standard emission factors, for MAN engines with slide valves. EF = fuel corrected EF*LAF*EFA.
[2] Emission factor adjustments are used in peak day calculations, where the type of engine has been identified or can be assumed.

**Table 11. Annual Ocean Going Vessel Transit Call Count and Tier Distribution**

| Year | Vessel Type | Annual Calls - Transit Trip | | | | Annual Calls - Percentage Weight | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Tier 0 | Tier 1 | Tier 2 | Tier 3 | Tier 0 | Tier 1 | Tier 2 | Tier 3 |
| 2019 | OGV Barge | 52 | 0 | 0 | 0 | 100% | 0% | 0% | 0% |
| 2019 | ATB | 0 | 2 | 3 | 0 | 0% | 43% | 57% | 0% |
| 2019 | Tanker - Handysize | 2 | 1 | 0 | 0 | 67% | 33% | 0% | 0% |
| 2019 | Tanker - Chemical | 2 | 8 | 1 | 0 | 20% | 70% | 10% | 0% |
| 2019 | Tanker - Panamax | 0 | 10 | 1 | 0 | 0% | 90% | 10% | 0% |
| 2019 | Tanker - Aframax | 0 | 0 | 0 | 0 | 0% | 0% | 0% | 0% |
| 2019 | Bunkering Barge | 0 | 0 | 0 | 147 | 0% | 0% | 0% | 100% |
| 2025 | OGV Barge | 69 | 0 | 0 | 0 | 100% | 0% | 0% | 0% |
| 2025 | ATB | 0 | 3 | 5 | 0 | 0% | 43% | 57% | 0% |
| 2025 | Tanker - Handysize | 2 | 1 | 0 | 0 | 67% | 33% | 0% | 0% |
| 2025 | Tanker - Chemical | 2 | 8 | 1 | 0 | 20% | 70% | 10% | 0% |
| 2025 | Tanker - Panamax | 0 | 18 | 2 | 0 | 0% | 90% | 10% | 0% |
| 2025 | Tanker - Aframax | 1 | 3 | 2 | 1 | 9% | 52% | 31% | 8% |
| 2025 | Bunkering Barge | 0 | 0 | 0 | 189 | 0% | 0% | 0% | 100% |

**Table 12. Annual Ocean Going Vessel Call Activity for all Years**

| Year | Vessel Type | Total Vessel Activity | | by Engine Tier Calls - Berthing | | | | Slide Valves | |
|---|---|---|---|---|---|---|---|---|---|
| | | Calls to Berth | Calls to Anchorage | Tier 0 | Tier 1 | Tier 2 | Tier 3 | With | Without |
| 2019 | OGV Barge | 52 | 18 | 52 | 0 | 0 | 0 | 0 | 0 |
| 2019 | ATB | 5 | 2 | 0 | 2 | 3 | 0 | 0 | 5 |
| 2019 | Tanker - Handysize | 3 | 0 | 2 | 1 | 0 | 0 | 1 | 2 |
| 2019 | Tanker - Chemical | 11 | 2 | 2 | 8 | 1 | 0 | 3 | 8 |
| 2019 | Tanker - Panamax | 11 | 0 | 0 | 10 | 1 | 0 | 9 | 2 |
| 2019 | Tanker - Aframax | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2019 | Bunkering Barge | 147 | 0 | 0 | 0 | 0 | 147 | 0 | 0 |
| **2019** | **Total** | **229** | **22** | **56** | **21** | **5** | **147** | **13** | **17** |
| 2025 | OGV Barge | 69 | 24 | 69 | 0 | 0 | 0 | 0 | 0 |
| 2025 | ATB | 8 | 3 | 0 | 3 | 5 | 0 | 0 | 8 |
| 2025 | Tanker - Handysize | 3 | 1 | 2 | 1 | 0 | 0 | 1 | 2 |
| 2025 | Tanker - Chemical | 11 | 1 | 2 | 8 | 1 | 0 | 3 | 8 |
| 2025 | Tanker - Panamax | 20 | 2 | 0 | 18 | 2 | 0 | 16 | 4 |
| 2025 | Tanker - Aframax | 6 | 1 | 1 | 3 | 2 | 1 | 5 | 1 |
| 2025 | Bunkering Barge | 189 | 0 | 0 | 0 | 0 | 189 | 0 | 0 |
| **2025** | **Total** | **306** | **32** | **74** | **33** | **10** | **189** | **25** | **23** |

**Source:**

[1] 2019 call activity provided by tenant and Wharfingers. Forecasted future activity provided by the tenant

**Table 13. Annual Ocean Going Vessel Hotelling and Anchorage Duration in Hours per Call**

| Year | Vessel Type | Peak Day - Uncontrolled[1,4] | | Annual Average - Uncontrolled | | Annual - Connected to Bonnet [5] | |
|---|---|---|---|---|---|---|---|
| | | Hotelling Time at Berth (hr/call) | Time at Anchorage (hr/day) | Hotelling Time at Berth (hr/call) [2] | Time at Anchorage (hr/call) [3] | Hotelling Time at Berth (hr/call) | Time at Anchorage (hr/day) |
| 2019 | OGV Barge | 0 | 24 | 76 | 53 | 0 | 0 |
| 2019 | ATB | 0 | 0 | 56 | 69 | 0 | 0 |
| 2019 | Tanker - Handysize | 18 | 24 | 36 | 37 | 0 | 0 |
| 2019 | Tanker - Chemical | 0 | 0 | 48 | 49 | 0 | 0 |
| 2019 | Tanker - Panamax | 5 | 18 | 70 | 55 | 0 | 0 |
| 2019 | Tanker - Aframax | 0 | 0 | 112 | 42 | 0 | 0 |
| 2019 | Bunkering Barge | 0 | 0 | 1 | | 0 | 0 |
| 2025 | OGV Barge | 0 | 20 | 76 | 53 | 0 | 0 |
| 2025 | ATB | 0 | 0 | 56 | 69 | 0 | 0 |
| 2025 | Tanker - Handysize | 5 | 18 | 3 | 37 | 33 | 0 |
| 2025 | Tanker - Chemical | 0 | 0 | 3 | 49 | 45 | 0 |
| 2025 | Tanker - Panamax | 0 | 0 | 3 | 55 | 67 | 0 |
| 2025 | Tanker - Aframax | 18 | 0 | 3 | 42 | 109 | 0 |
| 2025 | Bunkering Barge | 0 | 0 | 1 | - | 0 | 0 |

**Source:**

[1] Peak hoteling and anchorage time was obtained from information provided by Tenant (Reply to Port of LA CEQA Data Request 092020.pdf)

[2] Average hoteling time for OGV barge, ATB, Tanker - Chemical, Handsize, and Panamax Provided by P66

[3] Average anchorage time for tankers: 2019 POLA Emissions Inventory

[4] Time at berth for bunkering barges is asumed based Port description of bunkering activities. Bunkering barges do not spend time at anchorage.

[5] Only hotelling at berth subject to control. Time connection to Bonnet during anchorage does not apply.

**Table 14. Annual Main Engine Composite Emission Factors in grams per kilowatt hour**

| Year | Vessel Type | Emission Factors (g/kW-hr) - Weighted | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PM10 | PM2.5 | DPM | NOx | SOx | CO | HC | VOC | CO2 | CH4 | N2O |
| 2019 | OGV Barge | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0 | 0.000 | 0.000 |
| 2019 | ATB | 0.255 | 0.240 | 0.255 | 11.254 | 0.426 | 1.100 | 0.500 | 0.527 | 649 | 0.010 | 0.029 |
| 2019 | Tanker - Handysize | 0.255 | 0.240 | 0.255 | 16.667 | 0.389 | 1.400 | 0.600 | 0.632 | 589 | 0.012 | 0.029 |
| 2019 | Tanker - Chemical | 0.255 | 0.240 | 0.255 | 16.026 | 0.389 | 1.400 | 0.600 | 0.632 | 589 | 0.012 | 0.029 |
| 2019 | Tanker - Panamax | 0.255 | 0.240 | 0.255 | 15.820 | 0.389 | 1.400 | 0.600 | 0.632 | 589 | 0.012 | 0.029 |
| 2019 | Tanker - Aframax | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0 | 0.000 | 0.000 |
| 2019 | Bunkering Barge | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0 | 0.000 | 0.000 |
| 2025 | OGV Barge | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0 | 0.000 | 0.000 |
| 2025 | ATB | 0.255 | 0.240 | 0.255 | 11.254 | 0.426 | 1.100 | 0.500 | 0.527 | 649 | 0.010 | 0.029 |
| 2025 | Tanker - Handysize | 0.255 | 0.240 | 0.255 | 16.667 | 0.389 | 1.400 | 0.600 | 0.632 | 589 | 0.012 | 0.029 |
| 2025 | Tanker - Chemical | 0.255 | 0.240 | 0.255 | 16.026 | 0.389 | 1.400 | 0.600 | 0.632 | 589 | 0.012 | 0.029 |
| 2025 | Tanker - Panamax | 0.255 | 0.240 | 0.255 | 15.820 | 0.389 | 1.400 | 0.600 | 0.632 | 589 | 0.012 | 0.029 |
| 2025 | Tanker - Aframax | 0.255 | 0.240 | 0.255 | 14.500 | 0.389 | 1.400 | 0.600 | 0.632 | 589 | 0.012 | 0.029 |
| 2025 | Bunkering Barge | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0 | 0.000 | 0.000 |

**Table 15. Annual Auxiliary Engine Composite Emission Factors in grams per kilowatt hour**

| Year | Vessel Type | Emission Factors (g/kW-hr) - Weighted | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PM10 | PM2.5 | DPM | NOx | SOx | CO | HC | VOC | CO2 | CH4 | N2O |
| 2019 | OGV Barge | 0.255 | 0.240 | 0.255 | 13.820 | 0.455 | 1.400 | 0.600 | 0.632 | 686 | 0.012 | 0.029 |
| 2019 | ATB | 0.255 | 0.240 | 0.255 | 8.597 | 0.455 | 1.100 | 0.500 | 0.527 | 656 | 0.010 | 0.029 |
| 2019 | Tanker - Handysize | 0.255 | 0.240 | 0.255 | 13.287 | 0.455 | 1.400 | 0.600 | 0.632 | 686 | 0.012 | 0.029 |
| 2019 | Tanker - Chemical | 0.255 | 0.240 | 0.255 | 12.371 | 0.455 | 1.400 | 0.600 | 0.632 | 686 | 0.012 | 0.029 |
| 2019 | Tanker - Panamax | 0.255 | 0.240 | 0.255 | 12.051 | 0.455 | 1.400 | 0.600 | 0.632 | 686 | 0.012 | 0.029 |
| 2019 | Tanker - Aframax | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0 | 0.000 | 0.000 |
| 2019 | Bunkering Barge | 0.198 | 0.182 | 0.000 | 6.803 | 0.007 | 5.283 | 0.000 | 0.721 | 652 | 0.005 | 0.031 |
| 2025 | OGV Barge | 0.255 | 0.240 | 0.255 | 13.820 | 0.455 | 1.400 | 0.600 | 0.632 | 686 | 0.012 | 0.029 |
| 2025 | ATB | 0.255 | 0.240 | 0.255 | 8.597 | 0.455 | 1.100 | 0.500 | 0.527 | 656 | 0.010 | 0.029 |
| 2025 | Tanker - Handysize | 0.255 | 0.240 | 0.255 | 13.287 | 0.455 | 1.400 | 0.600 | 0.632 | 686 | 0.012 | 0.029 |
| 2025 | Tanker - Chemical | 0.255 | 0.240 | 0.255 | 12.371 | 0.455 | 1.400 | 0.600 | 0.632 | 686 | 0.012 | 0.029 |
| 2025 | Tanker - Panamax | 0.255 | 0.240 | 0.255 | 12.051 | 0.455 | 1.400 | 0.600 | 0.632 | 686 | 0.012 | 0.029 |
| 2025 | Tanker - Aframax | 0.255 | 0.240 | 0.255 | 11.016 | 0.455 | 1.400 | 0.600 | 0.632 | 686 | 0.012 | 0.029 |
| 2025 | Bunkering Barge | 0.198 | 0.182 | 0.000 | 6.803 | 0.007 | 5.283 | 0.000 | 0.721 | 652 | 0.005 | 0.031 |

**Table 16. Trucks and Worker Vehicles Annual Emissions**

| | | | | | | Emissions (lbs) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Calendar Year | Vehicle Category | Fuel | Mileage/visit | Population | Year | NOx | PM2.5 | PM2.5TW | PM2.5BW | PM10 | PM10TW | PM10BW | CO | Sox | VOC | CO2 | CH4 | N2O |
| 2019 | LDA | GAS | 50 | 365 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 44 | 0 | 1 | 12,387 | 0 | 0 |
| 2019 | T7 POLA | DSL | 30 | 1800 | 1 | 549 | 4 | 1 | 4 | 4 | 4 | 11 | 35 | 2 | 11 | 196,966 | 1 | 31 |
| 2025 | LDA | GAS | 50 | 365 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 11,378 | 0 | 0 |
| 2025 | T7 POLA | DSL | 30 | 1800 | 1 | 183 | 3 | 1 | 3 | 3 | 4 | 9 | 10 | 2 | 1 | 194,391 | 0 | 31 |
| **2019 Total** | | | | | | **552** | **4** | **1** | **4** | **4** | **5** | **11** | **79** | **2** | **12** | **209,353** | **1** | **31** |
| **2025 Total** | | | | | | **185** | **3** | **1** | **3** | **3** | **5** | **10** | **40** | **2** | **2** | **205,769** | **0** | **31** |

**Table 17. Annual Landside Sources Throughout and VOC Emissions for all Years**

| Year | Landside Sources | Annual Throughput (bbls) | VOC annual total (lbs) | VOC Daily total (lbs) |
|---|---|---|---|---|
| 2019 | Storage Tanks | | 1319 | |
| 2019 | Other Processes | | 88 | |
| 2019 | Fugitives | | 11443 | |
| 2019 | Total | 7,658,573 | 12851 | 35 |
| 2025 | Storage Tanks | | 2364 | |
| 2025 | Other Processes | | 158 | |
| 2025 | Fugitives | | 20506 | |
| 2025 | Total | 13,724,000 | 23028 | 63 |

**Source:**

[1] Tenant provided 2019 permitted emissions for landside sources. 2025 emissions scaled based on throughput

**Table 18. Harbor Craft Data**

| Year | Vessel Type | HC Classification | Engine Type | Engine Count per HC | HC Average MY | HC Average HP | HC Average kW | Load Factor |
|---|---|---|---|---|---|---|---|---|
| 2019 | Tanker Assist | Assist Tugboat | Propulsion | 2 | 2007 | 2,004 | 1,495 | 0.31 |
| 2019 | Tanker Assist | Assist Tugboat | Auxiliary | 2 | 2011 | 184 | 137 | 0.43 |
| 2019 | ITB/ATB Assist | Assist Tugboat | Propulsion | 2 | 2007 | 2,004 | 1,495 | 0.31 |
| 2019 | ITB/ATB Assist | Assist Tugboat | Auxiliary | 2 | 2011 | 184 | 137 | 0.43 |
| 2019 | OGV Barge Assist | Assist Tugboat | Propulsion | 2 | 2007 | 2,004 | 1,495 | 0.31 |
| 2019 | OGV Barge Assist | Assist Tugboat | Auxiliary | 2 | 2011 | 184 | 137 | 0.43 |
| 2019 | Bunkering Barge Assist | Assist Tugboat | Propulsion | 2 | 2007 | 2,004 | 1,495 | 0.31 |
| 2019 | Bunkering Barge Assist | Assist Tugboat | Auxiliary | 2 | 2011 | 184 | 137 | 0.43 |
| **2019 Total** | | | | | | | | |
| 2025 | Tanker Assist | Assist Tugboat | Propulsion | 2 | 2020 | 2,004 | 1,495 | 0.31 |
| 2025 | Tanker Assist | Assist Tugboat | Auxiliary | 2 | 2011 | 184 | 137 | 0.43 |
| 2025 | ITB/ATB Assist | Assist Tugboat | Propulsion | 2 | 2020 | 2,004 | 1,495 | 0.31 |
| 2025 | ITB/ATB Assist | Assist Tugboat | Auxiliary | 2 | 2011 | 184 | 137 | 0.43 |
| 2025 | OGV Barge Assist | Assist Tugboat | Propulsion | 2 | 2020 | 2,004 | 1,495 | 0.31 |
| 2025 | OGV Barge Assist | Assist Tugboat | Auxiliary | 2 | 2011 | 184 | 137 | 0.43 |
| 2025 | Bunkering Barge Assist | Assist Tugboat | Propulsion | 2 | 2020 | 2,004 | 1,495 | 0.31 |
| 2025 | Bunkering Barge Assist | Assist Tugboat | Auxiliary | 2 | 2011 | 184 | 137 | 0.43 |
| 2025 | Barge (for Bonnet System) | Tugboat | Propulsion - Tug | 2 | 2010 | 788 | 588 | 0.68 |
| 2025 | Barge (for Bonnet System) | Tugboat | Auxiliary - Tug | 2 | 2010 | 62 | 46 | 0.43 |
| **2025 Total** | | | | | | | | |

**Notes:**

[1] Tugboats are used to assist OGVs and OGV Barges during maneuvering and bunkering barges during maneuvering and transit. In general, two tugboats are needed in Zone 1 for tankers; ATBs only need one tugboat because another tug is already attached to the ATB; bunkering barges are pushed short distances in the Port and only require one tugboat. In general, one tugboat is needed in Zone 2 for all vessels; one tugboat is needed in Zones 3-6 for OGV Barge assist.

[2] Applicable engine Tier is identified based on the EPA requirements for new engines and ARB harbor craft compliance schedule and average model year. Conservatively assumed to be Tier 3 for baseline and 2025.

[3] EPA emission standards, which are reported as NOx+THC, were convered by Nox and HC assuming 95% and 5% are Nox and HC, respectively, per Carl Moyer Program guidelines.

[4] SOx emission factor is based on 15 ppm fuel sulfur content.

[5] PM2.5 is 89% of PM10, per SCAQMD 2006 Final Methodology to Calculate PM2.5 and PM 2.5 Significance Thresholds, Table 5.

**Source:**

[1] Tugboat engine characteristics are from the 2018 Port Emissions Inventory, Tables 4.1 and 4.2.

[2] CO2 and N2O emission factors are from IVL: Methodology for Calculating Emissions from Ships: Update on Emission Factors, 2004, also summarized in POLA 2019 Emissions Inventory, Appendix B. CH4 is 2% of HC, per IVL study.

**Table 19. Peakday Ocean Going Vessel Transit Call Count and Tier Distribution**

| Year | Vessel Type | Peakday Calls - Transit Trip | | | | Peakday Calls - Percentage Weight | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Tier 0 | Tier 1 | Tier 2 | Tier 3 | Tier 0 | Tier 1 | Tier 2 | Tier 3 |
| 2019 | OGV Barge | 1 | 0 | 0 | 0 | 100% | 0% | 0% | 0% |
| 2019 | ATB | 0 | 0 | 0 | 0 | 0% | 0% | 0% | 0% |
| 2019 | Tanker - Handysize | 2 | 1 | 0 | 0 | 67% | 33% | 0% | 0% |
| 2019 | Tanker - Chemical | 0 | 0 | 0 | 0 | 0% | 0% | 0% | 0% |
| 2019 | Tanker - Panamax | 0 | 3 | 0 | 0 | 0% | 90% | 10% | 0% |
| 2019 | Tanker - Aframax | 0 | 0 | 0 | 0 | 0% | 0% | 0% | 0% |
| 2019 | Bunkering Barge | 0 | 0 | 0 | 0 | 0% | 0% | 0% | 0% |
| 2025 | OGV Barge | 2 | 0 | 0 | 0 | 100% | 0% | 0% | 0% |
| 2025 | ATB | 0 | 0 | 0 | 0 | 0% | 0% | 0% | 0% |
| 2025 | Tanker - Handysize | 2 | 1 | 0 | 0 | 67% | 33% | 0% | 0% |
| 2025 | Tanker - Chemical | 0 | 0 | 0 | 0 | 0% | 0% | 0% | 0% |
| 2025 | Tanker - Panamax | 0 | 0 | 0 | 0 | 0% | 0% | 0% | 0% |
| 2025 | Tanker - Aframax | 0 | 1 | 1 | 0 | 9% | 52% | 31% | 8% |
| 2025 | Bunkering Barge | 0 | 0 | 0 | 0 | 0% | 0% | 0% | 0% |

**Table 20. Peakday Ocean Going Vessel Call Activity for all Years**

| Year | Vessel Type | Uncontrolled Hotelling Time | Controlled Hotelling Time | Anchorage Time | Transit Time | Notes |
|---|---|---|---|---|---|---|
| 2019 | OGV Barge | | | 24 | | One OGV barge at anchorage |
| 2019 | ATB | | | | | |
| 2019 | Tanker - Handysize | 18 | | 24 | 5 | Two handysizes: one at berth and leaving, one at anchorage for 24 hrs |
| 2019 | Tanker - Chemical | | | | | |
| 2019 | Tanker - Panamax | 5 | | 18 | 1 | One panamax going from anchorage to berth |
| 2019 | Tanker - Aframax | | | | | |
| 2019 | Bunkering Barge | | | | | |
| | **Total** | **23** | | **66** | **6** | |
| 2025 | OGV Barge | | | 20 | 4 | One OGV barge at anchorage, leaving/arriving |
| 2025 | ATB | | | | | |
| 2025 | Tanker - Handysize | 5 | | 18 | 1 | One handysize moving from anchor to berth for 5 hours |
| 2025 | Tanker - Chemical | | | | | |
| 2025 | Tanker - Panamax | | | | | |
| 2025 | Tanker - Aframax | 18 | | | 5 | One aframax at berth for 18 hr and leaving |
| 2025 | Bunkering Barge | | | | | |
| | **Total** | **23** | | **38** | **10** | |

**Table 21. Peakday Ocean Going Vessel Hotelling and Anchorage Duration in Hours per Call**

| Year | Vessel Type | Peak Day [1,4] - Aux Engines | | Annual Average | | Peak Day - Boiler/Pumps [1,4] | |
|---|---|---|---|---|---|---|---|
| | | Hotelling Time at Berth (hr/call) | Time at Anchorage (hr/day) | Hotelling Time at Berth (hr/call) [2] | Time at Anchorage (hr/call) [3] | Hotelling Time at Berth (hr/call) | Time at Anchorage (hr/day) |
| 2019 | OGV Barge | 0 | 24 | 76 | 53 | 0 | 24 |
| 2019 | ATB | 0 | 0 | 56 | 69 | 0 | 0 |
| 2019 | Tanker - Handysize | 18 | 24 | 36 | 37 | 18 | 24 |
| 2019 | Tanker - Chemical | 0 | 0 | 48 | 49 | 0 | 0 |
| 2019 | Tanker - Panamax | 5 | 18 | 70 | 55 | 5 | 18 |
| 2019 | Tanker - Aframax | 0 | 0 | 112 | 42 | 0 | 0 |
| 2019 | Bunkering Barge | 0 | 0 | 1 | | 0 | 0 |
| 2025 | OGV Barge | 0 | 20 | 76 | 53 | 0 | 20 |
| 2025 | ATB | 0 | 0 | 56 | 69 | 0 | 0 |
| 2025 | Tanker - Handysize | 5 | 18 | 36 | 37 | 5 | 18 |
| 2025 | Tanker - Chemical | 0 | 0 | 48 | 49 | 0 | 0 |
| 2025 | Tanker - Panamax | 0 | 0 | 70 | 55 | 0 | 0 |
| 2025 | Tanker - Aframax | 18 | 0 | 112 | 42 | 18 | 0 |
| 2025 | Bunkering Barge | 0 | 0 | 1 | - | 0 | 0 |

**Source:**

[1] Peak hoteling and anchorage time was obtained from information provided by Tenant (Reply to Port of LA CEQA Data Request 092020.pdf)

[2] Average hoteling time for OGV barge, ATB, Tanker - Chemical, Handsize, and Panamax Provided by P66

[3] Average anchorage time for tankers: 2019 POLA Emissions Inventory

[4] Time at berth for bunkering barges is asumed based Port description of bunkering activities. Bunkering barges do not spend time at anchorage.

**Table 22. Peakday Main Engine Composite Emission Factors in grams per kilowatt hour**

| Year | Vessel Type | Emission Factors (g/kW-hr) - Weighted | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PM10 | PM2.5 | DPM | NOx | SOx | CO | HC | VOC | CO2 | CH4 | N2O |
| 2019 | OGV Barge | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2019 | ATB | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2019 | Tanker - Handysize | 0.255 | 0.240 | 0.255 | 16.667 | 0.389 | 1.400 | 0.600 | 0.632 | 589 | 0.012 | 0.029 |
| 2019 | Tanker - Chemical | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2019 | Tanker - Panamax | 0.255 | 0.240 | 0.255 | 15.820 | 0.389 | 1.400 | 0.600 | 0.632 | 589 | 0.012 | 0.029 |
| 2019 | Tanker - Aframax | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2019 | Bunkering Barge | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2025 | OGV Barge | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2025 | ATB | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2025 | Tanker - Handysize | 0.255 | 0.240 | 0.255 | 16.667 | 0.389 | 1.400 | 0.600 | 0.632 | 589 | 0.012 | 0.029 |
| 2025 | Tanker - Chemical | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2025 | Tanker - Panamax | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2025 | Tanker - Aframax | 0.255 | 0.240 | 0.255 | 14.500 | 0.389 | 1.400 | 0.600 | 0.632 | 589 | 0.012 | 0.029 |
| 2025 | Bunkering Barge | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 23. Peakday Auxiliary Engine Composite Emission Factors in grams per kilowatt hour**

| Year | Vessel Type | Emission Factors (g/kW-hr) - Weighted | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PM10 | PM2.5 | DPM | NOx | SOx | CO | HC | VOC | CO2 | CH4 | N2O |
| 2019 | OGV Barge | 0.255 | 0.240 | 0.255 | 13.820 | 0.455 | 1.400 | 0.600 | 0.632 | 686 | 0.012 | 0.029 |
| 2019 | ATB | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2019 | Tanker - Handysize | 0.255 | 0.240 | 0.255 | 13.287 | 0.455 | 1.400 | 0.600 | 0.632 | 686 | 0.012 | 0.029 |
| 2019 | Tanker - Chemical | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2019 | Tanker - Panamax | 0.255 | 0.240 | 0.255 | 12.051 | 0.455 | 1.400 | 0.600 | 0.632 | 686 | 0.012 | 0.029 |
| 2019 | Tanker - Aframax | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2019 | Bunkering Barge | 0.198 | 0.182 | 0 | 6.803 | 0.007 | 5.283 | 0 | 0.721 | 652 | 0.005 | 0.031 |
| 2025 | OGV Barge | 0.255 | 0.240 | 0.255 | 13.820 | 0.455 | 1.400 | 0.600 | 0.632 | 686 | 0.012 | 0.029 |
| 2025 | ATB | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2025 | Tanker - Handysize | 0.255 | 0.240 | 0.255 | 13.287 | 0.455 | 1.400 | 0.600 | 0.632 | 686 | 0.012 | 0.029 |
| 2025 | Tanker - Chemical | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2025 | Tanker - Panamax | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2025 | Tanker - Aframax | 0.255 | 0.240 | 0.255 | 11.016 | 0.455 | 1.400 | 0.600 | 0.632 | 686 | 0.012 | 0.029 |
| 2025 | Bunkering Barge | 0.198 | 0.182 | 0 | 6.803 | 0.007 | 5.283 | 0 | 0.721 | 652 | 0.005 | 0.031 |

**Table 24. Trucks and Worker Vehicles Peakday Emissions**

| Calendar Year | Vehicle Category | Fuel | Mileage/visit | Population | Days | Emissions (lbs) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | NOx | PM2.5 | PM2.5TW | PM2.5BW | PM10 | PM10TW | PM10BW | CO | Sox | VOC | CO2 | CH4 | N2O |
| 2019 | LDA | GAS | 50 | 1 | 1 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 | 34 | 0.00 | 0.00 |
| 2019 | T7 POLA | DSL | 30 | 5 | 1 | 1.50 | 0.01 | 0.00 | 0.01 | 0.01 | 0.01 | 0.03 | 0.09 | 0.01 | 0.03 | 540 | 0.00 | 0.08 |
| 2025 | LDA | GAS | 50 | 1 | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.00 | 0.00 | 31 | 0.00 | 0.00 |
| 2025 | T7 POLA | DSL | 30 | 5 | 1 | 0.50 | 0.01 | 0.00 | 0.01 | 0.01 | 0.01 | 0.03 | 0.03 | 0.01 | 0.00 | 533 | 0.00 | 0.08 |
| **2019 Total** | | | | | | **1.51** | **0.01** | **0.00** | **0.01** | **0.01** | **0.01** | **0.03** | **0.22** | **0.01** | **0.03** | **574** | **0.00** | **0.09** |
| **2025 Total** | | | | | | **0.51** | **0.01** | **0.00** | **0.01** | **0.01** | **0.01** | **0.03** | **0.11** | **0.01** | **0.00** | **564** | **0.00** | **0.08** |

# APPENDIX B
# Historic Resources Evaluation

# Berths 148-151
## Los Angeles, California

Historical Resource Evaluation Report

*(Los Angeles Public Library)*

***Prepared by:***

CONSULTING

GPA

April 2019

# TABLE OF CONTENTS

## EXECUTIVE SUMMARY

The purpose of this report is to evaluate Berths 148 through 151 as potential historical resources in anticipation of proposed projects on these berths that would be subject to the California Environmental Quality Act (CEQA). The Study Area for the report comprises Berths 148-151 and a portion of Los Angeles County Tax Assessor's Parcel Numbers 7440-018-905, 7440-018-908, 7440-018-909, 7440-018-810. The berths are located in the Port of Los Angeles Community Plan Area of the City of Los Angeles. The Study Area is generally bounded by Pier A Street to the east, Pier A Place to the north, and the West Basin to the south and west.

The berths that comprise the Study Area, Berths 148-151, are not currently listed under any national, state, or local landmark or historic district programs, and were not identified during SurveyLA, as the Port of Los Angeles was not included in the scope of SurveyLA. A records search prepared by the South Central Coastal Information Center (SCCIC) (Records Search File No.: 20054.6089) revealed a prior evaluation of the berths prepared by Jones & Stokes in 2001 that concluded that Berths 150-151 appeared eligible for listing in the National Register of Historic Places as a historic district; the buildings and structures on Berths 148-149 post-dated the established period of significance for the evaluation. Furthermore, they were not 50 years of age at the time of the evaluation and did not appear to have the exceptional level of significance necessary for such properties to be eligible for listing in the National Register of Historic Places. Berths 150-151 were identified as Known Historical Built Resources in a July 2014 report prepared by Applied Earthworks, *Cultural Resources Study of the Wilmington Oil and Gas Field, Los Angeles County, California,* but were not re-evaluated. GPA was retained to update the 2001 Jones & Stokes evaluation in anticipation of projects within the Study Area.

As a result of this analysis, GPA concludes that the Study Area does not appear to be eligible for listing in the National Register of Historic Places and California Register of Historical Resources, or for designation as a Los Angeles Historic Preservation Overlay Zone due to a lack of integrity. The marine oil terminal at Berths 150-151 lacks sufficient physical integrity to convey its significance, and the terminal at Berths 148-149 is not significant under any of the four criteria.

The recommended California Historical Resource Status Code for the Study Area is 6Z, "ineligible for designation at the national, state, and local levels through survey evaluation."[1] Therefore, the berths that comprise the Study Area are not historical resources pursuant to CEQA. As proposed projects would have no impact on historical resources, no further study is recommended or required.

[1] "Technical Assistance Bulletin #8: User's Guide to the California Historical Resource Status Codes & Historic Resources Inventory Directory," California State Office of Historic Preservation, Department of Parks & Recreation, accessed March 2019, http://ohp.parks.ca.gov/pages/1069/files/tab8.pdf.

# 1. INTRODUCTION

## 1.1 Purpose and Qualifications

The purpose of this report is to evaluate Berths 148 through 151 as potential historical resources in anticipation of proposed projects on these berths that would be subject to the California Environmental Quality Act (CEQA). The Study Area for the report comprises Berths 148-151 and a portion of Los Angeles County Tax Assessor's Parcel Numbers 7440-018-905, 7440-018-908, 7440-018-909, 7440-018-810. The berths are located in the Port of Los Angeles Community Plan Area of the City of Los Angeles. The Study Area is generally bounded by Pier A Street to the east, Pier A Place to the north, and the West Basin to the south and west (see **Figure 1** and **Figure 2**).

GPA Consulting (GPA) was retained to evaluate Berths 148-151 for the purposes of CEQA compliance. Amanda Yoder Duane and Teresa Grimes were responsible for the preparation of this report. Both historians fulfill the qualifications for a historic preservation professional outlined in Title 36 of the Code of Federal Regulations, Part 61. Their résumés are included as **Appendix A**.

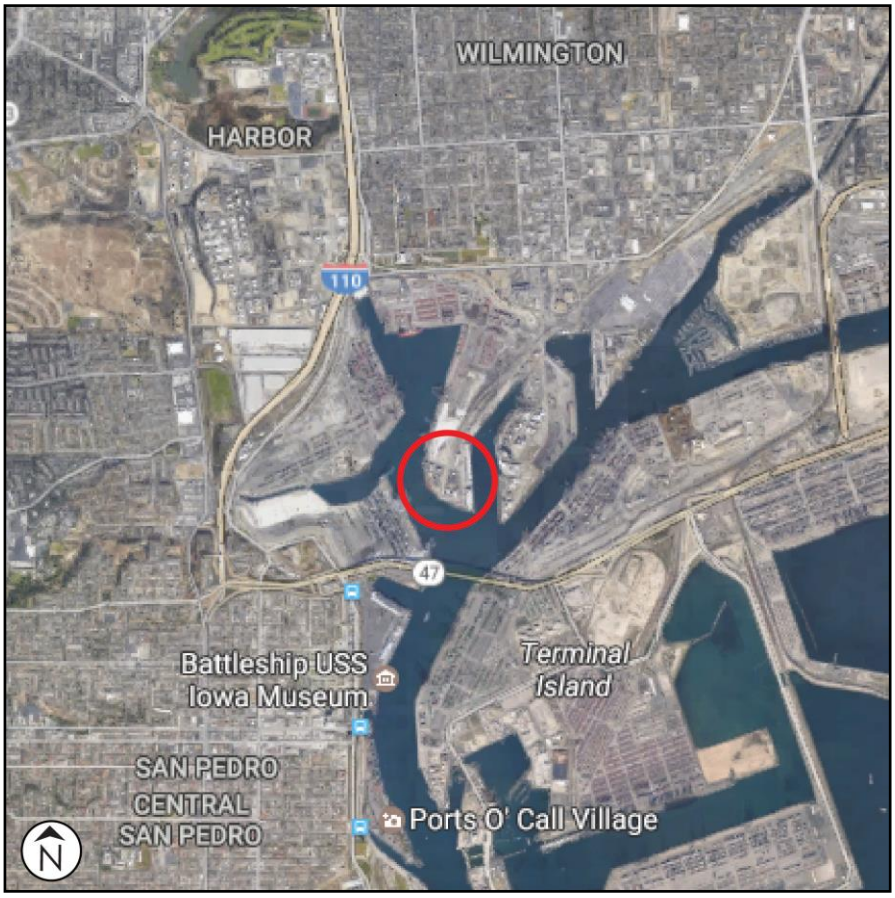


*Figure 1: Project Vicinity circled in red. Base image courtesy of Google Maps.*


*Figure 2: Project Study Area outlined in black. Approximate boundaries of two berths shaded within study area.*
*Base image courtesy of Google Maps.*

## 1.2 Methodology

In preparing this report, GPA performed the following tasks:

1. Reviewed records results from a search the South Central Coastal Information Center (SCCIC) at California State University, Fullerton dating from April 4, 2019 (Records Search File No.: 20054.6089). The records search included a review of all recorded non-archaeological resources situated within a half-mile radius of the Study Area, as well as a review of known cultural resource surveys and reports. Sources consulted included the National Register of Historic Places, the California Register of Historical Resources, the California Inventory of Historic Resources, the California Historical Landmarks list, the California Points of Historical Interest list, the Directory of Properties in the Historic Property Data File (HPDF), and other pertinent data available at the SCCIC.

   The records search revealed a prior evaluation of Berths 148-151 prepared by Jones & Stokes in 2001 that concluded that Berths 150-151 appeared eligible for listing in the National Register of Historic Places as a historic district, while Berths 148-149 appeared ineligible. Berths 150-151 were identified as Known Historical Built Resources in a July 2014

report prepared by Applied Earthworks, Cultural Resources Study of the Wilmington Oil and Gas Field, Los Angeles County, California, but were not re-evaluated.

2. Investigated the Study Area to ascertain the general condition and physical integrity of the buildings and structures thereon using aerial photography and satellite imagery, which was supplemented by photographs provided by the Port of Los Angeles.

3. Conducted research into the history of the Study Area in order to prepare the historic context and evaluations. Sources referenced included the Los Angeles Public Library, prior survey data, newspaper archives, historic maps, and the Los Angeles Citywide Historic Context Statement.

4. Reviewed and analyzed ordinances, statutes, regulations, bulletins, and technical materials relating to federal, state, and local historic preservation designations, and assessment processes and programs to evaluate the significance and integrity of the buildings and structures within the Study Area.

5. Determined that a historic district evaluation was the most appropriate approach for the Study Area. Per National Register Bulletin #15, "Properties with large acreage or a number of resources are usually considered districts. A district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development."[2]

[2] "National Register Bulletin #15: How to Apply the National Register Criteria for Evaluation," National Park Service, Cultural Resources, eds. Patrick Andrus and Rebecca Shrimpton, accessed March 2019, https://www.nps.gov/nr/publications/bulletins/nrb15/.

## 2. REGULATORY FRAMEWORK

Generally, a lead agency must consider a property a historical resource under CEQA if it is eligible for listing in the California Register of Historical Resources (California Register). The California Register is modeled after the National Register of Historic Places (National Register). Furthermore, a property is presumed to be historically significant if it is listed in a local register of historical resources or has been identified as historically significant in a historic resources survey (provided certain criteria and requirements are satisfied) unless a preponderance of evidence demonstrates that the property is not historically or culturally significant.[3] The National Register, California Register, and local designation programs are discussed below.

### 2.1 National Register of Historic Places

The National Register is "an authoritative guide to be used by federal, state, and local governments, private groups, and citizens to identify the nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment."[4]

#### Criteria

To be eligible for listing in the National Register, a property must be at least 50 years of age (unless the property is of "exceptional importance") and possess significance in American history and culture, architecture, or archaeology. A property of potential significance must meet one or more of the following four established criteria: [5]

A. Associated with events that have made a significant contribution to the broad patterns of our history; or

B. Associated with the lives of persons significant in our past; or

C. Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. Yield, or may be likely to yield, information important in prehistory or history.

#### Context

To be eligible for listing in the National Register, a property must be significant within a historic context. National Register Bulletin #15 states that the significance of a historic property can be judged only when it is evaluated within its historic context. Historic contexts are "those patterns, themes, or trends in history by which a specific...property or site is understood and its meaning...is made clear."[6] A property must represent an important aspect of the area's history or prehistory and possess the requisite integrity to qualify for the National Register.

[3] Public Resources Code §5024.1 and 14 California Code of Regulations §4850 & §15064.5(a)(2).
[4] Title 36 Code of Federal Regulations Part 60.2.
[5] Title 36 Code of Federal Regulations Part 60.4.
[6] "National Register Bulletin #15."

**Integrity**

In addition to possessing significance within a historic context, to be eligible for listing in the National Register a property must have integrity. Integrity is defined in National Register Bulletin #15 as "the ability of a property to convey its significance."[7] Within the concept of integrity, the National Register recognizes the following seven aspects or qualities that in various combinations define integrity: feeling, association, workmanship, location, design, setting, and materials. Integrity is based on significance: why, where, and when a property is important. Thus, the significance of the property must be fully established before the integrity is analyzed.

**Historic Districts**

The National Register includes significant properties, which are classified as buildings, sites, districts, structures, or objects. A historic district "derives its importance from being a unified entity, even though it is often composed of a variety of resources. The identity of a district results from the interrelationship of its resources, which can be an arrangement of historically or functionally related properties."[8]

A district is defined as a geographically definable area of land containing a significant concentration of buildings, sites, structures, or objects united by past events or aesthetically by plan or physical development.[9] A district's significance and historic integrity should help determine the boundaries. Other factors include:

- Visual barriers that mark a change in the historic character of the area or that break the continuity of the district, such as new construction, highways, or development of a different character;
- Visual changes in the character of the area due to different architectural styles, types, or periods, or to a decline in the concentration of contributing resources;
- Boundaries at a specific time in history, such as the original city limits or the legally recorded boundaries of a housing subdivision, estate, or ranch; and
- Clearly differentiated patterns of historical development, such as commercial versus residential or industrial.[10]

Within historic districts, properties are identified as contributing and noncontributing. A contributing building, site, structure, or object adds to the historic associations, historic architectural qualities, or archeological values for which a district is significant because:

- It was present during the period of significance, relates to the significance of the district, and retains its physical integrity; or
- It independently meets the criterion for listing in the National Register.[11]

[7] Ibid.
[8] Ibid.
[9] Title 36 Code of Federal Regulations Part 60.3(d).
[10] "*National Register Bulletin #21: Defining Boundaries for National Register Properties Form,*" National Park Service, Cultural Resources. Donna Seifert, Barbara J. Little, Beth L. Savage, and John H. Sprinkle, Jr., accessed March 2019, https://www.nps.gov/nr/publications/bulletins/boundaries/.
[11] "National Register Bulletin #16: How to Complete the National Register Registration Form," National Park Service, Cultural Resources, Linda McClelland, Carol D. Shull, James Charleton, et al., accessed March 2019, https://www.nps.gov/nr/publications/bulletins/nrb16a/.

## 2.2 California Register of Historical Resources

In 1992, Governor Wilson signed Assembly Bill 2881 into law establishing the California Register. The California Register is an authoritative guide used by state and local agencies, private groups, and citizens to identify historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse impacts.[12]

The California Register consists of properties that are listed automatically as well as those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

- California properties listed in the National Register and those formally Determined Eligible for the National Register;
- State Historical Landmarks from No. 0770 onward; and
- Those California Points of Historical Interest that have been evaluated by the State Office of Historic Preservation (SOHP) and have been recommended to the State Historical Resources Commission for inclusion on the California Register.[13]

**Criteria and Integrity**

For those properties not automatically listed, the criteria for eligibility of listing in the California Register are based upon National Register criteria, but are identified as 1-4 instead of A-D. To be eligible for listing in the California Register, a property generally must be at least 50 years of age and must possess significance at the local, state, or national level, under one or more of the following four criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; or
2. It is associated with the lives of persons important to local, California, or national history; or
3. It embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values; or
4. It has yielded, or has the potential to yield, information important in the prehistory or history of the local area, California, or the nation.

Properties eligible for listing in the California Register may include buildings, sites, structures, objects, and historic districts. A property less than 50 years of age may be eligible if it can be demonstrated that sufficient time has passed to understand its historical importance. While the enabling legislation for the California Register is less rigorous with regard to the issue of integrity, there is the expectation that properties reflect their appearance during their period of significance.[14]

[12] Public Resources Code §5024.1 (a).
[13] Public Resources Code §5024.1 (d).
[14] Public Resources Code §4852.

The California Register may also include properties identified during historic resource surveys. However, the survey must meet all of the following criteria:[15]

1. The survey has been or will be included in the State Historic Resources Inventory;
2. The survey and the survey documentation were prepared in accordance with office [SOHP] procedures and requirements;
3. The resource is evaluated and determined by the office [SOHP] to have a significance rating of Category 1 to 5 on a DPR Form 523; and
4. If the survey is five or more years old at the time of its nomination for inclusion in the California Register, the survey is updated to identify historical resources that have become eligible or ineligible due to changed circumstances or further documentation and those that have been demolished or altered in a manner that substantially diminishes the significance of the resource.

**SOHP Survey Methodology**

The evaluation instructions and classification system prescribed by the SOHP in its *Instructions for Recording Historical Resources* provide a Status Code for use in classifying potential historical resources. In 2003, the Status Codes were revised to address the California Register. These Status Codes are used statewide in the preparation of historical resource surveys and evaluation reports. The first code is a number that indicates the general category of evaluation. The second code is a letter that indicates additional details about the evaluation. For eligible properties, these letters indicate whether the property is separately eligible (S), eligible as part of a district (D), or both (B). There is sometimes a third code that describes some of the circumstances or conditions of the evaluation. The general evaluation categories are as follows:

1. Listed in the National Register or the California Register.
2. Determined eligible for listing in the National Register or the California Register.
3. Appears eligible for listing in the National Register or the California Register through survey evaluation.
4. Appears eligible for listing in the National Register or the California Register through other evaluation.
5. Recognized as historically significant by local government.
6. Not eligible for listing or designation as specified.
7. Not evaluated or needs re-evaluation.

[15] Public Resources Code §5024.1.

The specific Status Code referred to in this report is:

6Z: "Found ineligible for National Register, California Register, or local designation through survey evaluation."[16]

## 2.3 Los Angeles Cultural Heritage Ordinance

The Los Angeles City Council adopted the Cultural Heritage Ordinance[17] in 1962 and amended it in 2018 (Ordinance No. 185472). The Ordinance created a Cultural Heritage Commission and criteria for designating Historic-Cultural Monuments (HCM). The Commission comprises five citizens, appointed by the Mayor, who have exhibited knowledge of Los Angeles history, culture, and architecture. An HCM is defined as any site (including significant trees or other plant life located on the site), building or structure of particular historic or cultural significance to the City of Los Angeles. A proposed HCM may be designated by the City Council if it meets at least one of the following three criteria for designation:

1. The proposed HCM is identified with important events of national, state, or local history, or exemplifies significant contributions to the broad cultural, economic, or social history of the nation, state or community; or
2. The proposed HCM is associated with the lives of historic personages important to national, state or local history; or
3. The proposed HCM embodies the distinctive characteristics of a style, type, period, or method of construction; or represents a notable work of a master designer, builder, or architect whose individual genius influenced his or her age.

Unlike the National and California Registers, the Ordinance makes no mention of concepts such as physical integrity or period of significance. Moreover, properties do not have to reach a minimum age requirement, such as 50 years, to be designated as HCMs.

## 2.4 Los Angeles Historic Preservation Overlay Zones

In 1979, the Los Angeles City Council adopted an ordinance that enabled the creation of Historic Preservation Overlay Zones (HPOZ). These zones, also known as historic districts, are established and administered by the Los Angeles Planning Department and City Council. An HPOZ is defined in Ordinance 184903 as "any area of the City of Los Angeles containing buildings, structures, Landscaping, Natural Features or lots having Historic, architectural, Cultural or aesthetic significance" and therefore designated."

In order to establish an HPOZ, an area must be adopted as an HPOZ by the City Planning Commission and City Council by means of a zone change procedure. Once designated, these areas have a "preservation overlay" added to their zoning, and are subject to certain regulations under Section 12.20.3 of the Los Angeles Municipal Code (LAMC). Each HPOZ has an HPOZ board

[16] "Technical Assistance Bulletin #8: User's Guide to the California Historical Resource Status Codes & Historic Resources Inventory Directory," California State Office of Historic Preservation, Department of Parks & Recreation, accessed March 2019, http://ohp.parks.ca.gov/pages/1069/files/tab8.pdf.
[17] Los Angeles Administrative Code §22.171 of Article 1, Chapter 9, Division 22.

made up of five members who review projects, make recommendations, and promote historic preservation within the designated area.[18]

District features designated as contributing shall meet one or more of the following criteria:

1. Adds to the Historic architectural qualities or Historic associations for which a property is significant because it was present during the period of significance, and possesses Historic integrity reflecting its character at that time; or
2. Owing to its unique location or singular physical characteristics, represents an established feature of the neighborhood, community, or city; or
3. Retaining the building, structure, Landscaping, or Natural Feature, would contribute to the preservation and protection of an Historic place or area of Historic interest in the City.[19]

## 2.5 Los Angeles Harbor Department

The stated goal of the LAHD Built Environment Historic, Architectural and Cultural Resources Policy is to:[20]

> Encourage the preservation of the built historic, architectural, and cultural resources within the [Port] in a manner consistent with the City of Los Angeles Harbor Department's mission and obligations under the Tideland Trust Doctrine, Tideland Trust Grant, California Coastal Act, City of Los Angeles Charter, and the Port Master Plan.

The policy provides stipulations for inventorying, evaluating, preserving, and documenting historic, architectural, and cultural resources. Stipulations V(E)(1) through V(E)(4) outline the LAHD's environmental review process. They are as follows:[21]

E. The environmental review process for analysis of potential impacts to a building, structure or object shall include, but not be limited to, the following steps implemented by the Director of the Environmental Management Division in consultation with the Director of the Engineering Division:

   1. If a building, structure, object or district is included on the Inventory, but not listed on a federal, state or local Register, Environmental Management Division shall reevaluate its status if the previous evaluation is greater than five years old.
   2. If a building, structure, object or district is not included in the Inventory and is over 50-years of age the building or structure shall be evaluated to determine potential eligibility for listing in a Register.

[18] "Historic Preservation Overlay Zones," Los Angeles Department of City Planning Office of Historic Resources, accessed March 2019, http://preservation.lacity.org/hpoz/homepage/about-hpoz-program.
[19] "City of Los Angeles Ordinance No. 184303." Los Angeles Department of City Planning, Office of Historic Resources, accessed March 2019, http://preservation.lacity.org/sites/default/files/16-1157_ord_184903_5-5-17_1.pdf.
[20] "Los Angeles Harbor Department – Built Environment Historic, Architectural and Cultural Resource Policy," accessed March 2019, https://www.portoflosangeles.org/Board/2013/May%202013/05_02_13_Item_9_Transmittal_1.pdf.
[21] Ibid.

3. If a building, structure object or district is less than 50-years of age, Harbor Department staff will determine whether its evaluation is warranted. Criteria to be considered regarding a decision to evaluate shall include, but not be limited to:

    a. The age of the buildings, structures, object or district shall be one of the criteria in the determination, with older buildings, structures, objects and districts having a higher value in the consideration on whether to evaluate.

    b. Innovation in engineering or architecture recognized through time as trend setting in national or regional periodicals and widely emulated.

    c. If the resource is the only one remaining having an important association with a historic person or event.

    d. Whether or not the resource is an integral part of a district that is potentially eligible for listing on a Register.

4. Only after completion of environmental review (as applicable) will a General Engineering Permit, including those for demolition or substantial alternation, be issued.

The full text of the LAHD policy is located at:

https://www.portoflosangeles.org/Board/2013/May%202013/05_02_13_Item_9_Transmittal_1.pdf.

# 3. ENVIRONMENTAL SETTING

## 3.1 History of the Study Area

While the Study Area is being evaluated in its entirety as the Union Oil terminal (presently Phillips 66), the description below refers to the berths within the Study Area, the boundaries of which are shown in **Figure 2**.

The Study Area is located in the Port of Los Angeles between the West Basin, Turning Basin, and Slip 1. In 1920, Union Oil was granted a permit tor three-and-a-half acres for tanks and a pumping plant west of Pier A, on Berths 150-151. They also obtained a permit for right-of-way for a pipeline to their new refinery in Wilmington.[22] Construction on the Wilmington refinery had begun in 1916, and the facility is still extant. Located on West Anaheim Street, it is about two miles northwest of the Study Area.[23] The purpose of the site at Berths 150-151 was for "receiving oil from vessels to pump to the refinery, and to deliver oil to the vessels."[24] The Port constructed a 340-foot timber wharf while Union Oil installed oil storage tanks with a capacity of 335,000 barrels and six pipelines connecting the tanks to the refinery. When the improvements were completed in 1920, the company had the capability to load three vessels simultaneously. Union Oil continued to improve their facilities, increasing their oil storage capacity by millions of gallons by 1930. That same year, the Port conducted repairs on deteriorated portions of the timber wharf at Berth 151 with creosoted materials.[25] In 1931, Union Oil leased Berth 149, and a wharf was constructed.[26] By 1947, one 19-inch oil field pipeline and five refinery lines varying in width from four to twelve inches supplied the Union Oil terminal.[27] In 1955, the company leased an additional six acres west of Pier A. Concrete pilings for a reinforced concrete wharf and pipeway structure were constructed at Berths 148-149 for the company. Associated buildings and storage tanks were also constructed, bringing the total storage capacity to 1,675,000 barrels.[28] The tank farms have been reconfigured over the years. Three buildings and structures, including a warehouse, office, and the timber wharf at Berths 148-149 were demolished and replaced. Sometime after 1938, the berths were paved. Prior to this, the buildings and structures were surrounded by what appears to be packed dirt.

Union Oil occupied Berths 148-151 until Tosco Corporation acquired the downstream[29] portion of the company (at that point, Unocal) in 1996. Tosco was subsequently acquired by Phillips

[22] Ernest Marquez and Veronique de Turenne, *Port of Los Angeles: An Illustrated History from 150 to 1945* (Los Angeles: Los Angeles Board of Harbor Commissioners, 2007), 156.
[23] Charles F. Queenan, The Port of Los Angeles: From Wilderness to World Port (Los Angeles: Los Angeles Harbor Department, 1983), 66; LSA Associates, Inc. and Chattel, "Industrial Development, 1850-1980," *Los Angeles Citywide Historic Context Statement* (City of Los Angeles Office of Historic Resources, September 2011, revised February 2018), 95.
[24] Board of Harbor Commissioners, *Annual Report of the Board of Harbor Commissioners, July 1, 1918 to June 30, 1920* (Los Angeles, 1921), *19*.
[25] Jones and Stokes, *Architectural Survey and Evaluation of the Historic Union Oil Terminal (Berths 148-151) of the Port of Los Angeles* (San Pedro, CA: Los Angeles Harbor Department, August 2001), 12.
[26] Marquez and de Turenne, 158.
[27] Jones and Stokes, 12.
[28] Jones and Stokes, 12; "1955 Harbor Improvements," *Los Angeles Times,* January 3, 1956, D153.
[29] The term "downstream" generally refers to the refineries, plants, distributors, outlets and other companies that provide products such as gasoline, fuel, heating oil, lubricants, plastics, fertilizers, natural gas, and propane. Alternatively, "upstream" refers to the portion of the petroleum industry that finds and produces

Petroleum Co. in 2001. Later that year, Phillips Petroleum Co. and Conoco Inc. merged, forming ConocoPhillips. In 2012, Phillips 66 was created as a separate, publicly traded downstream business from ConocoPhillips (see **Section 4.3 History of the Union Oil Company** for additional information). The Study area is presently occupied by Phillips 66.

the crude oil and natural gas, from which the downstream products are refined and produced. "Industry Overview," Petroleum Services of Canada, accessed March 18, 2019, https://www.psac.ca/business/industry-overview/.

## 3.2 Description of the Study Area

Currently, Berths 148-151 comprise the Phillips 66 liquid bulk terminal leasehold. The structures and buildings on the berths are generally described north to south, east to west in the following narrative, beginning at Berth 148, and ending at Berth 151. This order is not necessarily chronological.

The structures and buildings have been labeled alphabetically in the following list and on **Figure 3** below.

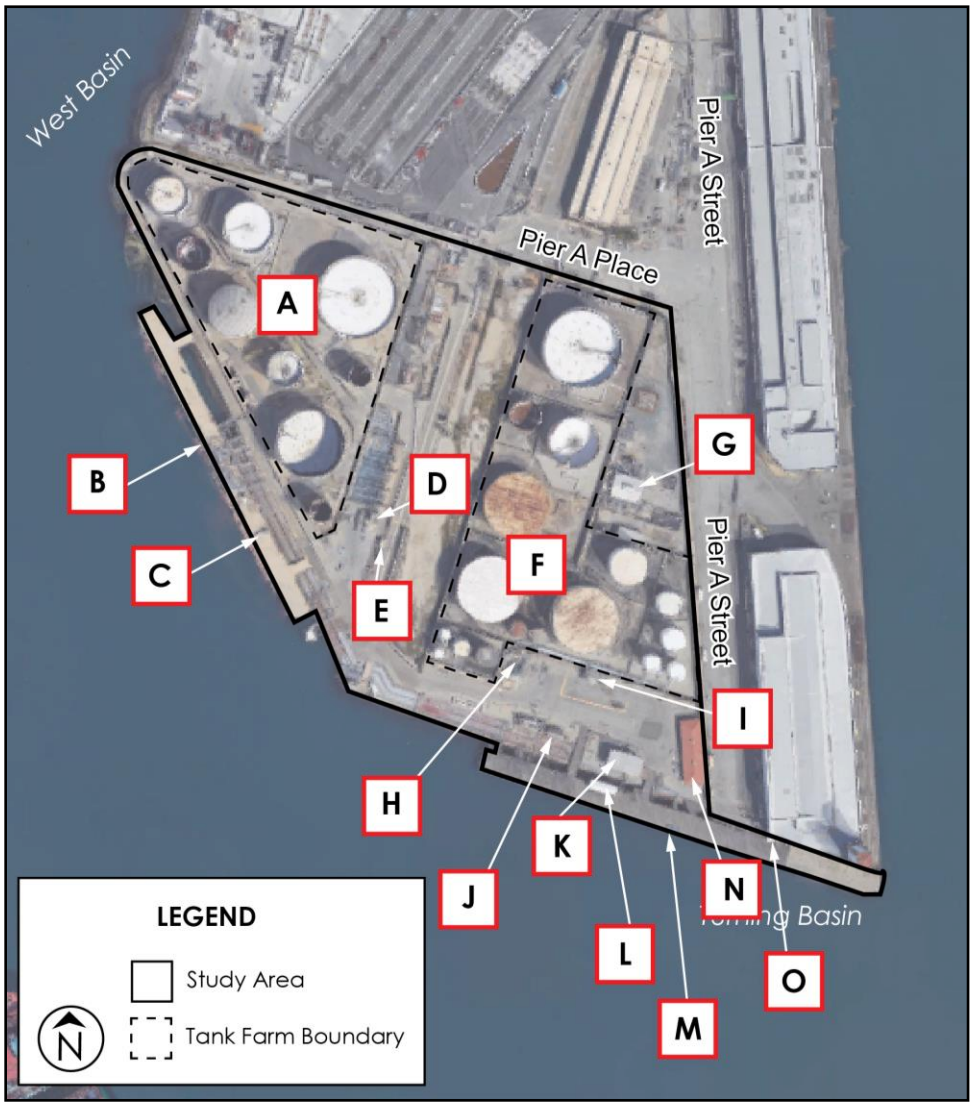


*Figure 3: Buildings and structures in the Study Area. Base image courtesy of Google Maps.*

A. West Tank Farm

On the west end of Berth 148-149 there is a tank farm (West Tank Farm for the purposes of this report) consisting of nine metal storage tanks ranging in size from as large as approximately 155 feet in diameter to as small as approximately 50 feet in diameter. See **Figure 4**. The tanks are surrounded by a concrete dike wall forming a generally triangular shape. Each of the tanks has a set of stairs leading to the rim of the tank as well as pipelines connected to their bases that lead underground. One of the tanks has a geodesic domed covering. Access to the interior of the dike wall appears to be via a metal ladder/stair at its east end and northeast corner. The tank farm was initially constructed in 1955 as part of Union Oil's expansion into Berth 148. Aerial photographs indicate that the tank farm initially consisted of just eight storage tanks; the tank directly south of the northwest corner was added sometime between 1956 and 1971.

B. Berth 148-149 Wharf

The wharf at Berths 148-149 is approximately 600 feet long, 35 feet wide, and is of concrete construction. See **Figure 5**. It was completed in 1955 as part of Union Oil's expansion into Berth 148 and replaced an earlier timber wharf from the 1930s. Equipment such as manifolds, hoses, and cranes are concentrated near the center of the wharf, and there is an access ramp at its north and south ends.

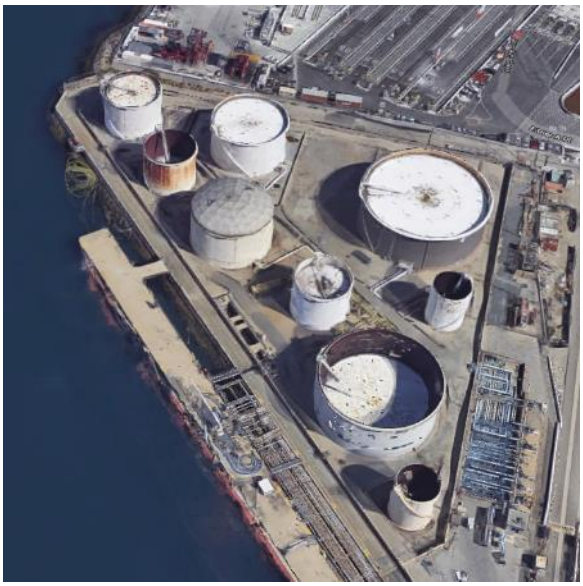

*Figure 4: Aerial view of West Tank Farm, looking north. Google Maps.*

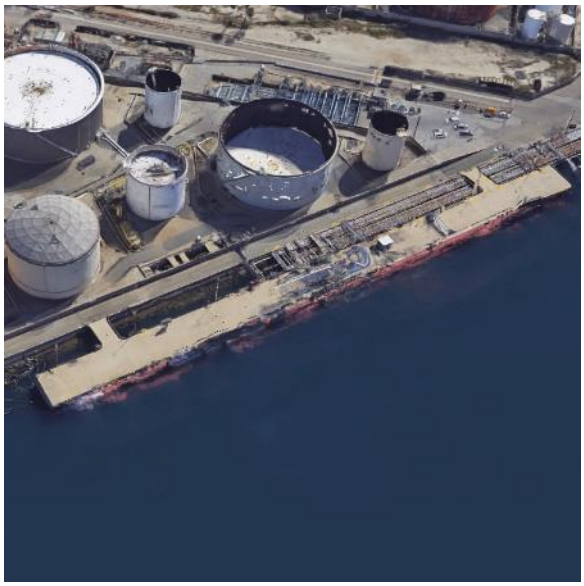

*Figure 5: Aerial view of Berth 148-149 Wharf, view looking east, Google Maps.*

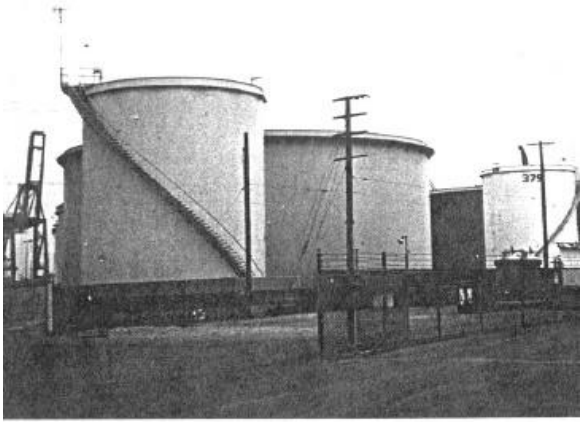

*Figure 6: Tank Farm as it appeared in 2000. Jones & Stokes.*

*Figure 7: Berth 148-149 Wharf, as it appeared in 2000. Jones & Stokes.*

C. Dock Shed 1

Dock Shed 1 is located near the center of the concrete wharf at Berths 148-149. It is a one-story utilitarian building that is rectangular in plan. See **Figure 8**. It has a corrugated metal shed roof and vertical cladding. Windows consist of metal-framed one-over-one sashes arranged in a ribbon. There is a single wood door on its southeast elevation. Aerial photography indicates that it was constructed prior to 1956; the dock shed was likely completed at the same time as the concrete wharf in 1955.

D. Substation

The Substation is located to the east of the West Tank Farm's dike wall. See **Figure 9**. It is a one-story utilitarian building that is rectangular in plan. It has a shed roof, vertical cladding, and metal multi-light windows. There is a single door on its south elevation.

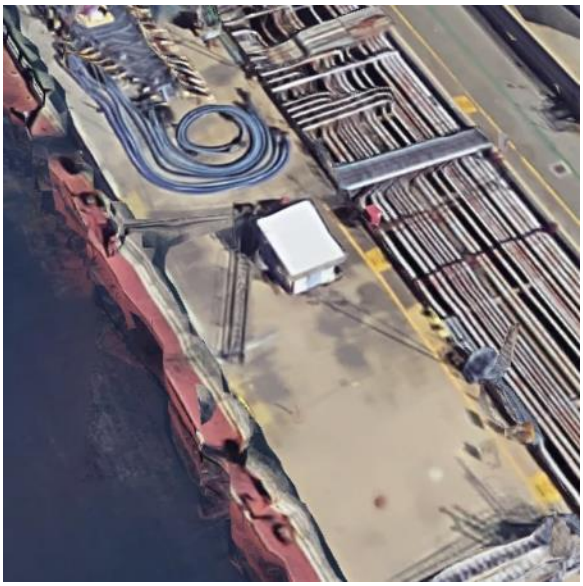

*Figure 8: Aerial view of Dock Shed 1, view looking north. Google Maps.*

*Figure 9: Aerial view of Substation, view looking north. Google Maps.*

*Figure 10: Dock Shed 1 as it appeared in 2000. Jones & Stokes.*

*Figure 11: Substation, as it appeared in 2000. Jones & Stokes.*

E. Gate House

The Gate House is a one-story utilitarian building located southeast of the Substation. See **Figure 12**. It is rectangular in plan and has a flat roof with overhanging eaves, wood cladding, a single door and single-light windows.

F. East Tank Farm

On the east end of Berths 150-151 there is a tank farm (East Tank Farm for the purposes of this report) consisting of seventeen metal storage tanks ranging in size from as large as approximately 140 feet in diameter to as small as approximately 20 feet in diameter. See **Figure 13**. The tanks are surrounded by a board-formed concrete dike wall forming a rough L-shape. At the east elevation of the wall is a stamped Union Oil shield logo bearing the date 1923. The majority of the tanks have a set of stairs leading to the rim of the tank as well as pipelines connected to their bases that lead underground. Tanks without access stairs are connected to others via catwalks. A number of metal ladder/stairs along its perimeter provide access to the interior of the concrete dike wall. Review of aerial photographs, harbor maps, and USGS topographical maps indicates that the East Tank Farm has been continually reconfigured over the years. It contained as few as eight tanks in 1923. By 1926, there were fourteen tanks. By 1939, two more tanks had been added and in 1952 what appear to be at least six additional tanks had been added along the western edge of the concrete dike wall. A 1956 aerial shows twenty-one tanks within the boundary of the dike wall, and at least six along the western edge. By 1971, the tank farm had been reconfigured for fewer, larger tanks; nineteen are visible within the boundaries of the dike wall, with fourteen smaller cylindrical volumes along the western edge of the dike wall. By 1979, the tank farm had been reconfigured once again to hold fewer larger tanks, with a total of seventeen visible within the dike wall—these appear to be the same seventeen that are present today. The smaller cylindrical structures along the western edge of the dike wall were removed between 1979 and 2001. The East Tank Farm was initially constructed in 1920 as part of Union Oil's improvements at Berths 150-151.

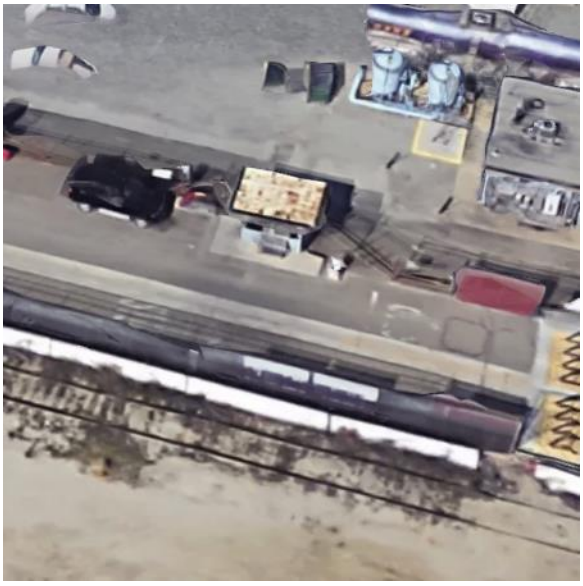

*Figure 12: Aerial view of Gate House, view looking west. Google Maps.*

*Figure 13: Aerial view of East Tank Farm, view looking north. Google Maps.*

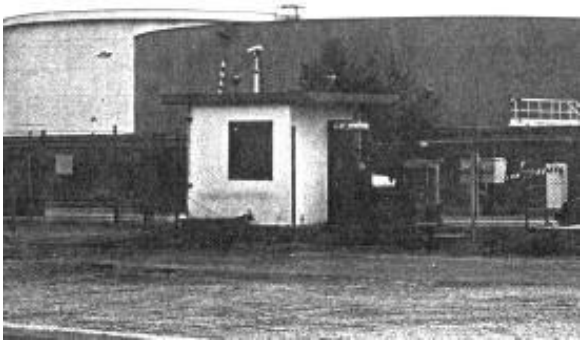

*Figure 14: Gate House as it appeared in 2000. Jones & Stokes.*

*Figure 15: East Tank Farm, as it appeared in 2000. Jones & Stokes.*

G. Pumphouse 1

Pumphouse 1 is located adjacent to the eastern boundary of the East Tank Farm dike wall. See **Figure 16**. It is a one-story utilitarian building that is rectangular in plan. It has a corrugated metal gabled roof with a monitor along its ridge, corrugated metal siding, multi-light metal windows, and a pair of metal doors on its east elevation. The building appears to be present in a 1927 aerial photograph.

H. Pumphouse 2

Pumphouse 2 is located adjacent to the southern boundary of the East Tank Farm dike wall. See **Figure 17**. It is a one-story utilitarian building that is rectangular in plan. It has a corrugated metal gabled roof, corrugated metal siding, multi-light metal windows, and a single door on its east elevation. The building appears to be present in a 1927 aerial photograph.

*Figure 16: Aerial view Pump House 1, view looking west. Google Maps.*

*Figure 17: Aerial view of Pump House 2, view looking west. Google Maps.*

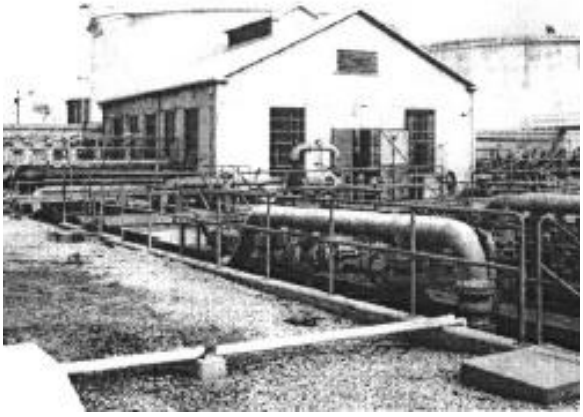

*Figure 18: Pump House 1, as it appeared in 2000. Jones & Stokes.*


*Figure 19: Pump House 2, as it appeared in 2000. Jones & Stokes.*

I. Truck Rack

The Truck Rack is located south of the East Tank Farm and east of Pumphouse 2. It is utilitarian structure raised on metal posts. See **Figure 20**. It consists of two rectangular volumes with shed roofs clad in corrugated metal. The interior of the structure is accessed by a set of metal stairs with open risers. There are no visible doors or windows. Based on aerial photographs, the Truck Rack was constructed between 1971 and 1979.

J. Shed

The Shed is located south of the Truck Rack. It is a one-story utilitarian building that is rectangular in plan. See **Figure 21**. It has a corrugated metal side-gabled roof, corrugated metal siding, and a single door on its north elevation. There are no visible windows. Based on aerial photographs, the Shed was constructed between 1971 and 1979.

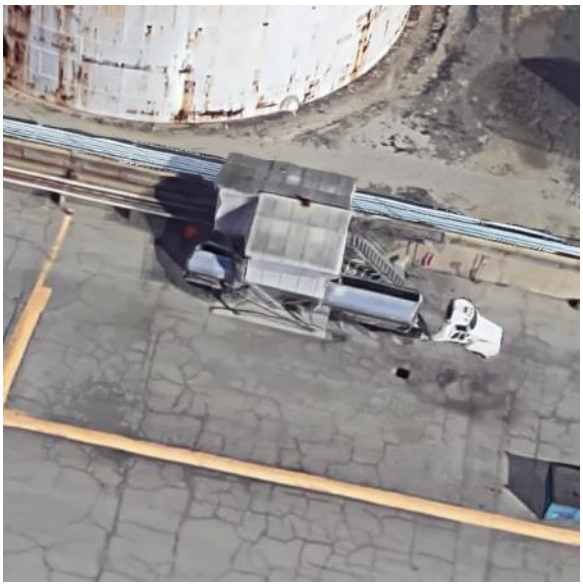

*Figure 20: Aerial view of Truck Rack, view looking north. Google Maps.*

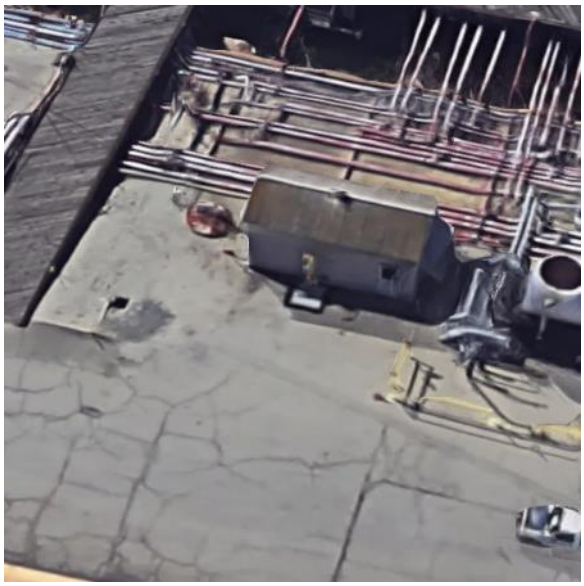

*Figure 21: Aerial view of Shed, view looking south. Google Maps.*

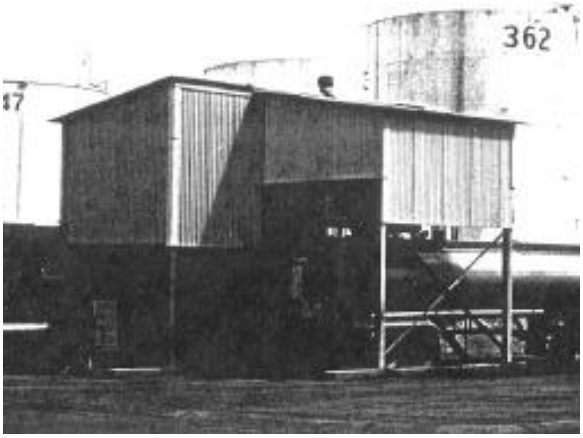


*Figure 22: Truck Rack, as it appeared in 2000. Jones & Stokes.*

*Note: The Shed was not recorded by Jones & Stokes as part of their 2001 report.*

K. Warehouse

The Warehouse is located east of the Shed. It is a one-story utilitarian building that is rectangular in plan. See **Figure 23**. It has a shed roof with an overhanging eave at its front (north) elevation. The exterior is clad in seamed metal panels and there are sliding metal doors on its north and south elevations. There is a single door and multi-light metal windows on its west elevation. On the east elevation there is a small pent-roofed addition that appears to be for storage. Based on aerial photographs, the Truck Rack was constructed between 1952 and 1956. Another building, used as a machine shop and later a warehouse, is shown on Sanborn maps for 1921 and 1951. Oriented north-south, this warehouse building was directly south of the East Tank Farm and west of the Shed but was demolished after 1952 and ostensibly replaced with this Warehouse.

L. Dock Shed 2

Dock Shed 2 is located south of the Warehouse on the timber wharf for Berths 150-151. It is a one-story utilitarian building that is rectangular in plan. See **Figure 24**. It has a side-gabled corrugated metal roof and corrugated metal siding. There is a single door, single-light metal windows, and a recessed work area along its front (south) elevation. The building appears to be present in a 1927 aerial photograph.

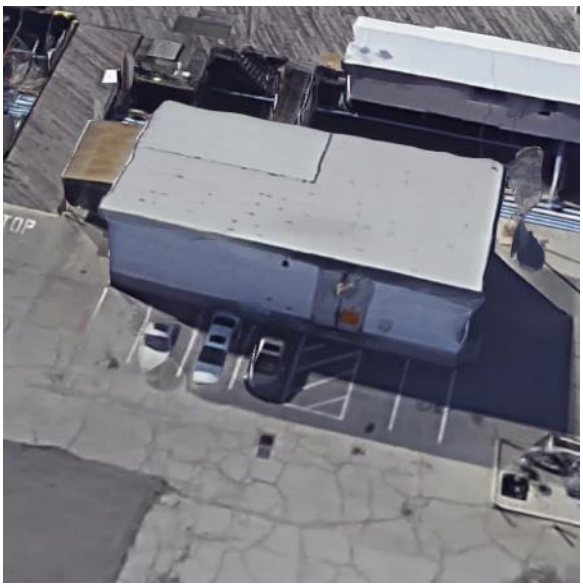

*Figure 23: Aerial view of Warehouse, view looking south. Google Maps.*

*Figure 24: Aerial view of Dock Shed 2, view looking south. Google Maps.*

*Figure 25: Warehouse, as it appeared in 2000. Jones & Stokes.*

*Figure 26: Dock Shed 2, as it appeared in 2000. Jones & Stokes.*

M. Berths 150-151 Wharf

The wharf at Berths 150-151 is approximately 570 feet in length and 40 feet wide and is of timber construction. See **Figure 27**. Diagonally laid timbers form the surface of the wharf above wood support pilings. It was initially constructed in 1920 by the Los Angeles Harbor Department for Union Oil and has undergone continuous repair over the years. Equipment such as manifolds and cranes are located along its southern edge, and there are three access ramps to the adjacent berths. The surface of the wharf is covered by wood boards that serve as stopgap repairs for especially damaged timbers. At the east end of the wharf, there is a concrete extension that is approximately 175 feet long. This extension appears in aerial photographs as early as 1927, but it is unclear if it was made of concrete at that time.

N. Main Office

The Main Office is located at the eastern edge of Berth 151. It is a one-story building designed in no particular style. See **Figure 28**. It is rectangular in plan and has a hipped, composition shingle roof with open eaves and two cupolas. The exterior is clad in stucco. The entrance is at the north end of the west elevation and is sheltered underneath a flat awning with narrow supports. Windows are double-hung wood sash. Based on aerial photographs, the Main Office was constructed after 1945, replacing a previous narrower building with a side-gabled roof in the same location.

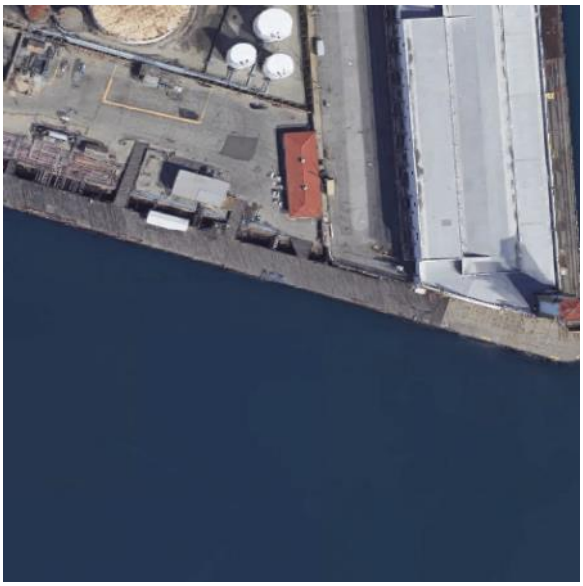

*Figure 27: Aerial view of Berths 150-151 Wharf. Google Maps.*

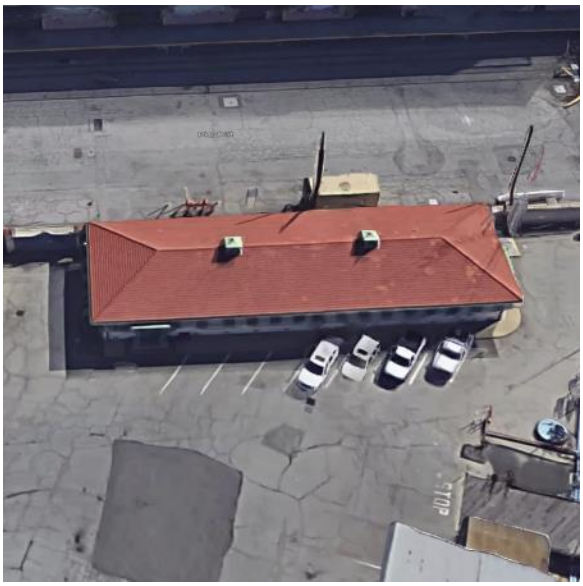

*Figure 28: Aerial view of Main Office, view looking east. Google Maps.*

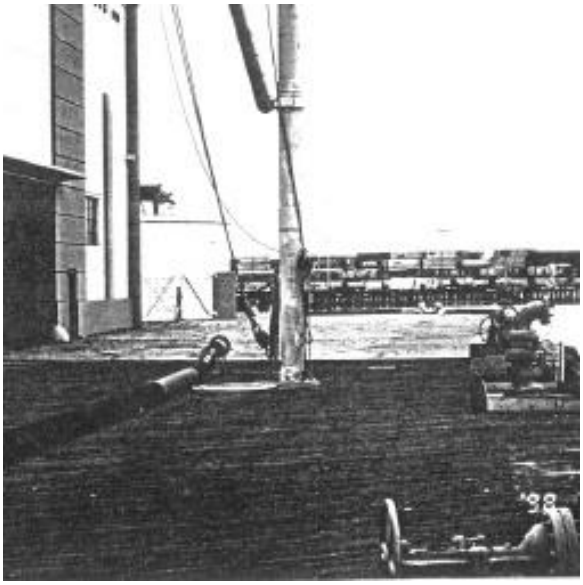

*Figure 29: Berths 150-151 Wharf, as it appeared in 2000. Jones & Stokes.*


*Figure 30: Main Office, as it appeared in 2000. Jones & Stokes.*

O. Dock Shed 3

Dock Shed 3 is located along the timber wharf at Berth 151, just west of the concrete extension. See **Figure 31**. It is a one-story utilitarian building that is rectangular in plan. It has a corrugated metal shed roof and corrugated metal siding. There is a single door on its front (south) elevation and a single-light wood window on its east elevation. Based on aerial photographs, Dock Shed 3 was constructed between 1952 and 1956.

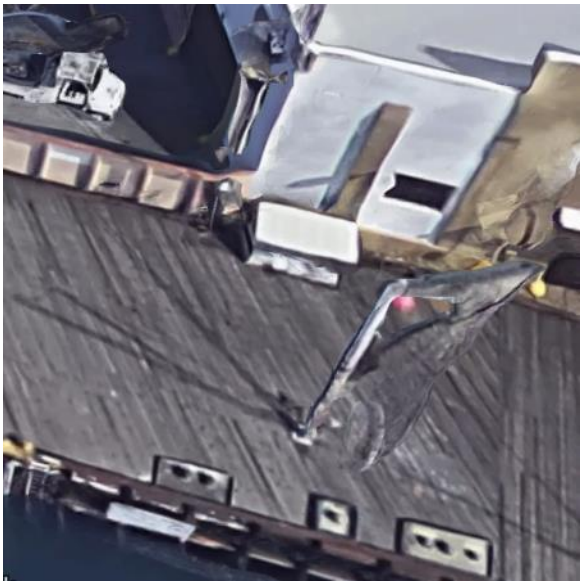

*Figure 31: Aerial view of Dock Shed 3. Google Maps.*

*Note: Dock Shed 3 was not recorded by Jones & Stokes as part of their 2001 report.*

# 4. HISTORICAL OVERVIEW

The significance of a property must be evaluated within its historic context(s). Historic contexts are those patterns or trends in history by which a specific property is understood. The following contexts, the history of the Port of Los Angeles, the oil industry in Southern California, and the Union Oil Company, were identified and developed for use in the evaluation of the Study Area as a potential historical district.

## 4.1 The Port of Los Angeles, 1907-1980

*Figure 32: The first steamer arrives at the harbor that would become the Port of Los Angeles, 1893. Los Angeles Public Library.*

Once a quiet natural harbor, what would eventually become the present-day Port of Los Angeles was transformed during the nineteenth century into a shipping and transportation hub for the region. The harbor and its existing facilities were formally acquired by the City of Los Angeles in 1906 when the City annexed a mile-wide, sixteen-mile long strip of land between its southern boundary and Wilmington and San Pedro. The two harbor cities were consolidated, the Board of Harbor Commissioners was created, and the Port of Los Angeles was officially founded in 1907.[30]

The first permanent oil-related facility came in 1909 when the directors of the Union Oil company helped finance a new subsidiary, the Outer Harbor Dock & Wharf Company, headed by a Navy engineer Ralph H. Minor. The company's goal was to "dredge a deep basin behind the new San Pedro breakwater and create a terminal which would accommodate the largest ocean-going

[30] LSA Associates, Inc. and Chattel, 104.

steamers." Union Oil was pressed for more and more financial support until they eventually took over the entire project, building sea walls, wharves, and creating industrial sites. In 1911, when the Los Angeles Tidelands Act was passed, tidelands and associated waterfront property was transferred to the city to be held in a trust. Lyman Stewart sued, as Union Oil had invested $1,600,000 in improving their port facility, only for the City to attempt to take over their property. An agreement was made in which Union Oil would hold the property as part of a thirty-year lease, after which time the land would be released to the City. This agreement expired on April 4, 1952. On this date, the wharves, piers, channels, and bulkheads that were the property of the Outer Harbor Dock & Terminal Company were transferred to the Los Angeles Board of Harbor Commissioners. All the "installations and machinery" remained the property of Union Oil.[31] Research indicates that these facilities were located near the present-day location of Watchorn Basin and Berths 45-49, and were separate from Union Oil's facilities at Berths 148-151.[32]

Major port developments were soon underway in anticipation of the completion of the Panama Canal in 1914. These changes were primarily industrial in nature, including extensive dredging, a large breakwater, and the construction of wharfs, the Los Angeles Harbor (also known as Angels Gate Lighthouse), a municipal pier, and a wholesale fish market. Fish Harbor, a dedicated area for fish processing and canning, was completed in 1915, laying the groundwork for the port's extensive fish industry facilities. Municipal Warehouse No. 1, the largest building at the port at the time, was completed in 1917.[33] In the years before World War I, companies were struggling to "keep ahead of the increasing flood of oil." The product was being pumped out as quickly as it was discovered throughout the region, but there was no dedicated place for storage or processing. As such, oil was being "funneled" in mass quantities toward the harbor and onto ships that would transport it through the Panama Canal, then east towards established refineries.[34] By 1911, the port handled one million barrels of oil for the Union Oil Company, Associated Petroleum, and Standard Oil Company. Pipelines and refineries were established to facilitate this process. Union Oil was the first to use a pipeline in the transport of oil, and in 1916, the company purchased land adjacent to the port to build its large refinery in Wilmington. [35]

While port improvements slowed at the beginning of World War I, shipbuilding activity increased. The Ralph J. Chandler Shipbuilding Company, Southwestern Shipbuilding Company, and the Los Angeles Shipbuilding and Drydock Corporation were among the first of the larger-scale shipyards. Together, they constructed over 50 ships, including cargo vessels and tankers. By 1918, over 20,000 workers were employed at four shipyards.[36]

After the war ended, shipbuilding was no longer needed on the same scale. However, shipping traffic increased exponentially. Goods that had accumulated during the war were now in demand. Raw materials, particularly lumber, were needed to support increases in construction;

[31] Queenan, 51-52; Frank J. Taylor and Earl M. Welty, *The Sign of the 76: The Fabulous Life and Times of the Union Oil Company of California* (Los Angeles: Union Oil Company of California, 1976), 158, 186.
[32] "Port of Los Angeles Terminals Map," The Port of Los Angeles, accessed March 18, 2019, https://www.portoflosangeles.org/getmedia/07e1377d-b452-4ecb-a629-9a0c69410805/pola_terminals_map; Thomas Brothers, *Los Angeles Harbor and Vicinity,* 1938, accessed March 18, 2019, Los Angeles Public Library Digital Collection.
[33] LSA Associates Inc. and Chattel, 105.
[34] Queenan, 55.
[35] Marquez and de Turenne,156.
[36] LSA Associates Inc. and Chattel, 105; Queenan, 59.

lumber was imported from the Pacific Northwest in huge quantities for Los Angeles' building boom. The nearby discovery of oil in 1921 also prompted major changes at the port. Although oil production and storage had been taking place in the area since the turn of the century, it quickly became a major industry. Oil-related facilities including refineries, warehouses, pipelines, and derricks sprang up, transforming the landscape of the port.[37] By the early 1920s, Standard Oil had storage for 460,000 barrels of oil at the port, and the capability to simultaneously load two tankers at a rate of 12,000 barrels per hour. The General Pipe Line Company had the same loading capabilities, and even more storage.[38] The Union Oil Company established a terminal in 1920 with a storage capacity of 335,000 barrels and the capability to load three tankers simultaneously.[39] Other oil companies doing business at the port by this time included Shell Oil Company of California, Gilmore Oil Company, Petroleum Export Corporation, Pan American Petroleum Company, Julian Petroleum, Southern Pacific Company, and Petroleum Midway Company, Limited.[40]

*Figure 33: Japanese fishing village on Terminal Island, 1925. Los Angeles Public Library.*

Fish processing, too, increased after World War I. Eleven canneries were operating at the port at this time, including Van Camp, French Sardine (now Star-Kist), White Star Canning, and the Franco-American Packing Co. Fish was plentiful, and the railroad connections were convenient. The port soon became the nation's leading commercial fishing center. Independent fishermen, many of whom were Japanese, Yugoslavian, Portuguese, Italian, and Scandinavian, lived in San Pedro or on Terminal Island and sold their yields of albacore, sardines, and mackerel, to the canneries.[41]

A village developed on Terminal Island. This village comprised a combination of first- and second-generation Japanese Americans, who developed their own "hybrid dialect and culture" that was wholly unique to the port. The residents primarily lived in cannery-owned housing, which surrounded a small commercial core at Tuna and Cannery Streets. The commercial strip included stores, restaurants, and recreation such as pool halls.[42]

By 1920, the Port of Los Angeles had become a "major Pacific commercial center."[43] The Panama Canal had reopened commercially in 1921, once again giving Los Angeles a geographic advantage and easy access to domestic and European ports. In 1923, a bond issue was passed for $15 million in harbor improvements. Using these funds, new facilities and infrastructure were constructed, including wharves, roads, and bridges; the Main Channel was both widened and dredged, relieving congestion and allowing for larger cargo ships to pass through; Deadman's

[37] LSA Associates Inc. and Chattel, 106.
[38] Queenan, 66.
[39] Marquez and de Turenne, 158.
[40] Queenan, 66.
[41] LSA Associates Inc. and Chattel, 107.
[42] Ibid.
[43] Ibid., 108.

Island, a small islet near the entrance to the harbor was demolished and its debris was deposited at Terminal Island, adding 62 acres to Reservation Point. With the improvements in place, direct trade with Asian markets—which previously routed through Seattle or San Francisco—was possible, and the transportation of goods began shifting to truck rather than rail. Using trucks allowed for "door-to-door" delivery via highways. The Great Depression, however, brought this increase in commerce and improvements to a halt.[44]

As the Depression progressed through the 1930s, activity at the port had begun to normalize. However, after the 1941 attack on Pearl Harbor, the port was once again immersed in the wartime effort. Large and small shipyards produced auxiliary vessels, cargo ships, troop carriers, and destroyers, employing over 90,000 workers. While international trade was limited during the war, the port served as a shipping hub for war materials and equipment.[45]

Beginning in 1941 and continuing into early 1942, the federal government forcibly removed the Japanese American population at the port. Some 3,000 residents were incarcerated in internment camps such as Manzanar in Owens Valley. Their homes were then razed by the US Navy, leaving nothing behind for them to return to. When the port return to normal operations in 1945, new facilities were constructed on the now-vacant land that once housed the Japanese village at Terminal Island.[46]

After World War II, there was another construction and population boom in the Los Angeles area as wartime workers and veterans began settling in the area permanently. Once again, lumber and other building materials were in high demand and the port continued to expand as a result. By 1947, there were hundreds of businesses operating at the port, including:

| | |
|---|---|
| Commercial Trucking Companies | 200 |
| Marine Surveyors | 134 |
| Shipping Lines | 115 |
| Ship Chandlery/Marine Supply Firms | 54 |
| Licensed Ship and Yacht Brokers | 40 |
| Bulk Petroleum Carriers | 38 |
| Canneries | 19 |
| Ship and Boatbuilding and Repair Firms | 18 |
| Custom Brokers | 11 |
| Stevedore (dockworker) Companies | 9 |
| Lumber Carriers | 8 |
| Lumber Companies | 5 |
| Transcontinental Railroads | 3 |
| Dredging Companies | 2 |
| Navigation Instrument Firms | 2 |
| Water Taxi Services | 2[47] |

[44] Ibid., 107-108; Queenan, 78-79.
[45] LSA Associates Inc. and Chattel, 108.
[46] Ibid.
[47] Queenan, 94.

*Figure 34: Port of Los Angeles, view looking east, 1956. Los Angeles Public Library.*

In 1958, the port established overseas trade offices in Oslo, Norway and Tokyo, Japan to better provide for their clients in Europe and the Pacific Rim. The next year, voters approved a City Charter Amendment that allowed the Harbor Department to use revenue bonds to fund harbor improvements—about $50 million. This facilitated replacement of outdated terminals throughout much of the port, enlargement of others, and the construction of a bulk loader.[48]

Around this time, containerization was introduced. Containerization was a method in which smaller cargo items were pre-packed in large, standardized containers for shipment. This allowed for greater productivity and efficiency with less theft and damage to the goods; however, it required a great deal of new equipment. The port had to overhaul its infrastructure. Huge new gantry cranes were installed to lift the containers, wharves were modified or rebuilt to support the additional weight, and cargo vessels had to be converted—if possible—with open decks for container storage. With access to the funding from the Charter Amendment, the Board of Harbor Commissioners approved a $37-million-dollar development plan in 1960 to construct new facilities and modernize and rehabilitate existing facilities.[49]

[48] Ibid., 101.
[49] Ibid., 105.

By the late 1960s, the port was largely adapted to containerization, resulting in major changes to the built environment. Throughout the port, existing facilities were heavily modified or demolished to make way for new construction. Certain industries at the port, particularly fish processing, began to dwindle during this era. Van Camp and Star-Kist established fish canneries in other countries; by the 1970s, many of these canneries had been purchased by larger, multi-national corporations, and by the 1980s, the majority of these operations were moved out of Los Angeles. Chicken of the Sea was the last plant to close at Fish Harbor in 2001.[50]

The port continued to develop throughout the 1980s. The Main Channel was dredged and widened once again, allowing for increasingly larger cargo ships to pass through. The resulting sediment was used to create new landfill, increase storage space, and construct new terminals. The Ports of Los Angeles and Long Beach and the Southern Pacific Transportation Company partnered on the Intermodal Container Transfer Facility, which was completed in the early 1980s. Here, shipping containers were loaded directly onto railcars, which eliminated the need for trucks to bring the shipping containers to a separate rail yard.[51] In 2002, the Alameda Corridor was completed, creating a single, grade-separated connection between the ports of Los Angeles and Long Beach and the mainline tracks near downtown Los Angeles. By eliminating rail crossings, the Alameda Corridor has reduced both emissions and certain traffic congestion factors while transporting the equivalent of 7,000 trucks worth of goods per day.[52]

## 4.2 The Oil Industry in Southern California, 1892-1965[53]

*Figure 35: Derricks in the Signal Hill Oil Field, 1926. Los Angeles Public Library.*

In 1892, oil was first discovered in Los Angeles by two prospectors—Edward L. Doheny and his business partner, Charles A. Canfield—in the area that would become the Los Angeles Oil Field and is now the location of Dodger Stadium. At its peak in 1901, the Los Angeles Oil Field was producing about 830,000 barrels[54] of oil a day for 200 different companies.[55]

A series of major oil discoveries in 1920 and 1921 triggered a second oil boom in the region. The largest of these discoveries was made by the Shell Oil Company in Signal Hill. The area was soon covered with hundreds of oil derricks, and by 1923, California was

[50] LSA Associates Inc. and Chattel, 110.
[51] Ibid., 109-110; Queenan, 121-123.
[52] "Frequently Asked Questions," Alameda Transit Corridor Authority, accessed March 7, 2018, http://www.acta.org/gen/faq.asp.
[53] The period of significance was established within the SurveyLA Industrial Context (Property Type: Port Production, Manufacturing, and Processing Plants). It begins with the early construction of the port and ends with the onset of the containerization era.
[54] A barrel is 42 gallons; Marquez and de Turenne, 158.
[55] LSA Associates, Inc. and Chattel, 82.

producing a quarter of the world's oil.[56] Prompted by the success in Signal Hill, oil companies began searching nearby Torrance. In 1921, the Del Amo Oil field in Torrance was discovered by the Chanslor-Canfield Midway Oil Company, a subsidiary of the Santa Fe Railroad. Wells owned by Standard Oil, Fullerton Oil, and Union Oil would soon follow. At the height of its production, the Del Amo Oil field would consist of 1,492 wells.[57] The Wilmington Oil Field was discovered in 1932 by the Ranger Petroleum Corporation. Partially located within both the cities of Los Angeles and Long Beach, the Wilmington Oil Field was believed to be an extension of the Del Amo Oil field, but additional investigation revealed in 1936 that it was a separate deposit.[58]

In the 1940s, the Wilmington Oil Field was sinking due to land subsidence resulting from the continued oil drilling. The eastern end of Terminal Island had lowered nearly four feet. By 1956, the subsidence had creeped northward, covering twenty-two square miles, a "bowl-shaped" area that included the harbor and downtown Long Beach. The sinking caused flooding, backed up gravity sewer systems, and lowered the height of levees along the Los Angeles River flood control channel. A number of businesses on Terminal Island had dipped below sea level. The City of Long Beach halted further development in the oil field until the subsidence could be remedied. The City determined that the use of water injection controlled—and eventually halted—the subsidence and restored ground pressure. A federal lawsuit in 1958 compelled the various parties involved, including landowners, port officials, state, and the city—400 in all—to adopt a subsidence mitigation plan that comprised pumping millions of gallons of seawater into the harbor oil field to replace the oil that had been pumped away. The plan was successfully carried out in 1962.[59] In the 1960s and into the 1970s, oil production in the Los Angeles basin declined, leading to an increase in oil and natural gas imports to meet the energy demands of the city. In 1973, an oil embargo by the Organization of Petroleum Exporting Companies (OPEC) caused a major fuel shortage, inflation, and a nationwide recession.[60]

The oilfields, oil wells, and related production facilities in Los Angeles are in one of the most urbanized areas in the world. In order for these facilities to coexist with the city around them and adapt to changing regulations, many have undergone extensive changes or been replaced entirely as technology has advanced, creating smaller, cleaner, quieter, and less obtrusive equipment. As a result, intact extraction, refining, and processing facilities are rare, and the history of the oil industry in Los Angeles and Southern California is often represented in the built environment by oil company offices or production and maintenance facilities.[61]

Oil and its byproducts helped to power the growing city, providing fuel for the industrial areas, electricity, gas for cooking, and wealth that prompted development of neighborhoods south and

[56] "Signal Hill Oil Boom," American Oil and Gas Historical Society, accessed March 7, 2019, https://aoghs.org/petroleum-pioneers/signal-hill-oil/.
[57] LSA Associates Inc. and Chattel, 83.
[58] Ibid.
[59] Ibid.; DJ Waldie, "The Incredibly Sinking State: The Lowdown on Subsidence," *KCET,* June 10, 2015, https://www.kcet.org/history-society/incredibly-sinking-state-the-lowdown-on-subsidence.
[60] OPEC was founded in Baghdad in 1960 and consisted of Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela. Before 1973, these five countries had been joined by Quatar, Indonesia, Libya, the United Arab Emirates, Algeria, and Nigeria. "Member Countries," OPEC, accessed March 18, 2019, https://www.opec.org/opec_web/en/about_us/25.htm; LSA Associates Inc. and Chattel, 12.
[61] LSA Associates Inc. and Chattel, 84-87.

west of downtown Los Angeles.[62] In the 1920s, oil was one of the major factors of the city's economy, along with shipping, banking, film, agriculture, and tourism.[63] The industry overall prompted the development of other major industries, including the automotive industry and the manufacture of rubber, tires, and steel. Inexpensive fuel and an expanse of scenic roadways also popularized the use of the automobile, which would go on to shape the development of the city itself throughout the twentieth century.[64]

## 4.3 History of the Union Oil Company

*Figure 36: The California Oil Museum, housed the original headquarters for the Union Oil Company, 1989. California State Library.*

The Union Oil Company was founded on October 17, 1890, in Santa Paula, California. The corporation was the result of a merger of three companies: the Hardiman & Stewart Oil Company, the Sespe Oil Company, and the Torrey Canyon Oil Company. Thomas R. Bard was named president, Lyman Stewart was vice-president, and W.L. Hardison was treasurer. All three men had been in California searching for oil for years, with little success, and were now facing financial difficulties. Although their debts were mounting, the newly formed Union Oil Company's assets were appraised at nearly $2 million and their stocks were capitalized at a value of $5 million.[65]

The next ten years were tumultuous as the three leaders disagreed on the best course forward for their company. Hardison had largely lost interest in the oil industry, Bard was interested in turning a quick profit, and Stewart wanted to invest in new land, research, and marketing to ensure the company's longevity. Tensions continued to build until Stewart managed to take control of Union Oil.[66]

In 1900, the company's headquarters were moved to Los Angeles.[67] In 1901, the company established the first petroleum-geology department in the western region, headed W.W. Orcutt, who began conducting specialized research in the use of geology to discover oil.[68] Union Oil also began constructing their network of pipelines to transport oil toward harbors where it could be transported on ships. With pipelines in place, the company instated a policy of closing their own wells and purchasing oil from other producers when prices were low, thereby maintaining their reserves while building relationships with smaller, independent companies.[69] By 1909, Union Oil was working on establishing themselves at the Port of Los Angeles, had a refinery in Bakersfield, nearly

[62] Ibid., 82.
[63] Kevin Starr, *Material Dreams: Southern California Through the 1920s* (New York: Oxford University Press, 1990), 85.
[64] LSA Associates Inc. and Chattel, 84
[65] Taylor and Welty, 93.
[66] Ibid., Chapter Four.
[67] Ibid., 131.
[68] Ibid., 132.
[69] Ibid., 132-133.

230,000 acres of land, and a number of high-producing wells, including Hartnell No. 1, or "Old Maud," which produced over 2,000,000 barrels over the course of six years, and Lake View No. 1, which produced 5,600,000 barrels in just six months.[70]

In 1911, the company's first permanent headquarters in Los Angeles was constructed at the corner of Seventh and Spring. At a cost of $700,000, the building was designed by the firm of Parkinson & Bergstrom in the Beaux Arts style.[71] The building was listed as a Los Angeles Historic-Cultural Monument in 2015 as an excellent example of the architectural style as well as for its important association with Union Oil.

Although Lyman Stewart's leadership had yielded the company a great deal of oil, the company was still "dollar-poor." After a series of financial mistakes, Stewart was forced to resign as the company's president in April 1914. His son, William Lyman Stewart, took his place as president while Lyman joined the company's board of directors.[72] Just a few months later, the country entered World War I. What was once a glut of oil was now in high demand as the company began drilling in new areas such as Texas, Wyoming, and Mexico, to increase production for the war effort. The refinery in Bakersfield and a new refinery in Wilmington[73] were processing tens of thousands of barrels a day, and three of the company's steamers were commandeered for use in the war effort.[74]

When the war ended, demand for oil products remained steady, but for different varieties. As the number of drivers on the road increased, so did the need for asphalt to pave roads, lubricating oils for engines, and gasoline to fuel the cars. In order to provide these products to consumers, companies like Union Oil needed to find and refine ever-increasing amounts of oil. Early techniques of spotting "oil seeps," or "smelling" for oil were no longer sufficient. The geology department, still headed by W.W. Orcutt, pioneered the use of more sophisticated mapping techniques that identified areas where oil might be trapped beneath the earth's surface. In the early 1920s, these techniques included aerial photography and the use of a seismic rig. The seismic rig involved drilling a hole and setting off dynamite charges, then measuring the resulting seismic waves to determine the location of "soft" layers trapped by "hard" layers that likely contained oil.[75]

By 1923, the company's investments were paying off. Union Oil had facilities capable of storing over 30 million barrels of oil, including the terminal at the Port of Los Angeles; a number of bulk distribution and service stations; 484 miles of trunk pipelines and 351 miles of gathering lines; and a tanker fleet of fourteen steamer ships and twenty-one barges. The company had also established a retirement fund for their workers, which provided medical care, hospitalization, as well as profit-sharing.[76]

[70] Ibid., 134, 149.
[71] "Millions in Skyscrapers," *Los Angeles Times,* April 16, 1911, VI1; Teresa Grimes and Amanda Yoder, "Los Angeles Historic-Cultural Monument Nomination: Bartlett Building, Union Oil Company Building," 2014, 4-6.
[72] Taylor and Welty, 164
[73] Construction on the refinery in Wilmington began in 1916. The extant facility is located on West Anaheim Street in Wilmington, approximately two miles northwest of the Study Area; Queenan, 66; LSA Associates Inc. and Chattel, 95.
[74] Taylor and Welty, 172.
[75] Ibid., 177-178.
[76] Ibid., 186-187.

Lyman Stewart died in 1923 after a battle with pneumonia. He was remembered in the *Union Oil Bulletin* in October of that year:

> He helped to blaze a trail in unproven California in the early Eighties, when oil production in the state was little more than a dream. He faced difficulties with stoicism and optimism, and played a might part in the upbuilding of California's oil industry with which he was constructively identified from its infancy. To his counsel, advice, and leadership, does the Union Oil Company of California largely owe its commanding position in the oil business of the West today.

*Figure 37: Aerial view of Union Oil's Los Angeles area refinery, 1924. Los Angeles Public Library.*

In April 1926, three million-barrel reservoirs at Union Oil's San Luis Obispo tank farm were simultaneously ignited by lightning strikes. A few minutes later, a fourth tank was ignited by another lightning strike. The resulting fire burned out of control for seventeen hours until the oil in the reservoirs boiled over and ignited a fifth reservoir and a row of steel tanks. Forty-mile-per-hour winds blew embers onto the roof of a sixth reservoir, which ignited 1,300,000 more barrels of crude oil. Fifteen steel tanks crumpled from the heat of the fire. The next day, the same storm that started the fire at San Luis Obispo went over a tank farm in Stewart, Orange County. Two of the reservoirs were ignited once again by lightning. These reservoirs, too, boiled over, and ignited a third, and a nearby refinery was "engulfed…in the lake of flaming oil." These fires raged for days, too dangerous to be approached, until they finally burned themselves out, causing over $9 million in damage. After these fires, Union Oil established their "fire labs." The fire labs, one near the Wilmington Refinery, and one in Oleum in Northern California, had metal tanks, pits, sheds, towers, vehicles, and other equipment that was deliberately set on fire using different oils and gases, allowing Union Oil fire fighters to study the fires and the best way to put them out. Teams of firemen from Los Angeles, Long Beach, and as far away as Honolulu trained at the fire lab in order to study the unique characteristics of oil fires.[77]

By 1930, the company had assets worth at least $400 million, land holdings of more than 600,000 acres, and an annual output of more than 18,000,000 barrels of oil, giving them sturdy footing as the country entered the Great Depression, despite the sudden death of William Lyman Stewart in June of that year.[78] Union Oil was the oldest existing oil company in the region. Even then, they were recognized as a pioneer in the field. Contemporary industry journals recognize them as the first to develop a number of technologies, including absorption towers and stills for recovering gasoline from natural gas, as well as the being the first to construct a pipeline for the tidewater

[77] Ibid., 189-191
[78] Ibid., 194

transportation of oil, the first to move oil in bulk on tankers, and the first to use oil as locomotive fuel.[79]

The Great Depression had begun to affect Union Oil by the early 1930s. The company's oil storage was overflowing—oil wells continued to produce, but the product was not selling. Prices were slashed industry-wide in an attempt to get rid of excess product, resulting in price wars. Gasoline prices, too, were slashed. Once the most profitable petroleum product, the number of cars on the road had fallen dramatically, reducing demand for fuel. Union Oil's sales dropped by millions of dollars and the company's leadership began liquidating certain assets, reducing drilling crews, and cutting their payroll by establishing a five-day workweek.[80] Another strategy Union Oil took to weather the hardship of the Depression was to introduce an "anti-knock" gasoline with the highest octane rating possible at the time, in order to set them apart from their competitors and get out of the price war.[81] The company trademarked the gasoline as "76," referring to the patriotic "spirit of '76," and was the origin of the blue "76" on an orange background that would become the company's instantly recognizable logo.[82]

Toward the end of the 1930s, sales were beginning to normalize. The company had, more or less, survived the Great Depression. However, facilities were in disrepair and management was in disarray. After a management shakeup, a number of "old-timers" retired. The company was in the hands of a younger generation who were dedicated to collaboration and exploration. The research and development department was expanded and facilities underwent a major overhaul of repairs, expansions, and improvements.[83] This "modernization program" continued up until 1941, when the attack on Pearl Harbor brought the country into World War II. Once again, Union Oil was part of the war effort as they were called on to produce products such as aviation gasoline, petroleum fuels, and lubricants in quadruple the amount as before the war. Union Oil met these demands by running facilities at double capacity, building new ones with emergency funding, and exploring new methods of recovering additional oil from existing oil fields.[84]

When the war ended, Union Oil rolled out an extensive marketing plan that would eventually result in 500% increase in sales by the 1950s. They leased their service stations to independent operators and gave them top-of-the-line products to sell, including motor oils, greases, and an improved "aviation-type" gasoline. These Union retail products began to sell nationally, and the company continued to expand to keep up with the demand for oil and refining.[85] By 1948, the company was producing more oil than ever before, even during World War II.[86] In 1951, the new multi-million-

[79] Ostensibly, this early tidewater pipeline is the one completed in 1906 between the Santa Barbara area oil fields and the company's Port Hartford storage tanks; Taylor and Welty, 141, 194.
[80] Taylor and Welty. 200-201
[81] Early combustion engines made a "knocking" sound due to out-of-sequence detonations caused by the mixture of gasoline and air in the engine's cylinder(s). Scientists at General Motors discovered that adding a dilution of tetraethyl lead to the gasoline reduced this "knocking," damage to the engine, and improved fuel economy, which was of great use particularly during World War II. The dangers of leaded gasoline to both humans and the environment soon became clear; however, the benefits to engines were so great that it was not banned outright until 1986; "Ethyl Anti-Knock Gas," American Oil and Gas Historical Society, accessed March 11, 2019, https://aoghs.org/products/tetraethyl-lead-gasoline/.
[82] Taylor and Welty, 201-203.
[83] Ibid., 210-215.
[84] Ibid., 217-219, 223.
[85] Ibid., 228-229.
[86] Ibid., 229.

dollar Brea Research Center was opened, housing a staff of 300 scientists and technicians who worked to solve specific problems faced at other Union Oil facilities. By 1955, forty oil companies were paying royalties to Union Oil for use of their patented processes developed in the new lab.[87]

In 1958, Union Oil moved into its large new headquarters west of downtown Los Angeles. When it was completed, the central tower was the tallest building in the city, and the complex as a whole represented the beginning of a trend toward the city's business district expanding outward from its central core. The new headquarters was designed by the firm of Pereira & Luckman under the supervision of Gin D. Wong. The complex comprised four buildings: a thirteen-story tower called the Home Office tower, two mirrored four-story buildings called the Maryland and Fifth Street buildings, and a cafeteria and auditorium building called the Beaudry Building. The complex also had a rectangular courtyard, subterranean parking garage, and elevated pedestrian bridges that connected the buildings. The design of the Home Office tower was characterized by a series of thin, aluminum louvers that shielded the offices inside from the sun. The Maryland Building housed a medical department, the Home Office tower had space for private and executive offices as well as clerical space, and the cafeteria and auditorium in the Beaudry Building could each seat 500.[88] Although it is not currently listed under any national, state, or local landmark or historic district programs, the complex and its modern amenities represented part of a larger mid-century trend of oil companies constructing skyscrapers in and around downtown Los Angeles for corporate headquarters or large branch offices.[89]

*Figure 38: Union Oil's new Pereira & Luckman-designed headquarters in Westlake, 1959. Los Angeles Public Library.*

In July 1965, Union Oil merged with Pure Oil, a company based in Palatine, Illinois. After the merger, Union Oil's assets were worth $1,700,000,000—making it the ninth largest company in the entire oil industry. The company had $1,400,000,000 in sales a year, nearly 10,000 oil-producing wells and more than a billion barrels of oil in reserve, nine refineries, 10,000 miles of pipelines, and an entire fleet of barges in addition to five tankers and three super tankers. The merger made the company more competitive and financially stable with a broader geographic reach and wider variety of products.[90]

[87] Ibid., 237-238.
[88] "Los Angeles Center Studios," Los Angeles Conservancy, accessed March 14, 2019, https://www.laconservancy.org/locations/los-angeles-center-studios; "Union Oil Center Unique in Design," *Los Angeles Times,* April 1, 1958, D6.
[89] LSA Associates Inc. and Chattel, 83.
[90] Taylor and Welty, 301.

The stability and expanded team that formed after the merger helped Union Oil tackle the ongoing challenges of the twentieth century. During the 1950s and 60s, air pollution was a mounting problem, especially in areas like the Los Angeles basin, where pollutants were trapped by natural barriers; the primary cause of the air pollution at the time was automobile emissions. The federal government initially relied on state and local governments to remedy the problem. In response, California created the Air Resources Board (ARB) tasked with establishing standards for air quality and automobile emissions in 1967. However, in order to meet standards like these, the oil and automobile manufacturing industries would have to collaborate on a number of drastic changes to their respective businesses: it would be extremely expensive to produce a sufficiently high-octane unleaded gasoline, but if an automobile's engine compression ratio could be reduced, refineries could reasonably produce a gasoline for this type of engine. Executives at Union Oil including then-CEO Fred Hartley, took the initiative of making a proposal first to the California ARB, then to the United States Secretary of Health, Education and Welfare.[91]

*Figure 39: View of a blimp flying through smog in Downtown Los Angeles, 1954. Los Angeles Public Library.*

Union Oil began to roll out their unleaded gasoline in Southern California. When automobile manufacturers announced that all of their 1975 models would have the catalytic converters necessary to operate using unleaded gasoline, the Environmental Protection Agency mandated that by July 1, 1974, unleaded gasoline would have to be available at all service stations that pumped more than 200,000 gallons of fuel a year, and at sixty percent of a company's stations. Additional regulations were put in place that gradually decreased the amount of lead permitted in unleaded fuels over the next several years.[92] Union Oil continued to upgrade and improve their facilities and products to meet the increasingly stringent air quality standards of the 1970s.[93]

Union Oil also continued to explore the world of petrochemicals through a number of subsidiary companies. These chemicals, generally derived from oil and natural gas, could be used to make a wide range of products industrial solvents, agricultural fertilizers, printers' inks, adhesives, and even medical supplies, all of which could be manufactured from materials derived from the

[91] Ibid., 311-313
[92] Ibid., 315.
[93] Ibid., 319.

*Figure 40: Union Oil's research and development lab in Brea, California, 1954. Los Angeles Public Library.*

process of refining oil.[94] The Research Center in Brea had grown to 600 scientists, engineers, and support personnel by 1976. At that time, some of the major issues the team were solving included processing heavier oils for use, converting nitrous oxide into elemental nitrogen in automobile exhaust, and minimizing the amount of vapor that escaped from gasoline pump nozzles at self-service stations. Over the years, Union Oil research teams had received over 4,600 patents, 2,000 of which were still active in the 1970s.[95]

In 1983, the company reorganized as the Unocal Corporation due to mounting debts resulting from bad public relations and a series of takeover attempts; in 1969, the company had been responsible for a major oil spill off the coast of California, and the company's reputation had taken a hit.[96] In 1996, a portion of the company was acquired by Tosco Corp., based out of Connecticut.[97] Tosco was subsequently acquired by Phillips Petroleum Co. in 2001, making them the second largest oil refiner in the United States. Later that year, Phillips Petroleum Co and Conoco Inc. merged, resulting in the sixth largest energy company in the world, and the fifth largest global oil refiner, worth $35 billion.[98] In 2012, ConocoPhillips separated the midstream and downstream portions of its business to create a publicly traded business called Phillips 66.[99] Today, ConocoPhillips is considered the world's largest independent exploration and production company in the world, based on their rates of production and reserves of oil and natural gas.[100]

[94] Ibid., 341-347.
[95] Ibid., 351-355.
[96] "Finding Aid for the Union Oil Company of California Records, 1884-2005," Online Archive of California, accessed March 14, 2019, https://oac.cdlib.org/findaid/ark:/13030/kt4g5035zk/entire_text/.
[97] "Tosco to Acquire Unocal Downstream Unit," *Oil & Gas Journal,* November 25, 1996, https://www.ogj.com/articles/print/volume-94/issue-48/in-this-issue/gas-processing/tosco-to-acquire-unocal-downstream-unit.html.
[98] "Phillips to Acquire Tosco in Multibillion-Dollar Deal," *Oil & Gas Journal,* February 12, 2001, https://www.ogj.com/articles/print/volume-99/issue-7/general-interest/company-news-phillips-to-acquire-tosco-in-multibillion-dollar-deal.html; "Phillips, Conoco Plan $35 Billion 'Merger of Equals,'" *Oil & Gas Journal,* November 26, 2001, accessed March 14, 2019, https://www.ogj.com/articles/print/volume-99/issue-48/general-interest/phillips-conoco-plan-35-billion-merger-of-equals.html.
[99] "About," Phillips66, accessed March 18, 2019, https://www.phillips66.com/about.
[100] "About Us," ConocoPhillips, accessed March 14, 2019, http://www.conocophillips.com/about-us/.

# 5. EVALUATION OF ELIGIBILITY

As a concentration of utilitarian buildings and structures that lack individual distinction, it is unlikely that a single building or structure within the Study Area would be sufficient to convey any potential historical significance within the context the oil industry at the Port of Los Angeles. Therefore, no buildings or structures within the Study Area were identified for individual evaluation.

Berths 148-151, the Study Area, were evaluated as a district for listing in the National and California Registers and for designation as a Los Angeles HPOZ. The historic context considered in these evaluations was the history of the oil industry in Southern California, specifically the association with Union Oil and activities at the Port of Los Angeles.

## 5.1 Previous Evaluations

Berths 148-151 were previously evaluated in 2001 by Jones & Stokes. As a result of this evaluation, the marine oil terminal at Berths 150-151 was identified as eligible for listing in the National Register under Criterion A for its association with the oil industry in Southern California and for its association with Union Oil, with a period of significance that was established as 1920 to 1936. The period of significance started when Union Oil first leased the property at Berths 150-151, and ended in 1936, with the last major oil discovery in the Los Angeles basin. The evaluation also asserted that the terminal at Berths 150-151 was one of two surviving and relatively intact examples of an oil terminal constructed at the port during the 1920s.

The terminal at Berths 148-149 was evaluated as ineligible, as it was constructed outside the period of significance (1920-1936). Furthermore, at the time of the evaluation, the buildings and structures were less than 50 years old and did not rise to the level of exceptionally significant, as is typically required. The timber wharf, which was initially constructed in 1931, was demolished and replaced by the existing concrete wharf in 1955 when the terminal was developed. **Figure 41** and **Figure 42** show the site as it appeared in 1951 and in 1956, respectively. The existing buildings and structures that comprise the terminal were constructed beginning in 1955; as the previous evaluation was prepared in 2001, they would have had to have been constructed earlier than 1951 to meet the 50-year age threshold at that time.

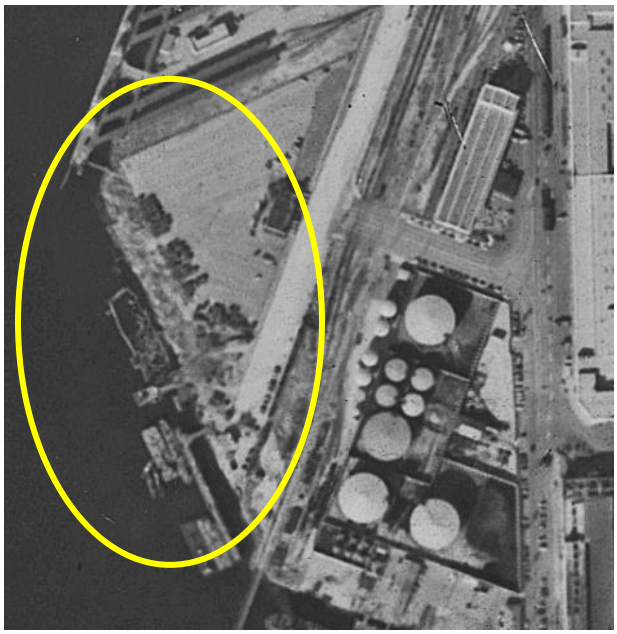

*Figure 41: Berths 148-149 as it appeared in 1952: the site is largely undeveloped, and the original timber wharf is still extant. Terminal indicated with yellow ellipse. USCB Library.*

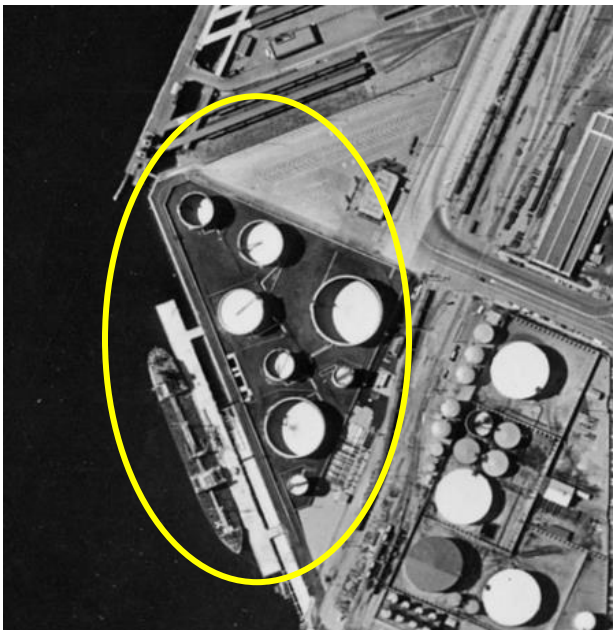

*Figure 42: Berths 148-149 as it appeared in 1956: the site was developed in 1955 and the original timber wharf was demolished and replaced with a concrete wharf. Terminal indicated with yellow ellipse. USCB Library.*

The discussion below serves to update the 2001 report, which is nearly twenty years old, provides new and relevant information on the integrity of the Study Area, and evaluates the buildings and structures in the Study Area as a potential historic district using the National Register, California Register, and Los Angeles HPOZ criteria.

## 5.2 National Register of Historic Places

As discussed above, large properties or areas with multiple buildings and structures from the same period of time and with a common history and use are typically evaluated as potential historic districts. As such, the Study Area was evaluated to determine if it constitutes a historic district. For National Register eligibility, historic districts usually meet the last portion of Criterion C, "a distinguishable entity whose components may lack individual distinction." However, they must also be significant within a historic context in order to be eligible. As such, historic districts must be historically significant under Criterion A, B, or D, or architecturally significant under other portions of Criterion C in addition to being a distinguishable entity.

Criterion A

To be eligible for listing in the National Register under Criterion A, a property must have a direct association with events that have made a significant contribution to the broad patterns of our history.

The 2001 evaluation identified Berths 150-151 as a historic district eligible for its association with the history of the oil industry, specifically the Union Oil company. In addition, the evaluation identified Berths 150-151 as one of "two surviving and relatively intact examples of an oil terminal," with a period of significance beginning in 1920, the year the facility was established, and ending in 1936, the year of the last major oil discovery in the Los Angeles basin. The buildings and structures on Berths 148-149 post-dated the established period of significance for the evaluation. Furthermore, they were not 50 years of age at the time and did not appear to have the exceptional level of significance necessary for National Register eligibility for properties less than 50 years of age.

The following Criterion A evaluation updates the 2001 Jones & Stokes evaluation within the same context, and also considers the Study Area as a historic district within the context of the history of the Port of Los Angeles.

*Association with Union Oil*

As an update on the previous report, GPA evaluated the terminal at Berths 150-151 as a historic district and has concluded that it does not appear to be significant for its association with Union Oil within the context of the history of the oil industry. In National Register Bulletin #15, the guidance under Criterion A states that "Mere association with historic events or trends is not enough, in and of itself, to qualify under Criterion A: the property's specific association must be considered important as well."[101] While Union Oil was an undeniably significant company that made great strides in the industry, this history is not reflected in the buildings and structures found at the terminal on Berths 150-151. Research did not reveal any evidence to suggest that significant events or trends in the company's history occurred at this terminal. Rather, the terminal comprised just one part of the company's larger distribution network and real estate holdings throughout the state and later the nation. It facilitated the storage and transshipment of their oil products but was not the site of, for example, one of their groundbreaking discoveries or important business deals that impacted the oil industry as a whole. In short: the terminal was associated with the company, but that association does not appear to be important. For these reasons, the terminal at Berths 150-151 does not appear to be significant in the context of the oil industry for its association with Union Oil. Berths 148-149 were simply an extension of the same terminal at Berths 150-151 and would not be significant for an association with Union Oil for the same reasons as discussed above. Therefore, none of the buildings or structures within the Study Area appear to be significant within this context set forth by the Jones & Stokes evaluation. In addition, the terminal at Berths 150-151 no longer retains its historic character from the period of significance, 1920 to 1936. The physical changes that have affected the integrity generally began taking place in the 1950s when Union Oil fully expanded their operations onto Berths 148-149. The buildings and structures on Berths 148-149 postdate this period of significance. See below for integrity discussion.

*Association with the Port of Los Angeles*

[101] "National Register Bulletin #15."

The Study Area was also considered as a historic district within the context of the history of the Port of Los Angeles. The Industrial Development Context written for the *Los Angeles Citywide Historic Context Statement* explains that… "the Port of Los Angeles contains several historical properties that are best understood in the context of port development. Some properties may be significant under other themes in the Industrial Context (e.g., oil, fishing, or manufacturing), but their primary significance will generally be in association with the history of the Port."[102] As discussed above, the Study Area does not appear to be significant for its association with the oil industry. However, during the 1920s, oil storage and shipment quickly became a major port industry along with fish processing, shipbuilding, and importing timber. The number of oil refineries, warehouses, pipelines, derricks that were built around the harbor dramatically changed the appearance of the port itself.

The terminal at Berths 150-151 was established in 1920 when the Port of Los Angeles constructed the timber wharf and the Union Oil company constructed tanks and a pumping plant and a pipeline that connected to their nearby Wilmington refinery. Among the dozens of oil companies that established facilities at the port, Union Oil and its competitor Standard Oil "dominated" the oil transport business, particularly during the oil boom of the 1920s.[103] A timber wharf was constructed at Berth 149 in 1931. Union Oil eventually expanded their facilities into Berth 148 in the mid-1950s after World War II.[104] The 1931 timber wharf at Berth 149 was demolished and replaced with a concrete wharf in 1955. During World War II, commerce and industry at the port—especially the oil industry—were interrupted in order to join the war effort. During the war, the port underwent a number of physical changes to meet the wartime demands for oil, ships, and other supplies. After the war, the changes continued as the port increased its global shipping capabilities and the containerization era began.

Berths 150-151 are associated with the rise of the oil industry at the port, which was a major factor in its development and its eventual position as an international shipping hub. GPA has identified a period of significance beginning in 1920, the year the terminal at Berths 150-151 was established, and ending in 1941, the onset of World War II. The onset of World War II brought with it many physical changes in order to meet the wartime demand for ships, oil, and supplies. Once the war ended, activities at the port had permanently changed. Union Oil was a major player in the oil industry and was one of the first to establish facilities at the port. Research indicates that Union Oil and Standard Oil generated the most petroleum-related business at the port, particularly during the oil boom of the 1920s. As a result, the terminal at Berths 150-151 was at the forefront of this historic trend—the rise of the oil industry at the port—and is differentiated from an array of other smaller companies who simply followed suit or established facilities at the harbor much later.

The terminal at Berths 148-149 is an extension of the Union Oil terminal that was developed after World War II. A timber wharf was originally constructed in 1931, but it was demolished and replaced with a concrete wharf in 1955. The terminal post-dates the established period of significance. Furthermore, it merely represents a continuation of oil-related activity at the port rather than the initial phase of development that changed the course of its history.

[102] LSA Associates Inc. and Chattel, 102.
[103] Marquez and de Turenne, 156.
[104] Ibid., 158.

Therefore, for the reasons discussed above, the terminal at Berths 150-151 appears to be significant under Criterion A for its association with the rise of the oil industry at the port; however, it does not retain sufficient integrity from the period of significance, 1920-1941 to convey that association. See detailed integrity discussion below. The terminal at Berths 148-149 does not appear to be significant under Criterion A as it post-dates the period of significance.

Criterion B

To be eligible for listing in the National Register under Criterion B, a property must be associated with the lives of persons significant in our past. National Register Bulletin #32: Guidelines for Evaluating and Documenting Properties Associated with Significant Persons states "specific individuals must have made contributions or played a role that can be justified as significant within a defining area of American history or prehistory."[105]

There are a number of important individuals in Union Oil history that would likely be considered significant figures, such as founding member Lyman Stewart and his son William Lyman Stewart. However, for a property to be eligible under Criterion B, the individual's association with the property must also be significant. As executives in the company, it is unlikely that the Stewarts would have personally conducted business at or within the Study Area. Furthermore, Lyman Stewart had been forced to resign as president a few years earlier in 1914, signifying that his most influential years at Union Oil ended before the facility was initially constructed in 1920. The Stewarts' contributions, and those of other prominent members of the Union Oil company, would be better illustrated by a property with which they had a stronger association during their productive life, such as an office building, headquarters, or personal residence.[106]

Research did not reveal any other potentially significant individuals associated with the Study Area. While many individuals have worked at the subject property since it was constructed, National Register Bulletin #32 states, "When specific individuals cannot be identified, or the significance of the activities, accomplishments, or influence of specific individuals cannot be identified or explained, significance rests more in a property's representation of a pattern of history, and the appropriate Criterion is A rather than B."

For the reasons discussed above, the Study Area does not appear to be significant under Criterion B.

[105] "National Register Bulletin 32: Guidelines for Properties Associated with Significant Persons," National Park Service, Cultural Resources, Beth Grosvenor Boland, accessed March, https://www.nps.gov/nr/publications/bulletins/nrb32/.

[106] For example, the first Union Oil Headquarters in Santa Paula is listed on the National Register. It is an early nomination that does not follow the general format and language used today, such as organizing information and significance by criterion, however the narrative statement lists Lyman Stewart as a "key individual" in its evaluation and notes that he was both instrumental in the company and in the construction of the initial headquarters itself.

Criterion C

To be eligible for listing under Criterion C, a property must embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction.

The Study Area is a typical example of a marine oil terminal, and includes small buildings such as warehouses and sheds, a timber or concrete wharf lining the waterway, and large tank farms with tanks of varying sizes, all of which are surrounded by pipelines and other mechanical equipment. The buildings and structures are constructed using common building materials and techniques, and they do not embody the distinctive characteristics of a type, period, or method of construction. The complex was developed over the course of the twentieth century beginning in 1920 when the wharves were constructed by the Los Angeles Harbor Department. The site was reconfigured and updated over time; buildings were demolished and replaced, additional storage tanks were added, and timber wharves were continually repaired or replaced entirely, with major redevelopment occurring in the 1950s. The timber wharf is a typical example of a wharf from the 1920s; wood wharves were a ubiquitous type of port infrastructure constructed at ports throughout the country during and after this era. There were more than 30,000 linear feet of timber wharves at the Port of Los Angeles alone by 1925.[107] The sheds, warehouses, and other structures within the Study Area are utilitarian and simplistic and there is little visual distinction between the buildings that date from the 1920s, the 1950s, and 1970s.

There is no reason to believe the Study Area is the work of a master. There is no evidence of a master plan or overarching design; rather, the site was more likely constructed to serve a specific industrial purpose and additional buildings and structures were added as needed. The Study Area inherently does not possess high artistic values. In order to be eligible under this aspect of Criterion C, a property must express a concept of design or an aesthetic ideal "more fully than other properties of its type."[108] This is not the case for the Study Area. Its construction was not intended to express design concepts or aesthetic ideals, but for the storage and transshipment of oil.

The last aspect of Criterion C—represents a significant and distinguishable entity whose components may lack individual distinction—refers to historic districts. As discussed above, the Study Area has been evaluated as a district. National Register Bulletin #15 provides guidance on the evaluation of historic districts; it notes that a district may be eligible even "if all of its components lack individual distinction, provided that the grouping achieves significance as a whole within its historic context."[109] That is, in order for a property to be eligible as a historic district, it must be significant under the last aspect of Criterion C as well as Criterion A, B, or D or other aspects of Criterion C, and retain sufficient integrity to convey that significance. The portions of the Study Area that have significance under Criterion A, Berths 150-151, do not retain integrity. Please see integrity discussion below.

[107] Marquez and de Turenne, 84.
[108] "National Register Bulletin #15."
[109] "National Register Bulletin #15."

Criterion D

To be eligible for listing under Criterion D, a property must have yielded, or may be likely to yield, information important to history or prehistory.

This criterion generally applies to archaeological resources but may apply to a built resource in instances where a resource may contain important information about such topics as construction techniques or human activity. In any case, the resource must be the principal source of information. This is unlikely to be true for the Study Area. Therefore, the Study Area does not appear to be eligible as a district under Criterion D.

Integrity

To be eligible for listing in the National Register, properties must retain their physical integrity from the period in which they gained significance. In the case of architecturally significant properties, the period of significance is normally the date of construction. For historically significant properties, the period of significance is usually measured by the length of the associations. The terminal at Berths 150-151 is historically significant for its association with the rise of the oil industry at the port from 1920 until 1941, coinciding with the year the facility was established and ending when the country entered World War II and commerce was interrupted in order to join the war effort. The terminal at Berths 148-149 is not significant under any of the four criteria as it postdates the established period of significance. Because a property must have significance and integrity in order to be eligible, this precludes the need for an integrity analysis for the terminal at Berths 148-149. Therefore, the following discussion is a point-by-point analysis of the terminal at Berths 150-151 alone.

The terminal at Berths 150-151 was analyzed as a historic district against the seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. While some factors of integrity are more important than others depending on the property, a majority of the seven recognized factors should be retained. For properties that have significance under Criterion A, like the terminal at Berths 150-151, it is ideal for the property to retain some features of all seven aspects of integrity. In the case of a historic district, National Register Bulletin #15 states, "…For a district to retain integrity as a whole, the majority of the components that make up the district's historic character must possess integrity even if they are individually undistinguished. In addition, the relationships among the district's components must be substantially unchanged since the period of significance."[110]

*Location – The place where the historic property was constructed or the place where the historic event occurred.*

The terminal at Berths 150-151 is still located within the Port of Los Angeles. While the buildings and structures within the terminal have been constructed over time and some have been altered and/or demolished, research did not reveal any definitive evidence to suggest that the buildings and structures were moved to or from another location. Therefore, the integrity of location is intact.

[110] "National Register Bulletin #15."

*Setting – The physical environment of the historic property.*

The terminal, located at Berths 150-151 within the Port of Los Angeles, has witnessed decades of change at the port since its initial development in the 1920s. During the period of significance, the terminal was generally surrounded by other bulk storage facilities of similar density, undeveloped areas, railroad spurs, and a network of timber wharves, see **Figure 43**. The facilities on the port have been modernized, modified, and expanded to accommodate larger cargo ships and increased storage space. In the late 1960s, much of the port was converted for containerization, which resulted in significant changes to the built environment of the surrounding setting, including the addition of large cranes on the skyline, reconfiguration of terminals for new uses throughout the harbor, continued dredging and widening of the Main Channel, addition of new terminals and additional acreage using dredging debris, and the construction of the Vincent Thomas Bridge. Continued development within the boundaries of the terminal, including the demolition and replacement of structures from the 1920s, has impacted the integrity of immediate setting, all of which have changed the character of the terminal's setting; as a result of these changes, Berths 150-151 no longer retains integrity of setting from the period of significance.

*Figure 43: Terminal at Berth 150-151 and its surroundings in 1927. Terminal indicated with yellow ellipse. Historic aerial courtesy of USCB Library.*

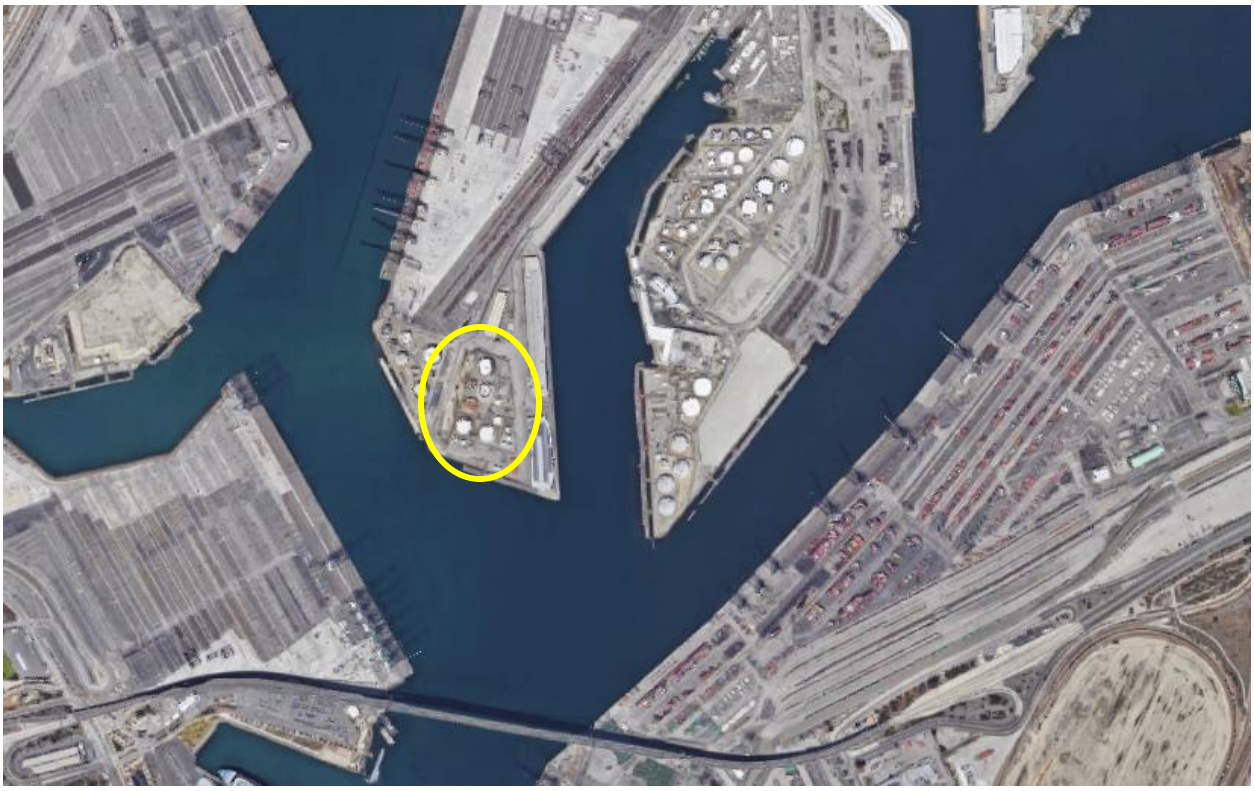

*Figure 44: Terminal at Berth 150-151 and its surroundings as it appears today. Terminal indicated with yellow ellipse. Base image courtesy of Google Maps.*

*Design – The combination of elements that create the form, plan, space, structure, and style of a property. For districts, the integrity of design refers to concepts such as the spatial relationship between features and the material and layout of circulation systems.*

The terminal's integrity of design has also been diminished by ongoing development. See **Figure 45** through **Figure 52** for a chronology of aerial photographs illustrating these changes. While there is no evidence of a formal design or master plan, the combination of elements on Berths 150-151 such as utilitarian materials and oil-related infrastructure and technology reflect its continued function and aesthetic as an oil terminal. However, ongoing changes such as the abandonment and demolition of older facilities, construction and development of new buildings and structures, incorporation of new technology and safety equipment, reconfiguration of the tank farm, and expansion onto Berths 148-149, have all changed the spatial relationships between the physical elements that comprise the terminal. The terminal's current configuration is the result of as-needed construction over the course of the twentieth century and it does not reflect the arrangement that was in place during the period of significance. Therefore, the terminal at Berths 150-151 does not retain integrity of design.

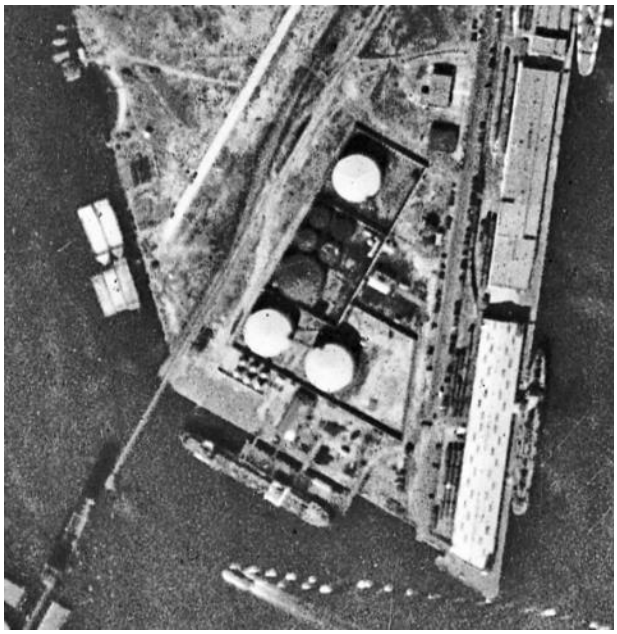

*Figure 45: Berths 150-151 as it appeared in 1927: one marine oil terminal, fourteen tanks in tank farm, original office and warehouse present, compacted dirt surfaces. USCB Library.*

*Figure 46: Berths 150-151 as it appeared in 1939: one marine oil terminal, approximately sixteen tanks in tank farm, original office and warehouse present, compacted dirt surfaces, access roads; wharf at Berth 149 added, wharf at Berths 150-151 extended. USCB Library.*

*Figure 47: Berths 150-151 as it appeared in 1952 one marine oil terminal, approximately sixteen tanks in tank farm, original office and warehouse present; wharf at Berth 149 present. USCB Library.*

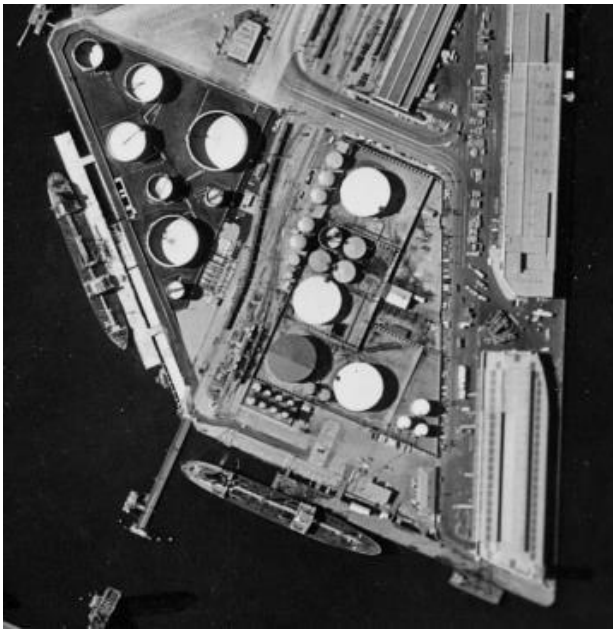

*Figure 48: Berths 150-151 as it appeared in 1956: expansion to Berths 148-149, over twenty tanks in tank farm, original office and warehouse demolished and replaced, compacted dirt surfaces appear to be paved. USCB Library.*

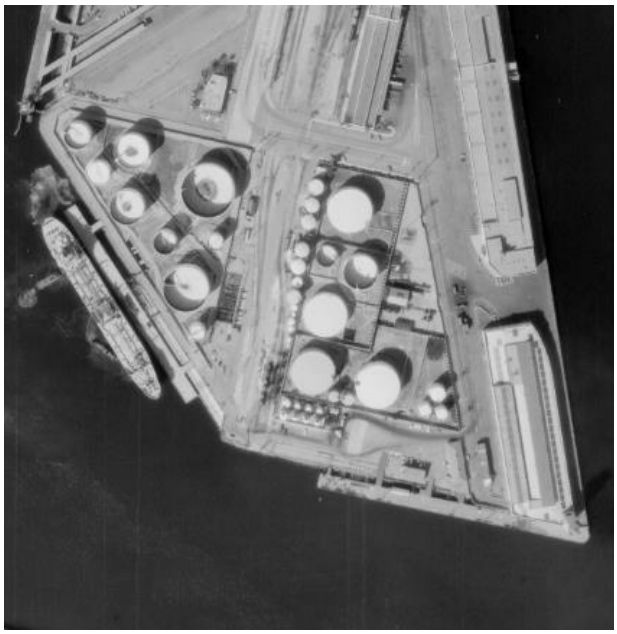

*Figure 49: Berths 150-151 as it appeared in 1971: expansion to Berths 148-149, over twenty tanks in tank farm, original office and warehouse demolished and replaced, compacted dirt surfaces appear to be paved. USCB Library.*

*Figure 50: Berths 150-151 as it appeared in 1979: tanks in tank farm reconfigured, Truck Rack constructed. USCB Library.*

*Figure 51: Berths 150-151 as it appeared in 2001: Further reconfiguration of tanks in tank farm. USCB Library.*

*Figure 52: Berths 150-151 as it appears today. Google Maps.*

*Materials – The physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.*

The materials used to construct the buildings and structures within the Berths 150-151 terminal are predominantly wood, metal, and concrete. The materials used were commonly available throughout the twentieth century and remain in use today, revealing little about any specific period. The largest wood structure, the timber wharf, has been essentially rebuilt in small sections due to continued maintenance and damage repair. The packed dirt of the terminal has been replaced with concrete since 1938. Over time, new materials and new construction have been introduced as older buildings were demolished and replaced. These cumulative alterations have diminished the Study Area's integrity of materials.

*Workmanship – The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.*

The nature of the buildings and structures within the terminal at Berths 150-151 is utilitarian. Most are prefabricated and assembled onsite, such as storage tanks and sheds. While they can potentially be identified as dating from a specific era, this type of construction does not reveal important information about a particular culture or people during a period in history, nor does it contain evidence of a craftsman's labor.

Evidence of construction techniques can, however, be seen in the timber wharf, which has been largely reconstructed (as discussed above) and in the board-formed concrete walls surrounding the tank farms. While the timber wharf has been largely reconstructed, the construction technique is still evident. As such, the workmanship that is evident does remain intact.

*Feeling – A property's expression of the aesthetic or historic sense of a particular period of time.*

The terminal at Berths 150-151 does not retain integrity of feeling. Due to continued development on and around the Study Area, including construction and development of new buildings and structures, incorporation of new technology and safety equipment, abandonment and demolition of older facilities, it no longer conveys the feeling of an early twentieth century oil terminal from the period of significance. Rather than reflecting a sense of time and place from the period 1920 to 1941, the terminal exhibits the feeling of a contemporary port facility that is indistinguishable from another.

*Association – The direct link between an important event or person and a historic property.*

According to National Register Bulletin #15, "A property retains association if it is the place where the event or activity occurred and is sufficiently intact to convey that relationship to an observer." Like feeling, association requires the presence of physical features that convey a property's historic character.[111] In other words, retaining integrity of association does not simply mean that a property is still associated with its original use. For the terminal at Berths 150-151, this means that the fact that it is still used as an oil terminal is not enough to conclude that Berths 148-151 retains integrity of association. The terminal would have to retain sufficient integrity to convey its

[111] "National Register Bulletin #15."

relationships to the historic context for the period 1920 to 1941, and it does not for all the reasons outlined above. Just like it no longer retains integrity of setting, design, materials, or feeling, it no longer conveys integrity of association with the context of the rise of the oil industry at the port from 1920 to 1941. Therefore it is not sufficiently intact enough to retain integrity of association.

Conclusion

Per National Register Bulletin 15, to be eligible for the National Register, "a property must not only be shown to be significant under the National Register criteria, but it also must have integrity."[112] The terminal at Berths 150-151 does not retain integrity of setting, design, materials, feeling, or association. Furthermore, as the terminal is being considered as a historic district, the relationships between the buildings and structures on the site do not remain "substantially unaltered," as prescribed in the guidance. The terminal at Berths 150-151 has been reconfigured, original structures have been demolished and replaced, and the overall layout of the site has changed since the period of significance.

While the terminal on Berths 150-151 appears to have significance for its association with the history of the Port of Los Angeles, it no longer retains sufficient physical integrity to convey this significance. Therefore, it does not appear to be eligible for listing in the National Register due to a lack of physical integrity.

## 5.3 California Register of Historical Resources

The California Register criteria mirror those of the National Register. The Study Area does not appear to be eligible for the California Register for the same reasons listed above.

## 5.4 Los Angeles Historic Preservation Overlay Zones

Under the Los Angeles Cultural Heritage Ordinance, an HCM is defined as any site (including significant trees or other plant life located on the site), building or structure of particular historic or cultural significance to the City of Los Angeles. As such, the HCM criteria are not applied to groupings of buildings or structures like those within the Study Area.

While the HPOZ ordinance does not provide specific eligibility criteria for the designation of an HPOZ, it defines an HPOZ as "any area of the City of Los Angeles containing buildings, structures, Landscaping, Natural Features or lots having Historic, architectural, Cultural or aesthetic significance [sic]."[113]

While the terminal at Berths 150-151 appears to have historic significance for its association with the history of the port, it does not retain integrity. The HPOZ ordinance does not include specific provisions for an integrity threshold; however, as a matter of practice, there is an expectation that the area be intact and able to convey its historic significance through the retention of physical features. The Office of Historic Resources describes an HPOZ as a "…a cohesive, unique, and intact collection of historic resources."[114] Furthermore, the HPOZ ordinance has never been used to

[112] "National Register Bulletin #15."
[113] "City of Los Angeles Ordinance No. 184303."

[114] "About the HPOZ Program," Los Angeles Department of City Planning Office of Historic Resources, accessed March 2019, http://preservation.lacity.org/hpoz/homepage/about-hpoz-program.

designate an industrial property, and the greater majority of properties designated within HPOZs are single-family residences with collective architectural significance.

Therefore, the terminal at Berths 150-151 does not appear to be eligible as a local HPOZ due to a lack of physical integrity.

The Los Angeles HCM program, which designates a wider variety of resources, includes buildings and sites of individual significance. However, as discussed on page 2, the terminal at Berths 150-151 comprises a concentration of utilitarian buildings and structures that lack individual distinction, none of which would be sufficient to convey the historical significance of the port if considered in an individual evaluation.

A historic district is defined in National Register Bulletin #15 as a "concentration, linkage, or continuity of sites, buildings, structures or objects united historically or aesthetically by plan or physical development." The bulletin goes on to explain that the "identity of a district results from the interrelationship of its resources, which can convey a visual sense of the overall historic environment or be an arrangement of historically or functionally related properties."[115] A frequent example given throughout the guidance is an industrial complex, like that found at Berths 150-151. Collectively, the buildings and structures comprise a marine oil terminal: each building or structure serves a specific function within the terminal, and they are all interconnected by their shared use. If considered alone, one of the buildings and structures on the terminal would only represent a portion of this collective function. As such, it would be illogical to evaluate one or more of the buildings and structures individually. A single outbuilding or structure would not represent the same history as the entire terminal considered as a grouping.

Lastly, the two most substantial buildings on the site that could reasonably be considered in an individual evaluation, the Main Office and Warehouse, were constructed outside the period of significance. The Main Office was constructed after 1945 and the Warehouse was constructed between 1952 and 1956. As such, these buildings are not associated with the same trend and would not be individually significant if evaluated within the context of the history of the port, nor would they have any significance within the context of the history of the oil industry for the reasons discussed in **Section 5.2** National Register of Historic Places

## 6. CONCLUSIONS

The berths that comprise the Study Area, Berths 148-151, are not currently listed under any national, state, or local landmark or historic district programs, and were not identified during SurveyLA, as the Port of Los Angeles was not included in the scope of SurveyLA. A records search prepared by the SCCIC (Records Search File No.: 20054.6089) revealed a prior evaluation of the berths prepared by Jones & Stokes in 2001 that concluded that Berths 150-151 appeared eligible for listing in the National Register as a historic district; while Berths 148-149 appeared ineligible. Berths 150-151 were identified as Known Historical Built Resources in a July 2014 report prepared by Applied Earthworks, *Cultural Resources Study of the Wilmington Oil and Gas Field, Los Angeles County, California,* but were not re-evaluated. GPA was retained to update the 2001 Jones & Stokes evaluation in anticipation of projects within the Study Area.

[115] "National Register #15."

As a result of this analysis, GPA concludes that the Study Area does not appear to be eligible for listing in the National and California Registers, or for designation as a local HPOZ. The terminal at Berths 150-151 lacks sufficient physical integrity to convey its significance, and the terminal at Berths 148-149 is not significant under any of the four criteria.

The recommended Status Code for the Study Area is 6Z, "ineligible for designation at the national, state, and local levels through survey evaluation."[116] Therefore, Berths 148-151 and the buildings and structures thereon are not historical resources, individually or as one or more historic districts, as defined by CEQA. As proposed projects would have no impact on historical resources, no further study is recommended or required.

[116] "Technical Assistance Bulletin #8: User's Guide to the California Historical Resource Status Codes & Historic Resources Inventory Directory."

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# Appendix A – Résumés

AMANDA DUANE is an Associate Architectural Historian at GPA. She has been involved in the field of historic preservation since 2011. Amanda graduated from Savannah College of Art and Design with a Bachelor of Fine Arts in Historic Preservation. She has since worked in private historic preservation consulting in California. Amanda joined GPA in 2012 and her experience has included the preparation of environmental compliance documents in accordance with the California Environmental Quality Act and Section 106 of the National Historic Preservation Act; Historic American Buildings Survey/Historic American Engineering Record recordation; large-scale historic resources surveys; Federal Rehabilitation Tax Credit and Mills Act applications; National Register of Historic Place nominations; local landmark applications; historic context statements; and evaluations of eligibility for a wide variety of projects and property types throughout California. She is experienced in working with local governments to develop design guidelines for administering local design review.

**Educational Background:**

- B.F.A, Historic Preservation, Savannah College of Art and Design, 2011

**Professional Experience:**

- GPA Consulting, Associate Architectural Historian, 2012-Present
- Architectural Resources Group, Intern, 2012
- City of Los Angles, Office of Historic Resources, Intern, 2011-2012

**Qualifications:**

- Meets the Secretary of the Interior's Professional Qualifications Standards for architectural history pursuant to the Code of Federal Regulations, 36 CFR Part 61, Appendix A.
- National Preservation Institute, Section 106: An Introduction

**Professional Activities:**

- California Preservation Foundation Conference Programs Committee, 2017

**Selected Projects:**

- High Speed Rail, Los Angeles to Burbank, CEQA/NEPA Historical Resource Technical Report, 2016-2018
- Rose Hill Courts, Los Angeles, CEQA/NEPA Historical Resource Technical Report, 2019
- 847-97 W. 10th Street, Los Angeles, CEQA Historical Resource Evaluation Report, 2018
- Oakwood School Master Plan, Los Angeles, Historical Resource Technical Report, 2016
- Villa Carlotta, Los Angeles, CEQA Historical Resource Technical Report, 2016
- Mira Loma Detention Center Women's Facility, Los Angeles County, CEQA Historical Resource Technical Report, 2016
- Commonwealth Nursery, Los Angeles, CEQA Historical Resource Technical Report, 2016
- City Market of Los Angeles, CEQA Historical Resource Technical Report, 2015
- 732 S. Spring Street, Los Angeles, CEQA Historical Resource Technical Report, 2015
- 1000 S. Santa Fe Avenue, Los Angeles, CEQA Historical Resource Technical Report, 2015
- LA Biomed, Torrance, CEQA Historical Resource Technical Report, 2014
- Willys Knight Building, Los Angeles, CEQA Historical Resource Technical Report, 2013
- High Desert Corridor, Los Angeles County, Historical Resource Evaluation Report, Section 106 Review, 2013
- Claremont Graduate University Master Plan, CEQA Historical Resource Technical Report, 2013

TERESA GRIMES is a Principal Architectural Historian at GPA with over 25 years of experience in the field of historic preservation. She is widely recognized as an expert in the identification and evaluation of historical resources having successfully prepared dozens of landmark and historic district applications for a wide variety of property types. Teresa graduated from the University of California in Los Angeles with a Master of Arts in Architecture, and has worked in the private, public, and non-profit sectors. She has led the GPA Historic Preservation team since 2009, skillfully supervising a wide array of projects throughout California. Teresa has extensive experience in the preparation of environmental compliance documents in accordance with the California Environmental Quality Act for projects involving major landmarks. Additionally, she has coordinated and reviewed documents for smaller-scale commercial, institutional, and residential property types throughout Los Angeles County. Teresa also participated in SurveyLA, the citywide historic resource survey of Los Angeles, from its inception, contributing to multiple sections of the citywide context statement and coordinating community plan area historic resources surveys.

**Educational Background:**

- M.A., Architecture, University of California, Los Angeles, 1992
- B.A., Political Science, University of California, Los Angeles, 1986

**Professional Experience:**

- GPA Consulting, Principal Architectural Historian, 2009-Present
- Christopher A. Joseph & Associates, Senior Architectural Historian, 2006-2009
- Teresa Grimes/Historic Preservation, Principal, 1999-2005, 1993-1994, 1991-1992
- Historic Resources Group, Architectural Historian, 1994-1998
- Getty Conservation Institute, Research Associate, 1992-1993
- Los Angeles Conservancy, Preservation Officer, 1988-1991

**Qualifications:**

- Meets the Secretary of the Interior's Professional Qualifications Standards for history and architectural history pursuant to the Code of Federal Regulations, 36 CFR Part 61, Appendix A.

**Professional Activities:**

- Pasadena Heritage Board Member, 2008-2012
- Highland Park Heritage Trust Board Member, 1996-1998
- West Hollywood Cultural Heritage Advisory Board Member, 1990-1994

**Selected Projects:**

- Los Angeles County Museum of Art Master Plan, CEQA Historical Resource Technical Report, 2019
- Vine/Afton/DeLongpre, Los Angeles CEQA Historical Resource Technical Report, 2019
- Rose Hill Courts, Los Angeles, CEQA/NEPA Historical Resource Technical Report, 2019
- Times Mirror Square, Los Angeles, CEQA Historical Resource Technical Report, 2019
- Figueroa and Flower, Los Angeles, CEQA Historical Resource Technical Report, 2019
- 913 S. Figueroa, Los Angeles, CEQA Historical Resource Technical Report, 2019
- 222 W. 2nd Street, Los Angeles, CEQA Historical Resource Technical Report, 2018
- Olympic and Hill, Los Angeles, CEQA Historical Resource Report, 2018
- City of Hope Master Plan, Duarte, CEQA Historical Resource Report, 2017
- 8th and Figueroa Tower, Los Angeles, CEQA Historical Resource Report, 2017
- John Anson Ford Theatres, Los Angeles County, CEQA Historical Resource Report, 2015
- LA Biomed Master Plan, Torrance, CEQA Historical Resource Report, 2014
- May Company, Laurel Plaza, Los Angeles, CEQA Historical Resource Report, 2014
- United Artist Theater, Los Angeles, CEQA Historical Resource Report, 2013
- Claremont Graduate University Master Plan, CEQA Historical Resource Report, 2013

**Appendix B – DPR 523 Form Sets**

# APPENDIX C
# LAHD Sustainable Construction Guidelines

RESOLUTION NO. 6518 ADOPTED, AS AMENDED
BY THE BOARD OF HARBOR COMMISSIONERS

February 21, 2008

Rose M. Dwarshak

SECRETARY

Executive Director's
Report to the
Board of Harbor Commissioners

**DATE:** **FEBRUARY 15, 2008**

**FROM:** **CONSTRUCTION DIVISION**

**SUBJECT:** **RESOLUTION TO ADOPT THE LOS ANGELES HARBOR DEPARTMENT SUSTAINABLE CONSTRUCTION GUIDELINES FOR REDUCING AIR EMISSIONS**

## SUMMARY:

The proposed Resolution adopts the Los Angeles Harbor Department Sustainable Construction Guidelines for Reducing Air Emissions. Following adoption, the guidelines will be used to establish air emission criteria for inclusion in construction bid specifications. The guidelines will reinforce and require sustainability measures during performance of the contracts, balancing the need to protect the environment, be socially responsible, and provide for the economic development of the Port. Future resolutions are anticipated to expand the guidelines to cover other aspects of construction, such as materials management, energy use, health and safety, and labor. These guidelines fall within the framework of the forthcoming Port Sustainability Program.

## RECOMMENDATION:

It is recommended that the Port of Los Angeles Board of Harbor Commissioners (Board) adopt the Los Angeles Harbor Department Sustainable Construction Guidelines for Reducing Air Emissions.

## DISCUSSION:

1. The Port strives to be a leader in the development of implementation of sustainable planning, design, and construction practices. The Los Angeles Mayor's Executive Directive No. 10 on Sustainable Practices in the city of Los Angeles requires the Port to develop a comprehensive sustainability program. This program will cover both Port development and operations and will provide the "umbrella" program over all Port activities. For example, the Clean Air Action Plan (CAAP), the Clean Marina Program, and the Green Building Policy are all programs adopted by the Board that fall within the larger framework of the Port's sustainability program.

2. As part of our sustainability program the Port is developing specific policies to govern all aspects of construction. The first specific policy we propose for Board adoption is "The Sustainable Construction Guidelines for Reducing Air Emissions." While the CAAP uses the CEQA review process to implement project-specific mitigation measures, the proposed Construction Guidelines for Reducing Air Emissions establishes a port-wide policy for all projects.

3. These measures are expected to reduce diesel particulate matter, green house gases, and other criteria pollutants. The Port is committed to developing and implementing planning, design, and construction practices that minimize air pollutants to the extent feasible for all future projects.

4. The intent of the Guidelines is to facilitate the integration of sustainable concepts and practices into all capital projects at the Port, and to phase-in the implementation of these procedures in a practical yet aggressive manner. Following approval, these guidelines will be made a part of all construction specifications advertised for bids.

5. Significant features of these Guidelines include, but are not limited to:

   - All ships & barges used primarily to deliver construction related materials for Los Angeles Harbor Department (LAHD) construction contracts shall comply with the Vessel Speed Reduction Program and use low-sulfur fuel within 40 nautical miles of Point Fermin.

   - Harbor craft shall meet U.S. EPA Tier-2 engine emission standards, and the requirement will be raised to U.S. EPA Tier-3 engine emission standards by January 1, 2011.

   - All dredging equipment shall be electric.

   - On-road heavy-duty trucks shall comply with EPA 2004 on-road emission standards for PM10 and NOx and shall be equipped with a CARB verified Level 3 device. Emission standards will be raised to EPA 2007 on-road emission standards for PM10 and NOx by January 1, 2012.

   - Construction equipment (excluding on-road trucks, derrick barges, and harbor craft) shall meet Tier-2 emission off-road standards. The requirement will be raised to Tier-3 by January 1, 2012, and Tier-4 by January 1, 2015. In addition, construction equipment shall be retrofitted with a California Air Resources Board (CARB) certified Level 3 diesel emissions control device.

   - Comply with SCAQMD Rule 403 regarding Fugitive Dust, and other fugitive dust control measures.

   - Additional Best Management Practices, based on Best Available Control Technology (BACT), will be required on construction equipment (including on-road trucks) to further reduce air emissions. The above measures shall be met unless a piece of specialized equipment is unavailable within the State of California(including through a leasing agreement); a contractor has applied for

necessary incentive funds to put controls on a piece of equipment but the application or funding process is not yet complete; or a contractor has ordered a control device for a piece of equipment but that order has not been completed by the manufacturer and the contractor is unable to lease the device from a dealer within 200 miles of the project.

6. These guidelines are based largely on the construction air emissions requirements contained in the Berths 136-149 Container Terminal Environmental Impact Statement (EIS) Environmental Impact Report (EIR), which were developed in cooperation with the South Coast Air Quality Management District (AQMD) and were compiled from numerous air quality regulatory sources including: AQMD rules, San Pedro Bay Ports Clean Air Action Plan, California Air Resources Board Regulations, United States Environmental Protection Agency (EPA) regulations, and Port of Los Angeles CEQA Mitigation Monitoring reports. In preparation of these guidelines, staff has also reviewed and, where appropriate, incorporated the Draft Sustainable Planning, Design, and Construction Guidelines being prepared by Los Angeles World Airports, and other applicable regulatory and industry standards.

7. These guidelines do not supersede any existing standards, regulations, or codes. They are designed to work in conjunction with existing regulations and may be used to streamline compliance with established regulations, including CEQA and NEPA. If conflicts between these guidelines and existing regulations are encountered, the more rigorous requirement will be met, where allowed by law.

8. Staff will monitor the implementation of these guidelines and recommend appropriate changes as new technologies are developed and construction practices evolve.

## ENVIRONMENTAL ASSESSMENT:

The proposed action is a Resolution to adopt the "Los Angeles Harbor Department Sustainable Construction Guidelines for Reducing Air Emissions." The guidelines are designed to reduce environmental impacts during Port construction projects, consistent with the Port's Environmental Policy. As such, the proposed action is exempt from the requirements of the California Environmental Quality Act (CEQA) in accordance with Article II, Section 2(m), of the Los Angeles City CEQA Guidelines.

## FINANCIAL IMPACT:

Costs to comply with this resolution will be considered as a normal part of project construction costs and will be included in individual project budgets.

SUBJECT: RESOLUTION TO ADOPT THE LOS ANGELES HARBOR DEPARTMENT SUSTAINABLE CONSTRUCTION GUIDELINES FOR REDUCING AIR EMISSIONS

**ECONOMIC IMPACT:**

The proposed clean air sustainability policies are a set of equipment requirements and dust control procedure changes which are not anticipated to have a significant regional direct employment impact.

**CITY ATTORNEY:**

The proposed Resolution has been reviewed and approved by the City Attorney.

**TRANSMITTALS:**

1. Draft Outline of Port Sustainability Program – Elements and Status
2. Resolution
3. Los Angeles Harbor Department Sustainable Construction Guidelines for Reducing Air Emissions

for SHAUN SHAHRESTANI
Chief Harbor Engineer
Construction Division

MICHAEL R. CHRISTENSEN
Deputy Executive Director

APPROVED:

GERALDINE KNATZ, Ph.D.
Executive Director

RAZ:lh:tz
BoardReportAirEmissions

Port Sustainability Program
Elements and Status

**DRAFT**

| | In Development | Draft | Adopted |
|---|---|---|---|
| **Sustainable Development** | | | |
| Green Building Policy | | | X |
| Green Leasing Requirements | | | X |
| **Sustainable Planning & Design Guidelines** | | | |
| Site Design | X | | |
| Water Efficiency | X | | |
| Energy & Atmosphere | X | | |
| Materials & Resources | X | | |
| Indoor Environmental Quality | X | | |
| Lighting | X | | |
| **Sustainable Construction Guidelines** | | | |
| Air Emissions | | X | |
| Traffic | X | | |
| Materials Management | X | | |
| Water & Stormwater | X | | |
| Energy | X | | |
| Health & Safety | X | | |
| Labor | X | | |
| Noise | X | | |
| **Sustainable Operations** | | | |
| Climate Action Plan | | X | |
| SP Bay Clean Air Action Plan (CAAP) | | | X |
| Employee Rideshare | | | X |
| Green Terminal Program | X | | |
| Environmental Management System | | | X |
| Clean Marina Program | | | X |
| POLA Recycling Program | | | X |
| Environmentally Preferable Purchasing Policy | | X | |
| Renewable Energy Program | X | | |
| Clean Water Action Plan | X | | |
| Biological Resources Management Plan | X | | |
| Tree Planting Program | | | X |
| Green Ports Program | | | X |
| **Green Business - Sustainable Economic Development** | | | |
| **Green Technology Investment** | | | |
| Technology Advancement Program | | | X |
| **Green Business Development Opportunities** | | | |
| Wilmington Waterfront Redevelopment | X | | |

RESOLUTION NO. 6518

A Resolution of the Board of Harbor Commissioners of the City of Los Angeles (Board) adopting the "Los Angeles Harbor Department Sustainable Construction Guidelines for Reducing Air Emissions."

WHEREAS, the Port of Los Angeles strives to be a leader in the development and implementation of sustainable planning, design, and construction practices and is developing a Port Sustainability Program; and

WHEREAS, the Los Angeles Mayor's Executive Directive No. 10 on Sustainable Practices in the City of Los Angeles, the Board's Green Growth policy, and the San Pedro Bay Ports Clean Air Action Plan provide the framework for this effort; and

WHEREAS, the Port of Los Angeles is committed to developing and implementing planning, design, and construction practices that minimize diesel particulate matter as well as other criteria pollutants and greenhouse gases; and

WHEREAS, pursuant to this policy, these Los Angeles Harbor Department Sustainable Construction Guidelines for Reducing Air Emissions shall apply to all Los Angeles Harbor Department construction specifications advertised for bids after the adoption of this resolution; and

WHEREAS, it is intended that future resolutions will address the establishment of the Port's Sustainability Program and ultimately provide a comprehensive set of Sustainable Planning, Design, and Construction Guidelines; and

NOW, THEREFORE, be it resolved that the Board hereby adopts the attached "Los Angeles Harbor Department Sustainable Construction Guidelines for Reducing Air Emissions."

ATTEST:

S. Dod Thum

President, Board of Harbor Commissioners

I HEREBY CERTIFY that the foregoing Resolution was adopted by the Board of Harbor Commissioners of the City of Los Angeles at its meeting of FEB 21 2008

Rose M. Dworshak

ROSE M. DWORSHAK
Board Secretary

APPROVED AS TO FORM
FEBRUARY 15, 2008
ROCKARD J. DELGADILLO, City Attorney

By _____
DEPUTY

RAZ:lh - ResolutionAirEmissions - 2/14/08

TRANSMITTAL NO. 2

# LOS ANGELES HARBOR DEPARTMENT
# SUSTAINABLE CONSTRUCTION GUIDELINES
# FOR REDUCING AIR EMISSIONS

These guidelines shall apply to all construction projects advertised for bids by the LAHD after the date of approval of this resolution. The LAHD is not precluded from adding additional more stringent requirements as they become technologically available.

## I. General Construction Best Management Practices

The LAHD shall implement a process to add Best Management Practices (BMPs) to reduce air emissions from all LAHD-sponsored construction projects. The LAHD shall determine the BMPs once the contractor identifies and secures a final equipment list and project scope. The LAHD shall then meet with the contractor to identify potential BMPs and work with the contractor to include such measures in the contract. BMPs shall be based on Best Available Control Technology (BACT) guidelines and may also include changes to construction practices and design to reduce or eliminate environmental impacts.

## II. Specific Environmental Measures

In addition to the above described BMPs, the following specific environmental measures and/or practices shall be added to LAHD construction specifications where applicable.

### Vessels

All ships & barges used primarily to deliver construction-related materials to a LAHD-contractor construction site shall comply with the expanded Vessel Speed Reduction Program (VSRP) of 12 knots from 40 nautical miles (nm) from Point Fermin to the Precautionary Area.

These ships must also use low-sulfur fuel (maximum sulfur content of 0.2 percent) in auxiliary engines, main engines, and boilers within 40 nm of Point Fermin.

### Harbor Craft

**Prior to December 31, 2010:** All harbor craft with C1 or C2 marine engines must achieve a minimum emission reduction equivalent to a U.S. Environmental Protection Agency (EPA) Tier-2 2004 level off-road marine engine.

**From January 1, 2011 on:** All harbor craft with C1 or C2 marine engines must utilize a U.S. EPA Tier-3 engine, or cleaner.

**Dredging Equipment**

All dredging equipment shall be electric.

**On-Road Trucks**

**Prior to December 31, 2011:** All on-road heavy-duty diesel trucks with a gross vehicle weight rating (GVWR) of 19,500 pounds or greater used at the Port of Los Angeles shall comply with EPA 2004 on-road emission standards for PM10 and NOx (0.10 g/bhp-hr PM10 and 2.0 g/bhp-hr NOx).

In addition, all on-road heavy heavy-duty trucks with a gross vehicle weight rating (GVWR) of 19,500 pounds or greater used at the Port of Los Angeles shall be equipped with a CARB verified Level 3 device.

**From January 1, 2012 on:** All on-road heavy-duty diesel trucks with a gross vehicle weight rating (GVWR) of 19,500 pounds or greater used at the Port of Los Angeles shall comply with EPA 2007 on-road emission standards for PM10 and NOx (0.01 g/bhp-hr and 0.20 g/bhp-hr).

**Construction Equipment (excluding on-road trucks)**

**Prior to December 31, 2011:** All off-road diesel-powered construction equipment greater than 50 horsepower (hp), except derrick barges and marine vessels, shall meet Tier-2 emission off-road emission standards, at a minimum. In addition, all construction equipment greater than 50 hp, shall be retrofitted with a CARB -certified Level 3 diesel emissions control device.

All construction equipment shall be maintained according to manufacturers' specifications.

Construction equipment shall not idle more than 5 minutes when not in use.

High-pressure fuel injectors shall be installed on construction equipment vehicles.

**From January 1, 2012 to December 31, 2014:** All off-road diesel-powered construction equipment greater than 50 hp, except ships and barges and marine vessels, shall meet Tier-3 emission off-road emission standards, at a minimum. In addition, all construction equipment greater than 50 horsepower (hp), shall be retrofitted with a CARB certified Level 3 diesel emissions control device.

All construction equipment shall be maintained according to manufacturers' specifications.

Construction equipment shall not idle more than 5 minutes when not in use.

High-pressure fuel injectors shall be installed on construction equipment vehicles.

**From January 1, 2015 on:** All off-road diesel-powered construction equipment greater than 50 hp, except ships and barges and marine vessels, shall meet Tier-4 emission off-road emission standards, at a minimum. In addition, all construction equipment greater than 50 hp, shall be retrofitted with a CARB certified Level 3 diesel emissions control device.
All construction equipment shall be maintained according to manufacturers' specifications.

Construction equipment shall not idle more than 5 minutes when not in use.

High-pressure fuel injectors shall be installed on construction equipment vehicles.

**Exceptions to Harbor Craft, On-Road Truck, and Construction Equipment (excluding on-road trucks) Requirements**

The above measures shall be met, unless one of the following circumstances exists and the contractor is able to provide proof that any of these circumstances exists:

1 A piece of specialized equipment is unavailable in a controlled form, or within the required Tier level within the state of California, including through a leasing agreement.

2 A contractor has applied for necessary incentive funds to put controls on a piece of uncontrolled equipment planned for use on the project, but the application process is not yet approved, or the application has been approved, but funds are not yet available.

3 A contractor has ordered a control device for a piece of equipment planned for use on the project, or the contractor has ordered a new piece of controlled equipment to replace the uncontrolled equipment, but that order has not been completed by the manufacturer or dealer. In addition, for this exemption to apply, the contractor must attempt to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the project has the controlled equipment available for lease.

**Fugitive Dust Control**

SCAQMD Rule 403 requires a Fugitive Dust Control Plan be prepared and approved for construction sites. The following measures to reduce dust should be included in this plan, at a minimum:

- SCAQMD's Best Available Control Technology (BACT) measures must be followed on all projects. They are outlined on Table 1 in Rule 403. Large construction projects (on a property which contains 50 or more disturbed acres) shall also follow Rule 403 Tables 2 and 3.

- Active grading sites shall be watered three times per day.
- Contractors shall apply approved non-toxic chemical soil stabilizers to all inactive construction areas or replace groundcover in disturbed areas.
- Contractors shall provide temporary wind fencing around sites being graded or cleared.
- Trucks hauling dirt, sand, or gravel shall be covered or shall maintain at least 2 feet of freeboard in accordance with Section 23114 of the California Vehicle Code. ("Spilling Loads on Highways").
- Construction contractors shall install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off tires of vehicles and any equipment leaving the construction site.
- The grading contractor shall suspend all soil disturbance activities when winds exceed 25 mph or when visible dust plumes emanate from a site; disturbed areas shall be stabilized if construction is delayed.
- Open storage piles (greater than 3 feet tall and a total surface area of 150 square feet) shall be covered with a plastic tarp or chemical dust suppressant.
- Stabilize the materials while loading, unloading and transporting to reduce fugitive dust emissions.
- Belly-dump truck seals should be checked regularly to remove trapped rocks to prevent possible spillage.
- Comply with track-out regulations and provide water while loading and unloading to reduce visible dust plumes.
- Waste materials should be hauled off-site immediately.