# 3.2

# AIR QUALITY

## 3.2.1 Introduction

Emissions from construction and operation of the proposed Project would affect air quality in the immediate proposed project area and the surrounding region. Therefore, this section of the draft EIR provides a description of affected air quality resources, discusses the impacts of the proposed Project, and presents mitigation measures that would reduce significant impacts. In certain cases, impacts would remain significant and unavoidable.

## 3.2.2 Environmental Setting

The proposed project site is in the Harbor District of the City of Los Angeles in the southwest coastal area of the South Coast Air Basin (SCAB). The SCAB consists of the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties and all of Orange County; covering an area of approximately 6,000 square miles, bounded on the west by the Pacific Ocean, on the north and east by the San Gabriel, San Bernardino, and San Jacinto Mountains, and on the south by the San Diego County line.

### 3.2.2.1 Regional Climate and Meteorology

The climate of the proposed project region is classified as Mediterranean, characterized by warm, rainless summers and mild, wet winters. The major influence on the regional climate is the Eastern Pacific High (a strong persistent area of high atmospheric pressure over the Pacific Ocean), topography, and the moderating effects of the Pacific Ocean. Seasonal variations in the position and strength of the High are a key factor in the area's weather patterns.

The Eastern Pacific High attains its greatest strength and most northerly position during the summer, when it is centered west of northern California. In this location, the High effectively shelters Southern California from the effects of polar storm systems. Large-scale atmospheric subsidence associated with the High produces an elevated temperature inversion along the West Coast. The base of this subsidence inversion is generally from 1,000 to 2,500 feet above mean sea level (msl) during the summer. Vertical mixing is often limited to the base of the inversion, and air pollutants are trapped in the lower atmosphere. The mountain ranges that surround the Los Angeles Basin constrain the horizontal movement of air and also inhibit the dispersion of air pollutants out of the region. These two factors, combined with the air pollution sources of over 15 million people, are responsible for the high pollutant concentrations that can occur in the SCAB. In addition, the warm temperatures and high solar radiation during the summer months promote the formation of ozone, which reaches its highest levels during the summer.

The proximity of the Eastern Pacific High and a thermal low pressure system in the desert interior to the east produce a sea breeze regime that prevails within the proposed project region for most of the year, particularly during the spring and summer months. Sea breezes at the Port typically increase during the morning hours from the southerly direction and reach a peak in the afternoon as they blow from the southwest. These winds generally subside after sundown. During the warmest months of the year, however, sea breezes could persist well into the nighttime hours. Conversely, during the colder months of the year, northerly land breezes increase by sunset and into the evening hours. Sea breezes transport air pollutants away from the coast and towards the interior regions in the afternoon hours for most of the year.

During the fall and winter months, the Eastern Pacific High can combine with high pressure over the continent to produce light winds and extended inversion conditions in the region. These stagnant atmospheric conditions often result in elevated pollutant concentrations in the SCAB. Excessive buildup of high pressure in the Great Basin region can produce a “Santa Ana” condition, characterized by warm, dry, northeast winds in the basin and offshore regions. Santa Ana winds often ventilate the SCAB of air pollutants.

The Palos Verdes Hills have a major influence on wind flow in the Port. For example, during afternoon southwest sea breeze conditions, the Palos Verdes Hills often block this flow and create a zone of lighter winds in the Inner Harbor area of the Port. During strong sea breezes, this flow can bend around the north side of the Hills and end up as a northwest breeze in the Inner Harbor area. This topographic feature also deflects northeasterly land breezes that flow from the coastal plains to a more northerly direction through the Port.

## 3.2.2.2 Criteria Pollutants and Air Monitoring

### 3.2.2.2.1 Criteria Pollutants

Air quality at a given location can be characterized by the concentration of various pollutants in the air. Units of concentration are generally expressed as parts per million by volume (ppmv) or micrograms per cubic meter ($\mu g/m^3$) of air. The significance of a pollutant concentration is determined by comparing the concentration to an appropriate national or state ambient air quality standard. These standards represent the allowable atmospheric concentrations at which the public health and welfare are protected. They include a reasonable margin of safety to protect the more sensitive individuals in the population.

EPA establishes the National Ambient Air Quality Standards (NAAQS). For most pollutants, maximum concentrations shall not exceed an NAAQS more than once per year; and they shall not exceed the annual standards. The California Air Resources Board (CARB) establishes the California Ambient Air Quality Standards (CAAQS), which are generally more stringent and include more pollutants than the NAAQS. California standards for ozone ($O_3$), carbon monoxide (CO), nitrogen dioxide ($NO_2$), particulate matter less than 10 microns (µm) in diameter ($PM_{10}$), and particulate matter less than 2.5 µm in diameter ($PM_{2.5}$) are values not to be exceeded. All other standards are not to be equaled or exceeded.

Pollutants that have corresponding national or state ambient air quality standards are known as criteria pollutants. These pollutants can harm human health and the environment, and cause property damage. They are called "criteria" air pollutants because they are regulated by developing human health–based and/or environmentally based criteria (science-based guidelines) for setting permissible levels. “Primary standards” are the set of limits based on human health; “secondary standards” are those intended to prevent environmental and property damage. The criteria pollutants of greatest concern for the proposed Project are ozone, CO, $NO_2$, $SO_2$, $PM_{10}$, and $PM_{2.5}$. $NO_X$ (nitrogen oxides) and $SO_X$ (sulfur oxides) are the generic terms for $NO_2$ and $SO_2$, respectively, because $NO_2$ and $SO_2$ are naturally highly reactive and may change composition when exposed to oxygen, other pollutants, and/or sunlight in the atmosphere. These oxides are produced during combustion.

As discussed above, one of the main concerns with criteria pollutants is that they contribute directly to regional human health problems. The known adverse effects associated with these criteria pollutants are shown in Table 3.2-1.

Of the criteria pollutants of concern, ozone is unique because it is not directly emitted from sources related to the proposed Project. Rather, ozone is a secondary pollutant, formed from the precursor pollutants volatile organic compounds (VOC) and ($NO_X$). VOC and $NO_X$ react to form ozone in the presence of sunlight through a complex series of photochemical reactions. As a result, unlike inert pollutants, ozone levels usually peak several hours after the precursors are emitted and many miles downwind of the source. Because of the complexity and uncertainty in predicting photochemical pollutant concentrations, ozone impacts are indirectly addressed in this study by comparing emissions of VOC and $NO_X$ generated by the proposed Project to daily emission thresholds set by the SCAQMD. These emission thresholds are discussed in Section 3.2.4.2, “Thresholds of Significance.”

**Table 3.2-1.** Adverse Effects Associated with the Criteria Pollutants

| *Pollutant* | *Adverse Effects* |
|---|---|
| Ozone | (1) Short-term exposures: (a) pulmonary function decrements and localized lung edema in humans and animals and (b) risk to public health implied by alterations in pulmonary morphology and host defense in animals; (2) long-term exposures: risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (3) vegetation damage; and (4) property damage. |
| Carbon monoxide (CO) | (1) Aggravation of angina pectoris and other aspects of coronary heart disease; (2) decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (3) impairment of central nervous system functions; and (4) possible increased risk to fetuses. |
| Nitrogen dioxide ($NO_2$) | (1) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (2) risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and (3) contribution to atmospheric discoloration. |
| Sulfur dioxide ($SO_2$) | (1) Bronchoconstriction accompanied by symptoms that may include wheezing, shortness of breath, and chest tightness during exercise or physical activity in persons with asthma. |
| Suspended particulate matter ($PM_{10}$) | (1) Excess deaths from short-term and long-term exposures; (2) excess seasonal declines in pulmonary function, especially in children; (3) asthma exacerbation and possibly induction; (4) adverse birth outcomes including low birth weight; (5) increased infant mortality; (6) increased respiratory symptoms in children such as cough and bronchitis; and (7) increased hospitalization for both cardiovascular and respiratory disease (including asthma).[a] |
| Suspended particulate matter ($PM_{2.5}$) | (1) Excess deaths from short- and long-term exposures; (2) excess seasonal declines in pulmonary function, especially in children; (3) asthma exacerbation and possibly induction; (4) adverse birth outcomes, including low birth weight; (5) increased infant mortality; (6) increased respiratory symptoms in children, such as cough and bronchitis; and (7) increased hospitalization for both cardiovascular and respiratory disease, including asthma.[a] |

Source*:* EPA 2008c.

[a] More detailed discussions on the health effects associated with exposure to suspended particulate matter can be found in the following documents: Office of Environmental Health Hazard Assessment, *Particulate Matter Health Effects and Standard Recommendations,* www.oehha.ca.gov/air/toxic_contaminants/PM10notice.html#may, May 9, 2002; and EPA, *Air Quality Criteria for Particulate Matter*, October 2004.

CAAQS have also been established for lead, sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. They are not shown in this table because they are not pollutants of concern for the proposed Project.

Generally, concentrations of photochemical pollutants, such as ozone, are highest during the summer months and coincide with the season of maximum solar insolation. Concentrations of inert pollutants, such as CO, tend to be the greatest during the winter months and are a product of light wind conditions and surface-based temperature inversions that are frequent during that time of year. These conditions limit atmospheric dispersion. However, in the case of $PM_{10}$ impacts from fugitive dust sources, maximum concentrations may occur during high wind events or near manmade ground-disturbing activities, such as vehicular activities on roads and earth moving during construction activities.

Because most of the proposed project–related emission sources would be diesel-powered, diesel particulate matter (DPM) is a key pollutant evaluated in this analysis. DPM is one of the components of ambient $PM_{10}$ and $PM_{2.5}$. DPM is also classified as a toxic air contaminant (TAC) by CARB. As a result, DPM is evaluated in this study both as a criteria pollutant (as a component of $PM_{10}$ and $PM_{2.5}$) and as a TAC.

### 3.2.2.2.2 Local Air Monitoring Levels

EPA designates all areas of the U.S. according to whether they meet the NAAQS. A nonattainment designation means that a primary NAAQS has been exceeded more than the number of times allowed by the standard in a given area. EPA currently designates the SCAB as a “severe-17” nonattainment area for 8-hour ozone, a serious nonattainment area for $PM_{10}$, and a nonattainment area for $PM_{2.5}$. SCAB is in attainment of the NAAQS for CO, $SO_2$, $NO_2$, and lead (EPA 2008a). States with nonattainment areas must prepare a State Implementation Plan (SIP) that demonstrates how those areas will come into attainment.

CARB also designates areas of the state according to whether they meet the CAAQS. A nonattainment designation means that a CAAQS has been exceeded more than the number of times allowed by the standard. CARB currently designates the SCAB as a nonattainment area for 1-hour ozone and a nonattainment area for both $PM_{10}$ and $PM_{2.5}$. The air basin is in attainment of the CAAQS for CO, $SO_2$, $NO_2$, sulfates, and lead and is unclassified for hydrogen sulfide and visibility-reducing particles.

LAHD has been conducting its own air quality monitoring program since February 2005. The main objective of the program is to estimate ambient levels of DPM near the Port. The secondary objective of the program is to estimate ambient particulate matter levels within adjacent communities due to Port emissions. To achieve these objectives, the program measures ambient concentrations of $PM_{10}$, $PM_{2.5}$, and elemental carbon $PM_{2.5}$ (which indicates fossil fuel combustion sources) at four locations in the Port vicinity (Port of Los Angeles 2008d). The station locations are:

**Wilmington Station—Saints Peter and Paul School.** This station measures aged urban emissions during offshore flows and a combination of marine aerosols, aged urban emissions, and fresh emissions from Port operations during onshore flows. It also provides information on the relative strengths of these source combinations.

**Coastal Boundary Station—Berth 47 in the Outer Harbor.** This station measures aged urban and Port emissions and marine aerosols during onshore flows and aged urban emissions and fresh Port emissions during offshore flows. Meteorological data from this station and the San Pedro Station (described below) were used in this air quality analysis to model human health risks and criteria pollutant impacts associated with the proposed Project.

**Source-Dominated Station—Terminal Island Treatment Plant.** This station is surrounded by three terminals and has the potential to receive emissions from offroad equipment, onroad trucks, and rail. During onshore flows, this station measures marine aerosols and fresh emissions from several nearby diesel-fired sources (trucks, trains, and ships). During offshore flows, it measures aged urban emissions and Port emissions.

**San Pedro Station—the Liberty Hill Plaza Building, Adjacent to the Port Administrative Property on Palos Verdes Street.** This location is near the western edge of Port operational emission sources and adjacent to residential areas in San Pedro. During onshore flows, aged urban emissions, marine aerosols, and fresh Port emissions have the potential to affect this site. During nighttime offshore flows, the station measures aged urban emissions and Port emissions. Meteorological data from this station and the Coastal Boundary Station were used in this air quality analysis to model human health risks and criteria pollutant impacts.

The Port has collected $PM_{10}$ data for the proposed Project at its Wilmington Station and $PM_{2.5}$ data at all four of its stations for 3 years. However, to show trends in criteria pollutant concentrations other than $PM_{10}$ and $PM_{2.5}$ over the past 3 years, it was necessary to use data from the network of monitoring stations operated by SCAQMD.

Of the SCAQMD monitoring stations, the most representative for the proposed project vicinity is the North Long Beach Station because it is closest to the proposed project site. Table 3.2-2 shows the highest pollutant concentrations recorded for 2005 to 2007, the most recent complete 3-year period of data available. As shown in the table, the following standards were exceeded at the North Long Beach Station over the 3-year period: ozone (state 1- and 8-hour standards), $PM_{10}$ (state and national 24-hour and annual standards), and $PM_{2.5}$ (national 24-hour standard and national and state annual standards). No standards were exceeded for CO, $NO_2$, $SO_2$, lead, and sulfates, although some data were not available for $SO_2$, lead, and sulfates between 2005 and 2007.

Pollutant sampling data are available for February 2006 through 2007 from the Port monitoring program at the time of this assessment. Samples were collected as 24-hour averages every 3 days. The data are summarized in Table 3.2-3. Data collected concurrently at the SCAQMD North Long Beach Station are also presented for comparison. The table shows that $PM_{10}$ concentrations at the Wilmington Station are lower than those at the North Long Beach Station. For $PM_{2.5}$, concentrations at the Port monitoring sites are lower than those at the North Long Beach Station for maximum 24-hour averages and are comparable to concentrations at the North Long Beach Station for period averages. For elemental carbon $PM_{2.5}$, the Source-Dominated Station has the highest concentrations, and the Coastal Boundary Station has the lowest concentrations. Elemental carbon $PM_{2.5}$ was not measured at the North Long Beach Station.

**Table 3.2-2**. Maximum Pollutant Concentrations Measured at the North Long Beach Monitoring Station

| *Pollutant* | *Averaging Period* | *National Standard* | *State Standard* | *Highest Monitored Concentration* | | | |
|---|---|---|---|---|---|---|---|
| | | | | *2004* | *2005* | *2006* | *2007* |
| Ozone (ppm)[a] | 1 hour | NA | 0.09 | 0.090 | **0.091** | 0.081 | **0.099** |
| | 8 hours | 0.08 | 0.07 | **0.074** | 0.069 | 0.058 | **0.073** |
| CO (ppm) | 1 hour | 35 | 20 | 4.2 | 4.2 | 4.2 | 3.3 |
| | 8 hours | 9 | 9 | 3.36 | 3.51 | 3.36 | 2.59 |
| $NO_2$ (ppm) | 1 hour | NA | 0.18 | 0.12 | 0.136 | 0.102 | 0.107 |
| | Annual | 0.053 | 0.030 | 0.028 | 0.024 | 0.022 | 0.020 |
| $SO_2$ (ppm) | 1 hour | NA | 0.25 | 0.042 | 0.041 | 0.027 | 0.037 |
| | 24 hours | 0.14 | 0.04 | 0.013 | 0.010 | 0.010 | 0.010 |
| | Annual | 0.03 | n/a | 0.005 | 0.002 | 0.002 | 0.003 |
| $PM_{10}$ ($\mu g/m^3$)[b] | 24 hours | 150 | 50 | **72.0** | **66.0** | **78.0** | **232.0** |
| | Annual | NA | 20 | **33.1** | **29.5** | **30.9** | **33.5** |
| $PM_{2.5}$ ($\mu g/m^3$)[c] | 24 hours | 35* | NA | **66.6** | 53.8 | 58.5 | **82.8** |
| | Annual | 15 | 12 | **17.9** | **15.9** | **14.1** | **14.6** |
| Lead ($\mu g/m^3$) | 30 days | NA | 1.5 | Not available | Not available | Not available | Not available |
| | Calendar quarter | 1.5 | NA | 0.01 | 0.01 | 0.01 | 0.01 |
| Sulfates ($\mu g/m^3$) | 24 hours | NA | 25 | | Not available | Not available | Not available |

Note: Exceedances of the standards are highlighted in bold.

[a] The state 1- and 8-hour ozone standards were exceeded on 0 days in 2004, 0 days in 2005, 0 days in 2006, and 1 day in 2007. The national 8-hour ozone standard was not exceeded.

[b] The state 24-hour $PM_{10}$ standard was exceeded 2 days in 2004, 4 days in 2005, 5 days in 2006, and 6 days in 2007. The national $PM_{10}$ standard was exceeded once in 2007.

[c] The national 24-hour $PM_{2.5}$ standard was exceeded on 1 day in 2004, 0 days in 2005, 0 days in 2006, and 1 days in 2007.

* The national 24-hour $PM_{2.5}$ standard was changed from 65 to 35 to be applied to the 2008 year.

Source: SCAQMD (www.aqmd.gov); CARB (http://www.arb.ca.gov/adam/welcome.html);
EPA (http://www.epa.gov/aqspubl1/)

**Table 3.2-3**. Maximum Pollutant Concentrations Measured for the Port of Los Angeles Air Quality Monitoring Program

| *Pollutant* | *Averaging Period* | *Port of Los Angeles Monitoring Stations* | | | | *SCAQMD Monitoring Station* |
|---|---|---|---|---|---|---|
| | | *Wilmington Community Station* | *Coastal Boundary Station* | *San Pedro Station* | *Source-Dominated Station* | *North Long Beach Station* |
| $PM_{10}$ ($\mu g/m^3$)[a,b,c] | 24 hours | 60.5 | -- | -- | -- | 78 |
| | Period average | 27.8 | -- | -- | -- | 30.9 |
| $PM_{2.5}$ ($\mu g/m^3$)[b] | 24 hours | 36.2 | 25.9 | 23.8 | 31.4 | 58.5 |
| | Period average | 12.4 | 9.8 | 10.7 | 13.5 | 14.1 |
| Elemental carbon $PM_{2.5}$ ($\mu g/m^3$)[d] | 24 hours | 5.2 | 4.6 | 6.7 | 9.3 | -- |
| | Period average | 1.5 | 1.1 | 1.5 | 2.5 | -- |

Notes:

[a]For $PM_{10}$, the SCAQMD North Long Beach Station measures a 24-hour sample every 6 days, compared to every 3 days for the Port monitoring stations. Therefore, only one-half of the Port monitoring station samples (every other sample) has a corresponding sample from the North Long Beach Station. For $PM_{2.5}$, all monitoring sites measure a 24-hour sample every 3 days.

[b]The Port $PM_{10}$ and $PM_{2.5}$ data were collected between February 2006 and January 2007. The Port's elemental carbon $PM_{2.5}$ data were collected between February 2005 and January 2006. Data from the SCAQMD North Long Beach Station were collected between February 2006 and December 2006.

[c]$PM_{10}$ is not measured at the Coastal Boundary, San Pedro, or Source-Dominated Stations.

[d]Elemental carbon $PM_{2.5}$ is not measured at the SCAQMD North Long Beach Station.

Source: Port of Los Angeles (2008d)

Air quality within the SCAB has generally improved since the inception of air pollutant monitoring in 1976. This improvement is mainly due to lower-polluting onroad motor vehicles, more stringent regulation of industrial sources, and SCAQMD's implementation of emission reduction strategies. This trend towards cleaner air has occurred in spite of continued population growth.

## 3.2.2.2.3 Toxic Air Contaminants

TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA). TACs include air pollutants that can produce adverse human health effects, including carcinogenic effects, after short-term (acute) or long-term (chronic) exposure. Examples of TAC sources within the SCAB include industrial processes, dry cleaners, gasoline stations, paint and solvent operations, and fossil fuel combustion sources.

The SCAQMD determined in the Multiple Air Toxics Exposure Study II (MATES II) that about 70% of the background airborne cancer risk in the SCAB is due to particulate emissions from diesel-powered on- and offroad motor vehicles (SCAQMD 2000). The higher risk levels were found in the urban core areas in south central Los Angeles County, in Wilmington adjacent to the Port, and near freeways.

In January 2008, the SCAQMD released the draft MATES III study (SCAQMD 2008a). Mates III determined that diesel exhaust remains the major contributor to air toxics risk, accounting for approximately 84% of the total risk. Compared to the MATES II study, the MATES III study found a decreasing risk for air toxics exposure, with the population-weighted risk down by 17% from the analysis in MATES II.

Furthermore, CARB released a report titled Diesel Particulate Matter Exposure Assessment Study for the Ports of Los Angeles and Long Beach (CARB 2006) that indicates that the two ports contributed approximately 21% of the total diesel PM emissions in the air basin during 2002. These emissions are reported to result in elevated cancer risk levels over the entire 20- by 20-mile study area.

As discussed in Section 3.2.3.4 the Port of Los Angeles, in conjunction with the Port of Long Beach, has developed the San Pedro Bay's Clean Air Action Plan (CAAP) that targets all emissions, but is focused primarily on TACs. The Port of Los Angeles has also developed the Sustainable Construction Guidelines as discussed in Section 3.2.3.4 to reduce emissions, including TAC's, from construction. Additionally, all major development projects will include a health risk assessment to further assess TAC emissions and to target mitigation to reduce the impact on public health.

#### 3.2.2.2.4 Secondary $PM_{2.5}$ Formation

Within the SCAB, $PM_{2.5}$ particles are both directly emitted into the atmosphere (e.g., primary particles) and are formed through atmospheric chemical reactions from precursor gases (e.g., secondary particles). Primary $PM_{2.5}$ includes diesel soot, combustion products, road dust, and other fine particles. Secondary $PM_{2.5}$, which includes products such as sulfates, nitrates, and complex carbon compounds, are formed from reactions with directly emitted $NO_X$, $SO_X$, VOCs, and ammonia (SCAQMD 2006).

Generated emissions of $NO_X$, $SO_X$, and VOCs from the proposed Project would contribute toward secondary $PM_{2.5}$ formation some distance downwind of the emission sources. However, the air quality analysis in this draft EIR focuses on the effects of direct $PM_{2.5}$ emissions generated by the proposed Project and their ambient impacts. This approach is consistent with the recommendations of the SCAQMD (SCAQMD 2006).

### 3.2.2.2.5 Ultrafine Particles

Although EPA and the State of California currently monitor and regulate $PM_{10}$ and $PM_{2.5}$, new research is being done on ultrafine particles (UFPs), particles classified as less than 0.1 micron in diameter. UFPs are formed usually by a combustion cycle, independent of fuel type. With diesel fuel, UFPs can be formed directly from the fuel during combustion. With gasoline and natural gas (liquefied or compressed), the UFPs are derived mostly from the lubricant oil. UFPs are emitted directly from the tailpipe as solid particles (soot—elemental carbon and metal oxides) and semivolatile particles (sulfates and hydrocarbons) that coagulate to form particles.

The research regarding UFPs is at its infancy but suggests the UFPs might be more dangerous to human health than the larger $PM_{10}$ and $PM_{2.5}$ particles (termed fine particles) due to size and shape. Because of the smaller size, UFPs are able to travel more deeply into the lung (the alveoli) and are deposited in the deep lung regions more efficiently than fine particles. UFPs are inert; therefore, normal bodily defense does not recognize them. UFPs might have the ability to travel across cell layers and enter into the bloodstream and/or into individual cells. With a large surface area–to–volume ratio, other entities might attach to the particle and travel into the cell as a kind of “hitchhiker.”

Current UFP research primarily involves roadway exposure. Preliminary studies suggest that over 50% of an individual’s daily exposure is from driving on highways. Levels appear to drop off rapidly as one moves away from major roadways. Little research has been done directly on ships and offroad vehicles. CARB is currently measuring and studying UFPs at the San Pedro Bay Ports. Work is being done on filter technology, including filters for ships, which appears promising. LAHD began collecting UFP data at its four air quality monitoring stations in late 2007 and early 2008, actively participates in CARB testing at the Port, and will comply with all future regulations regarding UFPs; additionally, measures included in the CAAP aim to reduce all emissions throughout the Port.

### 3.2.2.2.6 Atmospheric Deposition

The fallout of air pollutants to the surface of the earth is known as atmospheric deposition. Atmospheric deposition occurs in both a wet and dry form. Wet deposition occurs in the form of precipitation or cloud water and is associated with the conversion in the atmosphere of directly emitted pollutants into secondary pollutants such as acids. Dry deposition occurs in the form of directly emitted pollutants or the conversion of gaseous pollutants into secondary PM. Atmospheric deposition can produce watershed acidification, aquatic toxic pollutant loading, deforestation, damage to building materials, and respiratory problems.

CARB and the California Water Resources Control Board are in the process of examining the need to regulate atmospheric deposition for the purpose of protecting both fresh and salt water bodies from pollution. Port emissions deposit into both local waterways and regional land areas. Construction emission sources from the proposed Project would produce DPM, which contains trace amounts of toxic chemicals. Through its CAAP, the Port will reduce air pollutants from its future operations, which will work towards the goal of reducing atmospheric deposition for purposes of water quality protection. The CAAP will reduce air pollutants that generate both acidic and toxic compounds, include emissions of $NO_X$, $SO_X$, and DPM.

### 3.2.2.2.7 Greenhouse Gas Emissions

Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs). GHGs are emitted by natural processes and human activities. Examples that are produced both by natural processes and industry include carbon dioxide ($CO_2$), methane ($CH_4$), and nitrous oxide ($N_2O$). Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydrofluorocarbons [HFCs] and perfluorocarbons [PFCs]) and sulfur hexafluoride ($SF_6$).

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without these natural GHGs, the earth's surface would be about 61°F cooler (AEP 2007). However, emissions from fossil fuel combustion for activities such as electricity production and vehicular transportation have elevated the concentration of GHGs in the atmosphere above natural levels. According to the Intergovernmental Panel on Climate Change, (IPCC) the atmospheric concentration of $CO_2$ in 2005 was 379 ppm compared to the pre-industrial levels of 280 ppm (IPCC 2007). In addition, the *Fourth U.S. Climate Action Report* concluded, in assessing current trends, that $CO_2$ emissions increased by 20% from 1990 to 2004, while $CH_4$ and $N_2O$ emissions decreased by 10 and 2%, respectively

There appears to be a close relationship between the increased concentration of GHGs in the atmosphere and global temperatures. Scientific evidence indicates a trend of increasing global temperatures near the earth's surface over the past century due to increased human-induced levels of GHGs.

GHGs differ from criteria pollutants in that GHG emissions do not cause direct adverse human health effects. Rather, the direct environmental effect of GHG emissions is the increase in global temperatures, which in turn has numerous indirect effects on the environment and humans. For example, some observed changes include shrinking glaciers, thawing permafrost, later freezing and earlier break-up of ice on rivers and lakes, a lengthened growing season, shifts in plant and animal ranges, and earlier flowering of trees (IPCC 2001). Other, longer term environmental impacts of global warming may include sea level rise, changing weather patterns with increased storm and drought severity, changes to local and regional ecosystems including the potential loss of species, and a significant reduction in winter snow pack (e.g., estimates include a 30 to 90% reduction in snow pack in the Sierra Nevada mountain range). Current data suggest that in the next 25 years, in every season of the year, California could experience unprecedented heat, longer and more extreme heat waves, greater intensity and frequency of heat waves, and longer dry periods. More specifically, the California Climate Change Center (2006) predicted that California could witness the following events:

- Temperature rises between 3 and 10.5ºF
- 6 to 20 inches or more increase in sea level
- 2 to 4 times as many heat-wave days in major urban centers
- 2 to 6 times as many heat-related deaths in major urban centers
- 1 to 1.5 times more critically dry years
- 10 to 55% increase in the risk of wildfires

Currently, there are no federal standards for GHGs emissions. Recently, the U.S. Supreme Court ruled that the harms associated with climate change are serious and well recognized, that EPA must regulate GHGs as pollutants, and that, unless the agency determines that GHGs do not contribute to climate change, EPA must promulgate regulations for GHG emissions from new motor vehicles (*Massachusetts et al. v. Environmental Protection Agency* [ 549 U.S. 497 127 S. Ct. 1438 (2007)]). Additionally, in *Center for Biological Diversity v. National Highway Traffic Safety Administration*[538 F.3d 1172 (9th Cir. 2008)], the U.S. Ninth Circuit held that a complete GHG analysis is required in NEPA documents. However, no federal regulations have been set at this time. Currently, control of GHGs is generally regulated at the state level and approached by setting emission reduction targets for existing sources of GHGs, setting policies to promote renewable energy and increase energy efficiency, and developing statewide action plans.

To date, 12 states, including California, have set state GHG emission targets. Executive Order S-3-05 and the passage of Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, promulgated the California target to achieve 1990 GHG levels by the year 2020. The target-setting approach allows progress to be made in addressing climate change and is a forerunner to the setting of emission limits. A companion bill, Senate Bill (SB) 1368, similarly addresses global warming, but from the perspective of electricity generators selling power into the state. The legislation requires that imported power meet the same GHG standards that power plants in California meet. SB 1368 also sets standards for $CO_2$ for any long-term power production of electricity at 1,000 pounds per megawatt hour.

The World Resources Institute's GHG Protocol Initiative identifies six GHGs generated by human activity that are believed to be contributors to global warming (WRI/WBCSD 2007):

- Carbon dioxide ($CO_2$)
- Methane ($CH_4$)
- Nitrous oxide ($N_2O$)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride ($SF_6$)

These are the same six GHGs that are identified in California AB 32 and by the EPA. Appendix C contains descriptions of the natural and manmade sources of emissions for each of these GHGs.

The different GHGs have varying global warming potential (GWP). GWP is the ability of a gas or aerosol to trap heat in the atmosphere. By convention, $CO_2$ is assigned a GWP of 1. By comparison, $CH_4$ has a GWP of 21, which means that it has a global warming effect 21 times greater than $CO_2$ on an equal-mass basis. $N_2O$ has a GWP of 310, which means that it has a global warming effect 310 times greater than $CO_2$ on an equal-mass basis. To account for their GWPs, GHG emissions are often reported as a $CO_2$ equivalent ($CO_2e$). The $CO_2e$ is calculated by multiplying the emission of each GHG by its GWP, and adding the results together to produce a single, combined emission rate representing all GHGs. Appendix C lists the GWP for each GHG.

The proposed Project's air quality analysis includes estimates of GHG emissions generated by the proposed Project for existing and future conditions, as presented in Sections 3.2.2.3 and 3.2.4.3, respectively. In keeping with international convention, the GHG emissions in this report are expressed in metric units (metric tons [tonnes] in this case).

### Port's Climate Action Plan and Sustainability Plan

In May 2007, the City of Los Angeles Mayor's Office released the Green LA initiative, which is an action plan to lead the nation in fighting global warming. The Green LA Plan presents a citywide framework for confronting global climate change to create a cleaner, greener, sustainable Los Angeles. The Green LA Plan directs the Port to develop an individual Climate Action Plan, consistent with the goals of Green LA, to examine opportunities to reduce GHG emissions from operations.

In accordance with this directive, the Port prepared a Harbor Department Climate Action Plan (December 2007) detailing GHG emissions related to municipally controlled Port activities (such as Port buildings and Port workforce operations) and outlining current and proposed actions to reduce GHG from these operations. The Port is a member of the California Climate Action Registry (CCAR) and The Climate Registry (TCR). The Port has submitted GHG emissions inventories for LAHD-controlled operations for 2006 and 2007, and will begin submitting annual GHG inventories for trucks, ships, and rail to CCAR, beginning in 2008 for the year 2006. The Port, as a Department of the City of Los Angeles and as a port associated with a major city, is a participant in Clinton Climate Initiative (CCI) as a C40 City[1].

The Port is developing a Sustainability Plan in accordance with the Mayor's Office Directive that will incorporate Port environmental programs and reports, including the Port's Climate Action Plan. The Port is also a signatory to the California

1 The Clinton Climate Initiative (CCI) is a program through the William J. Clinton Foundation that applies a measurable business approach to fighting climate change globally. Specifically, the CCI focuses on working with the C40 Large Cities Climate Leadership Group, a group of large cities worldwide dedicated to reducing greenhouse gas emissions. Since cities contribute about 75%of all heat-trapping greenhouse gases, they are critical to slowing the pace of global warming.

Sustainable Goods Movement Program and is participating in the University of Southern California Sustainable Cities Program, which is looking at GHGs associated with international goods movement.

### 3.2.2.3 CEQA Baseline

Section 15125 of the CEQA Guidelines requires EIRs to include a description of the physical environmental conditions in the vicinity of the project that exists at the time the NOP is published. These environmental conditions would normally constitute the baseline physical conditions by which the CEQA lead agency determines whether an impact is significant. For purposes of this EIR, the CEQA baseline for determining the significance of potential project impacts is 2008.

CEQA baseline emissions include emissions from sources that were operating in the baseline year of 2008 and would include those sources planned for demolition, or which would no longer be operational, at the completion of the proposed Project.

Table 3.2-4, below, presents peak daily existing 2008 emissions, which include two 59,000-square feet LADWP oil tanks, industrial land uses in the Avalon Development District and Waterfront Development District, and Banning's Landing located on the south side of Water Street.

**Table 3.2-4**. CEQA Baseline Emissions: Peak Daily Emissions

| | *Pollutant Emission Rates (pounds/day)* | | | | | |
|---|---|---|---|---|---|---|
| *Emission Source* | *VOC* | *CO* | *$NO_X$* | *$SO_X$* | *$PM_{10}$* | *$PM_{2.5}$* |
| Mobile | 10 | 99 | 13 | <1 | 12 | 2 |
| Area | 2 | 6 | 2 | <1 | <1 | <1 |
| Stationary | <1 | <1 | 2 | <1 | <1 | <1 |
| **Total** | **11** | **105** | **17** | **<1** | **12** | **2** |

URBEMIS2007 model results are provided in Appendix C.
Mobile sources include onroad traffic (trucks and cars).
Area sources include activities such as landscaping and surface repainting.
Stationary sources include electricity and natural gas consumption.

Source: URBEMIS2007 (see Appendix C).

Operational emissions calculated for the CEQA baseline include mobile, area, and stationary sources. Mobile sources include onroad traffic, such as patrons visiting an establishment or employees driving into work. Area sources contribute to pollutants on site, and include activities such as landscaping and surface repainting. Stationary sources are considered regional in nature, as the main source of pollutants is generally located off site. Stationary sources include electricity and natural gas consumption.

#### 3.2.2.3.1 Greenhouse Gas Emissions

Table 3.2-5 presents an estimate of $CH_4$, $N_2O$, and $CO_2$ emissions generated within California borders from the CEQA baseline year operations in the form of $CO_2e$. As discussed further in Section 3.2.4.1, the analysis of GHG emissions within the state is consistent with the goals of the CCAR. The emission sources for which baseline GHG emissions were calculated are the same as for the criteria pollutants and include mobile, stationary, and area sources. The GHG emission calculation methodology is described in Appendix C.

**Table 3.2-5.** Estimate of CEQA Baseline Greenhouse Gas Emissions (pounds per day) [a]

| *Emission Source* | *$CO_2e$* |
|---|---|
| Mobile | 7,434 |
| Area | 2,013 |
| Stationary | 1,532 |
| **Total Emissions** | **10,979** |

[a] URBEMIS2007 model results are provided in Appendix C.
Mobile sources include onroad traffic (trucks and cars).
Area sources include activities such as landscaping and surface repainting.
Stationary sources include electricity and natural gas consumption.

Source: Jones & Stokes 2008.

### 3.2.2.4 Sensitive Receptors

The impact of air emissions on sensitive members of the population is a special concern. Sensitive receptor groups include children and infants, pregnant women, the elderly, and the acutely and chronically ill. The locations of these groups include residences, schools, playgrounds, daycare centers, and hospitals. The nearest sensitive receptors to the proposed project area are residents in south Wilmington. Additionally, the Hawaiian Avenue Elementary School and Saints Peter and Paul Elementary School in Wilmington are approximately 1 mile from the proposed project site. The nearest convalescent home, the Harbor View House, is approximately 2 miles southeast of the proposed project site. The nearest hospital is the Little Company of Mary San Pedro Hospital, approximately 2 miles southwest of the proposed project site. Residents and grammar schools in northeast San Pedro also are in proximity to the proposed project site.

The proposed Project is particular in that, in addition to the existing nearby sensitive receptors, it proposes to construct a new sensitive land use near existing industrial uses. As such, patrons of the new facilities would represent new sensitive receptors and may be affected by the existing surrounding land uses found at the Port.

Potential impacts to these new sensitive receptors are evaluated further under Section 3.2.4.3 as Impact AQ-7.

# 3.2.3 Applicable Regulations

The federal Clean Air Act of 1969 (CAA) and its subsequent amendments established air quality regulations and the NAAQS, and delegated enforcement of these standards to the states. In California, CARB is responsible for enforcing air pollution regulations. CARB has, in turn, delegated the responsibility of regulating stationary emission sources to the local air agencies. In the SCAB, the local air agency is the SCAQMD.

The following is a summary of the key federal, state, and local air quality rules, policies, and agreements that apply to the proposed Project and its related activities.

## 3.2.3.1 Federal Regulations

### 3.2.3.1.1 State Implementation Plan

In federal nonattainment areas, the CAA requires preparation of a State Implementation Plan that details how the state will attain the NAAQS within mandated timeframes. In response to this requirement, the SCAQMD and SCAG have jointly developed the 2007 Air Quality Management Plan (AQMP). The 2007 AQMP addresses several federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2007 AQMP builds upon the approaches taken in the 2003 AQMP for the SCAB for the attainment of federal air quality standards. Additionally, the plan highlights the significant amount of reductions necessary and the urgent need to identify additional strategies, especially in the area of mobile sources, to meet federal criteria pollutant standards within the timeframes allowed under the federal CAA (SCAQMD 2007a). The 2007 AQMP has been submitted as part of the SIP to EPA for approval.

### 3.2.3.1.2 Emission Standards for Offroad Diesel Engines

To reduce emissions from offroad diesel equipment, EPA established a series of increasingly strict emission standards for new offroad diesel engines. Tier 1 standards were phased in from 1996 to 2000 (year of manufacture), depending on the engine horsepower category. Tier 2 standards were phased in from 2001 to 2006. Tier 3 standards were phased in from 2006 to 2008. Tier 4 standards, which likely will require add-on emission control equipment to reach attainment, will be phased in from 2008 to 2015. These standards apply to construction equipment. (DieselNet 2005)

#### 3.2.3.1.3 Emission Standards for Onroad Trucks

To reduce emissions from onroad, heavy-duty diesel trucks, EPA established a series of increasingly strict emission standards for new engines, starting in 1988. EPA promulgated the final and cleanest standards with the *2007 Heavy-Duty Highway Rule* (EPA 2000). The PM emission standard of 0.01 gram per horsepower-hour (g/hp-hr) is required for new vehicles beginning with model year 2007. Also, the $NO_X$ and nonmethane hydrocarbon (NMHC) standards of 0.20 and 0.14 g/hp-hr, respectively, would be phased in together between 2007 and 2010 on a percent of sales basis: 50% from 2007 to 2009 and 100% in 2010. Currently, the strictest standards will be phased in starting in 2007 (EPA 2000).

#### 3.2.3.1.4 Highway Diesel Fuel Rule

With the Highway Diesel Fuel Rule, EPA set sulfur limitations for onroad diesel fuel to 15 ppm starting June 1, 2006 (EPA 2006).

### 3.2.3.2 State Regulations

#### 3.2.3.2.1 California Clean Air Act

The California Clean Air Act (CCAA) of 1988, as amended in 1992, outlines a program to attain the CAAQS by the earliest practical date. Because the CAAQS are more stringent than the NAAQS, attainment of the CAAQS will require more emissions reductions than what would be required to show attainment of the NAAQS. Consequently, the main focus of attainment planning in California has shifted from the federal to state requirements. Similar to the federal system, the state requirements and compliance dates are based on the severity of the ambient air quality standard violation within a region.

#### 3.2.3.2.2 Heavy Duty Diesel Truck Idling Regulation

This CARB rule affected heavy-duty diesel trucks in California starting February 1, 2005. The rule requires that heavy-duty trucks not idle for longer than 5 minutes at a time. However, truck idling for longer than 5 minutes while queuing is allowed if the queue is located more than 100 feet from any homes or schools.

#### 3.2.3.2.3 California Diesel Fuel Regulations

With this rule, CARB set sulfur limitations for diesel fuel sold in California for use in on- and offroad motor vehicles (CARB 2004c). Harbor craft were originally excluded from the rule but were later added by a 2004 rule amendment, and again updated in 2008 (CARB 2004b; 2008). Under this rule, diesel fuel used in motor vehicles except harbor craft has been limited to 500 ppm sulfur since 1993. The sulfur limit was reduced to 15 ppm on September 1, 2006. The phase-in period was from June 1, 2006, to September 1, 2006 (a federal diesel rule similarly limited sulfur content nationwide to 15 ppm by October 15, 2006). Diesel fuel used in harbor craft in the SCAQMD was limited to 500 ppm sulfur starting January 1, 2006, and 15-ppm sulfur starting September 1, 2006. The sulfur limit will be reduced to 1.5% by weight starting July 1, 2009, and again to 0.1% by weight starting January 1, 2012.

#### 3.2.3.2.4 Statewide Portable Equipment Registration Program

The Statewide Portable Equipment Registration Program (PERP) establishes a uniform program to regulate portable engines and portable engine-driven equipment units (CARB 2005). Once registered in this program, engines and equipment units may operate throughout California without the need to obtain individual permits from local air districts. The PERP generally would apply to proposed dredging and barge equipment.

#### 3.2.3.2.5 Executive Order S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, state-wide GHG emission reduction targets as follows:

- by 2010, reduce GHG emissions to 2000 levels;
- by 2020, reduce GHG emissions to 1990 levels; and
- by 2050, reduce GHG emissions to 80% below 1990 levels.

Some literature equates these reductions to 11% by 2010 and 25% by 2020.

#### 3.2.3.2.6 AB 32—California Global Warming Solutions Act of 2006

The purpose of AB 32 is to reduce statewide GHG emissions to 1990 levels by 2020. This act instructs CARB to adopt regulations that reduce emissions from significant sources of GHGs and establish a mandatory GHG reporting and verification program by January 1, 2008. AB 32 requires CARB to adopt GHG emission limits and emission reduction measures by January 1, 2011, both of which are to become effective on January 1, 2012. CARB must also evaluate whether to establish a market-based cap and trade system. AB 32 does not identify a significance level of GHG for CEQA purposes, nor has CARB adopted such a significance threshold.

CARB identified early actions in its April 20, 2007, report (CARB 2007):

- Group 1—Three new GHG-only regulations are proposed to meet the narrow legal definition of "discrete early action greenhouse gas reduction measures" in Section 38560.5 of the Health and Safety Code. These include the Governor's Low Carbon Fuel Standard, reduction of refrigerant losses from motor vehicle air conditioning maintenance, and increased methane capture from landfills. These actions are estimated to reduce GHG emissions between 13 and 26 million metric tons (MMT)-$CO_2$e annually by 2020 relative to projected levels. If approved for listing by the Governing Board, these measures will be brought to hearing in the next 12 to 18 months and take legal effect by January 1, 2010. When these actions take effect, they would influence GHG emissions associated with vehicle fuel combustion and air conditioning, but would not otherwise affect project site design or implementation.
- Group 2—CARB is initiating work on another 23 GHG emission reduction measures in the 2007–2009 time period, with rulemaking to occur as soon as possible where applicable. These GHG measures relate to the following sectors: agriculture, commercial, education, energy efficiency, fire suppression, forestry, oil and gas, and transportation.
- Group 3—CARB staff has identified 10 conventional air pollution control measures that are scheduled for rulemaking in the 2007–2009 period. These control measures are aimed at criteria and toxic air pollutants, but will have concurrent climate co-benefits through reductions in $CO_2$ or non-Kyoto pollutants (i.e., DPM, other light-absorbing compounds and/or ozone precursors) that contribute to global warming.

### 3.2.3.2.7 SB 97—CEQA: Greenhouse Gas Emissions

SB 97 would require the Office of Planning and Research (OPR), by July 1, 2009, to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions, as required by CEQA, including, but not limited to, effects associated with transportation or energy consumption. The Resources Agency would be required to certify and adopt those guidelines by January 1, 2010. The OPR would be required to periodically update the guidelines to incorporate new information or criteria established by the State Air Resources Board pursuant to the California Global Warming Solutions Act of 2006.

### 3.2.3.2.8 OPR Technical Advisory

On June 19, 2008, as part of its continuing service to professional planners, land use officials, and CEQA practitioners, OPR, in collaboration with the California Resources Agency, CalEPA, and CARB, has provided a new technical advisory containing informal guidance for public agencies as they address the issue of climate change in their CEQA documents. This technical advisory provides OPR's perspective on the issue and precedes the development of draft implementing regulations for CEQA, in accordance with SB 97. The regulations are expected to be finalized in January 2009. OPR requested that CARB develop GHG CEQA thresholds. CARB released the draft thresholds for industrial, commercial, and residential projects on October 24, 2008. These thresholds, which are advisory, are expected to go to CARB's Board in December (see, http://www.arb.ca.gov/cc/localgov/ceqa/meetings/102708/prelimdraftproposal102408.pdf).

### 3.2.3.2.9 Executive Order S-01-07

Executive Order S-01-07 was enacted by Governor Schwarzenegger on January 18, 2007. Essentially, the order mandates the following: (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020, and (2) that a Low Carbon Fuel Standard for transportation fuels be established for California.

### 3.2.3.2.10 SB 1368 GHG Standard for Electrical Generation

SB 1368 authorizes the California Public Utilities Commission (CPUC), in consultation with the California Energy Commission (CEC) and CARB, to establish GHG emissions standards for baseload generation for investor-owned utilities. It requires the CEC to adopt a similar standard for local publicly owned or municipal utilities. The CPUC adopted rules implementing the legislation in January 2007. The CEC adopted similar regulations in June 2007.

### 3.2.3.2.11 California Climate Action Registry

Established by the California Legislature in 2000, CCAR is a private non-profit organization originally formed by the State of California. CCAR serves as a voluntary GHG registry to protect and promote early actions to reduce GHG emissions by organizations. CCAR provides leadership on climate change by developing and promoting credible, accurate, and consistent GHG reporting standards and tools for organizations to measure, monitor, third-party verify, and reduce their GHG emissions consistently across industry sectors and geographical borders.

CCAR members voluntarily measure, verify, and publicly report their GHG emissions, are leaders in their respective industry sectors, and are actively participating in solving the challenge of climate change. In turn, the State of California offers its best efforts to ensure that CCAR members receive appropriate consideration for early actions in light of future state, federal, or international GHG regulatory programs. Registry members are well prepared to participate in market based solutions and upcoming regulatory requirements. LAHD is a voluntary member of CCAR and has made the following commitments:

- identify sources of GHG emissions, including direct emissions from vehicles, onsite combustion, fugitive and process emissions, and indirect emissions from electricity, steam, and co-generation;
- calculate GHG emissions using CCAR's General Reporting Protocol (Version 3.0, April 2008); and
- report final GHG emissions estimates on the CCAR website.

LAHD has been a member of CCAR since March 29, 2006, and has submitted GHG inventories of LAHD-controlled activities for 2006 and 2007. Organizations that join CCAR are specifically recognized by AB 32. As a result, LAHD is assured that CARB will incorporate emissions reporting protocols developed by CCAR into the state's new mandatory GHG emissions reporting program to the maximum extent feasible.

#### 3.2.3.2.12 California Climate Change Adaptation Strategy

With the passage and implementation of AB 32, California is leading the way in the mitigation of climate change through reductions in GHG emissions. In concert with these efforts, the California Resources Agency has undertaken the complicated task of developing California's first comprehensive Climate Adaptation Strategy (CAS). A new priority in the climate change arena, adaptation promises to offer solutions to climate impacts as a result of past and current emissions. Consequently, efforts to adapt to expected climate change impacts through careful planning and preparation must occur in parallel to ongoing mitigation efforts.

California is experiencing significant climate change impacts, including shifting precipitation patterns, increasing temperatures, sea level rise, increasing severity and duration of wildfires, earlier melting of snow pack, and effects on habitats and biodiversity. These and other effects are predicted to intensify in the coming decades and significantly impact the state's public health, natural and manmade infrastructure, and ecosystems. Some uncertainty remains regarding exactly how these impacts will occur, but there is enough information now to increase our resiliency to these impacts.

To prepare for the expected impacts of climate change, California is developing a statewide CAS in coordination with efforts targeting greenhouse gas mitigation policies. The CAS will synthesize the most up-to-date information on expected climate change impacts to California for policy-makers and resource managers, provide strategies to promote resiliency to these impacts, and develop implementation plans for short and long term actions. The California Resources Agency will coordinate the CAS with California Environmental Protection Agency (Cal/EPA); the Climate Action Team; the Business, Transportation and Housing Agency; California Department of Public Health; and other key stakeholders.

The CAS will have six different Climate Adaptation Working Groups that will identify and prioritize climate adaptation strategies on a per-sector basis, including:

- Biodiversity and Habitat
- Infrastructure (roads, levees, buildings, etc.)
- Oceans and Coastal Resources
- Public Health
- Water
- Working Landscapes (forestry and agriculture)

Climate change impacts on the ocean and coast, including sea level rise, are expected to be the most devastating. The Oceans and Coastal Resources working group has developed an outline for assessing climate change and sea level rise impacts. This will include adaptation strategies for coastal habitats and infrastructure along the 1,100 miles of California's coastline. This group has recently submitted their cross-sector analysis, which will undergo review through stakeholder meetings, workshops, and final review/approval by the Ocean Protection Council. (California Climate Change Portal, http://www.climatechange.ca.gov/adaptation/index.html. Last updated 11/14/2008)

### 3.2.3.3 Regional and Local Regulations

Through the attainment planning process, the SCAQMD develops the SCAQMD Rules and Regulations to regulate sources of air pollution in the SCAB (SCAQMD 2007b). The SCAQMD rules most pertinent to the proposed Project are listed below. With the possible exception of dredging equipment during construction, the emission sources associated with the proposed Project are considered mobile sources. Therefore, they are not subject to the SCAQMD rules that apply to stationary sources, such as Regulation XIII (New Source Review), Rule 1401 (New Source Review of Toxic Air Contaminants), or Rule 431.2 (Sulfur Content of Liquid Fuels).

**SCAQMD Rule 402—Nuisance.** This rule prohibits discharge of air contaminants or other materials that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any such persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property.

**SCAQMD Rule 403—Fugitive Dust.** This rule prohibits emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area that remains visible beyond the emission source property line. During proposed project construction, best available control measures identified in the rule would be required to minimize fugitive dust emissions from proposed earth-moving and grading activities. These measures would include site prewatering and rewatering as necessary to maintain sufficient soil moisture content. Additional requirements apply to construction projects on property with 50 or more acres of disturbed surface area, or for any earth-moving operation with a daily earth-moving or throughput volume of 5,000 cubic yards or more three times during the most recent 365-day period. These requirements include submittal of a dust control plan, maintaining dust control records, and designating a SCAQMD-certified dust control supervisor.

**SCAQMD Regulation XIII.** This regulation sets forth pre-construction review requirements for new, modified, or relocated facilities, to ensure that the operation of such facilities does not interfere with progress in attainment of the national ambient air quality standards, and that future economic growth within the SCAQMD is not unnecessarily restricted. The specific air quality goal of this regulation is to achieve no net increases from new or modified permitted sources of nonattainment air contaminants or their precursors.

In addition to nonattainment air contaminants, this regulation will also limit emission increases of ammonia and Ozone Depleting Compounds (ODCs) from new, modified or relocated facilities by requiring the use of Best Available Control Technology (BACT).

**SCAQMD Regulation XIV.** This rule specifies limits for maximum individual cancer risk (MICR), cancer burden, and noncancer acute and chronic hazard index (HI) from new permit units, relocations, or modifications to existing permit units which emit TACs. The rule establishes allowable risks for permit units requiring new permits.

**SCAQMD Rule 1403—Asbestos Emissions from Demolition/Renovation Activities.** The purpose of this rule is to limit emissions of asbestos, a TAC, from structural demolition/renovation activities. The rule requires people to notify the SCAQMD of proposed demolition/renovation activities and to survey these structures for the presence of asbestos-containing materials (ACMs). The rule also includes notification requirements for any intent to disturb ACM; emission control measures; and ACM removal, handling, and disposal techniques. All proposed structural demolition activities associated with proposed project construction would need to comply with the requirements of Rule 1403.

### 3.2.3.4 Los Angeles Harbor Department Clean Air Policy

The Port of Los Angeles implemented a Clean Air Program that has in place since 2001, and began monitoring and measuring air quality in surrounding communities in 2004. Through the Port-wide Emissions Inventory (PEI) process, the Port has been able to identify emission sources and their relative contributions in order to develop effective emissions reduction strategies. The Port's Clean Air Program has included progressive programs such as alternative maritime power (AMP), use of emulsified fuel and diesel oxidation catalysts (DOCs) in yard equipment, alternative fuel testing, switch locomotive modernization program, and the VSRP.

In late 2004, the Port developed a plan to reduce air emissions through a number of near-term measures. The measures primarily focused on decreasing $NO_X$, but also PM and $SO_X$ emissions. In August 2004, a policy shift occurred, and Mayor James

K. Hahn established the No Net Increase Task Force to develop a plan that would achieve the goal of No Net Increase (NNI) in air emissions at the Port relative to 2001 levels. The plan identified 68 measures to be applied over the next 25 years that would reduce PM and $NO_X$ emissions to the baseline year of 2001. The 68 measures included (1) near-term measures, (2) agency regulatory efforts, (3) technological innovations, and (4) longer-term measures still in development.

The Port, in conjunction with the Port of Long Beach and with guidance from SCAQMD, CARB, and EPA, has adopted the San Pedro Bay Ports Clean Air Action Plan (SPBP CAAP) to expand upon existing and develop new emission-reduction strategies. The SPBP CAAP was initiated in response to a new mayor and Board of Harbor Commissioners; the Port began work on the Draft SPBP CAAP. The SPBP CAAP was released as a draft Plan for public review on June 28, 2006, and was approved by both the Los Angeles and Long Beach Boards of Harbor Commissioners on November 20, 2006. The SPBP CAAP focuses on reducing emissions with two main goals: (1) reduce Port-related air emissions in the interest of public health and (2) accommodate growth in trade. The draft Plan includes near-term measures implemented largely through the CEQA process, tariffs, and new leases at both Ports.

## 3.2.3.5 Port of Los Angeles Sustainable Construction Guidelines

In February 2008, the Port's Board of Harbor Commissioners adopted the Los Angeles Harbor Department Sustainable Construction Guidelines for Reducing Air Emissions (Port Construction Guidelines). These guidelines will be used to establish air emission criteria for inclusion in construction bid specifications. The Port Construction 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 Board resolutions will expand the Guidelines to cover other aspects of construction, as well as planning and design. These guidelines support the forthcoming Port Sustainability Program.

The intent of the Port Construction 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. Significant features of the Port Construction Guidelines include, but are not limited to the following:

1. All ships & barges used primarily to deliver construction related materials for LAHD construction contracts shall comply with the Vessel Speed Reduction Program and use low-sulfur fuel within 40 nautical miles of Point Fermin.
2. Harbor craft shall meet U.S. EPA Tier 2 engine emission standards and this requirement will increase to U.S. EPA Tier 3 engine emission standards by January 1, 2011.
3. All dredging equipment shall be electric.

4. Onroad heavy-duty trucks shall comply with EPA 2004 onroad emission standards for $PM_{10}$ and $NO_x$ and shall be equipped with a CARB verified Level 3 device. Emission standards will increase to EPA 2007 onroad emission standards for $PM_{10}$ and $NO_x$ by January 1, 2012.
5. Construction equipment (excluding onroad trucks, derrick barges, and harbor craft) shall meet U.S. EPA Tier-2 nonroad standards. The requirement will increase 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.
6. Comply with SCAQMD Rule 403 regarding Fugitive Dust and other fugitive dust control measures.
7. Additional Best Management Practices, based largely on Best Available Control Technology (BACT), will be required on construction equipment (including onroad trucks) to further reduce air emissions.

This EIR analysis requires that the proposed Project would adopt all applicable Sustainable Construction Guidelines as mitigations. These measures are incorporated into the emission calculations for the mitigated proposed Project and Alternatives scenarios. Section 3.2.4.3 identifies the mitigation and monitoring requirements for these measures.

# 3.2.4 Impact Analysis

This section presents a discussion of the potential air quality impacts associated with the construction and operation of the proposed Project. Mitigation measures are provided where feasible for impacts found to be significant.

## 3.2.4.1 Methodology

The emission estimates, dispersion modeling, and health risk estimates presented in this document were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available for this study. The estimates and modeling, as discussed below, were compared to the Significance Criteria described in detail in Section 3.2.4.2 to determine their level of significance.

- Air pollutant emissions of VOC, CO, $NO_X$, $SO_X$, $PM_{10}$, and $PM_{2.5}$ were estimated for construction and operation of the proposed Project. To determine their significance, the emissions were compared to Significance Criteria AQ-1 and AQ-3. The criteria pollutant emission calculations are presented in Appendix C.
- Dispersion modeling of CO, $NO_X$, $PM_{10}$, and $PM_{2.5}$ construction emissions was performed to estimate maximum offsite pollutant concentrations in the air from emission sources attributed to proposed project construction. The predicted

ambient concentrations associated with construction of the proposed Project were compared to Significance Criteria AQ-2.

- Dispersion modeling of vehicle traffic also was performed at a worst-case roadway intersection affected by truck trips generated by the proposed Project. The maximum predicted CO "hot spot" concentrations near the intersection were compared to Significance Criterion AQ-5.
- The potential for odors generated by the proposed Project at sensitive receptors in the vicinity was assessed qualitatively and compared to Significance Criterion AQ-6.
- A qualitative assessment of how TAC emissions would result in a significant health risk to sensitive receptors was conducted for the proposed Project. Because the proposed Project would introduce a new sensitive land use (17-acre park) in an already highly industrial area, the impact analysis for TAC considers the potential impact of the surrounding industrial uses on the proposed Project and was addressed in AQ-7.
- The consistency of the proposed Project with the AQMP was addressed in accordance with Significance Criterion AQ-8.
- GHG emissions were addressed in AQ-9.

Finally, mitigation measures were applied to the proposed activities that would exceed a significance criterion, and then evaluated as to their effectiveness in reducing impacts of the proposed Project.

The numerical results presented in the tables of this report were rounded, often to the nearest whole number, for presentation purposes. As a result, the sum of tabular data in the tables could differ slightly from the reported totals. For example, if emissions from Source A equal 1.2 lb/day and emissions from Source B equal 1.4 lb/day, the total emissions from both sources would be 2.6 lb/day. However, in a table, the emissions would be rounded to the nearest lb/day, such that Source A would be reported as 1 lb/day, Source B would be reported as 1 lb/day, and the total emissions from both sources would be reported as 3 lb/day. Although the rounded numbers create an apparent discrepancy in the table, the underlying addition is accurate.

##### 3.2.4.1.1 Methodology for Determining Construction Emissions

Proposed construction activities for the proposed Project would involve the use of offroad construction equipment, dredging equipment, cranes, pile drivers, onroad trucks, tugboats, and heavy duty haul trucks. Because these sources would primarily use diesel fuel, they would generate emissions of diesel exhaust in the form of VOC, CO, $NO_X$, $SO_X$, $PM_{10}$, and $PM_{2.5}$. In addition, offroad construction equipment traveling over unpaved surfaces and performing earthmoving activities such as site clearing or grading would generate fugitive dust emissions in the form of $PM_{10}$ and $PM_{2.5}$. Worker commute vehicles and haul trucks would generate vehicle exhaust and paved road dust emissions.

Construction emissions were estimated using the following methodology. LAHD supplied the equipment usage and scheduling data needed to calculate emissions for the proposed construction activities (LAHD 2008). Emission factors from CARB's OFFROAD2007 and EMFAC2007, and the Port of Los Angeles Inventory of Air Emissions were identified for each type of equipment, heavy-duty trucks, and marine vessels, respectively. In some cases, the horsepower rating of the equipment was required in order to estimate emissions.

To estimate peak daily construction emissions for comparison to SCAQMD emission thresholds, emissions were first calculated for the individual construction activities (e.g., parking areas, promenade, industrial development, etc.). Peak daily emissions then were determined by summing emissions from overlapping construction activities as indicated in the proposed construction schedule (available in Appendix C). The SCAQMD emission thresholds are discussed in Section 3.2.4.2. The combination of construction activities producing the highest daily emissions was selected as the peak day.

The specific approaches to calculating emissions for the various emission sources during construction of the proposed Project are discussed below. Table 3.2-6 includes a synopsis of the regulations and agreements that were assumed as part of the proposed Project in the construction calculations. The construction emission calculations are presented in Appendix C.

Sustainable Construction Guideline measures planned for future implementation at a project level are treated as mitigation in this study. Therefore, the unmitigated emissions of the proposed Project construction assume no Sustainable Construction Guidelines measure implementation.

**Table 3.2-6.** Regulations and Agreements Assumed in the Unmitigated Construction Emissions

| *Offroad Construction Equipment* | *Onroad Trucks* | *Tugboats* | *Fugitive Dust* |
|---|---|---|---|
| **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><br>**California Diesel Fuel Regulations**—15 ppm sulfur starting September 1, 2006. | **Emission Standards for Onroad Trucks**—Tiered standards gradually phased in over all years due to normal truck fleet turnover.<br><br>**California Diesel Fuel Regulations**—15 ppm sulfur starting September 1, 2006.<br><br>**Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling**—Diesel trucks subject to idling limits starting February 1, 2005. | **California Diesel Fuel Regulations—**15 ppm sulfur starting September 1, 2006. 1.5% sulfur by weight starting July 1, 2009. | **SCAQMD Rule 403 Compliance—**61% reduction in fugitive dust. Rule 403 activities include, but are not limited to, watering three times per day, covering stockpiled materials, stabilizing transport material, and covering haul vehicles prior to exiting the site. |
| 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. A description of each regulation or agreement is provided in Section 3.2.3. | | | |

### Offroad Construction Equipment

Emissions of VOC, CO, $NO_X$, $SO_2$, $PM_{10}$, and $PM_{2.5}$ from diesel-powered construction equipment were calculated using emission factors derived from the CARB OFFROAD2007 Emissions Model (CARB 2007). Using the SCAB fleet information, the OFFROAD model was run for each of the construction years of 2009 through 2017. Emission factors were calculated based on each type of equipment, horsepower rating of the equipment, and the corresponding equipment activity levels. The OFFROAD model output shows that, on a per-horsepower-hour basis, emission factors will steadily decline in future years as older equipment is replaced with newer, cleaner equipment that meets the already adopted future state and federal offroad engine emission standards.

### Onroad Trucks Used during Construction

Emissions from onroad, heavy-duty diesel trucks during construction were calculated using emission factors generated by the EMFAC2007 onroad mobile source emission factor model for a truck fleet representative of the County of Los Angeles (CARB 2007). The EMFAC2007 model output shows that, on a per-mile basis, emission factors will steadily decline in future years, as older trucks are replaced with newer, cleaner trucks that meet the required state and federal onroad engine emission standards.

Other assumptions regarding onroad trucks during construction are as follows:

- Trucks hauling debris or fill materials would travel 90% of the trip distance on site at 25 mph and 10% at 10 mph. All other construction-related trucks would travel off site at 55 mph for 40 miles, 25 mph for 0.5 mile, and 10 mph for 0.25 mile.
- Nonincidental truck idling times would be 20 minutes for concrete truck trips and 5 minutes for all other truck trips.

### Tugboats Used during Construction

During construction, tugboats would be used to haul dredge sediment in barges off site for disposal at sea.

Emissions from tugboat main and auxiliary engines were calculated using Entec (2002) emission factors for medium- and high-speed diesel marine engines, respectively, as reported by Starcrest (Starcrest 2007). Although many tugboats at the Port have been repowered with Tier 2 marine engines as part of the ongoing Tugboat Retrofit Project, the emission calculations conservatively used uncontrolled Entec emission factors for all construction phases without mitigation.

The diesel fuel used in tugboats is assumed to have an average sulfur content of 15 ppm, which is the sulfur content limit for California harbor craft, in accordance with California Diesel Fuel Regulations (CARB 2004c).

Other assumptions regarding tugboats during construction are as follows:

- During dredging activities, a tugboat would operate at 4 hours per day hauling a barge off site for sediment disposal at sea. The round-trip distance would be 2 nm.

## Fugitive Dust during Construction

The evaluation of fugitive dust incorporates all sources of dust (e.g., demolition and grading) that might be produced during the construction phase. The SCAQMD factors were used to determine the fugitive dust generated by heavy-duty equipment, trucks, and automobiles travelling both on and off site. Fugitive dust emissions ($PM_{10}$) from loading, dumping, and construction equipment traveling over unpaved surfaces were estimated using the emissions factors in the Western Regional Air Partnership's (WRAP) *Fugitive Dust Handbook* (WRAP 2004). A general emission factor for all types of construction activity is 0.11 ton of $PM_{10}$/acre/month and is based on a 1996 best available control measure study conducted by Midwest Research Institute (MRI) for the SCAQMD. The single composite factor of 0.11 ton of $PM_{10}$/acre/month assumes that all construction activity produces the same amount of dust on a per-acre basis. In other words, the amount of dust produced is not dependent on the type of construction but merely on the area of land being disturbed by the construction activity. A second assumption is that most land affected by construction activity does not involve large-scale cut and fill operations. For the large-scale excavation operations for the proposed Project, a worst-case composite emission factor of 0.42 ton of $PM_{10}$/acre/month was used. Unmitigated emissions were reduced by 61% from uncontrolled levels to reflect required compliance with SCAQMD Rule 403. According to SCAQMD guidance, watering the site three times per day pursuant to Rule 403 would reduce fugitive dust emissions by 61% (SCAQMD 2005). The dust-control methods for the proposed Project would be specified in the dust-control plan that must be submitted to the SCAQMD per Rule 403.

Fugitive dust emissions from earth-moving activities are proportional to the surface area of the land being disturbed. Peak daily emissions for construction activities were calculated assuming that the total surface area of each proposed project component would be disturbed at any one time during construction.

## Worker Commute Trips during Construction Activities

Emissions from worker trips during construction were calculated using the EMFAC2007 emission factors in conjunction with crew information supplied by the LAHD. LAHD's construction estimates provided detailed information about the number of crew and man hours required for each proposed project component. The number of vehicle trips was determined based on default averages for passenger vehicles in the SCAB (SCAQMD 2007b).

### 3.2.4.1.2 Methods for Determining Operational Emissions

Operational emissions would be generated by the consumption of electricity and natural gas (cooking, space heating, and water heaters) and the operation of onroad vehicles. The sources would generate emissions of gasoline and diesel engine exhaust in the form of VOC, CO, $NO_X$, $SO_X$, $PM_{10}$, and $PM_{2.5}$. Onroad motor vehicles would generate vehicle exhaust and paved road dust emissions in addition to tire and brake wear. Normal maintenance activities, including landscaping and the reapplication of architectural coatings, would also result in emissions.

- Information on proposed operational emission sources was obtained from Port staff, the traffic study conducted as part of this draft EIR (see Section 3.11, Transportation and Circulation," and Appendix I), and the Port of Los Angeles Inventory of Air Emissions 2005 (Starcrest 2007).
- Table 3.2-6 includes a synopsis of the regulations that were assumed in the unmitigated emissions calculations. Current in-place regulations are treated as proposed project elements rather than mitigation because they represent enforceable rules with or without proposed Project approval. Only current regulations and agreements were assumed as part of the unmitigated proposed project emissions for the various analysis years.
- CAAP measures planned for future implementation at a project level are treated as mitigation in this study. Therefore, the unmitigated emissions of the proposed Project assume no future CAAP measure implementation.
- The specific approaches to calculating emissions for the various emission sources during operation of the proposed Project are discussed below.

The operational emission calculations are presented in Appendix C.

#### Motor Vehicle Emissions

The proposed project component land uses would generate motor-vehicle trips that would emit air pollutants. Emissions from motor vehicles during operations for the proposed Project were calculated via the URBEMIS2007 model, using emissions factors generated by the EMFAC2007 onroad mobile source emission factor model (CARB 2007a). The motor vehicle fleet age distribution incorporated into EMFAC2007 was used for the SCAB fleet mix.

Other assumptions regarding motor vehicles during operations are as follows:

- Emission calculations are based on the daily trip generation data provided by Fehr & Peers (2008; see Appendix I).
- The URBEMIS2007 model was used to calculate the emissions from vehicle exhaust, tire wear, brake wear, and paved road dust using SCAQMD default assumptions for vehicle fleet mix, travel distance, and average travel speeds.

## Roadway Intersection Modeling

Within an urban setting, vehicle exhaust is the primary source of CO. Consequently, the highest CO concentrations are generally found within close proximity to congested intersection locations. Under typical meteorological conditions, CO concentrations tend to decrease as the distance from the emissions source (i.e., congested intersection) increases. For purposes of providing a conservative, worst-case impact analysis, CO concentrations are typically analyzed at congested intersection locations, because if impacts are less than significant in close proximity of the congested intersections, impacts will also be less than significant at more distant sensitive receptor locations.

The roadway intersection modeling for the proposed Project was conducted using the CARB line source dispersion model, CALINE4. The model input data, setup, and modeling results are briefly described in this section.

### Modeled Intersection Selection and Traffic Volume

To ascertain the proposed Project's potential to generate localized air quality impacts, the Traffic Impact Assessment for the proposed Project (Fehr and Peers/Kaku Associates 2008; see Appendix I) was reviewed to determine the potential for the creation of localized carbon monoxide hot spots at congested intersection locations for operational years 2015 and 2020. The SCAQMD recommends a hot spot evaluation of potential localized CO impacts when vehicle to capacity (V/C) ratios are increased by 2% or more at intersections with a level of service (LOS) of C or worse. The traffic impact analysis identified 13 key intersection locations along routes that accommodate much of the traffic traveling within the proposed project area. Of the key intersection locations, one intersection for year 2015 and three intersections for year 2020 were selected for further analysis based on SCAQMD's screening level criteria. As shown in Table 3.2-7, Marine Avenue at Harry Bridges Boulevard experiences a 4.14% increase in V/C with LOS C in 2015. As shown in Table 3.2-8, Marine Avenue at Harry Bridges Boulevard experiences a 5.35% increase in V/C with LOS C, Avalon Boulevard at Anaheim Street experiences a 2.57% increase in V/C with LOS E, and Alameda Street at Anaheim Street experiences an increase in V/C of 3.38% with LOS C in 2020.

**Table 3.2-7.** Intersection CO Hot-Spot Screening Analysis 2015

| *Intersection* | *Peak Period*[a] | *2015 Without Project* | | *2015 With Project* | | *Project Percent Change in V/C* | *Potentially Significant CO Hot-Spot?*[a] |
|---|---|---|---|---|---|---|---|
| | | *V/C* | *LOS* | *V/C* | *LOS* | | |
| Figueroa Street at C Street | AM | 0.398 | A | 0.404 | A | 1.51 | No |
| | PM | 0.379 | A | 0.398 | A | 5.01 | No |
| Figueroa Street at Harry Bridges Boulevard | AM | Does Not Exist in Future | | | | | |
| | PM | | | | | | |
| N. Fries Avenue at Anaheim Street | AM | 0.508 | A | 0.524 | A | 3.15 | No |
| | PM | 0.524 | A | 0.555 | A | 5.92 | No |
| Fries Avenue at C Street | AM | 0.268 | A | 0.281 | A | 4.85 | No |
| | PM | 0.184 | A | 0.224 | A | 21.74 | No |
| Fries Avenue at Harry Bridges Boulevard | AM | 0.390 | A | 0.438 | A | 12.31 | No |
| | PM | 0.499 | A | 0.555 | A | 11.22 | No |
| Marine Avenue at C Street | AM | 0.205 | A | 0.216 | A | 5.37 | No |
| | PM | 0.151 | A | 0.168 | A | 11.26 | No |
| Marine Avenue at Harry Bridges Boulevard | AM | 0.486 | A | 0.500 | A | 2.88 | No |
| | PM | 0.677 | B | 0.705 | C | 4.14 | **Yes** |
| Avalon Boulevard at Anaheim Street | AM | 0.694 | B | 0.701 | C | 1.01 | No |
| | PM | 0.908 | E | 0.924 | E | 1.76 | No |
| Avalon Boulevard at C Street | AM | 0.198 | A | 0.208 | A | 5.05 | No |
| | PM | 0.301 | A | 0.314 | A | 4.32 | No |
| Avalon Boulevard at Harry Bridges Boulevard | AM | 0.423 | A | 0.432 | A | 2.13 | No |
| | PM | 0.679 | B | 0.672 | B | -1.03 | No |
| Broad Avenue at C Street | AM | 0.238 | A | 0.247 | A | 3.78 | No |
| | PM | 0.327 | A | 0.343 | A | 4.89 | No |
| Broad Avenue at Harry Bridges Boulevard | AM | 0.369 | A | 0.380 | A | 2.98 | No |
| | PM | 0.512 | A | 0.540 | A | 5.47 | No |
| Alameda Street at Anaheim Street | AM | 0.545 | A | 0.548 | A | 0.55 | No |
| | PM | 0.661 | B | 0.673 | B | 1.82 | No |

[a] Potentially Significant CO Hot-Spot based on SCAQMD's screening criteria of 2% increase in V/C with LOS C or worse.

Source: Fehr and Peers/Kaku Associates (2008; see Appendix I).

**Table 3.2-8.** Intersection CO Hot-Spot Screening Analysis 2020

| *Intersection* | *Peak Period*[a] | *2020 Without Project* | | *2020 With Project* | | *Project Percent Change in V/C* | *Potentially Significant CO Hot-Spot?*[a] |
|---|---|---|---|---|---|---|---|
| | | *V/C* | *LOS* | *V/C* | *LOS* | | |
| Figueroa Street at C Street | AM | 0.458 | A | 0.477 | A | 4.15 | No |
| | PM | 0.394 | A | 0.422 | A | 7.11 | No |
| Figueroa Street at Harry Bridges Boulevard | AM | Does Not Exist in Future | | | | | |
| | PM | | | | | | |
| N. Fries Avenue at Anaheim Street | AM | 0.527 | A | 0.549 | A | 4.17 | No |
| | PM | 0.541 | A | 0.575 | A | 6.28 | No |
| Fries Avenue at C Street | AM | 0.274 | A | 0.304 | A | 10.95 | No |
| | PM | 0.188 | A | 0.247 | A | 31.38 | No |
| Fries Avenue at Harry Bridges Boulevard | AM | 0.402 | A | 0.513 | A | 27.61 | No |
| | PM | 0.511 | A | 0.612 | B | 19.77 | No |
| Marine Avenue at C Street | AM | 0.210 | A | 0.233 | A | 10.95 | No |
| | PM | 0.155 | A | 0.183 | A | 18.06 | No |
| Marine Avenue at Harry Bridges Boulevard | AM | 0.497 | A | 0.521 | A | 4.83 | No |
| | PM | 0.691 | B | 0.728 | C | 5.35 | **Yes** |
| Avalon Boulevard at Anaheim Street | AM | 0.716 | C | 0.731 | C | 2.09 | **Yes** |
| | PM | 0.935 | E | 0.959 | E | 2.57 | **Yes** |
| Avalon Boulevard at C Street | AM | 0.203 | A | 0.226 | A | 11.33 | No |
| | PM | 0.308 | A | 0.332 | A | 7.79 | No |
| Avalon Boulevard at Harry Bridges Boulevard | AM | 0.437 | A | 0.449 | A | 2.75 | No |
| | PM | 0.694 | B | 0.693 | B | -0.14 | No |
| Broad Avenue at C Street | AM | 0.244 | A | 0.263 | A | 7.79 | No |
| | PM | 0.334 | A | 0.361 | A | 8.08 | No |
| Broad Avenue at Harry Bridges Boulevard | AM | 0.378 | A | 0.415 | A | 9.79 | No |
| | PM | 0.525 | A | 0.581 | A | 10.67 | No |
| Alameda Street at Anaheim Street | AM | 0.562 | A | 0.571 | A | 1.60 | No |
| | PM | 0.680 | B | 0.703 | C | 3.38 | **Yes** |

[a] Potentially Significant CO Hot-Spot based on SCAQMD's screening criteria of 2% increase in V/C with LOS C or worse.

Source: Fehr and Peers/Kaku Associates (2008; see Appendix I).

### Meteorology Inputs

The AM, PM, and weekend peak hours were modeled for the intersections with the worst-case meteorology per the guidance provided in *The Transportation Project-Level Carbon Monoxide Protocol* (Niemeier et al. 1997). Specifically, either the morning or early evening (which has the same meteorology for coastal locations) winter period with a ground-based inversion was considered with low wind speed and temperature, as specified in the Caltrans Protocol.

#### Modeled CO Concentration

The CALINE4 model predicts 1-hour CO concentrations at each receptor location. The 8-hour CO concentrations were estimated using a persistence factor of 0.7, recommended in the guidance for the urban location. The background 1- and 8-hour CO concentrations for the 2015 and 2020 project years were obtained from the SCAQMD website. The predicted 1- and 8-hour CO ambient concentrations are 5.1 and 3.9 ppm, respectively.

Traffic volumes were based on the traffic study and the projected changes in traffic volumes in future years for both with and without the proposed Project.

### Marine Pleasure Craft

The proposed project component land uses would generate marine pleasure craft trips that would emit air pollutants. Emissions from marine pleasure craft during operations for the proposed Project were calculated using emissions factors generated by the OFFROAD2007 mobile source emission factor model (CARB 2007a).

## 3.2.4.1.3 Greenhouse Gas Emissions

Greenhouse gas emissions associated with the proposed Project were calculated based on methodologies provided in the CCAR General Reporting Protocol, version 3.0 (CCAR 2008). This protocol is the guidance document that LAHD and other CCAR members must use to prepare annual Port-wide GHG inventories for CCAR. Therefore, for consistency, the CCAR General Reporting Protocol also was used in this study. However, to adapt the protocol for CEQA purposes, a modification to the protocol’s operational and geographical boundaries was necessary.

The construction sources for which GHG emissions were calculated include:

- offroad diesel construction equipment,
- onroad trucks,
- other motor vehicles, and
- crane/derrick barges.

The operational emission sources for which GHG emissions were calculated include:

- onroad trucks,
- other motor vehicles,
- electricity consumption, and
- natural gas consumption.

The adaptation of the CCAR General Reporting Protocol methodologies to these proposed emission sources for the proposed Project is described in Appendix C.

## Greenhouse Gas Operational and Geographical Boundaries

Under the CCAR General Reporting Protocol, emissions associated with construction and operation of the proposed Project would be divided into three categories:

- Scope 1: direct emissions from sources owned or operated by LAHD,
- Scope 2: indirect emissions from purchased and consumed electricity, and
- Scope 3: indirect emissions from sources not owned or operated by LAHD.

Examples of Scope 1 sources are cargo-handling equipment, LAHD vehicles, and Port-based tugboats. An example of Scope 2 emissions would be indirect GHG emissions from electricity consumption on the proposed Project site. Emissions from mobile sources; including trucks, ships, and construction equipment, would be considered Scope 3 emissions, because LAHD generally does not own this equipment.

CCAR does not require Scope 3 emissions to be reported because they are considered to belong to another reporting entity (i.e., whoever owns, leases, or operates the sources), and that entity would report these emissions as Scope 1 emissions in its own inventory. Virtually all tugboats and construction equipment fall under this category. As a result, when used for CEQA purposes, the CCAR definition of operational boundaries would omit a large portion of the GHG emission sources associated with the proposed Project. Therefore, the operational and geographical boundaries were determined differently from the General Reporting Protocol to make the GHG analysis more consistent with CEQA and to avoid the omission of a significant number of mobile sources.

For the purposes of this CEQA document, GHG emissions were calculated for all proposed project–related sources (Scopes 1, 2, and 3). Because CCAR does not require reporting of Scope 3 emissions, CCAR has not developed a protocol for determining the operational or geographical boundaries for some Scope 3 emissions sources. Therefore, for Scope 3 sources, this document assumes emissions stay within the State of California. In the case of electricity consumption, all GHG emissions were included regardless of whether they are generated by in-state or out-of-state power plants.

This approach is consistent with the CCAR goal of reporting all GHG emissions within the State of California (CCAR 2007). This document acknowledges that GHG emissions extend beyond state borders. However, origin and destination data for out-of-state emissions over the life of the project do not exist and would be speculative on a project-specific level. Emissions outside state boundaries are discussed in Chapter 4, “Cumulative Impacts.”

This methodology is consistent with other types of air quality analyses that address emissions within an area over which the regulating agency has control. For example, while the document discloses that criteria pollutants are emitted from ships, trucks, and railroads outside state boundaries and that these pollutants contribute to worldwide pollution rates, the scope of analysis is limited to SCAB to be consistent with thresholds established by SCAQMD.

## 3.2.4.2 Thresholds of Significance

The following thresholds were used in this study to determine the significance of the air quality impacts of the proposed Project. The thresholds were primarily based on standards established by the City of Los Angeles in the *L.A. CEQA Thresholds Guide* (City of Los Angeles 2006), except for AQ-9 (Greenhouse Gas Emissions) which is separately defined and evaluated.

### 3.2.4.2.1 Construction Thresholds

The *L.A. CEQA Thresholds Guide* references the SCAQMD *CEQA Air Quality Handbook* (SCAQMD 1993) and EPA AP-42 for calculating and determining the significance of construction emissions. Each lead city department has the responsibility to determine the appropriate standards. The following factors are to be used in a case-by-case evaluation of impact significance for a proposed project:

- combustion emissions from construction equipment;
- type, number of pieces, and usage for each type of construction equipment;
- estimated fuel usage and type of fuel (diesel, gasoline, natural gas) for each type of equipment;
- emission factors for each type of equipment;
- fugitive dust;
- grading, excavation, and hauling:
- amount of soil to be disturbed on site or moved off site;
- emission factors for disturbed soil;
- duration of grading, excavation, and hauling activities; and
- type and number of pieces of equipment to be used;
- other mobile source emissions;
- number and average length of construction worker trips to the project site, per day; and
- duration of construction activities.

For the purposes of this study, the air quality thresholds of significance for construction activities are based on emissions and concentration thresholds established by the SCAQMD (2007b). The following factors are used to determine significance for construction-related air emissions.

**AQ-1:** A project would have a significant impact if its construction-related emissions would exceed any of the SCAQMD thresholds of significance in Table 3.2-9.

**Table 3.2-9.** SCAQMD Thresholds for Construction Emissions

| *Air Pollutant* | *Emission Threshold (pounds/day)* |
|---|---|
| Volatile organic compounds (VOCs) | 75 |
| Carbon monoxide (CO) | 550 |
| Nitrogen oxides ($NO_X$) | 100 |
| Sulfur oxides ($SO_X$) | 150 |
| Particulates ($PM_{10}$) | 150 |
| Particulates ($PM_{2.5}$) | 55 |
| Lead | 3 |
| Source: SCAQMD 2008b | |

**AQ-2:** A project would have a significant impact if its construction would result in offsite ambient air pollutant concentrations that exceed the SCAQMD thresholds of significance in Table 3.2-10.[2]

**Table 3.2-10.** SCAQMD Thresholds for Ambient Air Quality Concentrations Associated with Proposed Project Construction[3]

| *Air Pollutant* | *Ambient Concentration Threshold* |
|---|---|
| Nitrogen dioxide ($NO_2$) | |
| 1-hour average | 0.18 ppm (338 $\mu g/m^3$) |
| Annual average | .03 ppm |
| Particulates ($PM_{10}$) | |
| 24-hour average | 10.4 $\mu g/m^3$ |
| Annual average | 1.0 $\mu g/m^3$ |

[2] The SCAQMD has published look-up reference tables of localized thresholds based on three factors: (1) location within the basin, (2) distance to the nearest sensitive receptor, and (3) project site area. These thresholds are used for project sites up to 5 acres in area. Because the proposed project site exceeds 5 acres, these thresholds are not applicable. As such, dispersion modeling was performed in accordance with the methods used by the SCAQMD when developing these Localized Significance Thresholds.

[3] These ambient concentration thresholds target those pollutants SCAQMD has determined are most likely to cause or contribute to an exceedance of the NAAQS or CAAQS. Although the thresholds represent the levels at which the SCAQMD considers the impacts to be significant, they are not necessarily the same as the NAAQS or CAAQS.

| Air Pollutant | Ambient Concentration Threshold |
|---|---|
| Particulates ($PM_{2.5}$)<br>24-hour average | <br>10.4 μg/m$^3$ |
| Sulfates<br>24-hour average | <br>1.0 μg/m$^3$ |
| Carbon monoxide (CO)<br>1-hour average<br>8-hour average | <br>20 ppm (23,000 μg/m$^3$)<br>9.0 ppm (10,000 μg/m$^3$) |
| Notes:<br>The $NO_2$ and CO thresholds are absolute thresholds; the maximum predicted impact from construction activities is added to the background concentration for the proposed project vicinity and compared to the threshold.<br>The $PM_{10}$ and $PM_{2.5}$ threshold is an incremental threshold; the maximum predicted impact from construction activities (without adding the background concentration) is compared to the threshold.<br>Because construction emissions vary from day-to-day and move from location-to-location over the course of a year, SCAQMD does not currently require an analysis of annual $PM_{10}$ or $NO_2$ pollutant concentrations from construction activities (SCAQMD 2008b). Therefore, this study analyzed 24-hour $PM_{10}$ and 1-hour $NO_2$ concentrations.<br>Source: SCAQMD (2007a). | |

## 3.2.4.2.2 Operation Thresholds

The *L.A. CEQA Thresholds Guide* provides specific significance thresholds for operational air quality impacts that also are based on SCAQMD standards. The following factors are used to determine significance for operations-related air emissions.

**AQ-3:** A project would have a significant impact if its operational emissions would exceed any of the SCAQMD thresholds of significance in Table 3.2-11. For determining CEQA significance, these thresholds are compared to the net change in proposed project emissions relative to CEQA baseline (2008) conditions.

**Table 3.2-11.** SCAQMD Thresholds for Operational Emissions

| *Air Pollutant* | *Emission Threshold (pounds/day)* |
|---|---|
| Volatile organic compounds (VOCs) | 55 |
| Carbon monoxide (CO) | 550 |
| Nitrogen oxides ($NO_X$) | 55 |
| Sulfur oxides ($SO_X$) | 150 |
| Particulates ($PM_{10}$) | 150 |
| Particulates ($PM_{2.5}$) | 55 |
| Lead | 3 |
| Source: SCAQMD (2007a); City of Los Angeles (2006). | |

**AQ-4:** A project would have a significant impact if its operations would result in offsite ambient air pollutant concentrations that would exceed any of the SCAQMD thresholds of significance in Table 3.2-12.[4]

**Table 3.2-12.** SCAQMD Thresholds for Ambient Air Quality Concentrations Associated with Proposed Project Operations[5]

| *Air Pollutant* | *Ambient Operation Threshold* |
|---|---|
| Nitrogen dioxide ($NO_2$) | |
| 1-hour average | 0.18 ppm (338 μg/m$^3$) |
| annual average | 0.03 ppm (56 μg/m$^3$) |
| Particulates ($PM_{10}$) | |
| 24-hour average | 2.5 μg/m$^3$ |
| annual average | 1 μg/m$^3$ |
| Fine Particulates ($PM_{2.5}$) | |
| 24-hour average | 2.5 μg/m$^3$ |
| Carbon monoxide (CO) | |
| 1-hour average | 20 ppm (23,000 μg/m$^3$) |
| 8-hour average | 9.0 ppm (10,000 μg/m$^3$) |

Notes:
The $NO_2$ and CO thresholds are absolute thresholds; the maximum predicted impact from proposed project operations is added to the background concentration for the proposed project vicinity and compared to the threshold.

The $PM_{10}$ threshold is an incremental threshold. For CEQA significance, the maximum increase in concentration relative to the CEQA baseline is compared to the threshold.
The SCAQMD has also established a threshold for sulfates, but it is currently not requiring a quantitative comparison to the threshold (Koizumi 2005a).
Source: SCAQMD (2007a).

**AQ-5:** A project would have a significant impact if the project-generated onroad traffic would result in either of the following conditions at an intersection or roadway within 0.25 mile of a sensitive receptor:

- the project would cause or contribute to an exceedance of the California 1- or 8-hour CO standards of 20 or 9.0 ppm, respectively; or
- the incremental increase due to the project would be equal to or greater than 1.0 ppm for the California 1-hour CO standard or 0.45 ppm for the 8-hour CO standard.

[4] The SCAQMD has published look-up reference tables of localized thresholds based on three factors: (1) location within the basin, (2) distance to the nearest sensitive receptor, and (3) project site area. These thresholds are used for project sites up to 5 acres in area. Because the proposed project site exceeds 5 acres, these thresholds are not applicable. As such, dispersion modeling was performed in accordance with the methods used by the SCAQMD when developing these Localized Significance Thresholds.
[5] These ambient concentration thresholds target those pollutants the SCAQMD has determined are most likely to cause or contribute to an exceedance of the NAAQS or CAAQS. Although the thresholds represent the levels at which the SCAQMD considers the impacts to be significant, the thresholds are not necessarily the same as the NAAQS or CAAQS.

**AQ-6:** A project would have a significant impact if it would create an objectionable odor at the nearest sensitive receptor.

**AQ-7:** A project would have a significant impact if it would expose receptors to significant levels of TACs. Impacts would be significant if:

- the maximum incremental cancer risk for residential receptors would be greater than or equal to 10 in 1 million, or
- the noncancer hazard index is greater than or equal to 1.0 (project increment) or 3.0 (facilitywide).

**AQ-8:** A project would have a significant impact if it would conflict with or obstruct implementation of an applicable AQMP.

**AQ-9:** A project would have a significant impact if it would produce GHG emissions that exceed CEQA thresholds.

**CEQA Threshold.** To date, there is little guidance and no local, regional, state, or federal regulations to establish a threshold of significance to determine the project-specific impacts of GHG emissions on global warming. In addition, the City has not established such a threshold. Therefore, LAHD, for purposes of the proposed Project, is using the following as its CEQA threshold of significance:

- A project would result in a significant CEQA impact if $CO_2e$ emissions would exceed CEQA baseline emissions.

In absence of further guidance, this threshold is thought to be the most conservative, as any increase over baseline is designated as significant.

## 3.2.4.3 Impacts and Mitigation

### 3.2.4.3.1 Construction Impacts

#### Impact AQ-1: The proposed Project would result in construction-related emissions that exceed a SCAQMD threshold of significance.

**Impact Determination**

Construction of the proposed Project would result in the generation of emissions of CO, VOCs, $NO_X$, $SO_X$, $PM_{10}$, and $PM_{2.5}$. Emissions would originate from mobile and stationary construction equipment exhaust, tugboat and small boat exhaust, delivery truck exhaust, employee vehicle exhaust, and dust from clearing the land and exposed soil eroded by wind. Construction-related emissions would vary substantially depending on the level of activity, length of the construction period, specific construction operations, types of equipment, number of personnel, wind and precipitation conditions, and soil moisture content.

Overall, a 99-month active construction period is anticipated, starting in the third quarter of 2009 and concluding around the fourth quarter of 2017. The total amount of construction, the duration of construction, and the intensity of construction activity could have a substantial effect on the amount and concentration of construction emissions and the resulting impacts occurring at any one time. As such, the emission forecasts provided herein reflect a specific set of conservative assumptions based on the expected construction scenario wherein a relatively large amount of construction is occurring in a relatively intensive manner. Because of this conservative assumption, actual emissions could be less than those forecast. If construction is delayed or occurs over a longer time period, emissions could be reduced because of (1) a more modern and cleaner burning construction equipment fleet mix, and/or (2) a less-intensive buildout schedule (i.e., fewer daily emissions occurring over a longer time interval). The construction equipment mix and duration for each construction stage is detailed in the construction spreadsheets provided in the air quality appendix (Appendix C).

Table 3.2-13 presents the maximum daily criteria pollutant emissions associated with construction of the proposed Project before mitigation. Maximum emissions for each construction phase were determined by totaling the daily emissions from those construction activities that overlap in the proposed construction schedule. In the case where more than one possible combination of activities would occur during the course of a construction phase, total daily emissions were calculated for all possible combinations, and the combination producing the greatest emissions was reported in Table 3.2-13.

Because of the different combinations of construction activities, the highest peak daily emission levels for VOC, CO, $NO_X$, $SO_X$, $PM_{10}$, and $PM_{2.5}$ would vary from year to year. A brief summary of the highest estimated peak daily construction emissions for each criteria pollutant is discussed below.

During the second half of January and first half of February 2011, activities 6, 8, 9, 10, 11, 12, 13, 14, 14a, 28, and 39 would all occur simultaneously, resulting in the greatest VOC, CO, $NO_X$ and $SO_2$ emissions. During the latter half of February 2011, activities 6, 8, 10, 11, 12, 13, 14a, 18, 28, 37, and 39 would all occur simultaneously, resulting in the greatest $PM_{10}$ and $PM_{2.5}$ emissions.

As shown in Table 3.2-13, the peak daily construction emissions would exceed the SCAQMD daily emissions thresholds for $NO_X$ and $PM_{10}$ without mitigation. Therefore, without mitigation, the air quality impacts associated with the proposed construction activities would be significant for $NO_X$ and $PM_{10}$.

**Table 3.2-13.** Peak Daily Emissions Associated with Construction Activities—Proposed Project without Mitigation

| *Construction Activity* | *Peak Daily Emissions (lb/day)* | | | | | |
|---|---|---|---|---|---|---|
| | *VOC* | *CO* | *$NO_X$* | *$SO_X$* | *$PM_{10}$* | *$PM_{2.5}$* |
| 1. Railroad Green (Landscaping/Hardscaping) | 3 | 11 | 32 | <1 | 14 | 4 |
| 2. Demolish Approximately 55,000 Square Feet of Existing Building | 8 | 26 | 74 | <1 | 5 | 3 |
| 3. Demolish Existing Sidewalks, Back of Curb to Right-of-Way (ROW) | 4 | 13 | 39 | <1 | 14 | 4 |
| 4. Construct New Sidewalk, including Tree Wells | 3 | 11 | 32 | <1 | 14 | 4 |
| 5. Place New Street Trees | 3 | 11 | 32 | <1 | 1 | 1 |
| 6. Waterfront Red Car Museum in Bekins Building | <1 | 1 | <1 | <1 | <1 | <1 |
| 7. Clear and Grub | 5 | 16 | 46 | <1 | 46 | 11 |
| 8. Demolish Pavement | 5 | 16 | 46 | <1 | 68 | 15 |
| 9. Demolish Utilities | 5 | 16 | 46 | <1 | 2 | 2 |
| 10. Remove and replace Existing 32" Storm Drain with 48" Reinforced Concrete Pipe (RCP) | 3 | 10 | 28 | <1 | 2 | 1 |
| 11. Realign 12" Oil Line | 3 | 10 | 26 | <1 | 2 | 1 |
| 12. Realign 12" Sewer | 3 | 10 | 26 | <1 | 2 | 1 |
| 13. Realign 12" Water | 3 | 10 | 26 | <1 | 2 | 1 |
| 14. Piles and Pile Caps | 3 | 9 | 26 | <1 | 7 | 2 |
| 14a. Set Pile Caps | 4 | 14 | 41 | <1 | 8 | 3 |
| 15. 80' Steel Masts | 3 | 11 | 32 | <1 | 8 | 2 |
| 16. Bridge Deck | 3 | 11 | 28 | <1 | 7 | 2 |
| 17. Water Feature | 2 | 6 | 14 | <1 | 7 | 2 |
| 18. Foundation Piles | 2 | 8 | 24 | <1 | 32 | 7 |
| 19. Set Up for Concrete Pour | 5 | 17 | 43 | <1 | 33 | 8 |
| 19a. Concrete Pour | 6 | 23 | 59 | <1 | 34 | 9 |
| 20. Retaining Walls | 2 | 6 | 14 | <1 | 4 | 1 |
| 21. Rough Fill/Grade | 2 | 6 | 15 | <1 | 32 | 7 |
| 22. Surface Fill/Grade | 2 | 6 | 15 | <1 | 32 | 7 |
| 23. Realign and Reconstruct Avalon Boulevard | 4 | 12 | 30 | <1 | 2 | 1 |
| 24. Realign and Reconstruct Broad Avenue | 4 | 12 | 30 | <1 | 2 | 1 |
| 25. Realign and Reconstruct Water Street | 3 | 12 | 28 | <1 | 2 | 1 |
| 26. 1st Parking Lot South of Water Street at Fries | 4 | 12 | 30 | <1 | 6 | 2 |

| Construction Activity | Peak Daily Emissions (lb/day) | | | | | |
|---|---|---|---|---|---|---|
| | VOC | CO | $NO_X$ | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| Avenue | | | | | | |
| 27. 2nd Parking Lot South of Water Street at Avalon Boulevard | 4 | 12 | 30 | <1 | 6 | 2 |
| 28. Remove Existing Wharf Structure | 8 | 23 | 132 | <1 | 11 | 7 |
| 29. Install Perimeter Sheet Pile Bulkheads | 7 | 21 | 128 | <1 | 6 | 6 |
| 30. Piles in Water | 7 | 19 | 124 | <1 | 6 | 6 |
| 31. Waterfront Boardwalk | 2 | 8 | 20 | <1 | 8 | 2 |
| 32. Public Dock | <1 | 2 | 4 | <1 | 2 | <1 |
| 33. Hardscaping | 3 | 10 | 27 | <1 | 35 | 8 |
| 34. Landscaping | 3 | 9 | 25 | <1 | 12 | 3 |
| 35. Trees | 3 | 9 | 25 | <1 | 1 | 1 |
| 36. Water Feature on Tunnel | <1 | 1 | <1 | <1 | <1 | <1 |
| 37. Prepare Concrete | 5 | 16 | 39 | <1 | 33 | 8 |
| 37.1 Pour Concrete | 4 | 14 | 36 | <1 | 33 | 8 |
| 37.2 Steel Work | 3 | 11 | 30 | <1 | 33 | 8 |
| 37.3 Miscellaneous | 3 | 11 | 30 | <1 | 33 | 8 |
| 38. Commercial | <1 | 1 | <1 | <1 | 10 | 2 |
| 39. Light Industrial | <1 | <1 | <1 | <1 | 13 | 3 |
| 40. Demolish two Tanks | 3 | 10 | 25 | <1 | 5 | 2 |
| 41. Remediate Soil under Tanks | 3 | 9 | 24 | <1 | 52 | 11 |
| 42. Clear and Grub | 2 | 6 | 14 | <1 | 44 | 10 |
| 43. Demolish Pavement | 2 | 6 | 14 | <1 | 23 | 5 |
| 44. Demolish Utilities | 2 | 6 | 14 | <1 | 1 | 1 |
| 45. Rough Fill/Grading | 3 | 11 | 23 | <1 | 67 | 15 |
| 46. Surface Fill/Grading | 3 | 11 | 23 | <1 | 67 | 15 |
| 47. Hardscaping | 3 | 9 | 20 | <1 | 22 | 5 |
| 48. Landscaping | 2 | 8 | 17 | <1 | 44 | 10 |
| 49. Trees | 2 | 8 | 17 | <1 | 1 | 1 |
| 50. Parking Lot West of Land Bridge | 3 | 10 | 21 | <1 | 9 | 3 |
| 51. Demolish Concrete Pavement | 2 | 6 | 13 | <1 | 16 | 4 |
| 52. Demolish Asphalt Concrete (AC) Pavement | 2 | 6 | 13 | <1 | 6 | 1 |
| 53. Clear and Grub | 2 | 6 | 13 | <1 | 16 | 4 |
| 54. New Concrete Pathway | 3 | 12 | 24 | <1 | 31 | 7 |

| Construction Activity | Peak Daily Emissions (lb/day) | | | | | |
|---|---|---|---|---|---|---|
| | VOC | CO | $NO_X$ | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| 55. Landscaping | 2 | 8 | 17 | <1 | 8 | 2 |
| 56. Construct Track and Catenary Wires | <1 | 1 | <1 | <1 | 11 | 2 |
| 57. Construct Stations | <1 | 1 | <1 | <1 | 11 | 2 |
| 58. Restaurant Space at Waterfront | <1 | <1 | <1 | <1 | 2 | <1 |
| 59. Light Industrial | <1 | <1 | <1 | <1 | 13 | 3 |
| **Maximum Concurrent Daily Emissions** | **35** | **119** | **398** | **<1** | **172** | **47** |
| Thresholds | 75 | 550 | **100** | 150 | **150** | 55 |
| **Significant?** | No | No | **Yes** | No | **Yes** | No |

Notes:

$PM_{10}$ and $PM_{2.5}$ emissions numbers assume that fugitive dust is controlled in accordance with SCAQMD Rule 403 by watering disturbed areas three times per day.

Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

In a case where more than one possible combination of activities occurred during the course of a construction phase, total daily emissions were calculated for all possible combinations, and the combination producing the greatest emissions was reported.

Source: URBEMIS2007 (see Appendix C).

## Mitigation Measures

Mitigation measures for the proposed project construction were derived, where feasible, from the Sustainable Construction Guidelines and in consultation with LAHD. The proposed NNI measures and Port Community Advisory Committee (PCAC)–recommended measures were also considered for mitigation. A complete proposed project feasibility review of the NNI and PCAC measures is included in Appendix C. Unless otherwise noted, LAHD and its contractors will be responsible for the implementation of the following mitigation either directly or through the lease agreement process.

The following mitigation measures would reduce criteria pollutant emissions associated with proposed project construction. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4, "Mitigation Monitoring."

**MM AQ-1: Harbor Craft Engine Standards.**

All harbor craft used during the construction phase of the proposed Project will, at a minimum, be repowered to meet the cleanest existing marine engine emission standards or EPA Tier 2. Additionally, where available, harbor craft will meet the proposed EPA Tier 3 (which are proposed to be phased-in beginning of 2009) or cleaner marine engine emission standards.

This harbor craft measure will be met unless one of the following circumstances exists, and the contractor is able to provide proof of its existence:

- A piece of specialized equipment is unavailable in a controlled form 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 uncontrolled equipment planned for use on the proposed Project, but the application process is not yet approved, or the application has been approved, but funds are not yet available.
- A contractor has ordered a control device for a piece of equipment planned for use on the proposed 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 have attempted to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the proposed Project has the controlled equipment available for lease.

**MM AQ-2: Dredging Equipment Electrification.**

All dredging equipment will be electric.

**MM AQ-3: Fleet Modernization for Onroad Trucks**

1. Trucks hauling materials such as debris or fill will be fully covered while operating off Port property
2. Idling will be restricted to a maximum of 5 minutes when not in use.
3. EPA Standards:

    a. Prior to December 31, 2011: All onroad heavy-duty diesel trucks with a gross vehicle weight rating (GVWR) of 19,500 pounds or greater used at the Port of Los Angeles will comply with EPA 2004 onroad emission standards for $PM_{10}$ and $NO_X$ (0.10 g/bhp-hr and 2.0 g/bhp-hr, respectively).

    In addition, all onroad heavy heavy-duty trucks with a GVWR of 19,500 pounds or greater used at the Port of Los Angeles will be equipped with a CARB-verified Level 3 device.

    b. From January 1, 2012 on: All onroad heavy-duty diesel trucks with a GVWR of 19,500 pounds or greater used at the Port of Los Angeles will comply with EPA 2007 onroad emission standards for $PM_{10}$ and $NO_X$ (0.01 g/bhp-hr and 0.20 g/bhp-hr, respectively).

A copy of each unit's certified EPA rating and each unit's CARB or SCAQMD operating permit, will be provided at the time of mobilization of each applicable unit of equipment

This onroad truck measure will be met unless one of the following circumstances exists, and the contractor is able to provide proof of its existence:

- A piece of specialized equipment is unavailable in a controlled form 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 uncontrolled equipment planned for use on the proposed Project, but the application process is not yet approved, or the application has been approved, but funds are not yet available.
- A contractor has ordered a control device for a piece of equipment planned for use on the proposed 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 have attempted to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the proposed Project has the controlled equipment available for lease.

**MM AQ-4: Fleet Modernization for Construction Equipment**

1. Construction equipment will incorporate, where feasible, emissions-savings technology such as hybrid drives and specific fuel economy standards.
2. Idling will be restricted to a maximum of 5 minutes when not in use.
3. Tier Specifications:
    - Prior to December 31, 2011: All offroad diesel-powered construction equipment greater than 50 horsepower (hp) will meet Tier-2 offroad emission standards, at a minimum. In addition, all construction equipment greater than 50 hp will be retrofitted with a CARB-certified Level 3 diesel emissions control device.
    - From January 1, 2012, to December 31, 2014: All offroad diesel-powered construction equipment greater than 50 hp, except ships and barges and marine vessels, will meet Tier-3 offroad emission standards, at a minimum. In addition, all construction equipment greater than 50 hp will be retrofitted with a CARB-certified Level 3 diesel emissions control device.
    - From January 1, 2015 on: All offroad diesel-powered construction equipment greater than 50 hp, except ships and barges and marine vessels, will meet Tier-4 offroad emission standards, at a minimum. In addition, all construction equipment greater than 50 hp will be retrofitted with a CARB-certified Level 3 diesel emissions control device.

    This above tier specifications will be met unless one of the following circumstances exists, and the contractor is able to provide proof of its existence:

    - A piece of specialized equipment is unavailable in a controlled form 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 uncontrolled equipment planned for use on the proposed Project, but the application process is not yet approved, or the application has been approved, but funds are not yet available.
- A contractor has ordered a control device for a piece of equipment planned for use on the proposed 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 have attempted to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the proposed Project has the controlled equipment available for lease.

**MM AQ-5: Additional Fugitive Dust Controls.**

The calculation of fugitive dust ($PM_{10}$) from proposed project earth-moving activities assumes a 61% reduction from uncontrolled levels to simulate rigorous watering of the site and use of other measures (listed below) to ensure compliance with SCAQMD Rule 403.

The construction contractor will reduce fugitive dust emissions by 90% from uncontrolled levels[6]. The proposed project construction contractor will specify dust-control methods that will achieve this control level in a SCAQMD Rule 403 dust control plan. Their will shall include holiday and weekend periods when work may not be in progress.

Measures to reduce fugitive dust include, but are not limited to, the following:

- Active grading sites will be watered 1 additional time per day beyond that required by Rule 403.
- Contractors will apply approved non-toxic chemical soil stabilizers according to manufacturer's specifications to all inactive construction areas or replace groundcover in disturbed areas (previously graded areas inactive for ten days or more).
- Construction contractors will provide temporary wind fencing around sites being graded or cleared.
- Trucks hauling dirt, sand, or gravel will be covered in accordance with Section 23114 of the California Vehicle Code.
- Construction contractors will 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. Pave road and road shoulders.
- The use of clean-fueled sweepers will be required pursuant to SCAQMD Rule 1186 and Rule 1186.1 certified street sweepers. Sweep streets at the end of each

[6] Fugitive dust emissions will be reduced 75% from uncontrolled emissions and then an additional 60% from unmitigated emissions.

day if visible soil is carried onto paved roads on site or roads adjacent to the site to reduce fugitive dust emissions.

- A construction relations officer will be appointed to act as a community liaison concerning onsite construction activity including resolution of issues related to $PM_{10}$ generation.
- Traffic speeds on all unpaved roads will be reduced to 15 mph or less.
- Temporary traffic controls such as a flag person will be provided during all phases of construction to maintain smooth traffic flow.
- Construction activities that affect traffic flow on the arterial system will be conducted during off-peak hours to the extent practicable.
- The use of electrified truck spaces for all truck parking or queuing areas will be required.

The grading contractor will suspend all soil disturbance activity when winds exceed 25 mph or when visible dust plumes emanate from a site; disturbed areas will be stabilized if construction is delayed.

**MM AQ-6: Best Management Practices.**

The following types of measures are required on construction equipment (including onroad trucks):

1. Use diesel oxidation catalysts and catalyzed diesel particulate traps
2. Maintain equipment according to manufacturers' specifications
3. Restrict idling of construction equipment and on-road heavy-duty trucks to a maximum of 5 minutes when not in use
4. Install high-pressure fuel injectors on construction equipment vehicles
5. Maintain a minimum buffer zone of 300 meters between truck traffic and sensitive receptors
6. Improve traffic flow by signal synchronization
7. Enforce truck parking restrictions
8. Provide on-site services to minimize truck traffic in or near residential areas, including, but not limited to, the following services: meal or cafeteria services, automated teller machines, etc.
9. Re-route construction trucks away from congested streets or sensitive receptor areas

LAHD will implement a process by which to select additional BMPs to further reduce air emissions during construction. The LAHD will determine the BMPs once the contractor identifies and secures a final equipment list and project scope. The LAHD will then meet with the contractor to identify potential BMPs and work with the contractor to include such measures in the contract. BMPs will 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.

**MM AQ-7: General Mitigation Measure.**

For any of the above mitigation measures, if a CARB-certified technology becomes available and is shown to be as good as or better in terms of emissions performance than the existing measure, the technology could replace the existing measure pending approval by the Port.

**MM AQ-8: Special Precautions near Sensitive Sites.**

All construction activities located within 1,000 feet of sensitive receptors (defined as schools, playgrounds, daycares, and hospitals), will notify each of these land uses in writing at least 30 days prior to construction activity.

**MM AQ-9: Construction Recycling.**

Demolition and/or excess construction materials will be separated on site for reuse/recycling or proper disposal. During grading and construction, separate bins for recycling of construction materials will be provided on site. Materials with recycled content will be used in project construction. Chippers on site during construction will be used to further reduce excess wood for landscaping cover.

Table 3.2-14 summarizes all construction mitigation measures and regulatory requirements assumed in the mitigated emission calculations.

**Table 3.2-14.** Regulations, Agreements, and Mitigation Measures Assumed in the Construction Emissions with Mitigation

| *Offroad Construction Equipment* | *Onroad Trucks* | *Tugboats* | *Fugitive Dust* |
|---|---|---|---|
| **Part 1. Regulations and Agreements Included in the Mitigated Emission Calculations** | | | |
| **Emission Standards for Nonroad Diesel Engines**<br>Tier 1, 2, 3, and 4 standards gradually phased in over all years due to normal construction equipment fleet turnover.<br><br>**California Diesel Fuel Regulations**<br>15 ppm sulfur starting September 1, 2006. | **Emission Standards for Onroad Trucks**<br>Tiered standards gradually phased in over all years due to normal truck fleet turnover.<br><br>**California Diesel Fuel Regulations**<br>15 ppm sulfur starting September 1, 2006.<br><br>**Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling**<br>Diesel trucks are subject to idling limits. | **California Diesel Fuel Regulations**<br>500 ppm sulfur starting January 1, 2006, and 15 ppm sulfur starting September 1, 2006. | **SCAQMD Rule 403 Compliance**<br>61% reduction in fugitive dust due to watering three times per day. |

| *Offroad Construction Equipment* | *Onroad Trucks* | *Tugboats* | *Fugitive Dust* |
|---|---|---|---|
| **Part 2. Mitigation Measures Included in the Mitigated Emission Calculations** | | | |
| **MM AQ-2: Dredging Equipment Electrification.**<br><br>**MM AQ-4: Fleet Modernization for Construction Equipment** This measure is more stringent than Emission Standards for Nonroad Diesel Engines (above). | **MM AQ-3: Fleet Modernization for Onroad Trucks** This measure is more stringent than Emission Standards for Onroad Trucks (above). | **MM AQ-1: Harbor Craft Engine Standards** Cleanest existing marine engine emission standards or EPA Tier 2 or Tier 3, where available. | **MM AQ-5: Additional Fugitive Dust Controls** 90% reduction. |
| **Part 3. Mitigation Measures Not Included in the Mitigated Emission Calculations[a]** | | | |
| **MM AQ-6: Best Management Practices.**<br><br>**MM AQ-7: General Mitigation Measure.**<br><br>**MM AQ-8: Special Precautions near Sensitive Sites.**<br><br>**MM AQ-9: Construction Recycling** | | | |

[a] These mitigation measures were not included in the calculations because their effectiveness has not been established.

Source: LAHD (2008).

## Residual Impacts

Table 3.2-15 presents the peak daily criteria pollutant emissions associated with construction of the proposed Project after the application of Mitigation Measures MM AQ-1 through MM AQ-9. Peak daily emissions for each construction phase were determined by totaling the daily emissions from those construction activities that overlap in the proposed construction schedule.

As with the unmitigated case, VOC, CO, $NO_X$, and $SO_2$ emissions are greatest during the second half of January and first half of February 2011. Also, as with the unmitigated case, $PM_{10}$ and $PM_{2.5}$ emissions are greatest during the latter half of February 2011.

During construction, Mitigation Measures MM AQ-1 through MM AQ-5 would lower the maximum daily construction emissions of all criteria pollutants. $PM_{10}$ and $PM_{2.5}$ emissions would be reduced to less-than-significant levels. However, even with mitigation incorporated, $NO_X$ emissions would remain above the threshold and thus would result in a significant and unavoidable impact.

Mitigation Measures MM AQ-6 through MM AQ-9, which were not included in the mitigated emissions calculations, could further reduce construction emissions, depending on their effectiveness. However, impacts related to $NO_X$ emissions would remain significant and unavoidable.

**Table 3.2-15.** Peak Daily Emissions Associated with Construction Activities—Proposed Project with Mitigation

| Activity | Daily Emissions (lb/day) | | | | | |
|---|---|---|---|---|---|---|
| | *VOC* | *CO* | *$NO_X$* | *$SO_X$* | *$PM_{10}$* | *$PM_{2.5}$* |
| 1. Railroad Green (Landscaping/Hardscaping) | 1 | 10 | 19 | <1 | 5 | 1 |
| 2. Demolish Approximately 55,000 Square Feet of Existing Building | 2 | 24 | 44 | <1 | 3 | 1 |
| 3. Demolish Existing Sidewalks, Back of Curb to ROW | 1 | 12 | 23 | <1 | 5 | 1 |
| 4. Construct New Sidewalk, including Tree Wells | 1 | 10 | 19 | <1 | 5 | 1 |
| 5. Place New Street Trees | 1 | 10 | 19 | <1 | <1 | <1 |
| 6. Waterfront Red Car Museum in Bekins Building | <1 | <1 | <1 | <1 | <1 | <1 |
| 7. Clear and Grub | 1 | 15 | 27 | <1 | 18 | 4 |
| 8. Demolish Pavement | 1 | 15 | 27 | <1 | 27 | 6 |
| 9. Demolish Utilities | 1 | 15 | 27 | <1 | <1 | <1 |
| 10. Remove and Replace Existing 32” Storm Drain with 48” RCP | 1 | 9 | 17 | <1 | 1 | <1 |
| 11. Realign 12” Oil Line | 1 | 9 | 15 | <1 | 1 | <1 |
| 12. Realign 12” Sewer | 1 | 9 | 15 | <1 | <1 | <1 |
| 13. Realign 12” Water | 1 | 9 | 15 | <1 | <1 | <1 |
| 14. Piles and Pile Caps | 1 | 9 | 16 | <1 | 3 | 1 |
| 14a. Set Pile Caps | 1 | 13 | 24 | <1 | 3 | 1 |
| 15. 80’ Steel Masts | 1 | 10 | 19 | <1 | 3 | 1 |
| 16. Bridge Deck | 1 | 10 | 17 | <1 | 3 | 1 |
| 17. Water Feature | <1 | 5 | 5 | <1 | 3 | 1 |
| 18. Foundation Piles | 1 | 8 | 15 | <1 | 13 | 3 |
| 19. Set Up for Concrete Pour | 2 | 15 | 27 | <1 | 13 | 3 |
| 19a. Concrete Pour | 2 | 17 | 32 | <1 | 13 | 3 |
| 20. Retaining Walls | <1 | 5 | 8 | <1 | 1 | <1 |
| 21. Rough Fill/Grade | <1 | 5 | 6 | <1 | 13 | 3 |
| 22. Surface Fill/Grade | <1 | 5 | 6 | <1 | 13 | 3 |

| Activity | Daily Emissions (lb/day) | | | | | |
|---|---|---|---|---|---|---|
| | VOC | CO | $NO_X$ | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| 23. Realign and Reconstruct Avalon Boulevard | 1 | 11 | 18 | <1 | <1 | <1 |
| 24. Realign and Reconstruct Broad Avenue | 1 | 11 | 18 | <1 | <1 | <1 |
| 25. Realign and Reconstruct Water Street | 1 | 10 | 10 | <1 | 1 | <1 |
| 26. 1st Parking Lot South of Water Street at Fries Avenue | 1 | 11 | 18 | <1 | 2 | <1 |
| 27. 2nd Parking Lot South of Water Street at Avalon Boulevard | 1 | 11 | 18 | <1 | 2 | <1 |
| 28. Remove Existing Wharf Structure | 5 | 49 | 92 | <1 | 9 | 6 |
| 29. Install Perimeter Sheet Pile Bulkheads | 2 | 47 | 64 | <1 | 1 | 1 |
| 30. Piles in Water | 1 | 45 | 54 | <1 | 1 | 1 |
| 31. Waterfront Boardwalk | 1 | 7 | 9 | <1 | 3 | 1 |
| 32. Public Dock | 0 | 2 | 1 | <1 | 1 | <1 |
| 33. Hardscaping | 1 | 9 | 10 | <1 | 14 | 3 |
| 34. Landscaping | 1 | 9 | 10 | <1 | 5 | 1 |
| 35. Trees | 1 | 9 | 10 | <1 | <1 | <1 |
| 36. Water Feature on Tunnel | <1 | <1 | <1 | <1 | <1 | <1 |
| 37. Prepare Concrete | 2 | 15 | 17 | <1 | 13 | 3 |
| 37.1 Pour Concrete | 1 | 13 | 14 | <1 | 13 | 3 |
| 37.2 Steel Work | 1 | 9 | 11 | <1 | 13 | 3 |
| 37.3 Miscellaneous | 1 | 9 | 11 | <1 | 13 | 3 |
| 38. Commercial | <1 | <1 | <1 | <1 | 4 | 1 |
| 39. Light Industrial | <1 | <1 | <1 | <1 | 5 | 1 |
| 40. Demolish two tanks | 1 | 9 | 10 | <1 | 12 | 3 |
| 41. Remediate Soil under Tanks | 1 | 8 | 9 | <1 | 21 | 4 |
| 42. Clear and Grub | <1 | 6 | 3 | <1 | 18 | 4 |
| 43. Demolish Pavement | <1 | 6 | 3 | <1 | 9 | 2 |
| 44. Demolish Utilities | <1 | 6 | 3 | <1 | <1 | <1 |
| 45. Rough Fill/Grading | 1 | 11 | 5 | <1 | 26 | 6 |
| 46. Surface Fill/Grading | 1 | 11 | 5 | <1 | 26 | 6 |
| 47. Hardscaping | 1 | 8 | 5 | <1 | 9 | 2 |
| 48. Landscaping | 1 | 8 | 4 | <1 | 18 | 4 |
| 49. Trees | 1 | 8 | 4 | <1 | <1 | <1 |
| 50. Parking Lot West of Land Bridge | <1 | 10 | 5 | <1 | 3 | 1 |
| 51. Demolish Concrete Pavement | <1 | 6 | 3 | <1 | 6 | 1 |

| Activity | Daily Emissions (lb/day) | | | | | |
|---|---|---|---|---|---|---|
| | *VOC* | *CO* | *$NO_X$* | *$SO_X$* | *$PM_{10}$* | *$PM_{2.5}$* |
| 52. Demolish AC Pavement | <1 | 6 | 3 | <1 | 2 | <1 |
| 53. Clear and Grub | <1 | 6 | 3 | <1 | 6 | 1 |
| 54. New Concrete Pathway | 1 | 11 | 7 | <1 | 12 | 3 |
| 55. Landscaping | 1 | 8 | 4 | <1 | 3 | 1 |
| 56. Construct Track and Catenary Wires | <1 | <1 | <1 | <1 | 5 | 1 |
| 57. Construct Stations | <1 | <1 | <1 | <1 | 5 | 1 |
| 58. Restaurant Space at Waterfront | <1 | <1 | <1 | <1 | 1 | <1 |
| 59. Light Industrial | <1 | <1 | <1 | <1 | 5 | 1 |
| **Maximum Concurrent Daily Emissions** | **14** | **135** | **250** | **<1** | **71** | **19** |
| Thresholds | 75 | 550 | 100 | 150 | 150 | 55 |
| **Significant?** | No | No | **Yes** | No | No | No |

Notes:

Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Source: URBEMIS2007 (see Appendix C)

### Impact AQ-2: The proposed Project would result in offsite ambient air pollutant concentrations during construction that exceed a SCAQMD threshold of significance.

In addition to regional emissions, SCAQMD has developed a methodology that can be used to evaluate localized impacts that may result from construction-period emissions. For small projects (5 acres or less), SCAQMD has developed a set of Localized Significance Thresholds that are used much like the regional significance thresholds. For larger projects, like the proposed Project, dispersion modeling of criteria pollutant emissions is typically performed. As such, dispersion modeling of construction emissions was performed to assess the impact of the proposed Project on local ambient air concentrations during project construction. Peak offsite concentrations of $NO_2$, CO, $PM_{10}$, and $PM_{2.5}$ were modeled and compared to the SCAQMD significance thresholds listed in Table 3.2-10. The analysis was performed using the U.S. Environmental Protection Agency's AERMOD Modeling System, version 07026, based on the *Guideline on Air Quality Models* (40 CFR 51, Appendix W, November 2005). One year's worth of consecutive hourly meteorological data recorded at the Saints Peter and Paul School in Wilmington, about ¾-mile northwest of the project site, was used in AERMOD to simulate the meteorological conditions.

The modeling analysis included diesel exhaust emissions from construction equipment, onsite trucks, and tugboats assisting wharf demolition and construction, and fugitive dust emissions from earth disturbance activities. The combination of construction activities producing the highest daily onsite emissions was selected for the modeling analysis for each pollutant. The possible combinations of construction activities were determined from a detailed construction schedule provided by Port staff. For $NO_2$ and CO, the modeled construction scenario would occur during Phase I and would consist of the following activities assumed to occur simultaneously:

- Waterfront Red Car Museum in Bekins Building
- General Site Preparation
  - Demolish Pavement
  - Demolish Utilities
- Public Utilities and Infrastructure
  - Remove and replace existing 32-inch storm drain with 48-inch reinforced concrete pipe
  - Realign 12-inch oil line
  - Realign 12-inch sewer
  - Realign 12-inch water line
- Pedestrian (Water) Bridge
  - Piles and pile caps
  - Set pile caps
- Waterfront Promenade
  - Remove existing wharf structure, demolish bulkhead, and install rock slope protection
- Light Industrial Development

This worst-case combination of construction activities would occur for about 1 month (in year 2011) during the approximately 8-year construction schedule for Phases I and II.

For $PM_{10}$ and $PM_{2.5}$, the modeled construction scenario would occur during Phase I and would consist of the following activities assumed to occur simultaneously:

- Waterfront Red Car Museum in Bekins Building
- General Site Preparation
  - Demolish Pavement
- Public Utilities and Infrastructure
  - Remove and replace existing 32-inch storm drain with 48-inch reinforced concrete pipe
  - Realign 12-inch oil line

- Realign 12-inch sewer
- Realign 12-inch water line
- Pedestrian (Water) Bridge
  - Set pile caps
- Interim Land Bridge (Rail/Street Tunnel)
  - Foundation piles
- Waterfront Promenade
  - Remove existing wharf structure, demolish bulkhead, and install rock slope protection
- Observation Tower
  - Prepare concrete
- Light Industrial Development

This worst-case combination of construction activities would occur for about 2 weeks (in year 2011) during the approximately 8-year construction schedule for Phases I and II.

These two modeled construction scenarios are conservative because they assume each listed activity would occur at full strength simultaneous with every other listed activity. In practice, some of these activities may actually occur one after another by the same construction crew and equipment fleet. For example, under "Public Utilities and Infrastructure," the 4 listed subactivities are assumed to occur simultaneously by 4 different crews in the modeling analysis. As a result, the modeling analysis assumes the simultaneous use of 16 pieces of diesel construction equipment for "Public Utilities and Infrastructure" rather than 4 pieces of equipment for any one of the 4 subactivities.

Regular-spaced rectangular receptor grids were used in AERMOD to provide adequate spatial coverage surrounding the proposed project area to assess ground-level pollution concentrations and identify maximum-impact locations. AERMOD was modeled with a 164-foot spacing receptor grid measuring 1.25 by 1.25 miles, centered over the project site; combined with a 328-foot spacing grid measuring 2.5 by 2.5 miles, also centered over the proposed project site. Receptor grid points located on water were not included in the dispersion analysis.

Table 3.2-16 presents the maximum offsite ground-level concentrations of $NO_2$, CO, $PM_{10}$, and $PM_{2.5}$ from construction without mitigation. The table shows that the maximum offsite concentrations of $NO_2$, $PM_{10}$, and $PM_{2.5}$ would exceed the SCAQMD significance thresholds. The maximum offsite CO concentrations would not exceed SCAQMD thresholds.

Figure 3.2-1 shows the locations of the maximum offsite pollutant concentrations, both with and without mitigation. All of the maximum locations except for 1-hour CO are predicted to occur along the eastern proposed project site boundary, south of

A Street. The location of the maximum 1-hour CO concentration is predicted to occur along the western proposed project site boundary, near the intersection of Water Street and Fries Avenue.

Without mitigation, landside construction equipment would be the primary contributor to the maximum $NO_2$ and CO concentrations. Fugitive dust would be the primary contributor to the maximum $PM_{10}$ and $PM_{2.5}$ concentrations.

**Table 3.2-16.** Maximum Offsite Ambient Concentrations—Proposed Project Construction without Mitigation

| *Pollutant* | *Averaging Time* | *Background Concentration ($\mu g/m^3$)* | *Maximum Concentration (without Background) ($\mu g/m^3$)* | *Total Ground-Level Concentration ($\mu g/m^3$)* | *SCAQMD Threshold ($\mu g/m^3$)* |
|---|---|---|---|---|---|
| $NO_2$ | 1 hour | 260 | 1,466 | **1,726** | 338 |
| CO | 1 hour | 4,892 | 1,277 | 6,169 | 23,000 |
| | 8 hours | 4,077 | 150 | 4,227 | 10,000 |
| $PM_{10}$ | 24 hours | - | 104 | **104** | 10.4 |
| $PM_{2.5}$ | 24 hours | - | 28.7 | **28.7** | 10.4 |

Notes:

Exceedances of the thresholds are indicated in bold. The thresholds for $PM_{10}$ and $PM_{2.5}$ are incremental thresholds; therefore, the concentrations without background are compared to the thresholds. The thresholds for $NO_2$ and CO are absolute thresholds; therefore, the total concentrations (with background) are compared to the thresholds.

$NO_2$ concentrations were calculated by modeling $NO_X$ emissions and using the ozone limiting method in AERMOD. A conservative ozone background concentration of 0.099 ppm was assumed. The conversion of $NO_X$ to $NO_2$ is dependent on the hourly ozone concentration and hourly $NO_X$ emission rates. $NO_X$ to $NO_2$ conversion is increased with higher ozone concentrations.

Particulate emissions associated with fugitive dust were modeled in AERMOD with the particle settling algorithm. The following weight fractions were used, which are consistent with the *Final Localized Significance Threshold Methodology* (SCAQMD 2003): 0.0787 less than one micron; 0.1292 from 1.0 to 2.5 microns; and 0.7922 from 2.5 to 10 microns. The particle density was assumed to be 2.3 g/cm.

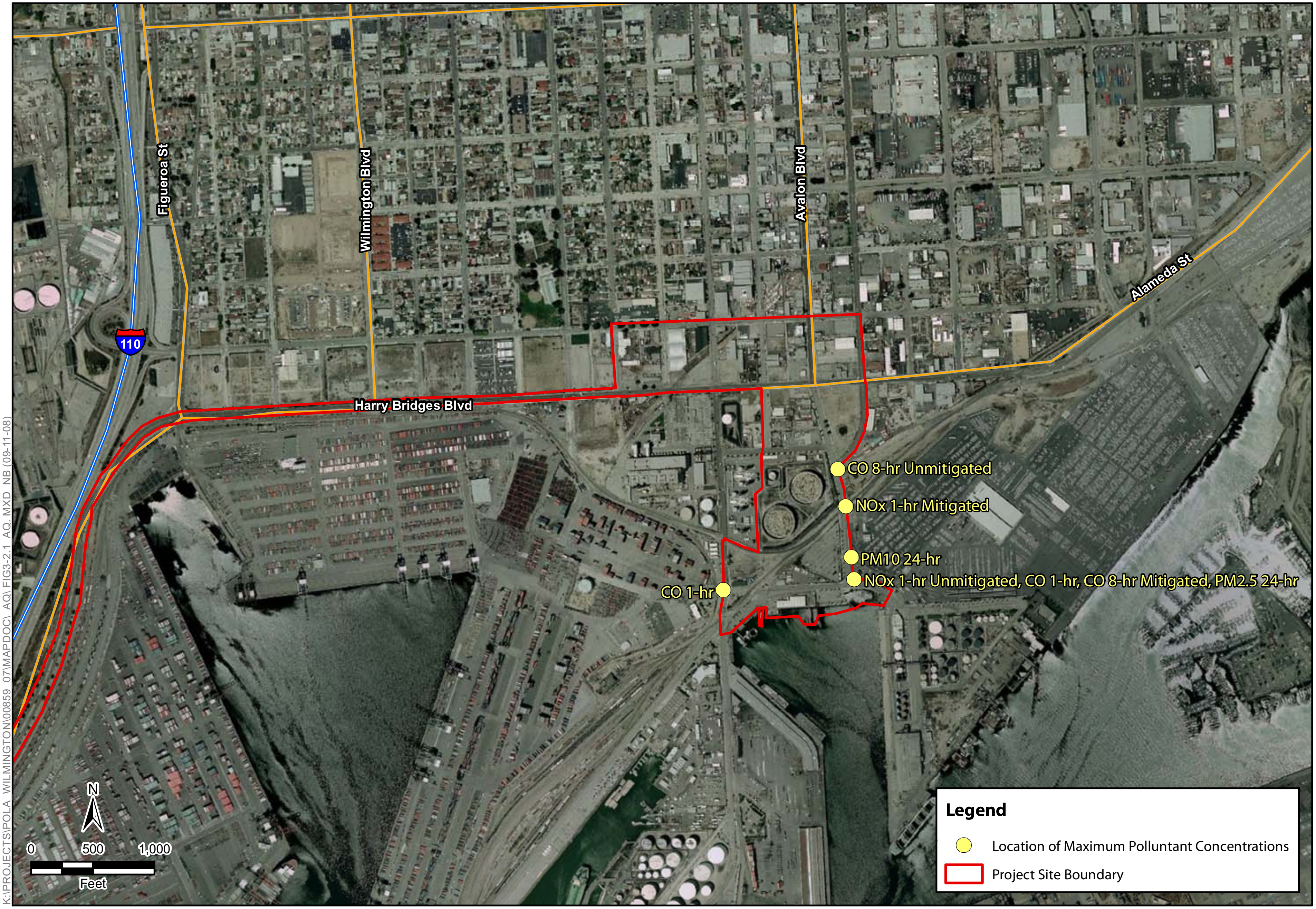
Source: Castle Environmental Consulting (2008).

### Impact Determination

Maximum offsite ambient pollutant concentrations associated with proposed project construction would be significant for $NO_2$ (1-hour average), $PM_{10}$ (24-hour average), and $PM_{2.5}$ (24-hour average).

<u>Mitigation Measures</u>

Implement mitigation measures MM AQ-1 through MM AQ-9.

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SOURCE: ESRI USA Imagery (2006)

ICF Jones & Stokes
an ICF International Company

**Figure 3-2.1**
**Location of Maximum Offsite Pollutant Concentrations during Project Construction**
**Wilmington Waterfront Development Project**

### Residual Impacts

Table 3.2-17 presents the maximum offsite ground-level concentrations of $NO_2$, CO, $PM_{10}$, and $PM_{2.5}$ from construction with mitigation. The maximum offsite concentrations of $NO_2$, $PM_{10}$, and $PM_{2.5}$ after mitigation would be reduced but would still exceed the SCAQMD significance thresholds. Therefore, with mitigation, maximum offsite ambient pollutant concentrations associated with proposed project construction would remain significant for $NO_2$ (1-hour average), $PM_{10}$ (24-hour average), and $PM_{2.5}$ (24-hour average). The maximum offsite CO concentrations would remain less than significant.

Figure 3.2-1 shows the locations of the maximum offsite pollutant concentrations, both with and without mitigation. All of the maximum locations except for 1-hour CO are predicted to occur along the eastern proposed project site boundary, south of A Street. The location of the maximum 1-hour CO concentration is predicted to occur along the western proposed project site boundary, near the intersection of Water Street and Fries Avenue.

With mitigation, landside construction equipment would remain the primary contributor to the maximum $NO_2$ and CO concentrations. Fugitive dust would remain the primary contributor to the maximum $PM_{10}$ and $PM_{2.5}$ concentrations.

**Table 3.2-17.** Maximum Offsite Ambient Concentrations—Proposed Project Construction with Mitigation

| *Pollutant* | *Averaging Time* | *Background Concentration ($\mu g/m^3$)* | *Maximum Concentration (without background) ($\mu g/m^3$)* | *Total Ground-Level Concentration ($\mu g/m^3$)* | *SCAQMD Threshold ($\mu g/m^3$)* |
|---|---|---|---|---|---|
| $NO_2$ | 1 hour | 260 | 1,220 | **1,480** | 338 |
| CO | 1 hour | 4,892 | 1,409 | 6,301 | 23,000 |
| | 8 hours | 4,077 | 158 | 4,235 | 10,000 |
| $PM_{10}$ | 24 hours | - | 40.7 | **40.7** | 10.4 |
| $PM_{2.5}$ | 24 hours | - | 10.7 | **10.7** | 10.4 |

Notes:
Exceedances of the thresholds are indicated in bold. The thresholds for $PM_{10}$ and $PM_{2.5}$ are incremental thresholds; therefore, the concentrations without background are compared to the thresholds. The thresholds for $NO_2$ and CO are absolute thresholds; therefore, the total concentrations (with background) are compared to the thresholds.
$NO_2$ concentrations were calculated by modeling $NO_x$ emissions and using the ozone limiting method in AERMOD. A conservative ozone background concentration of 0.099 ppm was assumed. The conversion of $NO_X$ to $NO_2$ is dependent on the hourly ozone concentration and hourly $NO_X$ emission rates. $NO_x$ to $NO_2$ conversion is increased with higher ozone concentrations.
Particulate emissions associated with fugitive dust were modeled in AERMOD with the particle settling algorithm. The following weight fractions were used, which are consistent with the *Final Localized Significance Threshold Methodology* (SCAQMD 2003): 0.0787 less than one micron; 0.1292 from 1.0 to 2.5 microns; and 0.7922 from 2.5 to 10 microns. The particle density was assumed to be 2.3 g/cm.
Source: Castle Environmental Consulting (2008).

### 3.2.4.3.2 Operations Impacts

**Impact AQ-3: The proposed Project would result in operational emissions that exceed a SCAQMD threshold of significance.**

Table 3.2-18 presents the unmitigated peak daily criteria pollutant emissions associated with operation of the proposed Project. Emissions were estimated for three project study years: 2011, 2015, and 2020. Interim year 2011 was chosen to represent a time when specific components of the proposed Project would be operational while a bulk of the construction would occur at the same time. Year 2015 represents the end of phase one of the proposed Project. Year 2020 represents the completion of Phase 2 and full project buildout.

For emissions found in Table 3.2-18, mobile sources include trips generated by the proposed project, both on- and offroad (automobile trips and marine pleasure craft). Area sources contribute to pollutants on site, and include activities such as landscaping and surface repainting. Stationary sources are considered regional in nature, as the main source of pollutants is generally located off site. Stationary sources include electricity and natural gas consumption.

**Table 3.2-18.** Peak Daily Operational Emissions without Mitigation

| | *Peak Daily Emissions (lb/day)* | | | | | |
|---|---|---|---|---|---|---|
| *Emission Source* | *VOC* | *CO* | *$NO_X$* | *$SO_X$* | *$PM_{10}$* | *$PM_{2.5}$* |
| **Project Year 2011** | | | | | | |
| Mobile | 2 | 27 | 4 | <1 | 5 | 1 |
| Area | 1 | 4 | 1 | <1 | <1 | <1 |
| Stationary | <1 | <1 | 1 | <1 | <1 | <1 |
| **Total (Project Year 2011)** | *3* | *31* | *5* | *<1* | *5* | *1* |
| Thresholds | 55 | 550 | 55 | 150 | 150 | 55 |
| **Significant?** | No | No | No | No | No | No |
| **Project Year 2015** | | | | | | |
| Mobile | 32 | 430 | 36 | <1 | 50 | 10 |
| Area | 1 | 6 | 1 | <1 | <1 | <1 |
| Stationary | <1 | 1 | 5 | <1 | <1 | <1 |
| **Total (Project Year 2015)** | *33* | *437* | *42* | *1* | *50* | *10* |
| Thresholds | 55 | 550 | 55 | 150 | 150 | 55 |
| **Significant?** | No | No | No | No | No | No |
| **Project Year 2020** | | | | | | |
| Mobile | 35 | 536 | 44 | 1 | 84 | 17 |
| Area | 2 | 8 | 2 | <1 | <1 | <1 |
| Stationary | <1 | 1 | 8 | 1 | <1 | <1 |
| **Total (Project Year 2020)** | *37* | *545* | *54* | *1* | *84* | *17* |

| | *Peak Daily Emissions (lb/day)* | | | | | |
|---|---|---|---|---|---|---|
| *Emission Source* | *VOC* | *CO* | *$NO_X$* | *$SO_X$* | *$PM_{10}$* | *$PM_{2.5}$* |
| Thresholds | 55 | 550 | 55 | 150 | 150 | 55 |
| **Significant?** | **No** | **No** | **No** | **No** | **No** | **No** |

Notes:

Emissions might not precisely add to the given total due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Source: URBEMIS2007 (see Appendix C)

Due to the lengthy construction period, operational activities would overlap with construction. Table 3.2-19 shows the combined total of construction and operational emissions for years 2011 and 2015 during which construction and operation activities would occur simultaneously.

**Table 3.2-19.** Peak Daily Construction and Operational Emissions without Mitigation

| | *Peak Daily Emissions (lb/day)* | | | | | |
|---|---|---|---|---|---|---|
| | *VOC* | *CO* | *$NO_X$* | *$SO_X$* | *$PM_{10}$* | *$PM_{2.5}$* |
| **Project Year 2011** | | | | | | |
| Maximum Daily Construction Emissions | 35 | 119 | 398 | <1 | 172 | 47 |
| Maximum Daily Operational Emissions | 3 | 31 | 5 | <1 | 5 | 1 |
| **Total (Construction and Operation—Project Year 2011)** | *38* | *150* | ***403*** | *<1* | ***177*** | *48* |
| Thresholds | 55 | 550 | 55 | 150 | 150 | 55 |
| **Significant?** | No | No | **Yes** | No | **Yes** | No |
| **Project Year 2015** | | | | | | |
| Maximum Daily Construction Emissions | 6 | 22 | 44 | <1 | 77 | 17 |
| Maximum Daily Operational Emissions | 33 | 437 | 42 | 1 | 50 | 10 |
| **Total (Construction and Operation—Project Year 2015)** | *39* | *459* | ***86*** | *1* | *127* | *27* |
| Regional Thresholds | 55 | 550 | 55 | 150 | 150 | 55 |
| **Significant?** | No | No | **Yes** | No | No | No |

Notes:

Emissions might not precisely add to the given total due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Source: URBEMIS2007 (see Appendix C).

### Impact Determination

The proposed Project's unmitigated peak daily operational emissions are not expected to exceed SCAQMD Significance Thresholds for any criteria pollutants in all study years. The unmitigated air quality impacts associated with the proposed Project are expected to be less than significant for all criteria pollutants during all years. However, for 2011 the combined total of construction and operational impacts is expected to be significant for $NO_X$ and $PM_{10}$, while for 2015, the combined total is expected to be significant for $NO_X$.

#### Mitigation Measures

Implement Mitigation Measures MM AQ-1 through MM AQ-9 for construction emissions.

#### Residual Impacts

Table 3.2-20 shows the combined total of peak daily construction and operational emissions for 2011 and 2015 after the application of mitigation measures MM AQ-1 through MM AQ-9. As shown therein, emissions of $PM_{10}$ would be reduced to a less-than-significant level. However, $NO_X$ emissions remain significant for year 2011.

**Table 3.2-20.** Peak Daily Construction and Operational Emissions with Mitigation

| | *Peak Daily Emissions (lb/day)* | | | | | |
|---|---|---|---|---|---|---|
| | *VOC* | *CO* | *$NO_X$* | *$SO_X$* | *$PM_{10}$* | *$PM_{2.5}$* |
| **Project Year 2011** | | | | | | |
| Maximum Daily Construction Emissions | 14 | 135 | 250 | <1 | 71 | 19 |
| Maximum Daily Operational Emissions | 3 | 31 | 5 | <1 | 5 | 1 |
| **Total (Construction and Operation—Project Year 2011)** | **17** | **166** | **255** | **<1** | **76** | **20** |
| Thresholds | 55 | 550 | **55** | 150 | 150 | 55 |
| **Significant?** | No | No | **Yes** | No | No | No |
| **Project Year 2015** | | | | | | |
| Maximum Daily Construction Emissions | 1 | 21 | 10 | <1 | 30 | 6 |
| Maximum Daily Operational Emissions | 33 | 437 | 42 | 1 | 50 | 10 |
| **Total (Construction and Operation—Project Year 2015)** | **34** | **458** | **52** | **1** | **80** | **16** |
| Thresholds | 55 | 550 | 55 | 150 | 150 | 55 |
| **Significant?** | No | No | No | No | No | No |

Notes:

Emissions might not precisely add to the given total due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Source: URBEMIS2007 (see Appendix C).

## Impact AQ-4: The proposed Project would not result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance.

In addition to regional emissions, SCAQMD has developed a methodology that can be used to evaluate localized impacts that may result from operation-period emissions. For small projects (5 acres or less), SCAQMD has developed a set of Localized Significance Thresholds that are used much like the regional significance thresholds. For larger projects, like the proposed Project, dispersion modeling of criteria pollutant emissions, such as that for Impact AQ-2, is typically performed. When analyzing localized impacts, only onsite emission sources are modeled. In the case of operational emissions, only area sources are included; stationary and mobile source emissions are generated offsite and therefore are not considered.

### Impact Determination

For the proposed Project, operational emissions were presented earlier in Table 3.2-18. As shown therein, the bulk of proposed Project emissions are generated by mobile sources. Mobile source emissions, as they pertain to sensitive receptors, are further analyzed under Impact AQ-5. For area sources, it can be deduced, based on the relatively small amounts of emissions, that SCAQMD concentration thresholds would not be exceeded. As such, operation impacts to sensitive receptors would be less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

## Impact AQ-5: The proposed Project would not generate onroad traffic that would contribute to an exceedance of the 1- or 8-hour CO standards.

The proposed Project's CO concentrations for a.m. and p.m. 1- and 8-hour CO levels for project years 2015 and 2020 are presented in Tables 3.2-21 and 3.2-22, respectively. As shown therein, the proposed Project would not have a significant impact upon 1- or 8-hour local CO concentrations due to mobile source emissions.

Because significant impacts would not occur at the intersections with the highest traffic volumes located adjacent to sensitive receptors, no significant impacts are anticipated to occur at any other locations in the study area because the conditions yielding CO hotspots would not be worse than those occurring at the analyzed intersections. Consequently, the sensitive receptors that are included in this analysis would not be significantly affected by CO emissions generated by the net increase in traffic that would occur under the proposed Project. Because the proposed Project does not cause an exceedance, or exacerbate an existing exceedance of an ambient air quality standard (AAQS), the proposed Project's localized operational air quality impacts would be less than significant.

**Table 3.2-21.** Project Buildout (Year 2015)—Local Area CO Dispersion Analysis

| *Intersection* | *Peak Period* [a] | *Maximum 1-Hour 2015 Base Concentration (ppm)* [b] | *Maximum 1-Hour 2015 with-Project Concentration (ppm)* [c] | *Significant 1-Hour Concentration Impact?* [d] | *Maximum 8-Hour 2015 Base Concentration (ppm)* [e] | *Maximum 8-Hour 2015 With-Project Concentration (ppm)* [f] | *Significant 8-Hour Concentration Impact?* [d] |
|---|---|---|---|---|---|---|---|
| Marine Avenue at Harry Bridges Boulevard | AM | 5.8 | 5.8 | No | 4.4 | 4.4 | No |
| | PM | 5.9 | 5.9 | No | 4.5 | 4.5 | No |

Notes:
CALINE4 dispersion model output sheets and EMFAC 2007 emissions factors are provided in Appendix C.
[a]Peak hour traffic volumes are based on the Traffic Impact Analysis prepared for the proposed Project by Fehr and Peers (2008 see Appendix I).
[b]SCAQMD 2015 1-hour ambient background concentration (5.1 ppm) + 2015 base traffic CO 1-hour contribution.
[c]SCAQMD 2015 1-hour ambient background concentration (5.1 ppm) + 2015 with-project traffic CO 1-hour contribution.
[d]The state standard for the 1-hour average CO concentration is 20 ppm, and the 8-hour average concentration is 9.0 ppm.
[e]SCAQMD 2015 8-hour ambient background concentration (3.9 ppm) + 2015 base traffic CO 8-hour contribution.
[f]SCAQMD 2015 8-hour ambient background concentration (3.9 ppm) + 2015 with-project traffic CO 8-hour contribution.
Source: URBEMIS2007 (see Appendix C).

**Table 3.2-22.** Year 2020—Local Area CO Dispersion Analysis

| *Intersection* | *Peak Period* [a] | *Maximum 1-Hour 2020 Base Concentration (ppm)* [b] | *Maximum 1-Hour 2020 with-Project Concentration (ppm)* [c] | *Significant 1-Hour Concentration Impact?* [d] | *Maximum 8-Hour 2020 Base Concentration (ppm)* [e] | *Maximum 8-Hour 2020 with-Project Concentration (ppm)* [f] | *Significant 8-Hour Concentration Impact?* [d] |
|---|---|---|---|---|---|---|---|
| Marine Avenue at Harry Bridges Boulevard | AM | 5.6 | 5.6 | No | 4.3 | 4.3 | No |
| | PM | 5.6 | 5.7 | No | 4.3 | 4.3 | No |
| Avalon Boulevard at Anaheim Street | AM | 5.7 | 5.7 | No | 4.3 | 4.3 | No |
| | PM | 5.8 | 5.8 | No | 4.4 | 4.4 | No |
| Alameda Street at Anaheim Street | AM | 5.9 | 5.9 | No | 4.5 | 4.5 | No |
| | PM | 6.0 | 6.1 | No | 4.5 | 4.5 | No |

Notes:
CALINE4 dispersion model output sheets and EMFAC 2007 emissions factors are provided in Appendix C.
[a]Peak hour traffic volumes are based on the Traffic Impact Analysis prepared for the proposed Project by Fehr and Peers, 2008 (see Appendix I).
[b]SCAQMD 2020 1-hour ambient background concentration (5.1 ppm) + 2020 base traffic CO 1-hour contribution.
[c]SCAQMD 2020 1-hour ambient background concentration (5.1 ppm) + 2020 with-project traffic CO 1-hour contribution.
[d]The state standard for the 1-hour average CO concentration is 20 ppm, and the 8-hour average concentration is 9.0 ppm.
[e]SCAQMD 2020 8-hour ambient background concentration (3.9 ppm) + 2020 base traffic CO 8-hour contribution.
[f]SCAQMD 2020 8-hour ambient background concentration (3.9 ppm) + 2020 with-project traffic CO 8-hour contribution.
Source: URBEMIS2007 (see Appendix C).

Because the proposed Project does not cause an exceedance, or exacerbate an existing exceedance of an AAQS, the proposed Project's localized operational air quality impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

## Impact AQ-6: The proposed Project would not create an objectionable odor at the nearest sensitive receptor.

### Impact Determination

*Construction*

Potential sources that may emit odors during construction activities include equipment exhaust and asphalt paving. Odors from these sources would be localized and generally confined to the proposed project site. The proposed Project would utilize typical construction techniques, and the odors would be typical of most construction sites. Additionally, any odors would be short-term, sporadic, and temporary, occurring when equipment is operating and during paving activities. Odor impacts during construction would be less than significant.

*Operation*

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The proposed Project does not include any uses identified by the SCAQMD as being associated with odors and therefore would not produce objectionable odors.

It is reasonably foreseeable that occasional odor from surrounding industrial land uses, including the Harbor Generating Station, may interfere with recreational users' enjoyment of the proposed Project elements, including the land bridge once operational. The occasional odor would not constitute a significant adverse impact due to the infrequent and short-duration of exposure and the reasonable expectation of the presence of odors in an industrial area by recreational users.

Mitigation Measures

No mitigation is required.

<u>Residual Impacts</u>

Impacts would be less than significant.

## Impact AQ-7: The proposed Project would expose receptors to significant levels of TACs.

The proposed Project is located in an industrial area and is adjacent to several sources of toxic air contaminant emissions—most notably, the Harbor Generating Station to the west, the Ports of Los Angeles and Long Beach to the south and southeast, and Port-related diesel trucks traveling along Harry Bridges Boulevard to the north. Although proposed Project operations are not expected to produce significant health risk impacts on the surrounding community, people visiting the proposed project site could be exposed to elevated levels of TACs from these adjacent emission sources. Of particular concern are sensitive receptors, including those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality).

### Impacts from the Harbor Generating Station

In 2004, LADWP conducted a health risk assessment of TAC emissions from the Harbor Generating Station (HGS), a power plant that operates adjacent to the proposed project site. The HRA was conducted in anticipation of the proposed Project to determine whether the HGS would expose park visitors to high health risks and therefore constrain the HGS from any future facility modifications (LADWP 2004).

The emission sources assessed in the HRA included 7 combustion turbines, 5 cooling towers, a diesel emergency generator, a diesel power washer, and fugitive VOC emissions from an oil/water separator, storage tanks, and piping. The combustion turbines use natural gas as their primary fuel, although they are also permitted to burn diesel fuel (distillate oil No. 2) in the event of a natural gas curtailment and are regularly tested on diesel fuel.

The HRA evaluated individual lifetime cancer risk for proposed project site visitors from HGS emissions. Cancer risk is the probability or chance of contracting cancer over a human life span (assumed to be 70 years). For CEQA purposes, a project's incremental cancer risk is considered significant if it is equal to or greater than 10 chances per million. The HRA estimated the maximum cancer risk at the proposed project site to be 6.3 per million when evaluated with 70-year residential exposure assumptions (i.e., 24-hour-per-day exposure, 350 days per year, for 70 years). To estimate the cancer risk posed to children that may visit the proposed project site, the HRA also estimated the cancer risk posed to children over an exposure period of 9 years. The 9-year child cancer risk at the location of the proposed project site is 1.2 per million.

The HRA also evaluated non-cancer impacts, which include the chronic hazard index and acute hazard index. Chronic toxicity is defined as adverse health effects from long-term chemical exposure. Acute toxicity is defined as adverse health effects caused by a short-term chemical exposure, typically 1 hour for most chemicals. A chronic or acute hazard index equal to or greater than 1.0 indicates that adverse health effects could occur. The maximum chronic and acute hazard indices computed for emissions from the HGS are 0.3 and 0.96, respectively, on the park site (LADWP 2004).

In November 2008, LADWP elected to perform a subsequent HRA for the Harbor Generating Station to account for various design features of the proposed Project that were not well defined in the 2004 study. Results of the subsequent HRA are expected from LADWP in late 2008 or early 2009.

### Impacts from the Ports of Los Angeles and Long Beach

As mentioned in Section 3.2.2.2.3, CARB published an exposure assessment in 2006 that evaluated the impacts from airborne particulate matter emissions from diesel-fueled engines associated with port activities at the Ports of Los Angeles and Long Beach (CARB 2006). The study focused on the on-Port property emissions from locomotives, onroad heavy duty trucks, and cargo handling equipment used to move containerized and bulk cargo such as yard tractors, top picks, side picks, rubber tired gantry cranes, and forklifts. The study also evaluated the at-berth and over-water emissions impacts from ocean-going vessel main and auxiliary engine emissions as well as commercial harbor craft such as passenger ferries and tugboats.

The CARB study estimated that DPM emissions from the Ports result in potential cancer risk levels exceeding 500 in a million near the Port boundaries, including the proposed project site. Farther away from the Ports, the potential cancer risk levels decrease but continue to exceed 50 in a million for more than 15 miles.

The CARB study also estimated potential non-cancer health impacts. Based on this study, average numbers of cases per year that would be expected in a 20- by 20-mile (400 square mile) study area are:

- 29 premature deaths[7] (for ages 30 and older)
- 750 asthma attacks
- 6,600 days of work loss
- 35,000 minor restricted activity days

Hotelling emissions from ocean-going vessel auxiliary engines and emissions from cargo handling equipment are the primary contributors to the higher pollution-related health risks near the ports.

### Impacts from Harry Bridges Boulevard

Harry Bridges Boulevard is a major route for heavy duty diesel trucks traveling between the Port of Los Angeles and the Intermodal Container Transfer Facility

[7] A death in which one dies before one's potential life expectancy.

(ICTF). In general, concentrations of airborne particles have been shown to be high near transportation corridors and decline as one moves further from the source. The distance from the roadway and truck traffic densities were key factors affecting the strength of the association with adverse health effects (CARB 2004a). The association of traffic-related emissions with adverse health effects was seen within 1,000 feet of transportation corridors and was strongest within 300 feet (Zhu 2002). There is growing evidence that close proximity to heavily traveled roadways increases the potential for adverse health effects such as child lung function, asthma, and increased medical visits (Brunekreef 1997; Lin 2000; Venn 2001; Kim 2004; and English 1999).

### Existing Toxic Air Contaminant Levels in the Proposed Project Vicinity

As discussed in Section 3.2.2.2.3, SCAQMD published the draft MATES-III in January 2008. The objective of MATES-III was to characterize the ambient air toxic concentrations and potential human exposures in the South Coast Air Basin. The effort included two years of ambient monitoring for air toxics. MATES-III developed an updated toxics emissions inventory and conducted air dispersion modeling to estimate ambient levels and the potential health risks of air toxics.

A network of 10 fixed sites was used to monitor TACs once every 3 days for 2 years. One of these fixed monitoring sites was at 1903 Santa Fe Avenue in Long Beach (referred to as the “Wilmington site”), about 3 miles northeast of the proposed project site. The risk at the Wilmington site was estimated at approximately 1,270 per million based on the monitored data. This risk estimate represents the cumulative contribution from all TAC emission sources in the basin, including the specific sources adjacent to the proposed project site, as mentioned above. The risk of 1,270 per million at the Wilmington site is slightly higher than the basinwide average risk of 1,194 per million. The monitoring results indicate that diesel exhaust is the major contributor to air toxics risk throughout the air basin, accounting for about 84% of the total (SCAQMD 2008a).

MATES-III also conducted dispersion modeling to estimate cancer risk in 1.25 by 1.25 mile grid cells covering the entire air basin, including areas not covered by the fixed monitoring sites. The grid cells covering the two ports, including the proposed project site, were predicted to have risk values ranging from 1,100 to 2,900 in a million. The grid cell with the highest modeled risk in the air basin was at the Ports.

### Summary of CARB Land Use Siting Guidance

In 2005, the California Air Resources Board published the *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB 2005). This document considers the potential health impacts associated with proximity of sensitive receptors to various categories of air pollution sources so planners can explicitly consider this issue in the land use planning processes. According to the Handbook, sensitive land uses deserve special attention because children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the non-cancer effects of air pollution. Examples of non-cancer effects are asthma attacks, heart attacks, and increases in daily mortality and hospitalization for heart and respiratory diseases. There is also substantial evidence that children are more sensitive than adults to cancer-causing chemicals (CARB 2005).

Because of the difficulty in quantifying non-cancer effects from air pollution, the Handbook generally used estimates of cancer health impacts as an indicator of non-cancer impacts to provide a picture of relative risk. The CARB study looked at 8 specific source categories:

- Freeways and high traffic roads
- Distribution centers
- Rail yards
- Ports
- Refineries
- Chrome plating facilities
- Dry cleaners
- Large gas dispensing facilities

CARB's recommendation for ports is to avoid siting new sensitive land uses immediately downwind of ports in the most heavily affected zones. For freeways and high traffic roads, CARB recommends that sensitive land uses should be at least 1,000 feet from freeways and high traffic roads.

**Impact Determination**

The proposed Project is located adjacent to substantial Port-related activities that generate emissions of DPM and other TACs. The northern portion of the proposed project site is also located within 1,000 feet of Harry Bridges Boulevard, a major route for Port-related diesel trucks. In addition, studies conducted by CARB (2006) and SCAQMD (2008a) show that the area in the vicinity of the Ports, including the proposed project site, exhibits levels of DPM and health risks that are higher than most other areas within the air basin.

Because the proposed Project would attract sensitive individuals to a location that most likely has a higher risk than their place of residence, a recreational health risk impact would result. The magnitude of the impact would depend on a variety of factors, including the frequency and duration of a person's visit, the person's exertion level (i.e., breathing rate) during the visit, the amount of Port and industrial activity occurring during the visit, and the prevailing meteorological conditions (wind speed, wind direction, and atmospheric stability level). While most visitors would probably receive a relatively slight health risk impact, the possibility exists that a frequent visitor could accumulate a significant long-term cancer or non-cancer impact. The possibility also exists that any visitor could receive a significant short-term (acute) impact if the visit takes place during a high level of adjacent industrial activity coupled with worst-case meteorological conditions. Therefore, the proposed Project would expose visitors to significant health risk impacts associated with air pollutants from other sources.

Mitigation Measures

Because the significant impact is an indirect impact associated with emissions from emission sources outside the control of the proposed Project, no additional mitigation measures are proposed.

Residual Impacts

In the short term, the recreational health risk impact on project visitors would remain significant. In the long term, levels of pollution from both Port facilities and all Port-related trucks traveling along Harry Bridges Boulevard will substantially diminish in accordance with the recently approved Clean Air Action Plan (LAHD et al. 2006). Specifically, DPM from trucks is anticipated to diminish by 80% over the next 5 years under the Port's proposed Clean Trucks Program. The Ports of Los Angeles and Long Beach have also instituted voluntary programs to reduce DPM emissions from port operations including installation of diesel oxidation catalysts on yard equipment, funding the incremental costs of cleaner fuels, cold-ironing of ocean-going ships, and providing monetary support to the Gateway Cities truck fleet modernization program. In addition, efforts at the state and local level to implement the Diesel Risk Reduction Plan and to fulfill commitments in the SIP will also reduce emissions. For example, the new offroad engine standards adopted by CARB and EPA will reduce emissions from new offroad engines by over 95% compared to uncontrolled levels. As another example, CARB adopted a regulation in July 2008 that will require low sulfur fuel in ships operating within 24 nautical miles of the California coast, starting in 2009. This regulation would reduce DPM emissions from ships by about 75% in 2009 and 83% by 2012 compared to uncontrolled levels. Other current regulations and future rules adopted by CARB and EPA also will further reduce air emissions and associated cumulative impacts in the proposed project region (CARB 2006).

### Impact AQ-8: The proposed Project would not conflict with or obstruct implementation of an applicable AQMP.

Proposed project operations would produce emissions of nonattainment pollutants. The 2007 AQMP proposes emission reduction measures that are designed to bring the SCAB into attainment of the state and national AAQS. The attainment strategies in these plans include mobile-source control measures and clean fuel programs that are enforced at the state and federal level on engine manufacturers and petroleum refiners and retailers; as a result, proposed project operations would comply with these control measures. SCAQMD also adopts AQMP control measures into SCAQMD rules and regulations, which are then used to regulate sources of air pollution in the SCAB. Therefore, compliance with these requirements would ensure that the proposed Project would not conflict with or obstruct implementation of the AQMP.

**Impact Determination**

The proposed Project would not conflict with or obstruct implementation of the AQMP; therefore, significant impacts under CEQA are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

## Impact AQ-9: The proposed Project would produce GHG emissions that exceed CEQA thresholds.

Climate change, as it relates to man-made GHG emissions, is by nature a global impact. The issue of global climate change is, therefore, a cumulative impact. Nevertheless, for the purposes of this EIR, LAHD has opted to address GHG emissions as a proposed project–level impact. In actuality, an appreciable impact on global climate change would occur only when the proposed project GHG emissions combine with GHG emissions from other man-made activities on a global scale.

**Impact Determination**

Table 3.2-23 presents an estimate of proposed project–related GHG emissions of $CO_2$, $CH_4$, and $N_2O$ in the form of $CO_2e$. Both construction- and operation-related GHG emissions are compared to the CEQA baseline emissions for significance determination. As shown, the proposed project GHG emissions would be above the CEQA baseline emissions, and therefore would result in a significant impact.

**Table 3.2-23.** Estimate of Proposed Project–Related Greenhouse Gas Emissions[a]

| *Source* | *$CO_2e$ (lbs/day)* |
|---|---|
| **Project Emissions** | |
| **Maximum Construction-period Emissions (January 2011)** | **37,786** |
| 2011 Operations-period Emissions | |
| Mobile Source | 3,143 |
| Stationary Source | 892 |
| Area Source | 972 |
| **Total 2011 Operations-period Emissions** | **5,007** |
| 2015 Operations-period Emissions | |
| Mobile Source | 30,897 |
| Stationary Source | 3,829 |

| *Source* | *$CO_2e$ (lbs/day)* |
|---|---|
| Area Source | 1,647 |
| **Total 2015 Operations-period Emissions** | **36,373** |
| 2020 Operations-period Emissions | |
| Mobile Source | 52,235 |
| Stationary Source | 7,055 |
| Area Source | 1,789 |
| **Total 2020 Operations-period Emissions** | **61,089** |
| **CEQA Baseline Emissions** | **10,979** |
| [a]URBEMIS 2007 output and energy emissions calculation worksheets are provided in Appendix C. Source: URBEMIS2007 (see Appendix C). | |

## Mitigation Measures

Mitigation measures MM AQ-1 through MM AQ-9 developed for criteria pollutant emissions as part of Impact AQ-1 above would help to reduce construction-related GHG emissions.

The following additional mitigation measures specifically target the proposed project GHG emissions. They were developed through an applicability and feasibility review of possible measures identified in the *Climate Action Team Report to Governor Schwarzenegger and the California Legislature* (State of California 2006) and *CARB's Proposed Early Actions to Mitigate Climate Change in California* (CARB 2007).

**Table 3.2-24.** Project Applicability Review of Potential GHG Emission Reduction Strategies

| *Operational Strategy* | *Applicability to Proposed Project* |
|---|---|
| **Commercial and Industrial Design Features** | |
| Vehicle Climate Change Standards | Regulatory measure implemented by CARB |
| Diesel Anti-Idling | Regulatory measures implemented by CARB |
| Other Light duty Vehicle Technology | Regulatory measure implemented by CARB (standards will phase in starting 2009) |
| HFCs Reduction | Future regulatory measure planned by CARB |

| *Operational Strategy* | *Applicability to Proposed Project* |
|---|---|
| **Building Operations Strategy** | |
| Recycling | **MM AQ-11** and regulatory measure implemented by the Integrated Waste Management Board |
| Building Energy Efficiency | **MM AQ-10** and regulatory measure implemented by the California Energy Commission |
| Green Buildings Initiative | **MM AQ-10** and future regulatory measure planned by the State and Consumer Services and CalEPA |
| California Solar Initiative | Future regulatory measure is planned by the California Public Utilities Commission |
| Note: These strategies are found in the *California Climate Action Team's report to the Governor* (State of California 2006) and CARB's *Proposed Early Actions to Mitigate Climate Change in California* (CARB 2007). | |

**MM AQ-10: Energy Efficiency.**

- Design buildings to be energy efficient. Site buildings to take advantage of shade, prevailing winds, landscaping, and sun screens to reduce energy use.
- Install efficient lighting and lighting control systems. Use daylight as an integral part of lighting systems in buildings.
- Install light colored "cool" roofs, cool pavements, and strategically placed shade trees.
- Provide information on energy management services for large energy users.
- Install energy efficient heating and cooling systems, appliances and equipment, and control systems.
- Install light emitting diodes (LEDs) for outdoor lighting as feasible.
- Limit the hours of operation of outdoor lighting.
- Provide education on energy efficiency.

**MM AQ-11: Renewable Energy.**

- Require the installation of solar and/or wind power systems, solar and tankless hot water heaters, and energy efficient heating ventilation and air conditioning by Port tenants, where feasible. Educate Port tenants about existing incentives.
- Use combined heat and power in appropriate applications.

**MM AQ-12: Water Conservation and Efficiency.**

- Create water-efficient landscapes.
- Install water-efficient irrigation systems and devices, such as soil moisture–based irrigation controls.
- Use reclaimed water for landscape irrigation in new developments and on public property. Install the infrastructure to deliver and use reclaimed water.
- Design buildings to be water-efficient. Install water-efficient fixtures and appliances.
- Restrict watering methods (e.g., prohibit systems that apply water to non-vegetated surfaces) and control runoff.
- Restrict the use of water for cleaning outdoor surfaces and vehicles.
- Implement low-impact development practices that maintain the existing hydrologic character of the site to manage stormwater and protect the environment. (Retaining stormwater runoff on site can drastically reduce the need for energy-intensive imported water at the site.)
- Devise a comprehensive water conservation strategy appropriate for the proposed Project and location. The strategy may include many of the specific items listed above, plus other innovative measures that are appropriate.
- Provide education to Port tenants about water conservation and available programs and incentives.

**MM AQ-13: Solid Waste Measures.**

- Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).
- Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers in public areas.
- Provide education and publicity about reducing waste and available recycling services.

**MM AQ-14: Land Use Measures.**

- Incorporate public transit into project design.
- Preserve and create open space and parks. Preserve existing trees, and plant replacement trees at a set ratio.
- Include pedestrian and bicycle-only streets and plazas within developments. Create travel routes that ensure that destinations may be reached conveniently by public transportation, bicycling, or walking.

**MM AQ-15: Transportation and Motor Vehicles.**

- Limit idling time for commercial vehicles, including delivery and construction vehicles.
- Use low- or zero-emission vehicles, including construction vehicles.
- Promote ride sharing programs (e.g., by designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles, and providing a web site or message board for coordinating rides).
- Provide the necessary facilities and infrastructure to encourage the use of low or zero-emission vehicles (e.g., electric vehicle charging facilities and conveniently located alternative fueling stations).
- Promote "least polluting" ways to connect people and goods to their destinations.
- Incorporate bicycle lanes and routes into street systems.
- Incorporate bicycle-friendly intersections into street design.
- Provide adequate bicycle parking near building entrances to promote cyclist safety, security, and convenience.
- Create bicycle lanes and walking paths.

## Residual Impacts

Table 3.2-25 presents an estimate of mitigated proposed Project–related GHG emissions of $CO_2$, $CH_4$, and $N_2O$ in the form of $CO_2e$. Both construction- and operation-related GHG emissions are compared to the CEQA baseline emissions for significance determination. As shown, the proposed project GHG emissions would remain above the CEQA baseline emissions, and therefore would result in a significant and unavoidable impact.

**Table 3.2-25.** Estimate of Mitigated Proposed Project-Related Greenhouse Gas Emissions[a]

| *Source* | *$CO_2e$ (lbs/day)* |
|---|---|
| **Project Emissions** | |
| **Maximum Construction-period Emissions (January 2011)** | **37,800** |
| 2011 Operations-period Emissions | |
| Mobile Source | 3,143 |
| Stationary Source | 892 |
| Area Source | 972 |
| **Total 2011 Operations-period Emissions** | **5,007** |
| 2015 Operations-period Emissions | |
| Mobile Source | 30,897 |

| *Source* | *$CO_2e$ (lbs/day)* |
|---|---|
| Stationary Source | 3,829 |
| Area Source | 1,647 |
| **Total 2015 Operations-period Emissions** | **36,373** |
| 2020 Operations-period Emissions | |
| Mobile Source | 52,235 |
| Stationary Source | 7,055 |
| Area Source | 1,789 |
| **Total 2020 Operations-period Emissions** | **61,089** |
| 2011 Operations-period Emissions | |
| Mobile Source | 94,972 |
| Stationary Source | 765 |
| Area Source | 972 |
| **Total 2011 Operations-period Emissions** | **96,710** |
| 2015 Operations-period Emissions | |
| Mobile Source | 759,560 |
| Stationary Source | 3,396 |
| Area Source | 1,647 |
| **Total 2015 Operations-period Emissions** | **764,604** |
| 2020 Operations-period Emissions | |
| Mobile Source | 1,111,643 |
| Stationary Source | 6,244 |
| Area Source | 1,789 |
| **Total 2020 Operations-period Emissions** | **1,119,676** |
| **CEQA Baseline Emissions** | **10,979** |
| [a]URBEMIS 2007 output and energy emissions calculation worksheets are provided in Appendix C.<br>Source: (URBEMIS2007 (see Appendix C). | |

### 3.2.4.3.3 Summary of Impact Determinations

Table 3.2-26 summarizes the CEQA impact determinations of the proposed Project related to air quality, as described in the detailed discussion in Sections 3.2.4.3.1 and 3.2.4.3.2. This table is meant to allow easy comparison between the potential impacts of the proposed Project with respect to this resource. Identified potential impacts may be based on federal, state, and City of Los Angeles significance criteria, LAHD criteria, and the scientific judgment of the report preparers.

For each type of potential impact, the table describes the impact, notes the CEQA impact determinations, describes any applicable mitigation measures, and notes the residual impacts (i.e., the impact remaining after mitigation). All impacts, whether significant or not, are included in this table.

**Table 3.2-26.** Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Meteorology Associated with the Proposed Project

| *Environmental Impacts* | *Impact Determination* | *Mitigation Measures* | *Impacts after Mitigation* |
|---|---|---|---|
| **3.2. Air Quality and Meteorology** | | | |
| **Construction** | | | |
| **AQ-1:** The proposed Project would result in construction-related emissions that exceed a SCAQMD threshold of significance. | Significant | **MM AQ-1: Harbor Craft Engine Standards.** All harbor craft used during the construction phase of the proposed Project will, at a minimum, be repowered to meet the cleanest existing marine engine emission standards or EPA Tier 2. Additionally, where available, harbor craft will meet the proposed EPA Tier 3 (which are proposed to be phased-in beginning of 2009) or cleaner marine engine emission standards.<br><br>**MM AQ-2: Dredging Equipment Electrification.** All dredging equipment will be electric.<br><br>**MM AQ-3: Fleet Modernization for Onroad Trucks**.<br><br>1. Trucks hauling materials such as debris or fill will be fully covered while operating off Port property.<br><br>2. Idling will be restricted to a maximum of 5 minutes when not in use. | Significant and unavoidable |

| *Environmental Impacts* | *Impact Determination* | *Mitigation Measures* | *Impacts after Mitigation* |
|---|---|---|---|
| | | 3. EPA Standards:<br><br>a. Prior to December 31, 2011: All onroad heavy-duty diesel trucks with a gross vehicle weight rating (GVWR) of 19,500 pounds or greater used at the Port of Los Angeles will comply with EPA 2004 onroad emission standards for $PM_{10}$ and $NO_X$ (0.10 g/bhp-hr and 2.0 g/bhp-hr, respectively).<br><br>In addition, all onroad heavy heavy-duty trucks with a GVWR of 19,500 pounds or greater used at the Port of Los Angeles will be equipped with a CARB-verified Level 3 device.<br><br>b. From January 1, 2012 on: All onroad heavy-duty diesel trucks with a GVWR of 19,500 pounds or greater used at the Port of Los Angeles will comply with EPA 2007 onroad emission standards for $PM_{10}$ and $NO_X$ (0.01 g/bhp-hr and 0.20 g/bhp-hr, respectively).<br><br>A copy of each unit's certified, USEPA rating and each unit's CARB or SCAQMD operating permit, shall be provided at the time of mobilization of each applicable unit of equipment<br><br>**MM AQ-4: Fleet Modernization for Construction Equipment.**<br><br>1. Construction equipment will incorporate, where feasible, emissions-savings technology such as hybrid drives and specific fuel economy standards.<br><br>2. Idling will be restricted to a maximum of 5 minutes when not in use. | |

| *Environmental Impacts* | *Impact Determination* | *Mitigation Measures* | *Impacts after Mitigation* |
|---|---|---|---|
| | | 3. Tier Specifications:<br><br>■ Prior to December 31, 2011: All offroad diesel-powered construction equipment greater than 50 horsepower (hp) will meet Tier-2 offroad emission standards, at a minimum. In addition, all construction equipment greater than 50 hp will be retrofitted with a CARB-certified Level 3 diesel emissions control device.<br><br>■ From January 1, 2012, to December 31, 2014: All offroad diesel-powered construction equipment greater than 50 hp, except ships and barges and marine vessels, will meet Tier-3 offroad emission standards, at a minimum. In addition, all construction equipment greater than 50 hp will be retrofitted with a CARB-certified Level 3 diesel emissions control device.<br><br>■ From January 1, 2015 on: All offroad diesel-powered construction equipment greater than 50 hp, except ships and barges and marine vessels, will meet Tier-4 offroad emission standards, at a minimum. In addition, all construction equipment greater than 50 hp will be retrofitted with a CARB-certified Level 3 diesel emissions control device.<br><br>**MM AQ-5: Additional Fugitive Dust Controls.** The calculation of fugitive dust ($PM_{10}$) from proposed project earth-moving activities assumes a 61% reduction from uncontrolled levels to simulate rigorous watering of the site and use of other measures (listed below) to ensure compliance with SCAQMD Rule 403.<br><br>The construction contractor will reduce | |

| Environmental Impacts | Impact Determination | Mitigation Measures | Impacts after Mitigation |
|---|---|---|---|
| | | fugitive dust emissions by 90% from uncontrolled levels. The proposed project construction contractor will specify dust-control methods that will achieve this control level in a SCAQMD Rule 403 dust control plan. Their will shall include holiday and weekend periods when work may not be in progress.<br><br>Measures to reduce fugitive dust include, but are not limited to, the following:<br><br>■ Active grading sites will be watered 1 additional time per day beyond that required by Rule 403.<br><br>■ Contractors will apply approved nontoxic chemical soil stabilizers to all inactive construction areas or replace groundcover in disturbed areas (previously graded areas inactive for ten days or more).<br><br>■ Construction contractors will provide temporary wind fencing around sites being graded or cleared.<br><br>■ Trucks hauling dirt, sand, or gravel will be covered in accordance with Section 23114 of the California Vehicle Code.<br><br>■ Construction contractors will 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. Pave road and road shoulders.<br><br>■ The use of clean-fueled sweepers will be required pursuant to SCAQMD Rule 1186 and Rule 1186.1 certified street sweepers. Sweep streets at the end of each day if visible soil is carried onto paved roads on site or roads adjacent to the site to reduce | |

| *Environmental Impacts* | *Impact Determination* | *Mitigation Measures* | *Impacts after Mitigation* |
|---|---|---|---|
| | | fugitive dust emissions.<br><br>■ A construction relations officer will be appointed to act as a community liaison concerning onsite construction activity including resolution of issues related to PM10 generation.<br><br>■ Traffic speeds on all unpaved roads will be reduced to 15 mph or less.<br><br>■ Temporary traffic controls such as a flag person will be provided during all phases of construction to maintain smooth traffic flow.<br><br>■ Construction activities that affect traffic flow on the arterial system will be conducted during off-peak hours to the extent practicable.<br><br>■ The use of electrified truck spaces for all truck parking or queuing areas will be required.<br><br>**MM AQ-6: Best Management Practices.** The following types of measures are required on construction equipment (including onroad trucks):<br>1. Use diesel oxidation catalysts and catalyzed diesel particulate traps<br>2. Maintain equipment according to manufacturers' specifications<br>3. Restrict idling of construction equipment and on-road heavy-duty trucks to a maximum of 5 minutes when not in use<br>4. Install high-pressure fuel injectors on construction equipment vehicles<br>5. Maintain a minimum buffer zone of 300 meters between truck traffic and sensitive receptors<br>6. Improve traffic flow by signal synchronization<br>7. Enforce truck parking restrictions | |

| Environmental Impacts | Impact Determination | Mitigation Measures | Impacts after Mitigation |
|---|---|---|---|
| | | 8. Provide on-site services to minimize truck traffic in or near residential areas, including, but not limited to, the following services: meal or cafeteria services, automated teller machines, etc.<br><br>9. Re-route construction trucks away from congested streets or sensitive receptor areas<br><br>LAHD will implement a process by which to select additional BMPs to further reduce air emissions during construction. The LAHD will determine the BMPs once the contractor identifies and secures a final equipment list and project scope. The LAHD will then meet with the contractor to identify potential BMPs and work with the contractor to include such measures in the contract. BMPs will 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.<br><br>**MM AQ-7: General Mitigation Measure.** For any of the above mitigation measures, if a CARB-certified technology becomes available and is shown to be as good as or better in terms of emissions performance than the existing measure, the technology could replace the existing measure pending approval by the Port.<br><br>**MM AQ-8: Special Precautions near Sensitive Sites.** All construction activities located within 1,000 feet of sensitive receptors (defined as schools, playgrounds, daycares, and hospitals), will notify each of these sites in writing at least 30 days prior to construction activity.<br><br>**MM AQ-9: Construction Recycling.** Demolition and/or excess construction materials will be separated on site for reuse/recycling or proper disposal. During grading and construction, separate bins for recycling of | |

| *Environmental Impacts* | *Impact Determination* | *Mitigation Measures* | *Impacts after Mitigation* |
|---|---|---|---|
| | | construction materials will be provided on site. Materials with recycled content will be used in project construction. Chippers on site during construction will be used to further reduce excess wood for landscaping cover. | |
| **AQ-2:** The proposed Project would result in offsite ambient air pollutant concentrations during construction that exceed a SCAQMD threshold of significance. | Significant | Implement mitigation measures MM AQ-1 through MM AQ-9. | Significant and unavoidable |
| **Operations** | | | |
| **AQ-3:** The proposed Project would result in operational emissions that exceed a SCAQMD threshold of significance. | Significant | Implement mitigation measures MM AQ-1 through MM AQ-9. | Significant and unavoidable |
| **AQ-4:** The proposed Project would not result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance | Less than Significant | No mitigation is required. | Less than Significant |
| **AQ-5:** The proposed Project would not generate onroad traffic that would contribute to an exceedance of the 1- or 8-hour CO standards. | Less than significant | No mitigation is required. | Less than significant |
| **AQ-6:** The proposed Project would not create an objectionable odor at the nearest sensitive receptor. | Less than significant | No mitigation is required | Less than significant |
| **AQ-7:** The proposed Project would expose receptors to significant | Significant | No mitigation is available. | Significant and unavoidable |

| *Environmental Impacts* | *Impact Determination* | *Mitigation Measures* | *Impacts after Mitigation* |
|---|---|---|---|
| levels of TACs. | | | |
| **AQ-8:** The proposed Project would not conflict with or obstruct implementation of an applicable AQMP. | Less than significant | No mitigation is required | Less than significant |
| **AQ-9:** The proposed Project would produce GHG emissions that exceed CEQA thresholds. | Significant | Implement mitigation measures MM AQ-1 through MM AQ-9.<br>**MM AQ-10: Energy Efficiency.**<br>■ Design buildings to be energy efficient. Site buildings to take advantage of shade, prevailing winds, landscaping, and sun screens to reduce energy use.<br>■ Install efficient lighting and lighting control systems. Use daylight as an integral part of lighting systems in buildings.<br>■ Install light colored “cool” roofs, cool pavements, and strategically placed shade trees.<br>■ Provide information on energy management services for large energy users.<br>■ Install energy efficient heating and cooling systems, appliances and equipment, and control systems.<br>■ Install light emitting diodes (LEDs) for outdoor lighting as feasible.<br>■ Limit the hours of operation of outdoor lighting.<br>■ Provide education on energy efficiency.<br>**MM AQ-11: Renewable Energy.**<br>■ Require the installation of solar and/or wind power systems, solar and tankless hot water heaters, and energy efficient heating ventilation and air conditioning by Port tenants, where feasible. Educate | Significant and unavoidable |

| *Environmental Impacts* | *Impact Determination* | *Mitigation Measures* | *Impacts after Mitigation* |
|---|---|---|---|
| | | Port tenants about existing incentives.<br>■ Use combined heat and power in appropriate applications.<br><br>**MM AQ-12: Water Conservation and Efficiency.**<br><br>■ Create water-efficient landscapes.<br>■ Install water-efficient irrigation systems and devices, such as soil moisture–based irrigation controls.<br>■ Use reclaimed water for landscape irrigation in new developments and on public property. Install the infrastructure to deliver and use reclaimed water.<br>■ Design buildings to be water-efficient. Install water-efficient fixtures and appliances.<br>■ Restrict watering methods (e.g., prohibit systems that apply water to non-vegetated surfaces) and control runoff.<br>■ Restrict the use of water for cleaning outdoor surfaces and vehicles.<br>■ Implement low-impact development practices that maintain the existing hydrologic character of the site to manage stormwater and protect the environment. (Retaining stormwater runoff on site can drastically reduce the need for energy-intensive imported water at the site.)<br>■ Devise a comprehensive water conservation strategy appropriate for the proposed Project and location. The strategy may include many of the specific items listed above, plus other innovative measures that are appropriate.<br>■ Provide education about water conservation and available | |

| *Environmental Impacts* | *Impact Determination* | *Mitigation Measures* | *Impacts after Mitigation* |
|---|---|---|---|
| | | programs and incentives.<br><br>**MM AQ-13: Solid Waste Measures.**<br><br>■ Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).<br>■ Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers in public areas.<br>■ Provide education and publicity about reducing waste and available recycling services.<br><br>**MM AQ-14: Land Use Measures.**<br><br>■ Incorporate public transit into project design.<br>■ Preserve and create open space and parks. Preserve existing trees, and plant replacement trees at a set ratio.<br>■ Include pedestrian and bicycle-only streets and plazas within developments. Create travel routes that ensure that destinations may be reached conveniently by public transportation, bicycling, or walking.<br><br>**MM AQ-15: Transportation and Motor Vehicles**.<br><br>■ Limit idling time for commercial vehicles, including delivery and construction vehicles.<br>■ Use low- or zero-emission vehicles, including construction vehicles.<br>■ Promote ride sharing programs (e.g., by designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and | |

| *Environmental Impacts* | *Impact Determination* | *Mitigation Measures* | *Impacts after Mitigation* |
|---|---|---|---|
| | | unloading and waiting areas for ride sharing vehicles, and providing a web site or message board for coordinating rides).<br>■ Provide the necessary facilities and infrastructure to encourage the use of low or zero-emission vehicles (e.g., electric vehicle charging facilities and conveniently located alternative fueling stations).<br>■ Promote “least polluting” ways to connect people and goods to their destinations.<br>■ Incorporate bicycle lanes and routes into street systems.<br>■ Incorporate bicycle-friendly intersections into street design.<br>■ Provide adequate bicycle parking near building entrances to promote cyclist safety, security, and convenience.<br>■ Create bicycle lanes and walking paths. | |

## 3.2.4.4 Mitigation Monitoring

**Table 3.2-27**. Mitigation Monitoring for Air Quality and Meteorology

| **Impact AQ-1:** The proposed Project would result in construction-related emissions that exceed a SCAQMD threshold of significance. | |
|---|---|
| Mitigation Measure | **MM AQ-1. Harbor Craft Engine Standards.** |
| Timing | During specified construction phases. |
| Methodology | LAHD will include MM AQ-1 in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction. |
| Responsible Parties | LAHD |
| Residual Impacts | Significant |
| Mitigation Measure | **MM AQ-2: Dredging Equipment Electrification.** |
| Timing | During specified construction phases. |
| Methodology | LAHD will include MM AQ-2 in the contract specifications for construction. LAHD |

| | |
|---|---|
| | will monitor implementation of mitigation measures during construction. |
| Responsible Parties | LAHD |
| Residual Impacts | Significant |
| Mitigation Measure | **MM AQ-3: Fleet Modernization for Onroad Trucks.** |
| Timing | During specified construction phases. |
| Methodology | LAHD will include MM AQ-3 in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction. |
| Responsible Parties | LAHD |
| Residual Impacts | Significant |
| Mitigation Measure | **MM AQ-4: Fleet Modernization for Construction Equipment.** |
| Timing | During specified construction phases. |
| Methodology | LAHD will include MM AQ-4 in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction. |
| Responsible Parties | LAHD |
| Residual Impacts | Significant |
| Mitigation Measure | **MM AQ-5: Additional Fugitive Dust Controls.** |
| Timing | During specified construction phases. |
| Methodology | LAHD will include MM AQ-5 in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction. |
| Responsible Parties | LAHD |
| Residual Impacts | Significant |
| Mitigation Measure | **MM AQ-6: Best Management Practices.** |
| Timing | During specified construction phases. |
| Methodology | LAHD will include MM AQ-6 in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction. |
| Responsible Parties | LAHD |
| Residual Impacts | Significant |
| Mitigation Measure | **MM AQ-7: General Mitigation Measure.** |
| Timing | During specified construction phases. |
| Methodology | LAHD will include MM AQ-7 in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction. |
| Responsible Parties | LAHD |
| Residual Impacts | Significant |
| Mitigation Measure | **MM AQ-8: Special Precautions near Sensitive Sites.** |
| Timing | During specified construction phases. |
| Methodology | LAHD will include MM AQ-8 in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction. |
| Responsible Parties | LAHD |
| Residual Impacts | Significant |
| Mitigation Measure | **MM AQ-9: Construction Recycling.** |
| Timing | During specified construction phases. |

| | |
|---|---|
| Methodology | LAHD will include MM AQ-8 in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction. |
| Responsible Parties | LAHD |
| Residual Impacts | Significant |
| **Impact AQ-2:** The proposed Project would result in offsite ambient air pollutant concentrations during construction that exceed a SCAQMD threshold of significance. | |
| Mitigation Measure | **Implement mitigation measures MM AQ-1 through MM AQ-9.** |
| Residual Impacts | Significant |
| **Impact AQ-3:** The proposed Project would result in operational emissions that exceed a SCAQMD threshold of significance. | |
| Mitigation Measure | **Implement mitigation measures MM AQ-1 through MM AQ-9.** |
| Residual Impacts | Significant |
| **Impact AQ-9:** The proposed Project would produce GHG emissions that would exceed CEQA thresholds.. | |
| Mitigation Measure | **In addition to implementing mitigation measures MM AQ-1 though MM AQ-9,**<br>**MM AQ-10: Energy Efficiency** |
| Timing | Prior to approving final Project design |
| Methodology | Implement energy efficiency design elements into Project development plans |
| Responsible Parties | LAHD and Contractor |
| Residual Impacts | Significant |
| Mitigation Measure | **MM AQ-11: Renewable Energy** |
| Timing | Prior to approving final Project design |
| Methodology | Implement renewable energy design elements into Project development plans |
| Responsible Parties | LAHD and Contractor |
| Residual Impacts | Significant |
| Mitigation Measure | **MM AQ-12: Water Conservation and Efficiency** |
| Timing | Prior to approving final Project design |
| Methodology | Implement water conservation design elements into Project development plans |
| Responsible Parties | LAHD and Contractor |
| Residual Impacts | Significant |
| Mitigation Measure | **MM AQ-13: Solid Waste Measures** |
| Timing | Prior to approving final Project design |
| Methodology | Implement solid waste measure design elements into Project development plans |
| Responsible Parties | LAHD and Contractor |
| Residual Impacts | Significant |
| Mitigation Measure | **MM AQ-14: Land Use Measures** |
| Timing | Prior to approving final Project design |
| Methodology | Implement sustainable land use design elements into Project development plans |
| Responsible Parties | LAHD and Contractor |
| Residual Impacts | Significant |
| Mitigation Measure | **MM AQ-15: Transportation and Motor Vehicles** |

| | |
|---|---|
| Timing | Prior to final Project design and during Project operation |
| Methodology | Implement sustainable transportation elements into Project development plans and enforce operating policies |
| Responsible Parties | LAHD and Contractor |
| Residual Impacts | Significant |

## 3.2.5 Significant Unavoidable Impacts

- Proposed project construction emissions would result in significant and unavoidable impacts for $NO_X$ emissions.
- Construction of the proposed Project would exceed the SCAQMD 1-hour $NO_2$, 24-hour $PM_{10}$, and 24-hour $PM_{2.5}$ ambient thresholds and would result in significant and unavoidable impacts under CEQA.
- Peak daily operational emissions from the proposed Project would result in significant and unavoidable impacts under CEQA for $NO_X$ air emissions when combined with 2011 construction emissions.
- The proposed Project would expose sensitive receptors to significant levels of TACs.
- The proposed Project would produce GHG emissions that would exceed CEQA baseline levels, resulting in a significant and unavoidable impact under CEQA.