3.2

AIR QUALITY AND METEOROLOGY

3.2.1 Introduction

Emissions from construction and operation of the proposed Project would affect air quality in the immediate Project area and the surrounding region. This section includes a description of the affected air quality resource, predicted impacts of each Project Alternative, and mitigations that would reduce significant impacts.

3.2.2 Environmental Setting

The site of the proposed Project is located 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. The SCAB covers an area of approximately 15,500 square kilometers (6,000 square miles) and is 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 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 weather changes in the area.

The Eastern Pacific High attains its greatest strength and most northerly position during the summer, when the High 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 (300 to 800 meters) 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 South Coast Air Basin. In addition, the warm temperatures and high solar radiation during the summer months promote the formation of ozone, which has 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 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 South Coast Air Basin. 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 South Coast Air Basin 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 Air Pollutants and Air Monitoring

Criteria Pollutants

Air quality at a given location can be described by the concentration of various pollutants in the atmosphere. Units of concentration are generally expressed in parts per million (ppm) or micrograms per cubic meter (µg/m3). The significance of a pollutant concentration is determined by comparing the concentration to an appropriate national and/or state ambient air quality standard. These standards represent the allowable atmospheric concentrations at which the public health and welfare are protected and include a reasonable margin of safety to protect the more sensitive individuals in the population.

The USEPA establishes the National Ambient Air Quality Standards (NAAQS). Maximum pollutant concentrations generally shall not exceed a short-term NAAQS more than once per year and they shall not exceed the annual standards. The state standards, established by the California Air Resources Board (CARB), are termed the California Ambient Air Quality Standards (CAAQS). 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. The criteria pollutants of primary concern that are assessed in this EIR include O_3, CO, NO_2, sulfur dioxide (SO_2), PM_{10}, and $PM_{2.5}$. Criteria pollutants add directly to regional health problems. The known adverse effects associated with these criteria pollutants are shown in Table 3.2-1.

Of the criteria pollutants of concern, O_3 is unique because it is not directly emitted from Project-related sources. Rather, ozone is a secondary pollutant, formed from the precursor pollutants volatile organic compounds (VOC) and nitrogen oxides (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 by comparing Project-generated emissions of VOC and NO_x to daily emission thresholds set by the South Coast Air Quality Management District (SCAQMD). These emission thresholds are discussed in Section 3.2.4.2 (Significance Criteria).

Because most of the 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 by the 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 toxic air contaminant (with its cancer and non-cancer health effects quantified under **Impact AQ-6**).

Local Air Monitoring Levels

The USEPA designates all areas of the United States as having air quality better than (attainment) or worse than (nonattainment) the NAAQS. A nonattainment designation generally means that a primary NAAQS has been exceeded more than once per year in a given area. The CARB also designates areas of the state as either in attainment or nonattainment of the CAAQS. An area is in nonattainment if a CAAQS has been exceeded more than once in 3 years. In regard to the NAAQS, the SCAB is presently in "severe" nonattainment for 8-hour O_3, "serious" nonattainment for PM_{10} and CO, nonattainment for $PM_{2.5}$, and in attainment for SO_2. The CARB recently reclassified the SCAB as in attainment for CO and is currently petitioning the USEPA for reclassification as a federal CO attainment region. The SCAB was historically in nonattainment of the NAAQS for NO_2. The main sources of NO_2 emissions are on-road vehicles (SCAQMD, CARB, Southern California Association of Governments [SCAG], and USEPA 2006). Due to a reduction in emissions caused by national emission standards for new vehicles and a state vehicle emissions testing program, the region has attained the NO_2 standard since 1991. As a result, the EPA in September 1998 re-designated the SCAB to attainment of the NO_2 NAAQS and the region is now considered a maintenance area for NO_2.

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

Pollutant	*Adverse Effects*
Ozone	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals and (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) 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; (c) Vegetation damage; (d) Property damage
Carbon Monoxide	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
Sulfur Dioxide	(a) Broncho-constriction 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})	(a) Excess deaths from short-term and long-term exposures; (b) excess seasonal declines in pulmonary function, especially in children; (c) asthma exacerbation and possibly induction; (d) adverse birth outcomes including low birth weight; (e) increased infant mortality; (f) increased respiratory symptoms in children such as cough and bronchitis; and (g) increased hospitalization for both cardiovascular and respiratory disease (including asthma) [a]
Suspended Particulate Matter ($PM_{2.5}$)	(a) Excess deaths from short-term and long-term exposures; (b) excess seasonal declines in pulmonary function, especially in children; (c) asthma exacerbation and possibly induction; (d) adverse birth outcomes including low birth weight; (e) increased infant mortality; (f) increased respiratory symptoms in children such as cough and bronchitis; and (g) increased hospitalization for both cardiovascular and respiratory disease (including asthma) a
Lead [b]	(a) Increased body burden; (b) impairment of blood formation and nerve conduction, and neurotoxin.
Sulfates [c]	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardiopulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage

Source: (SCAQMD 2006a).

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

[b] Lead emissions were evaluated in the health risk assessment of this study. Screening calculations have shown that lead emissions would be well below the SCAQMD emission thresholds for all Project alternatives.

[c] Sulfate emissions were evaluated in the health risk assessment of this study. The SCAQMD has not established an emissions threshold for sulfates, nor does it require dispersion modeling against the localized significance thresholds (LSTs).

[d] California Ambient Air Quality Standards have also been established for 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.

In regard to the CAAQS, the SCAB is presently in "extreme" nonattainment for O_3, "severe" nonattainment for CO, and nonattainment for PM_{10}. The air basin is in attainment of the CAAQS for CO, SO_2, NO_2, sulfates, and lead, and is unclassified for hydrogen sulfide, vinyl chloride, and visibility reducing particles.

Generally, concentrations of photochemical smog, or O_3, are highest during the summer months and coincide with the season of maximum solar insolation. Inert pollutant concentrations 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 this time of year. These conditions limit atmospheric dispersion. However, in the case of PM_{10} impacts from fugitive dust sources, maximum dust impacts may occur during high wind events and/or in proximity to man-made ground-disturbing activities, such as vehicular activities on roads and earth moving during construction activities.

Air quality within the SCAB has improved since the inception of air pollutant monitoring in 1976 by the SCAQMD (SCAQMD 2006b). This improvement is mainly due to lower-polluting on-road motor vehicles and the implementation of emission reduction strategies by the SCAQMD. This trend towards cleaner air has occurred in spite of continued population growth. While the SCAB exceeded the national one-hour O_3 standard on 208 days in 1977, the number of O_3 exceedance days was 30 in 2005.

Table 3.2-2 summarizes the maximum pollutant concentrations recorded at the SCAQMD North Long Beach station for 2002 through 2005. Data from this station are used to describe the air quality of the Project region, as it is the closest station that has the longest period of record of measured ambient air quality conditions. However, short-term monitoring programs have occurred closer to the Port then at the North Long Beach station, including the CARB Wilmington station on Mahar Avenue and the current Port monitoring program. Table 3.2-2 shows that the following standards were exceeded at the North Long Beach station over the 4-year period: (1) O_3 (state 1-hour standards), (2) PM_{10} (state 24-hour and annual standards), and (3) $PM_{2.5}$ (national 24-hour standard and national and state annual standards). No standards were exceeded for CO, NO_2, SO_2, lead, and sulfates.

The Port has been monitoring air quality conditions within the Port area since February 2005 to estimate the contribution of Port operations to ambient levels of DPM in the area (LAHD 2004). This monitoring program measures meteorological conditions and ambient concentrations of particulate matter (PM) at four stations within and adjacent to the Port and performs analyses of PM samples to estimate the presence of diesel combustive products, such as elemental carbon. The station locations include the following:

- Wilmington Community Primary Station – Located at the Saints Peter and Paul School.
- Coastal Boundary Station – Located at Berth 47 in the Port Outer Harbor.
- Source-Dominated Station – Located at the Terminal Island Treatment Plant.
- San Pedro Community Station – Located at the Liberty Hill Plaza Building.

Meteorological data from the Wilmington and Berth 47 sites were used in this air quality analysis to simulate human health risks and criteria pollutant impacts associated with the Project Alternatives within the Inner and Outer Harbor regions, respectively, as discussed in Appendix D3 of this EIS/EIR. These data are the most representative of meteorological conditions that would occur within the operational areas of Project emission sources.

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			
				2002	*2003*	*2004*	*2005*
Ozone (ppm)	1 hour	n/a	0.09	0.084	**0.099** [a]	0.090	0.091
	8 hours	0.08	0.07	0.064	0.068	0.074	0.068
CO (ppm)	1 hour	35	20	5.8	5.5	4.2	5.0
	8 hours	9	9	4.6	4.7	3.4	3.7
NO_2 (ppm)	1 hour	n/a	0.18	0.13	0.14	0.12	0.12
	Annual	0.053	0.03	0.029	0.029	0.028	0.024
SO_2 (ppm)	1 hour	n/a	0.25	0.03	not avail.	not avail.	0.04
	24 hours	0.14	0.04	0.008	0.008	0.013	0.010
	Annual	0.03	n/a	0.002	0.002	0.005	0.002
PM_{10} (µg/m^3)	24 hours	150	50	**74** [b]	**63** [b]	**72** [b]	**66** [b]
	Annual	n/a	20	35.9	32.8	33.1	29.7
$PM_{2.5}$ (µg/m^3)	24 hours	35	n/a	**62.7** [c]	**115.2** [c]	**66.6** [c]	**53.8** [c]
	Annual	15	12	**19.5**	**18.0**	**17.8**	**16.0**
Lead (µg/m^3)	30 days	n/a	1.5	0.03	not avail.	not avail.	not avail.
	Calendar quarter	1.5	n/a	0.02	not avail.	not avail.	not avail.
Sulfates (µg/m^3)	24 hours	n/a	25	17.8	not avail.	not avail.	not avail.

Notes:

Exceedances of the standards are highlighted in bold. Although the NAAQS were not exceeded at the North Long Beach Monitoring Station for carbon monoxide and PM_{10} from 2002 to 2005, the South Coast Air Basin is classified by USEPA as nonattainment for these pollutants because violations have occurred at other monitoring stations in the Basin.

a The state 1-hour ozone standard was exceeded on 0 days in 2002, 1 day in 2003, 0 days in 2004, and 0 days in 2005. The national 1-hour ozone standard was not exceeded.

b The state 24-hour PM_{10} standard was exceeded on 5 of 58 (9 percent) sampled days in 2002, 4 of 61 (7 percent) sampled days in 2003, and 2 of 57 (4 percent) sampled days in 2004. The number of 24-hour PM_{10} exceedances in 2005 is not available. The national 24-hour PM_{10} standard was not exceeded.

c The number of 24-hour $PM_{2.5}$ exceedances is not available.

Sources: (SCAQMD 2006c), (CARB 2006a), and (USEPA 2006).

µg/m3 micrograms per cubic meter

ppm parts per million

Pollutant sampling data for February 2005 through January 2006 from the Port monitoring program are summarized in Table 3.2-3. Samples are collected as 24-hour averages every 3 days. Data collected concurrently at the SCAQMD North Long Beach monitoring station are also presented for comparison. The table shows that PM_{10} concentrations at the Wilmington Community station are of similar values to those at the North Long Beach station. $PM_{2.5}$ concentrations at the Wilmington Community and Source-Dominated stations are generally greater than the Coastal

Boundary and San Pedro stations, less than the North Long Beach station for maximum 24-hour averages, and comparable to 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 3.2-3. Maximum Pollutant Concentrations Measured by the POLA Air Quality Monitoring Network (February 2005 to February 2006)

Pollutant	*Averaging Period*	PORT OF LOS ANGELES MONITORING SITES				SCAQMD MONITORING SITE
		Wilmington Community Site	*Coastal Boundary Site*	*San Pedro Community Site*	*Source-Dominated Site*	*North Long Beach*
PM_{10} (µg/m^3)	24 hours	**63.3**	--	--	--	**66.0**
	Period Average	27.6	--	--	--	30.0
$PM_{2.5}$ (µg/m^3)	24 hours	32.7	**42.3**	25.7	28.5	**48.0**
	Period Average	13.0	10.4	10.9	14.5	14.9
Elemental Carbon $PM_{2.5}$ (µg/m^3)	24 hours	5.2	4.6	6.7	9.3	--
	Period Average	1.8	1.3	1.7	3.3	--

Notes:

Exceedances of the National 24-hour and State annual $PM_{2.5}$ standards are highlighted in bold.

1. For PM_{10}, the SCAQMD North Long Beach monitoring site measures a 24-hour sample every 6 days, compared to every 3 days for the POLA monitoring sites. Therefore, only one-half of the POLA monitoring site samples (every other sample) has a corresponding sample from the North Long Beach site. For $PM_{2.5}$, all monitoring sites measure a 24-hour sample every 3 days.
2. The data were collected from February 2005 through January 2006, with the following exceptions: the Source-Dominated site collected data from May 2005 through January 2006, and data from the SCAQMD North Long Beach monitoring sites were available from February 2005 through December 2005.
3. PM_{10} is not measured at the Coastal Boundary site, San Pedro Community site, or Source-Dominated site.
4. Elemental Carbon $PM_{2.5}$ is not measured at the SCAQMD North Long Beach site.5.

Source: (POLA 2006a).

Toxic Air Contaminants

Toxic Air Contaminants (TACs) are identified by the CARB, based upon its own exposure assessments and by health effects assessments conducted by the Office of Environmental Health Hazard Assessment (OEHHA). TACs are compounds that are known or suspected to cause short-term (acute) and/or long-term (chronic non-carcinogenic or carcinogenic) adverse health effects. Exposure to increased PM concentrations also may cause a reduction in life span or premature death. The OEHHA develops non-cancer and cancer health values from information available from published animal and human studies. TACs are emitted from many industrial processes and stationary sources, such as dry cleaners, gasoline stations, paint and solvent operations, and notably fossil fuel combustion sources. The SCAQMD estimates in the *Multiple Air Toxics Exposure Study II* (*MATES-II*) that about 70 percent of the background airborne cancer risk in the SCAB is due to particulate emissions from diesel-powered on- and off-road motor vehicles (SCAQMD 2000). Due to the prevalence of diesel-powered sources associated with operations at the San Pedro Bay Ports, *MATES-II* identified that this area has some of the highest ambient cancer risks due to air emissions of any area within the SCAB. The CARB also estimates that elevated levels of cancer risks due to operational emissions from the Ports of Los Angeles and Long Beach occur within and in proximity to the two Ports (CARB 2006b).

The *MATES-II* results also show a downward trend in emissions of most TACs in the SCAB over the last 12 years. A recent study determined that diesel particulate emissions in the air basin have decreased by about 32 percent between 1990 and 2000 (Christoforou et al. 2000). These reductions are due, in part, to stricter diesel engine standards and the implementation of programs such as the Low Emissions Vehicle (LEV) Program, the Toxic Hot Spots Program (Assembly Bill 2588), reformulated fuels, and SCAQMD Regulation XIV (*Toxics and Other Non-Criteria Pollutants*).

As discussed in Section 1.7.6, the Port of Los Angeles, in conjunction with the Port of Long Beach, has developed the San Pedro Bay Ports Clean Air Action Plan (CAAP) that targets all emissions, but is focused primarily on TACs (Ports of Los Angeles and Long Beach 2006).

The SCAQMD began a subsequent air toxics study, MATES-III, in 2004 as part of the *Environmental Justice Workplan 2003-4 Summary* (SCAQMD 2004). The Project includes 1 year of ambient monitoring for air toxics in 2004-2005, with a combination of Basin-wide measurements and localized studies. One objective of MATES-III is to identify localized areas of high carcinogenic risk resulting from the cumulative impacts from multiple TAC emission sources. The MATES-III study has not yet been completed. The CARB also funds a variety of health effects studies within the Port region through their air toxics and environmental health programs (CARB 2006c).

Secondary $PM_{2.5}$ Formation

Within the SCAB, $PM_{2.5}$ particles both are 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, et al 2006).

Project-generated emissions of NO_x, SO_x, and VOCs would contribute toward secondary $PM_{2.5}$ formation some distance downwind of the emission sources. However, the air quality analysis in this 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 2006d).

Ultrafine Particles

Ultrafine particles (UFP) are generally defined as ambient air particles less than or equal to 0.1 µm in diameter. Due to their small size, UFP generally contribute to less than 10 percent of ambient $PM_{10}/PM_{2.5}$ mass. On the basis of numbers, they can dominate the distribution of particle sizes in the atmosphere, as very large numbers of UFP are produced by combustion sources. Hence, UFP are monitored on the basis of particle count. Most studies that evaluate health effects from PM have used particle mass as the measure of exposure. However, there is growing evidence that UFP may be important in determining health effects, as for example, they are able to penetrate deeper into the lung tissue (alveoli) than fine ($PM_{2.5}$) or coarse (PM_{10}) PM.

UFP emissions occur from both natural and manmade activities. Internal combustion engines are a significant source of UFPs. Most diesel emission particles have diameters smaller than 0.1 μm. Typically, these particles are a complex mixture of solid and more volatile particles. The solid particles are formed during the combustion process in the engine and are generally larger than the volatile particles. They consist mainly of agglomerated elemental carbon (soot) and act as an absorbent for some of the more volatile organic species formed during combustion. The smaller, more volatile particles mainly form outside of the engine by the nucleation of hydrocarbon, sulfuric acid, and water vapor as the exhaust undergoes processes of dilution and cooling in the atmosphere (SCAQMD et al 2006).

Current UFP research primarily involves roadway exposure. Preliminary studies suggest that over 50 percent of an individual's daily exposure is from driving on highways. Levels appear to drop off rapidly in the direction away from major roadways. A number of UFP studies are referenced in Appendix D5. Little research has been conducted on the presence of UFP from ships and off-road vehicles. The SCAQMD and CARB are in the process of implementing studies that will measure ambient UFP at the San Pedro Bay Ports as part of their Clean Ports Initiative and Harbor Communities Monitoring Programs, respectively. Additionally, the POLA monitoring program will initiate sampling for UFPs in 2007. Work is also being done on UFP filter oxidation control technologies, including filters for ships. The Port actively participates in CARB emissions testing at the Port. The *2007 AQMP* also recommends that the SCAQMD consider UFP issues in PM and air toxics control strategies.

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.

The CARB and 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. Emission sources from the proposed Project Alternatives would produce DPM, which contains trace amounts of toxic chemicals. Through its Clean Air Action Plan, 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 Clean Air Action Plan will reduce air pollutants that generate both acidic and toxic compounds, include emissions of NO_x, SO_x, and DPM.

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 of GHGs 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 and perfluorocarbons) and sulfur hexafluoride.

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. 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 increases in the severity of storms and droughts, changes to local and regional ecosystems including the potential loss of species, and a significant reduction in winter snow pack. These and other environmental changes have environmental, economic, and social consequences, possibly including increased spread of disease, changes to agriculture, and fresh water shortages.

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 the U.S. EPA must regulate GHGs as pollutants, and unless the agency determines that GHGs do not contribute to climate change, it must promulgate regulations for GHG emissions from new motor vehicles (*Massachusetts et al. Environmental Protection Agency* [case No. 05-1120], April 2, 2007). 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 greenhouse gas 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 (SF6)

These are the same six GHGs that are identified in California Assembly Bill (AB) 32 and by the USEPA. Attachment 3 of Appendix D1.3 describes the natural and man-made sources of emissions for each of these GHGs.

The different GHGs have varying global warming potential (GWP). The 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_2on 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. Attachment 1 of Appendix D1.3 lists the GWP for each GHG.

The Project air quality analysis includes estimates of GHG emissions generated by the Project for existing and future conditions, as presented in Sections 3.2.2.4 and 3.2.4.4, respectively. To be consistent with international convention, the GHG emissions in this report are expressed in metric units (metric tons, in this case).

3.2.2.3 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 Berths 136-147 area include residents in south Wilmington. Additionally, the Hawaiian Avenue Elementary School in Wilmington is currently about 0.40 miles away from the proposed Project site. The nearest convalescent home is the Harbor View House, about 1 mile south of the Project site. The nearest hospital is the San Pedro Peninsula Hospital, about 1.5 miles southwest of the Project site. Residents and grammar schools in northeast San Pedro also are in proximity to the

Project site. Table D3-3 in Appendix D3 lists the sensitive receptors that occur in proximity to the project site and were evaluated in the Project air quality analysis.

3.2.2.4 Existing Emissions at the Berths 136-147 Terminal

The existing Project site at Berths 136-147 Terminal area is primarily used as a marine container cargo terminal, with an adjacent rail switching yard. Diesel fuels power almost all existing Project operational sources. Operational activities associated with this facility include (1) cruising, maneuvering, and hoteling of cargo ships, (2) tug boat assistance to cargo ships, (3) handling of cargo within terminals by mobile equipment, (4) transport of cargo by on-road trucks, and (5) transport of cargo by rail from off-site rail yards and the handling of these cargo with mobile equipment. The Pier A rail yard is adjacent to the existing Berths 136-147 terminal and is a source of locomotive emissions. This facility performs rail storage and switching activities that are unrelated to container operations at Berths 136-147. Since the proposed Project would relocate this facility to the Berth 200C area and expand into its current location, its emissions are considered in the existing and future baseline conditions. The Project also would construct the Harry Bridges Buffer area. As discussed in Sections 2.2.3 and 2.3.4, the proposed buffer area is largely vacant and therefore does not contribute to existing emissions. The following describes the methods used to estimate year 2003 emissions from existing operations associated with the Berths 136-147 Terminal.

Activity data used to estimate emissions from existing operational sources at the Berths 136-147 Terminal were obtained from Port staff (personal communications, Chris Brown and Dave Walsh), TraPac, Inc. staff (personal communications, Scott Axleson), documents on the environmental review of previous and proposed terminal development projects in the Port (Port 1997a, 2002, and 2006b), the proposed Project traffic study conducted as part of this EIS/EIR (refer to section 3.10), and the *Port of Los Angeles Baseline Air Emissions Inventory - 2001* and *The Port of Los Angeles Inventory of Air Emissions for Calendar Year 2005* (*2001 and 2005 PEIs*) (Starcrest Consulting Group 2005 and 2007). Emission factors used to estimate existing operational emissions were obtained from (1) the CARB OFFROAD2007 Emissions Model (CARB 2006i) for terminal and rail yard equipment, (2) the *2001 and 2005 PEIs* for vessel sources, (3) special studies for locomotives (USEPA 1997), and (4) the EMFAC2007 mobile source emissions models for on-road trucks (CARB 2006e). Appendix D1 includes data and assumptions used to estimate emissions for existing Berths 136-147 Terminal operations.

The following assumptions were used to estimate existing operational air emissions:

1. The annual cargo throughput for the Berths 136-147 operations during year 2003 was 891,976 twenty-foot equivalent units (TEUs). This data was obtained from Port cargo data and billing records.
2. A total of 246 ship visits occurred at Berths 136-147 in 2003. This data was obtained from Port cargo data and billing records.
3. Cargo ship cruising emissions were based on transit activities between the Port breakwater and the boundaries of the SCAQMD waters, which amounted to an average one-way trip length of about 45 nautical miles (nm).

4. The Vessel Speed Reduction Program (VSRP) compliance rate for vessel destined for the Berths 136-147 Terminal was 25 percent in 2003 (POLA 2005a). The VSRP recommends cargo vessels that access the Ports of Los Angeles and Long Beach to reduce their speed to 12 knots or less within 20 nm of the Point Fermin Lighthouse. The purpose of the program is to reduce vessel fuel usage and resulting emissions during transits in this area.
5. Registration information of approximately 7,200 on-road trucks that serviced San Pedro Bay Ports container terminals in the year 2003 were used to develop the existing truck fleet age distribution for use as inputs to the EMFAC2007 on-road emissions model (Starcrest Consulting Group 2004).
6. Sixty-seven percent of rail cargo trucked to off-site rail yards would go to the Carson ICTF (4.5 miles) and the remaining thirty-three percent would go to Los Angeles rail yards (18 miles) (POLA 2004). This resulted in an average truck trip distance of 9.0 miles. Trucks destined to local deliveries were given an average trip distance of 20 miles, which is an approximate distance to the center of the Los Angeles Basin from the Port. This average trip distance is supported by the Rail study done for the Port of Los Angeles (REF). Trucks destined for deliveries outside of the SCAB were given an average trip distance of 90 miles. Truck trips numbers were obtained from the traffic analysis (Chapter 3.10) and are based upon truck counts taken on the busiest days at the Port.
7. Container terminal equipment usages were obtained through the PEI process.
8. Each inbound train trip (into the Carson and Los Angeles rail yards) to an off-site rail yard would transport 90 containers (167 TEUs). Each outbound train trip from an off-site rail yard (to inland locations) would transport 240 containers (444 TEUs) (Yang Ming/MTC Terminal 2003).

Table 3.2-4 summarizes the annual average daily emissions that occurred from existing operations at the Berths 136-147 Terminal for the Project CEQA Baseline in year 2003. These data were developed from annual ship visits, truck counts, and throughput. Total 2003 annual emissions were divided by 365 days to estimate annual average daily emissions. Table 3.2-4 shows that the main contributors to emissions were container ships, terminal equipment, and on-road trucks. Container ship cruising emissions are due to transit activities between the Port breakwater and the outer boundary of the SCAQMD waters. Train and rail yard equipment usages and emissions occurred at off-site rail yards and along rail lines east of the Los Angeles metropolitan regions and not within the Port area.

Table 3.2-5 summarizes peak daily emissions estimated for 2003 CEQA Baseline operations at the Berths 136-147 Terminal. Peak Day emissions are estimated to comply with SCAQMD reporting standards. These emissions are compared to future Project peak day scenarios to determine CEQA significance. However, average daily emissions discussed in Table 3.2-5 more adequately express typical Port operations. Additionally, peak daily emissions occur infrequently and are based upon a lesser known and therefore more theoretical set of assumptions on which to determine significance.

Table 3.2-4. Average Daily Emissions Associated with Baseline Operations at the Berths 136-147 Terminal - Year 2003

Activity	POUNDS PER DAY					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Ships – Fairway Transit	65	151	1,949	1,145	163	153
Ships – Precautionary Area Transit	10	23	240	152	21	19
Ships – Harbor Transit	18	23	169	87	17	16
Ships – Docking	6	6	47	21	5	5
Ships – Hoteling Sources	32	120	1,146	1,142	98	92
Tugs – Cargo Vessel Assist	1	6	42	3	2	2
Terminal Equipment	93	337	1,198	16	55	50
On-Road Trucks	827	2,974	6,666	44	595	433
Trains (Off-site)	100	208	1,738	111	52	48
Rail Yard Equipment (Off-site)	17	63	202	3	10	9
Worker Commuter Vehicles	12	160	20	0	12	11
Pier A Rail Yard	4	6	55	1	1	1
Total Daily Emissions - Pounds	1,185	4,077	13,472	2,724	1,022	831

Table 3.2-5. Peak Daily Emissions Associated with Baseline Operations at the Berths 136-147 Terminal

Activity	POUNDS PER DAY					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Ships – Fairway Transit	68	160	2,076	1,230	174	163
Ships – Precautionary Area Transit	13	31	350	231	30	28
Ships – Harbor Transit	22	28	205	110	21	20
Ships – Docking	8	8	57	27	6	6
Ships – Hoteling Sources	57	208	2,019	1,975	173	162
Tugs – Cargo Vessel Assist	5	24	156	10	6	6
Terminal Equipment	542	1,969	7,008	92	320	294
On-Road Trucks	1,132	4,071	9,126	61	814	593
Trains (Off-site)	100	208	1,737	111	52	48
Rail Yard Equipment (Off-site)	17	63	202	3	10	9
Worker Commuter Vehicles	12	160	20	0	12	11
Pier A Rail Yard (Off-site)	4	6	55	1	1	1
Total Daily Emissions – Pounds	1,977	6,935	23,010	3,851	1,607	1,329

The peak daily emissions for 2003 CEQA Baseline operations include the following assumptions that were chosen to identify a scenario that occurred with some regularity, rather than a scenario that would produce extreme daily emissions. Development of this type of scenario would provide for a more meaningful comparison to future Project peak daily scenarios, as it is expected that this scenario occurred several days per year. Additionally, it would represent lower baseline conditions, which would provide higher increments for comparison to the Project and its alternatives.

- Ship visits are dependent upon the number of available berths and annual ship visits. In 2003, there were three berths and 246 annual ship visits at Berths 136-147. Therefore, the analysis assumes 2 ships at berth, which is approximately 3 times the annual average daily vessel occupancy at the terminal: one <3,000 TEU and one 3,000 to 5,000 TEU capacity vessel, as this exceeds the annual average daily activity level for the berth.
- Throughput across the berth is dependent upon the number of available cranes and its service capacity. There were 11 operable cranes in place during 2003. The analysis assumed that 4 cranes would service <3,000 and 3-5,000 TEU capacity vessels at a rate of 25 lifts per hour and 16 hours per day, for 1,600 lifts per day, times 1.87 TEUs per lift, or 2,992 TEUs per day per berth, for a total of 5,984 TEUs.
- Vessel transit. One <3,000 TEU capacity vessel would perform a round trip transit in and out of the Port. Selection of the smallest vessel size would maximize the difference between the CEQA Baseline and the Project alternatives.
- Truck trips and gate cargo throughput were equal to the annual number of truck trips divided by 266.6 work days, or 4,492 trips, times 1.85 TEUs per truck trip, or 8,310 TEUs.
- Train trips and associated cargo throughput at off-site rail yard. The analysis used the 2003 annual daily average number of train round trips, or 2, times 611 TEUs per train round trip, for a total of 1,222 TEUs of rail cargo.
- Rail yard cargo handling equipment usage. The equipment usage associated with this activity was based upon two round trip trains loads, or 1,222 TEUs.

Peak day container yard cargo handling equipment (CHE) usage is a function of the wharf and gate throughput identified above, or 14,294 TEUs. Peak day emissions generated by CHE were estimated by multiplying the annual CHE emissions estimated for the baseline year times the container yard peak daily TEUs divided by the baseline year annual throughput in TEUs.

Greenhouse Gas Emissions

Table 3.2-6 presents an estimate of the GHG emissions generated within California from the 2003 baseline operations at the Berths 136-147 Terminal. As discussed further in Section 3.2.4.3.2, this analysis analyzes GHG emissions within the State of California, consistent with the goals of the California Climate Action Registry

(CCAR).[1] The emission sources for which GHG emissions were calculated include ships, tugboats, diesel terminal and railyard equipment, on-road trucks, trains, fugitive refrigerant losses from refrigerated containers (reefers), on-terminal electricity usage, and worker commute vehicles. The GHG emission calculation methodology is described in Section 3.2.4.3.2 and Appendix D1.3.

Table 3.2-6. Annual Operational GHG Emissions - Berths 136-147 Terminal Project — CEQA Baseline (2003)

Project Scenario/ Source Type	METRIC TONS PER YEAR						
	CO_2	*CH_4*	*N_2O*	*HFC-125*	*HFC-134a*	*HFC-143a*	*CO_2e*
Year 2003 Baseline							
Ships	62,861	8.3	0.6				63,209
Tugboats	369	0.1	0.0				371
Terminal & Railyard Equipment	16,799	2.7	0.2				16,917
Trucks	184,564	9.3	4.6				186,200
Trains	32,843	4.6	0.3				33,040
Reefer Refrigerant Losses				0.05	0.11	0.05	482
AMP Usage							0
On-Terminal Electricity Usage	3,773	0.0	0.0				3,779
Worker Vehicles	1,014	0.2	0.2				1,073
Year 2003 Total	**302,223**	**25.2**	**5.9**	**0.05**	**0.11**	**0.05**	**305,073**

One metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2800 for HFC-125; 1300 for HFC-134a; and 3800 for HFC-143a.

3.2.3 Applicable Regulations

Various aspects of air quality in the SCAB are regulated by the USEPA, CARB, and SCAQMD. In addition, regional and local jurisdictions play a role in air quality management. The role of each regulatory agency is discussed below.

3.2.3.1 Federal Regulations

The Federal Clean Air Act (CAA) and its subsequent amendments form the basis for the national air pollution control effort. USEPA is responsible for implementing most aspects of the CAA. Basic elements of the act include the NAAQS for major air pollutants, hazardous air pollutant standards, attainment plans, motor vehicle emission standards, stationary source emission standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.

[1] In the case of electricity consumption, the GHG emissions may also be generated by out-of-state power plants.

The CAA delegates the enforcement of the federal standards to the states. In California, the CARB is responsible for enforcing air pollution regulations. The CARB has in turn delegated to local air agencies the responsibility of regulating stationary emission sources. In the SCAB, the SCAQMD has this responsibility.

State Implementation Plan

In areas that do not attain a NAAQS, the CAA requires preparation of a State Implementation Plan (SIP), detailing how the State will attain the NAAQS within mandated timeframes. In response to this requirement, the SCAQMD and SCAG developed the *2003 Air Quality Management Plan* (*2003 AQMP*). The focus of the *2003 AQMP* was to demonstrate attainment of the federal PM_{10} standard by 2006 and the federal 1-hour ozone standard by 2010, while making expeditious progress toward attainment of state standards. Since the SCAB is on the verge of attaining the federal CO standard, the *2003 AQMP* also replaced the 1997 attainment demonstration for the federal CO standard and provided a basis for a future maintenance plan for CO (SCAQMD 2003). The SCAQMD and SCAG, in cooperation with the CARB and USEPA, have developed the *2007 AQMP* for purposes of demonstrating compliance with the new NAAQS for $PM_{2.5}$ and 8-hour O_3 and other planning requirements, including compliance with the NAAQS for PM_{10} (SCAQMD et al 2007). Since it will be more difficult to achieve the 8-hour O_3 NAAQS compared to the one-hour NAAQS, the *2007 AQMP* contains substantially more emission reduction measures compared to the *2003 AQMP*. The SCAQMD released the *Draft Program Environmental Impact Report for the 2007 AQMP* in March 2007 (SCAQMD 2007a).

IMO MARPOL Annex VI

The International Maritime Organization (IMO) MARPOL Annex VI, which came into force in May 2005, set new international NO_x emission limits on Category 3 (>30 liters per cylinder displacement) marine engines installed on new vessels retroactive to the year 2000. For oceangoing vessel main propulsion engines (<130 revolutions-per-minute [rpm] engine speed), the NO_x limits are about 6 percent lower than the average emissions from pre-Annex VI ships used in the *PEIs*.

Emission Standards for Nonroad Diesel Engines

To reduce emissions from off-road diesel equipment, USEPA established a series of cleaner emission standards for new off-road 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 will be phased in from 2006 to 2008. Tier 4 standards, which likely will require add-on emission control equipment to attain them, will be phased in from 2008 to 2015. These standards apply to construction and terminal equipment, but not locomotives or marine vessels.

Emission Standards for Marine Diesel Engines

To reduce emissions from Category 1 (at least 50 horsepower [hp] but < 5 liters per cylinder displacement) and Category 2 (5 to 30 liters per cylinder displacement) marine diesel engines, USEPA established emission standards for new engines, referred to as Tier 2 marine engine standards. The Tier 2 standards will be phased in from 2004 to 2007 (year of manufacture), depending on the engine size (USEPA 1999a). For the proposed Project, this rule is assumed to affect harbor craft but not oceangoing vessel auxiliary engines, as the latter would likely be manufactured overseas and, therefore, would be exempt from the rule.

Emission Standards for Locomotives

To reduce emissions from switch and line-haul locomotives, USEPA established a series of cleaner emission standards for new or remanufactured locomotive engines. Tier 0 standards apply to engines manufactured or remanufactured from 1973 to 2001. Tier 1 standards apply from 2002 to 2004. Tier 2 standards apply starting in 2005.

Emission Standards for On-Road Trucks

To reduce emissions from on-road, heavy-duty diesel trucks, USEPA established a series of cleaner emission standards for new engines, starting in 1988. The final and cleanest standards apply to engines manufactured in year 2007 (USEPA 2000b). Complete phase-in of the 2007 standards for new engines will be accomplished by 2010.

Nonroad Diesel Fuel Rule

With this rule, USEPA set sulfur limitations for non-road diesel fuel, including locomotives and marine vessels (excluding residual fuel used by oceangoing vessels). This rule affects Project line-haul locomotives. The California Diesel Fuel Regulations (described below) generally pre-empt this rule for other proposed Project sources, such as switch yard locomotives, construction equipment, terminal equipment, and harbor craft. Under this rule, diesel fuel used by line-haul locomotives will be limited to 500 ppm starting June 1, 2007 and 15 ppm starting January 1, 2012 (USEPA 2000b).

Highway Diesel Fuel Rule

With this rule, USEPA set sulfur limitations for on-road diesel fuel to 15 ppm starting June 1, 2006 (USEPA 2006).

General Conformity Rule

Section 176(c) of the CAA states that a federal agency cannot issue a permit for or support an activity unless the agency determines it will conform to the most recent USEPA-approved SIP. This means that projects using federal funds or requiring federal approval must not (1) cause or contribute to any new violation of a NAAQS, (2) increase the frequency or severity of any existing violation, or (3) delay the timely attainment of any standard, interim emission reduction, or other milestone.

Based on the present attainment status of the SCAB, a federal action would conform to the SIP if its annual emissions remain below 100 tons of CO or $PM_{2.5}$, 70 tons of PM_{10}, or 25 tons of NO_x or VOCs. The United States Court of Appeals ruled in December 2006 that areas in nonattainment of the 1-hour O_3 NAAQS that were superseded by the 8-hour nonattainment classifications must also consider the 1-hour requirements in conformity analyses (*South Coast Air Quality Management District v. EPA*, *et al.*, 472 F.3d 882) (US Court of Appeals, District of Columbia Circuit 2006). Hence, to conform to the SIP in the SCAB, a federal action also would have to comply with annual de minimis thresholds of 10 tons of NO_x or VOCs, as the SCAB was in extreme nonattainment of the 1-hour O_3 NAAQS. These de minimis thresholds apply to both proposed construction and operational activities. (For proposed Project operations, the thresholds are compared to the net change in emissions relative to the NEPA Baseline.) If the proposed action exceeds one or more of the de minimis thresholds, a more rigorous conformity determination is the next step in the conformity evaluation process. SCAQMD Rule 1901 adopts the guidelines of the General Conformity Rule.

Conformity Statement

The Port of Los Angeles regularly provides SCAG with its Portwide cargo forecasts for development of the AQMP. Therefore, the attainment demonstrations included in the 2003 AQMP and Draft Final 2007 AQMP account for the emissions generated by projected future growth at the Port. Because one objective of the proposed Project is to accommodate growth in cargo throughput at the Port, the AQMP accounts for the Project and conforms to the SIP. The SCAQMD Governing Board approved the 2007 Draft Final AQMP on June 1, 2007. The plan now must be approved by the CARB and submitted to EPA for its review and approval.

3.2.3.2 State Regulations and Agreements

California Clean Air Act

The CARB, which became part of the California Environmental Protection Agency (Cal-EPA) in 1991, is responsible for responding to the federal CAA, regulating emissions from motor vehicles and consumer products, and implementing the California Clean Air Act of 1988 (CCAA). The CCAA outlines a program to attain the CAAQS for O_3, NO_2, SO_2, and CO by the earliest practical date. Since 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. Similar to the federal system, the state requirements and compliance dates are based upon the severity of the ambient air quality standard violation within a region.

Assembly Bill (AB) 2650

Assembly Bill (AB) 2650 (Lowenthal) was signed into law by Governor Davis and became effective on January 1, 2003. Under AB 2650, shipping terminal operators are required to limit truck-waiting times to no more than 30 minutes at the Ports of Los Angeles, Long Beach, and Oakland, or face fines of $250 per violation. Collected fines are to be used to provide grants to truck drivers to replace and retrofit their vehicles with cleaner engines and pollution control devices. A companion piece of legislation (AB 1971) was passed in September 2004 that would ensure that the intent of AB 2650 is not circumvented by moving trucks with appointments inside the terminal gates to wait.

Heavy Duty Diesel Truck Idling Regulation

This CARB rule became effective in February 1, 2005 and it prohibits heavy-duty diesel trucks from idling for longer than 5 minutes at a time. Truck idling for longer than 5 minutes while queuing is allowed, however, provided the queue is located beyond 100 feet from any homes or schools (CARB 2006d).

1998 South Coast Locomotive Emissions Agreement

In 1998, the CARB, Class I freight railroads operating in the SCAB (BNSF and Union Pacific Railroad [UPRR]), and USEPA signed the 1998 Memorandum of Understanding (MOU) to implement a locomotive fleet average emissions program in the region. The 1998 MOU requires the Class I freight railroad fleet of locomotives in the SCAQMD to achieve average emissions equivalent to the NO_x emission standard established by USEPA for Tier 2 locomotives (5.5 grams per brake horsepower-hour) by year 2010. The MOU applies to both line-haul (freight) and switch locomotives operated by the railroads. This emission level is equivalent, on average, to operating only federal Tier 2 NO_x -compliant locomotives in the SCAB (CARB 2005a).

2005 CARB/Railroad Statewide Agreement

In 2005, the CARB, Class I freight railroads operating in the South Coast Air Basin (BNSF and UPRR), and USEPA signed the 2005 MOU, agreeing to several program elements intended to reduce the emission impacts of rail-yard operations on local communities. The 2005 MOU includes a locomotive idling-reduction program, early introduction of lower-sulfur diesel fuel in interstate locomotives, and a visible emission reduction and repair program (CARB 2005a).

California Diesel Fuel Regulations

This rule sets sulfur limitations for diesel fuel sold in California for use in on-road and off-road motor vehicles (CARB 2004a). Harbor craft and intrastate locomotives were originally excluded from the rule, but were later included by a 2004 rule amendment (CARB 2005b). Under this rule, diesel fuel used in motor vehicles except harbor craft and intrastate locomotives has been limited to 500-ppm sulfur since 1993. The sulfur limit was reduced to 15 ppm beginning September 1, 2006. (A federal diesel rule similarly limited sulfur content nationwide for on-road vehicles to 15 ppm beginning October 15, 2006.) Diesel fuel used in harbor craft in the SCAQMD also was limited to 500-ppm sulfur starting January 1, 2006 and 15-ppm sulfur by September 1, 2006. Diesel fuel used in intrastate locomotives (switch locomotives) was limited to 15-ppm sulfur starting January 1, 2007.

Measures to Reduce Emissions from Goods Movement Activities

In April 2006, the CARB approved the *Emission reduction Plan for Ports and Goods Movement in California* (CARB 2006e). The Goods Movement Plan proposes measures that would reduce emissions from the main sources associated with port cargo handling activities, including ships, harbor craft, terminal equipment, trucks, and locomotives. This Plan currently is under public review.

In December 2005, CARB approved the Ocean-going Ship Auxiliary Engine Regulation (Title 13, CCR, Section 2299.1), which requires ship auxiliary engines operating in California waters beginning on January 1, 2007 to use marine diesel oil (MDO) with a maximum sulfur content of 0.5 percent or use marine gas oil (MGO). By January 1, 2010, these source activities must an MGO sulfur limit of 0.1 percent (CARB 2006f).

In December 2006, CARB approved the Regulation for Mobile Cargo Handling Equipment (CHE) at Ports and Intermodal Rail Yards (Title 13, CCR, Section 2479), which is designed to use best available control technology (BACT) to reduce diesel PM and NO_x emissions from mobile cargo-handling equipment at ports and inter-modal rail yards. Since January 1, 2007, the regulation imposes emission performance standards on new and in-use terminal equipment that vary by equipment type. The regulation would also include recordkeeping and reporting requirements.

Due to the complexity of accurately predicting how the Berths 136-147 Terminal would implement the new equipment/retrofit schedule of the CHE regulation and the fact that the Ocean-going Ship Auxiliary Engine Regulation is currently being litigated, the effects of these regulations were not assumed in the emission calculations for the Project Alternatives future conditions. As a result, this approach produced higher estimates of future unmitigated emissions from proposed CHE and vessel auxiliary engines. If the implementation of these regulations becomes certain prior to completion of this EIS/EIR, their effects will be simulated as such in this analysis.

Statewide Portable Equipment Registration Program (PERP)

The PERP establishes a uniform program to regulate portable engines and portable engine-driven equipment units (CARB 2005c). Once registered in the PERP, 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.

AB 1493 - Vehicular Emissions of Greenhouse Gases

California Assembly Bill 1493 (Pavley), enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce greenhouse gases emitted by passenger vehicles and light duty trucks. Regulations adopted by CARB will apply to 2009 and later model year vehicles. CARB estimates that the regulation will reduce climate change emissions from light duty passenger vehicle fleet by 18 percent in 2020 and 27 percent in 2030 (CARB 2004).

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 percent below 1990 levels (CA 2005). Some literature equates these reductions to 11 percent by 2010 and 25 percent by 2020.

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 enactment instructs the 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 the 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. The CARB must also evaluate whether to establish a market-based cap and trade system. AB32 does not identify a significance level of GHG for CEQA/NEPA purposes, nor has the CARB adopted such a significance threshold.

Executive Order S-01-07

Executive Order S-01-07 was enacted by the Governor 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 percent by 2020; and 2) that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California.

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 (IOUs). It requires the CEC to adopt a similar standard for local publicly owned or municipal utilities. The CPUC adopted rulemaking implementing the legislation in January 2007. The California Energy Commission will adopt similar regulations in June 2007.

California Climate Action Registry (CCAR)

Established by the California Legislature in 2000, the California Climate Action Registry (CCAR) (Registry) is a non-profit public-private partnership that maintains a voluntary registry for GHG emissions. The purpose of the Registry is to help companies, organizations, and local agencies establish GHG emissions baselines for purposes of complying with future GHG emission reduction requirements. The Port is a voluntary member of the Registry 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 the Registry's *General Reporting Protocol* (Version 2.2, March 2007).
- Report final GHG emissions estimates on the Registry website.

LAHD has been a member of CCAR since March 29, 2006 and is currently working on an emissions inventory for Port operations. Organizations that join the Registry are specifically recognized by AB 32. As a result, POLA is assured that CARB will incorporate emissions reporting protocols developed by the Registry into the state's new mandatory GHG emissions reporting program to the maximum extent feasible.

3.2.3.3 Local Regulations and Agreements

Through the attainment planning process, the SCAQMD develops the *SCAQMD Rules and Regulations* to regulate sources of air pollution in the South Coast Air Basin (SCAQMD 2007b). The most pertinent SCAQMD rules 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 material 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 Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities. The purpose of this rule is to limit emissions of asbestos, a toxic air contaminant, 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.

POLA/POLB Vessel Speed Reduction Program (VSRP). The Ports of Los Angeles and Long Beach began this voluntary program in May 2001 for ships that call at the Ports to reduce their speed to 12 knots (kts) or less within 20 nm of the Point Fermin Lighthouse. A reduction in vessel speed in the offshore shipping lanes (up to 13 kts for the largest container ships) can substantially reduce emissions from the main propulsion engines of the ships. The CAAP adopted the VSRP as control measure OGV-1 and it expands the program out to 40 nm from the Point Fermin Lighthouse.

POLA/POLB Switch Locomotive Modernization. Pacific Harbor Line (PHL) entered into an agreement with the Ports of Los Angeles and Long Beach to replace their switch locomotive engines with cleaner engines that meet the Tier 2 locomotive standards (as described in Section 3.2.3.1). The replacement is scheduled to occur between the 3rd quarter 2006 and the 3rd quarter 2007, per CAAP measure RL-1.

3.2.3.4 Los Angeles Harbor Department Clean Air Policy

The Port of Los Angeles has implemented a Clean Air Program in place since 2001 and began monitoring and measuring air quality in surrounding communities in 2004. Through the *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. Since the NNI measures represent potential mitigations for the proposed Project, Appendix B contains an analysis of the feasibility of implementing the NNI measures for purposes of reducing Project emissions.

The Port, in conjunction with the Port of Long Beach and with guidance from SCAQMD, CARB, and USEPA, 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 Board 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/NEPA process, tariffs, and new leases at both Ports.

This EIS/EIR analysis assumes Project compliance with the SPBP CAAP. Project mitigation measures applied to reduce air emissions and public health impacts are largely consistent with, and in some cases exceed, the emission-reduction strategies of the draft SPBP CAAP. For example, in 2010, 40 percent of the Project ship calls (128 calls) would use AMP while at berth. Project mitigations also would extend beyond the five year SPBP CAAP time-frame to the end of the lease period in 2038. (Table 3.2-24 details how Project mitigation measures compare to measures identified in the CAAP).

3.2.4 Impacts and Mitigation Measures

3.2.4.1 Methodology

Air pollutant emissions from the proposed construction and operational activities were calculated using the most current emission factors and methods, then compared to the criteria identified in section 3.2.4.2 to determine their significance. For proposed Project and alternatives impacts that exceeded a significance criterion, measures were evaluated for their ability to mitigate these impacts to insignificance. The following analysis considers the air quality impacts that would occur from the Berths 136-147 Terminal Project Alternatives. Section 4.2 of this EIS/EIR also evaluates the cumulative air quality impacts that would occur from proposed Project construction and operational activities in combination with existing or reasonably foreseeable future projects. The analysis assumes that only the proposed Project elements as described in Section 2 at the Berth 136-147 would be implemented over the proposed 30 year lease. However, if the tenant requests to modify the proposed Project at any time over the lease period, the modifications would require further CEQA and possibly NEPA analysis and lease amendments. Any future projects at the Berth 136-147 Terminal requiring CEQA and/or NEPA analysis will be subject to future version of the CAAP.

3.2.4.1.1 CEQA Baseline

Section 15125 of the CEQA Guidelines requires EIRs to include a description of the physical environmental conditions in the vicinity of a project that exist at the time of the NOP. 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 Draft EIS/EIR, the CEQA air quality Baseline for determining the significance of potential impacts under CEQA is December 2003. CEQA Baseline conditions are described in Table 2-2 of Section 2.4.

As discussed in Section 3.2.2.4, Table 3.2-4 presents the average daily operational emissions associated with the Project CEQA Baseline. For purposes of this EIS/EIR, the evaluation of significance under CEQA is defined by comparing the Project or its Alternatives to the CEQA Baseline. Table 3.2.-5 presents the CEQA baseline peak daily operational emissions. A comparison of the peak daily baseline and Project emissions are also presented as part of the air quality analysis to determine CEQA significance. Table 3.2-6 presents the annual GHG operational emissions associated with the CEQA Baseline in 2003.

The CEQA Baseline represents the setting at a fixed point in time, with no project growth over time, and differs from the "No Project" Alternative (discussed in Section 2.5.1) in that the No Project Alternative addresses what is likely to happen at the site over time, starting from the baseline conditions. The No Project Alternative allows for growth at the proposed Project site that would occur without any required additional approvals.

3.2.4.1.2 NEPA Baseline

For purposes of this Draft EIS/EIR, the evaluation of significance under NEPA is defined by comparing the proposed Project or other alternative to the No Federal

Action scenario. The No Federal Action/NEPA Baseline condition for determining significance of impacts coincides with the "No Federal Action" condition, which is defined by examining the full range of construction and operational activities the applicant could implement and is likely to implement absent permits from the USACE. Therefore, the No Federal Action/NEPA Baseline would not include any dredging, filling of the Northwest Slip, wharf construction or upgrades, or crane replacement. The No Federal Action/NEPA Baseline would include construction and operation of all upland elements (existing lands) for backlands or other purposes. Table 3.2-7 summarizes the daily emissions for each construction activity that would occur at the Berths 136-147 Terminal under the NEPA Baseline scenario.The upland elements are assumed to include:

- Adding 57 acres or existing land for backland area and an on-dock rail yard;
- Constructing a 500-space parking lot for union workers;
- Demolishing the existing administration building and constructing a new LEED certified administration building and other terminal buildings;
- Adding new lighting and replacing existing lighting, fencing, paving, and utilities on the backlands;
- Relocating the Pier A rail yard and constructing the new on-dock rail yard;
- Widening and realigning Harry Bridges Boulevard; and
- Developing the Harry Bridges Buffer Area.

Unlike the CEQA Baseline, which is defined by conditions at a point in time, the No Federal Action/NEPA Baseline is not bound by statute to a "flat" or "no growth" scenario; therefore, the USACE may project increases in operations over the life of a project to properly analyze the No Federal Action/NEPA Baseline condition. Normally, any ultimate permit decision would focus on direct impacts to the aquatic environment, as well as indirect and cumulative impacts in the uplands determined to be within the scope of federal control and responsibility. Significance of the proposed Project or alternative is defined by comparing the proposed Project or alternative to the No Federal Action/NEPA Baseline (i.e., the increment). The No Federal Action/NEPA Baseline conditions are described in Table 2-2 of Section 2.4.

The No Federal Action/NEPA Baseline also differs from the "No Project" Alternative, where the Port would take no further action to construct and develop additional backlands (other than the 176 acres that currently exist). Under this alternative, no construction impacts would occur. However, forecasted increases in cargo throughput would still occur as greater operational efficiencies are made.

Table 3.2-8 summarizes the annual average daily emissions associated with operations at the Berths 136-147 Terminal under the NEPA Baseline scenario for Project years 2007, 2015, 2025, and 2038. Table 3.2-9 presents peak daily operational emissions associated with the NEPA Baseline. A comparison of these emissions to peak daily emissions for the Project Alternatives is also presented as part of the air quality analysis to determine NEPA significance. Emission estimates followed the methods presented in Sections 3.2.2.5 and 3.2.4.3.

Table 3.2-7. Daily Emissions from Construction Activities Associated with the NEPA Baseline

Construction Project/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
78-Acre Backland Improvements at Berths 142-147						
Building Demolition	12	43	116	0	42	12
Backland Improvements	15	58	147	0	87	23
Construct New Administration Building, Main Gate, and Worker Parking Lot						
Construct Administration Building	6	23	41	0	16	5
Construct New Main Gate	2	8	17	0	28	7
Improve Demolished Areas and Parking	15	58	147	0	74	20
Demolish Existing Admin. Building/Gate	12	43	116	0	42	12
Construct New Maintenance and Repair Facility						
Construct Maintenance/Repair Facility	7	26	47	0	43	11
Improve Demolished Areas and M & R	15	58	147	0	74	20
Demolish Existing M & R Facility	12	43	116	0	42	12
Harry Bridges Blvd. Realignment						
Street Removals	17	64	154	0	34	12
Street Improvements	37	202	415	0	31	19
Sewer Installation	4	16	34	0	2	2
Water Systems Installation	4	16	34	0	2	2
Storm Drain Installation	8	32	71	0	4	3
Construct a 46-Acre Rail Yard at Berth 200	21	66	139	0	62	18
9 Acres of Backland Imp. at Berths 134-135	15	58	147	0	60	17
Construct the Berths 142-147 12-Acre ICTF and 19-Acre Backlands						
Rail Track Removal	6	21	54	0	2	2
Rail Yard Construction	21	66	139	0	62	18
Backland Improvements	15	58	147	0	87	23
Construct Harry Bridges Blvd. Buffer						
Landscape Installation	11	39	81	0	32	11
Grading/Earthmoving	21	83	191	0	116	31
Worker Commuter Vehicles	3	35	3	0	21	20
Peak Daily Emissions (1) (2)	**111**	494	**983**	1	**380**	**120**
Mitigated Peak Daily Emissions	56	262	**783**	1	**171**	**65**
SCAQMD Daily Significance Thresholds	**75**	**550**	**100**	**150**	**150**	**55**

Notes: (1) Peak daily construction emissions of all pollutants except $PM_{10}/PM_{2.5}$ would occur from: (a) 78-acres of backland improvements at Berths 142-147, (b) construction of a new administration building, (c) construction of new maintenance and repair facility, (d) street improvements at the Harry Bridges Blvd (HBB) realignment, (e) construction of a 46-Acre rail yard at berth 200, (f) grading/earthmoving at Harry Bridges Blvd. Buffer, and (g) commuting of workers. However, this is an overestimation, as all equipment during these activities would not operate together in the same day.

(2) Peak daily construction emissions of $PM_{10}/PM_{2.5}$ 0 would occur from the same set of activities as above with one exception: instead of street improvements at the HBB realignment, street removals at the HBB realignment would be a contributor.

Table 3.2-8. Average Daily Operational Emissions Associated with the No Federal Action Baseline Scenario

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2007						
Ships – Fairway Transit	77	179	2,288	1,344	192	180
Ships – Precautionary Area Transit	14	30	304	189	26	25
Ships – Harbor Transit	22	28	209	106	21	20
Ships – Docking	8	7	58	26	6	6
Ships – Hoteling Aux. Sources	41	147	1,451	1,393	124	116
Tugs – Cargo Vessel Assist	2	12	77	0	3	3
Terminal Equipment	118	430	1,374	1	59	54
On-road Trucks	676	2,167	6,599	6	444	269
Trains	106	247	1,475	131	56	51
Railyard Equipment	21	80	229	0	10	9
Worker Commutes	10	140	18	0	15	14
PHL Rail Yard	4	7	54	1	1	1
Project Year 2007 Total	**1,099**	**3,475**	**14,136**	**3,197**	**958**	**748**
Project Year 2015						
Ships – Fairway Transit	20	144	1,081	65	23	22
Ships – Precautionary Area Transit	6	42	292	43	7	6
Ships – Harbor Transit	9	39	240	32	6	6
Ships – Docking	3	11	66	8	2	2
Ships – Hoteling Aux. Sources	16	92	551	746	28	26
Tugs – Cargo Vessel Assist	3	15	79	0	3	3
Terminal Equipment	69	516	77	1	4	4
On-road Trucks	176	620	1,544	9	255	71
Trains	102	280	1,408	1	37	34
Railyard Equipment	9	102	9	0	0	0
Worker Commutes	12	161	21	0	22	21
PHL Rail Yard	2	9	30	0	0	0
Project Year 2015 Total	**428**	**2,031**	**5,399**	**906**	**388**	**195**
Project Year 2025						
Ships – Fairway Transit	23	161	1,136	67	25	23
Ships – Precautionary Area Transit	7	47	314	41	7	7
Ships – Harbor Transit	11	45	279	31	7	6
Ships – Docking	3	12	77	8	2	2
Ships – Hoteling Aux. Sources	5	66	176	772	22	20
Tugs – Cargo Vessel Assist	2	13	59	0	3	2
Terminal Equipment	28	561	88	1	4	4
On-road Trucks	151	534	1,347	8	220	61
Trains	124	406	1,781	1	45	41
Railyard Equipment	14	148	14	0	1	1
Worker Commutes	8	109	14	0	24	22
PHL Rail Yard	2	9	6	0	0	0
Project Year 2025 Total	**380**	**2,112**	**5,290**	**930**	**359**	**191**

Table 3.2-8. Average Daily Operational Emissions Associated with the No Federal Action Baseline Scenario (continued)

Project Scenario/Activity	Emissions (pounds per day)					
	VOC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Project Year 2038						
Ships – Fairway Transit	23	161	1,136	67	25	23
Ships – Precautionary Area Transit	7	47	314	41	7	7
Ships – Harbor Transit	11	45	279	31	7	6
Ships – Docking	3	12	77	8	2	2
Ships – Hoteling Aux. Sources	5	66	176	772	22	20
Tugs – Cargo Vessel Assist	2	13	53	0	2	2
Terminal Equipment	39	787	123	2	6	6
On-road Trucks	155	533	1,363	8	218	59
Trains	106	406	1,559	1	37	34
Railyard Equipment	14	148	14	0	1	1
Worker Commutes	4	50	5	0	30	28
PHL Rail Yard	2	9	5	0	0	0
Project Year 2038 Total	**373**	**2,278**	**5,104**	**930**	**357**	**189**

Table 3.2-9. Peak Daily Operational Emissions Associated with the NEPA Baseline Scenario

Project Scenario/Activity	Emissions (pounds per day)					
	VOC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Project Year 2007						
Ships – Fairway Transit	68	160	2,076	1,230	174	163
Ships – Precautionary Area Transit	13	31	350	231	30	28
Ships – Harbor Transit	22	28	205	110	21	20
Ships – Docking	8	8	57	27	6	6
Ships – Hoteling Aux. Sources	78	267	2,789	2,468	236	221
Tugs – Cargo Vessel Assist	5	24	147	0	6	6
Terminal Equipment	688	2,511	8,024	5	345	318
On-road Trucks	925	2,967	9,034	8	607	368
Trains	89	208	1,245	111	47	43
Railyard Equipment	17	67	193	0	9	8
Worker Commutes	10	140	18	0	15	14
PHL Rail Yard	4	7	54	1	1	1
Project Year 2007 Total	**1,927**	**6,417**	**24,193**	**4,191**	**1,498**	**1,195**
Project Year 2015						
Ships – Fairway Transit	34	260	1,658	94	35	32
Ships – Precautionary Area Transit	12	78	493	58	11	11
Ships – Harbor Transit	19	77	482	47	12	11
Ships – Docking	6	21	133	12	3	3
Ships – Hoteling Aux. Sources	20	135	684	1,222	42	39
Tugs – Cargo Vessel Assist	4	24	127	0	5	5
Terminal Equipment	332	2,498	374	5	19	17

Table 3.2-9. Peak Daily Operational Emissions Associated with the NEPA Baseline Scenario (continued)

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2015(continued)						
On-road Trucks	241	849	2,114	12	349	98
Trains	119	326	1,636	1	43	40
Railyard Equipment	2	24	2	0	0	0
Worker Commutes	12	161	21	0	22	21
PHL Rail Yard	2	9	30	0	0	0
Project Year 2015 Total	**804**	**4,461**	**7,754**	**1,453**	**542**	**277**
Project Year 2025						
Ships – Fairway Transit	34	260	1,658	94	35	32
Ships – Precautionary Area Transit	12	78	493	58	11	11
Ships – Harbor Transit	19	77	482	47	12	11
Ships – Docking	6	21	133	12	3	3
Ships – Hoteling Aux. Sources	8	102	273	1,198	34	31
Tugs – Cargo Vessel Assist	4	24	105	0	5	4
Terminal Equipment	114	2,307	362	5	18	17
On-road Trucks	207	731	1,845	10	301	83
Trains	100	326	1,429	1	36	33
Railyard Equipment	11	120	11	0	1	1
Worker Commutes	8	109	14	0	24	22
PHL Rail Yard	2	9	6	0	0	0
Project Year 2025 Total	**527**	**4,163**	**6,811**	**1,426**	**479**	**249**
Project Year 2038						
Ships – Fairway Transit	34	260	1,658	94	35	32
Ships – Precautionary Area Transit	12	78	493	58	11	11
Ships – Harbor Transit	19	77	482	47	12	11
Ships – Docking	6	21	133	12	3	3
Ships – Hoteling Aux. Sources	8	102	273	1,198	34	31
Tugs – Cargo Vessel Assist	4	24	94	0	4	4
Terminal Equipment	114	2,307	362	5	18	17
On-road Trucks	213	729	1,866	11	298	81
Trains	85	326	1,251	1	30	27
Railyard Equipment	11	120	11	0	1	1
Worker Commutes	4	50	5	0	30	28
PHL Rail Yard	2	9	5	0	0	0
Project Year 2038 Total	**513**	**4,102**	**6,634**	**1,426**	**476**	**246**

Table 3.2-10 summarizes the total GHG construction emissions associated with the No Federal Action Baseline. The emissions are totaled over the entire multiple-year construction period. The construction sources for which GHG emissions were calculated include off-road diesel equipment, on-road trucks, marine cargo vessels used to deliver equipment to the site, and worker commute vehicles.

Table 3.2-10. Total GHG Emissions from Berths 136-147 Terminal Construction Activities – No Federal Action Baseline

Construction Activity	TOTAL EMISSIONS (METRIC TONS)			
	CO_2	*CH_4*	*N_2O*	*CO_2e*
89 Acres of Backland Improvement at Berths 142-147	392	0.05	0.01	395
Construct a New Admin. Bldg, Main Gate, and Worker Parking Lot	217	0.03	0.00	219
Construct a New Maintenance and Repair Facility-Berths 136-147	300	0.05	0.00	303
Harry Bridges Blvd. Realignment	447	0.05	0.01	451
Construction of a 46-Acre Rail Yard at Berth 200	1,410	0.17	0.03	1,422
5 Acres of Backland Improvements at Berts 134-135	19	0.00	0.00	19
Construction of B142-147 12-Acre ICTF and 19-Acre Backlands	548	0.07	0.01	553
Construction of Harry Bridges Blvd. Buffer	1,198	0.17	0.02	1,207
Worker Vehicles	857	0.14	0.14	902
Total Emissions	**5,388**	**0.73**	**0.21**	**5,469**

One metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

Table 3.2-11 presents annual GHG operational emissions associated with the No Federal Action Baseline for project years 2007, 2015, 2025, and 2038. The emission sources for which GHG emission were calculated include ships, tugboats, diesel terminal and railyard equipment, on-road trucks, trains, fugitive refrigerant losses from reefers, AMP electricity usage, on-terminal electricity usage, and worker commute vehicles. These GHG emissions are compared to the emissions for the proposed Project and alternatives to determine NEPA impacts. The emission estimates followed the methods presented in Section 3.2.4.3.2.

Table 3.2-11. Annual Operational GHG Emissions - Berths 136-147 Terminal — No Federal Action Baseline

Project Scenario/Source Type	METRIC TONS PER YEAR						
	CO_2	*CH_4*	*N_2O*	*HFC-125*	*HFC-134a*	*HFC-143a*	*CO_2e*
Year 2007							
Ships	78,788	10.4	0.7				79,224
Tugboats	717	0.1	0.0				721
Terminal & Railyard Equipment	19,889	3.2	0.2				20,028
Trucks	224,934	11.3	5.6				226,917
Trains	38,873	5.4	0.4				39,106
Reefer Refrigerant Losses				0.06	0.13	0.07	571
AMP Usage	0	0.0	0.0				0
On-Terminal Electricity Usage	4,467	0.0	0.0				4,475
Worker Vehicles	1,349	0.2	0.2				1,420
Year 2007 Total	**369,017**	**30.7**	**7.2**	**0.06**	**0.13**	**0.07**	**372,462**

Table 3.2-11. Annual Operational GHG Emissions - Berths 136-147 Terminal — No Federal Action Baseline (continued)

Project Scenario/Source Type	METRIC TONS PER YEAR						
	CO_2	*CH_4*	*N_2O*	*HFC-125*	*HFC-134a*	*HFC-143a*	*CO_2e*
Year 2015							
Ships	49,184	6.7	0.5				49,471
Tugboats	854	0.1	0.0				859
Terminal & Railyard Equipment	27,147	4.4	0.3				27,338
Trucks	359,790	17.7	8.8				362,902
Trains	42,576	5.9	0.4				42,832
Reefer Refrigerant Losses				0.08	0.18	0.09	806
AMP Usage	6,710	0.1	0.0				6,720
On-Terminal Electricity Usage	6,308	0.1	0.0				6,318
Worker Vehicles	1,649	0.2	0.2				1,730
Year 2015 Total	**494,217**	**35.2**	**10.4**	**0.08**	**0.18**	**0.09**	**498,977**
Year 2025							
Ships	50,377	6.9	0.5				50,671
Tugboats	764	0.1	0.0				769
Terminal & Railyard Equipment	31,842	5.2	0.4				32,066
Trucks	306,195	14.8	7.4				308,798
Trains	61,799	8.6	0.6				62,170
Reefer Refrigerant Losses				0.09	0.21	0.10	917
AMP Usage	10,371	0.1	0.0				10,387
On-Terminal Electricity Usage	7,180	0.1	0.0				7,192
Worker Vehicles	1,664	0.2	0.2				1,744
Year 2025 Total	**470,192**	**35.9**	**9.2**	**0.09**	**0.21**	**0.10**	**474,715**
Year 2038							
Ships	50,377	6.9	0.5				50,671
Tugboats	764	0.1	0.0				769
Terminal & Railyard Equipment	31,842	5.2	0.4				32,066
Trucks	306,195	14.8	7.4				308,798
Trains	61,799	8.6	0.6				62,170
Reefer Refrigerant Losses				0.09	0.21	0.10	917
AMP Usage	10,371	0.1	0.0				10,387
On-Terminal Electricity Usage	7,180	0.1	0.0				7,192
Worker Vehicles	1,697	0.2	0.2				1,777
Year 2038 Total	**470,225**	**35.9**	**9.2**	**0.09**	**0.21**	**0.10**	**474,748**

One metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2800 for HFC-125; 1300 for HFC-134a; and 3800 for HFC-143a.

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 both from a CEQA and NEPA perspective. They were primarily based on standards established by the City of Los Angeles in the *L.A. CEQA Thresholds Guid*e (City of Los Angeles 2006).

Construction Thresholds

The *L.A. CEQA Thresholds Guide* references the SCAQMD *CEQA Air Quality Handbook* and USEPA *AP-42* for calculating and determining the significance of construction emissions. Each lead city department has the responsibility to determine the appropriate standards. Project-related factors considered on a case-by-case for the evaluation of significance include the following:

- Combustion emissions from construction equipment:
  - Type, number of pieces, and usage for each type of 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 or area of soil disturbed onsite or moved offsite
    - Emission factors for disturbed soil
    - Duration of grading, excavation, and hauling activities
    - 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
  - 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 (2006e). Construction-related air emissions would be considered significant if:

AQ-1 The proposed Project would result in construction-related emissions that exceed any of the following SCAQMD daily thresholds of significance: (1) 75 pounds of VOCs, (2) 100 pounds of NO_x, (3) 150 pounds of SO_x or PM_{10}, (4) 55 pounds of $PM_{2.5}$, or (5) 550 pounds of CO (Table 3.2-12).

Table 3.2-12. SCAQMD Thresholds for Construction Emissions

Air Pollutant	*Emission Threshold (pounds/day)*
Volatile organic compounds (VOC)	75
Carbon monoxide (CO)	550
Nitrogen oxides (NO_x)	100
Sulfur oxides (SO_x)	150
Particulates (PM_{10})	150
Particulates ($PM_{2.5}$)	55
Source: SCAQMD 2006e.	

AQ-2 Proposed Project construction would result in offsite ambient air pollutant concentrations that exceed any of the SCAQMD thresholds of significance shown in Table 3.2-13. However, to evaluate Project impacts to ambient NO_2 levels, the analysis replaced the use of the current SCAQMD NO_2 thresholds with the revised 1-hour California ambient air quality standard of 338 $\mu g/m^3$.

Table 3.2-13. SCAQMD Thresholds for Ambient Air Quality Concentrations Associated with Proposed Project Construction

Air Pollutant	*Ambient Concentration Threshold*
Nitrogen Dioxide (NO_2) 1-hour average	 0.25 ppm (470 $\mu g/m^3$)*
Particulates (PM_{10} or $PM_{2.5}$) 24-hour average	 10.4 $\mu g/m^3$
Carbon Monoxide (CO) 1-hour average 8-hour average	 20 ppm (23,000 $\mu g/m^3$) 9.0 ppm (10,000 $\mu g/m^3$)

Notes:

The NO_2 and CO thresholds are absolute thresholds; the maximum predicted impact from construction activities is added to the background concentration for the Project vicinity and compared to the threshold.

The PM_{10} and $PM_{2.5}$ thresholds are an incremental threshold; meaning that the maximum predicted impacts from construction activities (without adding background concentrations) are compared to these thresholds.

The SCAQMD does not require an analysis of ambient annual pollutant concentrations from construction activities (POLA 2006c).

*To evaluate Project impacts to ambient NO_2 levels, the analysis replaced the use of the current SCAQMD NO_2 thresholds with the revised 1-hour California ambient air quality standard of 338 $\mu g/m^3$.

Source: SCAQMD 2006e.

Operation Thresholds

The *L.A. CEQA Thresholds Guide* provides specific significance thresholds for operational air quality impacts that also are based on SCAQMD standards. For the purposes of this study, a project would create a significant impact if it would result in one or more of the following:

AQ-3 Operational emissions that would exceed 10 tons per year of VOCs or any of the following SCAQMD daily thresholds of significance: (1) 55 pounds of VOCs or NO_x, (2) 150 pounds of sulfur oxides (SO_x) or PM_{10}, (3) 55 pound of $PM_{2.5}$, or (4) 550 pounds of CO (Table 3.2-14). For determining CEQA significance, these thresholds are compared to the net change in project emissions relative to 2003 baseline conditions. For determining NEPA significance, these thresholds are compared to the net change in project emissions relative to NEPA Baseline emissions. For purposes of significance determination under CEQA and NEPA, project emissions that would occur within the SCAB were compared to these thresholds. Air quality impacts from project sources of trucks, trains, and marine vessels also would extend beyond the SCAB and California state line. However, the greatest air quality impacts would occur within the SCAB and adjacent to the Port, in association with the highest concentration of project emission sources.

Table 3.2-14. SCAQMD Thresholds for Operational Emissions

Air Pollutant	*Emission Threshold (pounds/day)*
Volatile organic compounds (VOC)	55
Carbon monoxide (CO)	550
Nitrogen oxides (NOx)	55
Sulfur oxides (SOx)	150
Particulates (PM10)	150
Particulates (PM2.5)	55
Source: SCAQMD 2006e and City of Los Angeles 2006	

AQ-4 Proposed Project operations would result in offsite ambient air pollutant concentrations that exceed any of the SCAQMD thresholds of significance in Table 3.2-15. However, to evaluate Project impacts to ambient NO_2 levels, the analysis replaced the use of the current SCAQMD NO_2 thresholds with the revised 1-hour and annual California ambient air quality standards of 338 and 56 $\mu g/m^3$, respectively.

Table 3.2-15. SCAQMD Thresholds for Ambient Air Quality Concentrations Associated with Proposed Project Operations

Air Pollutant	*Ambient Concentration Threshold*
Nitrogen Dioxide (NO_2) 1-hour average annual average	 0.25 ppm (470 $\mu g/m^3$)* 0.053 ppm (100 $\mu g/m^3$)*
Particulates (PM_{10} or $PM_{2.5}$) 24-hour average	 2.5 $\mu g/m^3$
Carbon Monoxide (CO) 1-hour average 8-hour average	 20 ppm (23,000 $\mu g/m^3$) 9.0 ppm (10,000 $\mu g/m^3$)

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 Project vicinity and compared to the threshold.

The PM_{10} and $PM_{2.5}$ thresholds are incremental thresholds. For CEQA significance, the maximum increase in concentration relative to the 2003 baseline (i.e., Project impact minus baseline impact) is compared to each threshold. For NEPA significance, the maximum increase in concentration relative to NEPA (i.e., Project impact minus NEPA Baseline impact) is compared to the threshold.

The SCAQMD has also established thresholds for sulfates and annual PM_{10}, but is currently not requiring a quantitative comparison to these thresholds (POLA 2006c).

* To evaluate Project impacts to ambient NO_2 levels, the analysis replaced the use of the current SCAQMD NO_2 thresholds with the revised 1-hour and annual California ambient air quality standards of 338 and 56 $\mu g/m^3$, respectively.

Source: SCAQMD 2006e.

Proposed Project operations also would result in significant offsite ambient air pollutant concentrations if either of the following conditions would occur at an intersection or roadway within one-quarter mile of a sensitive receptor (City of Los Angeles 2006):

- The proposed Project causes or contributes to an exceedance of the California 1-hour or 8-hour CO standards of 20 or 9.0 ppm, respectively, or,
- The incremental increase due to the Project is equal to or greater than 1.0 ppm (1,150 µg/m3) for the California 1-hour CO standard or 0.45 ppm (518 µg/m3) for the 8-hour CO standard.

AQ-5 The proposed Project would create an objectionable odor at the nearest sensitive receptor.

AQ-6 The proposed Project would expose the public to significant levels of toxic air contaminants. The determination of significance is based upon the following:

- Maximum Incremental Cancer Risk > 10 in 1 million (10×10^{-6})
- Non-cancer Hazard Index > 1.0 (project increment).

AQ-7 The proposed Project would conflict with or obstruct implementation of an applicable AQMP.

AQ-8 The proposed Project 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 of Los Angeles has not established such a threshold. Therefore, the Port of Los Angeles, for purposes of this project only, is utilizing the following as its CEQA threshold of significance:

- The Proposed Project would result in a significant CEQA impact if CO_2e emissions 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.

NEPA Impacts

The USACE has established the following position under NEPA. There are no science-based GHG significance thresholds, nor has the Federal government or the state adopted any by regulations. In the absence of an adopted or science-based GHG standard, the USACE will not utilize the Port of Los Angeles' proposed AQ-8 CEQA standard, propose a new GHG standard, or make a NEPA impact determination for GHG emissions anticipated to result from the proposed Project or any of the alternatives. Rather, in compliance with the CEQA and NEPA implementing regulations, the anticipated emissions relative to the NEPA baseline will be disclosed for the proposed Project and each alternative without expressing a judgment as to their significance.

3.2.4.3 Proposed Project Emissions

3.2.4.3.1 Construction

Project construction activities would require the use of off-road construction equipment, on-road trucks, tugboats, and general cargo ships. Because these sources would primarily use diesel fuel, they would generate combustive emissions in the form of VOC, CO, NO_x, SO_x, and PM. In addition, off-road 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}.

Equipment usage and scheduling data needed to calculate emissions for proposed construction activities were obtained from environmental review documents of previously proposed construction actions within the Port (LAHD 1997a and USACE and LAHD 2000) and in consultation with contractors involved in the Berth 100 wharf construction activity (personal communications, Jim Cole) and LAHD staff (personal communications, Chris Brown and Dave Walsh).

To estimate peak daily construction emissions for comparison to SCAQMD emission thresholds, emissions were first calculated for the individual construction activities (for example, wharf construction, marine terminal crane delivery, or backlands construction). Peak daily emissions then were determined by summing emissions from overlapping construction activities as indicated in the proposed construction schedule.

The specific approaches to calculating emissions for the various emission sources during construction of the proposed Project are discussed below. Table 3.2-16 includes a synopsis of the regulations and agreements that were assumed as part of the Project in the construction calculations. The construction emission calculations are presented in Appendix D1.1.

Table 3.2-16. Regulations and Agreements Assumed in the Construction Emissions

Off-Road Construction Equipment	*On-Road Trucks*	*Tugboats*	*General Cargo Ships*	*Fugitive Dust*
Emission Standards for Nonroad Diesel Engines – Gradual annual phase-in of Tier 1, 2, 3, and 4 standards due to normal construction equipment fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 2006.	**Emission Standards for On-road Trucks** – Gradual annual phase-in of tiered standards due to normal truck fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 2006.	**California Diesel Fuel Regulations** – 500-ppm sulfur starting January 2006 and 15-ppm sulfur starting September 2006.	No regulations or agreements are assumed to affect unmitigated emissions from cargo ships that deliver cranes during Project construction.	**SCAQMD Rule 403 Compliance** – 75 percent reduction in fugitive dust emissions to simulate Rule compliance.
Note: This table is not a comprehensive list of all applicable regulations; rather, the table lists key regulations and agreements that substantially affect the Project construction emission calculations. A description of each regulation or agreement is provided in Section 3.2.3.				

Off-Road Construction Equipment

Combustive emissions from diesel-powered construction equipment were calculated using emission factors derived from the CARB OFFROAD2007 Emissions Model (CARB 2006i). The OFFROAD2007 model was run by the CARB for this analysis for years 2005 and 2015, using equipment age distributions representative of the statewide construction equipment fleet (personal communications, D. Futaba, 2004). Emission factors for the Project Phase 1 construction activities in year 2007 were interpolated between these 2005 and 2015 data. The OFFROAD2007 model output shows that, on a horsepower-hour basis, emission factors will steadily decline in future years, as older equipment are replaced with newer, cleaner equipment that meets the already-adopted future state and federal off-road engine emission standards.

Emission factors for SO_x were determined from the fuel consumption rate of the construction equipment and the sulfur content of the diesel fuel used in the equipment. Average brake-specific fuel consumption (BSFC) factors for the equipment horsepower categories were obtained from the OFFROAD2007 model. The sulfur content in diesel fuel was assumed to be 15 ppm starting September 1, 2006.

Assumptions used to estimate emissions from proposed dredge and disposal activities include the following (U.S Army Corps of Engineers and Port of Los Angeles 2000):

- Diesel-powered clamshell dredges would remove sediments for dike toes and berth deepening at an average daily rate of 3,000 cubic yards (cy). Dredges would operate 24 hours per day until completion of each dredge action. The disposal of dredge sediments would occur at either the Anchorage Road site near Berth 205 or the Pier 400 surplus site within the Port.
- Sediments for the 10-acre Northwest Slip fill would originate from dredging projects in the outer harbor area of the Port of Los Angeles. An electric-powered hydraulic dredge would perform these actions. Diesel-powered auxiliary equipment and tender vessels would support this equipment. The hydraulic dredge would have an average daily production rate of 32,000 cy.

On-Road Trucks

Emissions from on-road, heavy-duty diesel trucks during Project construction were calculated using emission factors generated by the EMFAC2007 on-road mobile source emission factor model for a truck fleet representative of the SCAB for years 2007 and 2015 (CARB 2006e). 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 on-road engine emission standards. In addition, similar to off-road construction equipment, the sulfur limit in on-road diesel fuel was 15 ppm. Assumptions used to estimate emissions from on-road trucks during construction include:

- Trucks hauling dredge materials were assumed to travel 90 percent of the trip distance at 25 miles per hour (mph), and 10 percent at 10 mph. All other construction-related trucks were assumed to travel 40 percent of the trip distance at 55 mph, 50 percent at 25 mph, and 10 percent at 10 mph.

- The average round-trip travel distances for trucks were assumed to be 130 miles for pile deliveries, 15 miles for concrete trucks, 1 mile for disposal of dredge sediments (at the Anchorage Road site near Berth 205), and 40 miles for all other supply trucks.
- Truck idling times were assumed to be 20 minutes for concrete truck trips and 10 minutes for all other truck trips.

Tugboats

During construction, tugboats would transport (1) dredge sediment in barges to Berth 205 for disposal, (2) dike rock in barges from Catalina Island to the Project site for use in the landfill and wharf construction activities and would assist in berthing activities for cargo ships that deliver marine terminal cranes and sheet piles to the Project site.

Emissions from tugboat main and auxiliary engines were calculated using Entec emission factors for medium- and high-speed diesel marine engines, respectively, as reported in the *2001 and 2005 PEIs* (Entec 2002). Although many tugboats at the Port have been re-powered with Tier 2 marine engines as part of the ongoing Tugboat Retrofit Project at the Port, the emission calculations conservatively used uncontrolled Entec emission factors for all construction phases, both with and without mitigation. Assumptions used to estimate emissions from tugboats during construction include:

- During dredging activities, a tugboat would complete two round trips per day hauling a barge to Berth 205 for sediment disposal. Clamshell/hydraulic dredge sediments would contain 20/40 percent water and barge capacity of 2,000 cy would hold 1,600/1,200 cy of solid clamshell/hydraulic dredge sediments. Barges would bottom-dump 60 percent of the sediment volume required at the landfill site into a partially completed and submerged dike structure. A booster pump would deliver the remaining 40 percent of the fill volume from the barges into the completed dike.
- Barges would transport dike rock from Catalina Island to the Project site for use in the landfill and wharf construction activities. Two tugboats hauling barges with a capacity of 2,000 tons would deliver rock to the construction sites on a daily basis. This activity would occur for about 41 and 24 days, respectively, for wharf improvements at Berths 144-147 during Phase 1 and the 10-acre fill during Phase 2.
- Two tugboats would assist a general cargo ship during marine terminal crane and sheet piles delivery.

General Cargo Ships

During construction, general cargo ships would deliver marine terminal cranes and sheet piles to the Project site. Vessels would remain at berth (hotel) for about 2 to 4 days while cargo is transferred onto the wharf and then depart (POLA 2006d).

Emissions from the main engines, auxiliary engines, and boilers on general cargo ships were calculated using Entec and CARB emission factors, as reported in the *2001 and 2005 PEIs*. These factors were developed from one of the most comprehensive data set available for vessel emissions. At low loads (less than 20 percent of full power), the emission factors for main engines were adjusted higher, on a per kilowatt hour (kWh) basis, using low-load adjustment factors (Starcrest 2005). No USEPA rules currently exist that would require cleaner engine standards in oceangoing vessels in the future. Therefore, emission factors for these sources remain unchanged in future years for the unmitigated case.

Assumptions used in the *2001 and 2005 PEIs* were used to calculate ship emissions during transit and hoteling. The *PEI* identifies engine load factors and associated energy output per vessel type for various modes of operation performed during a vessel trip. During transit, main engine load factors follow the propeller law, which states that the engine load factor is proportional to the cube of the vessel speed. Assumptions used to estimate emissions from general cargo ships during construction include:

- Phase 1 construction would require one ship visit to deliver 2 cranes to Berths 136-139 (for final placement at Berth 144), one ship visit to deliver 1 crane to Berth 144, one ship visit to deliver 1 crane to both Berth 136 and Berth 144, and one ship visit to deliver sheet piles to Berth 144. Phase 2 construction would require one ship visit to deliver sheet piles to Berth 136.
- To be conservative, the general cargo ships would not observe the VSRP, as vessel calling at the Port had a VSRP compliance rate of 49 percent in 2004.
- During transport, emissions from ships were calculated from the berth to the edge of SCAQMD waters (roughly a one-way trip of 50 miles).
- During hoteling, ships would turn off their main engines and operate auxiliary engines and boilers.

<u>Fugitive Dust</u>

Emissions of fugitive dust (PM_{10}) from earth-moving activities would occur during assorted backland development activities. Emission factors used to estimate fugitive dust emissions were developed in special studies conducted by the USEPA (USEPA 1995). Fugitive dust emissions were reduced by 75 percent from uncontrolled levels to simulate rigorous watering of the site and use of other measures to ensure Project compliance with SCAQMD Rule 403. The Project construction contractor would specify proposed dust-control methods in a dust control plan that would be submitted to the SCAQMD per Rule 403 requirements.

Fugitive dust emissions from earth-moving activities are proportional to the surface area of disturbed land. Emissions from ground disturbing activities were based upon the assumption that from 5 to 20 percent of the total activity area would be disturbed at any one time during construction.

3.2.4.3.2 Operations

Operational activities associated with the proposed Project would be similar to the existing container cargo operations at the Berths 136-147 Terminal. However, the Project would develop an on-dock rail yard. This facility would introduce new locomotive emission sources into the terminal, but it would substantially reduce emissions generated by trucks that transport cargo to off-site rail yards, compared to existing operations. The Berths 136-147 Project also would relocate the existing Pier

A rail yard and its emissions to the Berth 200C area, approximately 1.5 miles to the northeast.

Information on proposed operational emission sources was obtained from Port staff (personal communications, Chris Brown and Dave Walsh), terminal operators (personal communications, Scott Axleson), environmental review documents of previous and proposed terminal development projects in the Port (LAHD 1997a, 2002, and 2006), the Project traffic study conducted as part of this EIS/EIR (refer to section 3.10), and the *PEIs*. All of the proposed operational emission sources are diesel-powered.

Emissions were estimated for Project milestone development years of 2007, 2015, 2025, and 2038. For the Project and each Project Alternative, the following emission comparisons were made to assess operational air quality impacts:

- Project Alternative emissions for each year minus Berths 136-147 existing emissions in year 2003 were compared to the SCAQMD emission thresholds to determine CEQA significance. A comparison was done for both average daily and peak daily emissions.
- Project Alternative emissions for each year minus the NEPA Baseline emissions for the same year were compared to SCAQMD emission thresholds to determine NEPA significance. A comparison was done for both average daily and peak daily emissions.

Table 3.2-17 includes a synopsis of the regulations that were assumed in the emission calculations for Project operations. Regulations are not treated as mitigation measures, but rather as part of the Project because they represent enforceable rules with or without Project approval. Only currently adopted regulations and agreements were assumed in the Project emission calculations.

The following describes the specific approaches used to calculate emissions for the various operational emission sources associated with the Project Alternatives. Appendix D1 documents data used to estimate emissions from each Project Alternative.

Container Ships

Emission calculation methods similar to those presented for general cargo ships in Section 3.2.4.3.1 were used to estimate emissions from proposed container ships. These methods relied heavily on those used in the *2001 and 2005 PEIs*. Assumptions regarding container ship activities include the following:

- The analysis gradually increased the cargo capacity and throughput of Project container vessels in future years to simulate this expected trend in the international container vessel fleet (JWD 2002). The number of vessel sizes assumed in the Project fleet increased from 2 in 2003 to 4 by year 2010. These vessel sizes include <3,000, 3,000 to 5,000, 5,000 to 6,000, and 8,000

Table 3.2-17. Regulations and Agreements Assumed as Part of the Proposed Project Emissions

Container Ships	*Tugboats*	*Terminal Equipment*	*Trucks*	*Trains*	*Rail Yard Equipment*
Vessel Speed Reduction Program – 25 percent compliance rate in 2003; 50 percent in 2007, 75 percent in 2010, and 80 percent in post-2014.	**California Diesel Fuel Regulations** – 500-ppm sulfur starting January 2006 and 15-ppm sulfur starting September 2006. **Engine Standards for Marine Diesel Engines** – Gradual annual phase-in of Tier 2 standards due to normal tugboat fleet turnover.	**Emission Standards for Nonroad Diesel Engines** – Gradual annual phase-in of Tier 1, 2, 3, and 4 standards due to normal terminal equipment fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 2006.	**Emission Standards for Onroad Trucks** – Gradual annual phase-in of tiered standards due to normal truck fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 2006.	**Emission Standards for Locomotives** – Gradual annual phase-in of Tier 0, 1, and 2 standards due to normal locomotive fleet turnover. **2005 CARB/Railroad Statewide Agreement** – Reduced line haul locomotive idling times assumed to take effect starting in 2006. **Switch Locomotive Modernization Agreement** – Tier 2 switch locomotive starting in 2008. This supersedes the Emission Standards for Locomotives (above). Applies only to Berths 136-147 rail yard switch locomotives. **Nonroad Diesel Fuel Rule** – 500-ppm sulfur starting June 2007 and 15-ppm sulfur starting January 2012. Applies to all line-haul locomotives. **California Diesel Fuel Regulations** –15-ppm sulfur starting January 2007. Applies to all switch locomotives.	**Emission Standards for Nonroad Diesel Engines** – Gradual annual phase-in of Tier 1, 2, 3, and 4 standards due to normal rail yard equipment fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 2006.

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 emissions. A description of each regulation or agreement is provided in Section 3.2.3.

to 9,000 TEU-capacity vessels. With time, larger vessels would carry a larger percentage of the Project annual cargo. To be consistent with the Project designs, ship visits used in the air quality analysis differed by less than 10 percent of those estimated by the Port for an average-sized container ship (POLA 2006e). The air quality analysis evaluated the following numbers of Project annual ship calls: 246 in 2003 (baseline), 261 in 2007, 279 in 2015, and 311 in 2025 and 2038.

- Cargo throughputs for <3,000 and 3,000-5,000 TEU vessels were based upon current and future expected operations at the Berths 136-147 terminal. Throughputs for 5,000-6,000 TEU vessels were based upon the average throughput of vessels >5000 TEUs at Berths 121-131 in year 2001 (Starcrest 2003). Throughputs for 8,000-9,000 TEU vessels were based upon an expected capacity of 8,800 TEUs (Samsung Heavy Industries 2003) times 1.43 (the ratio of TEU throughput per ship visit to the TEU capacity for vessels >5,000 TEUs that called at Berths 121-131 in 2001), or 12,584 TEUs.
- Cargo throughputs estimate the expected maximum capacity of the terminal.
- Vessel hoteling durations assumed that cranes would service vessels for 16 hours per day: (1) 4 cranes would service <3,000 and 3-5,000 TEU vessels at 1600 lifts/day or a total of 2992 TEUs/day, (2) 5 cranes would service 5-6,000 TEU vessels at 2000 lifts/day or a total of 3740 TEUs/day, and (3) 6 cranes would service 8-9,000 TEU vessels at 2400 lifts/day or a total of 4488 TEUs/day (TraPac Inc. 2006).
- Unmitigated VSRP compliance rates for all Project vessels of 50 percent in 2007, 75 percent in 2010, and 80 percent in post-2014.
- During hoteling activities, vessels would operate a diesel fuel-powered boiler for heating demands, such as space, water, or fuel heating, even if they use AMP.

To estimate annual average daily unmitigated emissions, ship main engines were assumed to use residual fuel with an average sulfur content of 2.7 percent (27,000 ppm). A sulfur content of 2.7 percent represents a worldwide average for residual fuel (Entec 2002). The Port has completed a study regarding low sulfur fuel availability and has verified that the ships calling at the San Pedro Bays Port are consistent with the worldwide average of 2.7 percent sulfur content (Starcrest 2007). To estimate emissions for auxiliary engines, 66 percent of the ships were assumed to use residual fuel with an average sulfur content of 2.7 percent and 37 percent of the ships were assumed to use marine diesel oil (MDO) with an average sulfur content of 0.78 percent, as identified from vessel boarding surveys conducted in support of the *2005 PEI* (Starcrest 2007). According to the *Evaluation of Low Sulfur Marine Fuel Availability - Pacific Rim*, the average sulfur content of MDO is 0.58 percent (Starcrest 2005).

Tugboats

Tugboats would assist Project container ships while maneuvering and docking inside the Port breakwater. The analysis assumed that 3 tugboats would assist one container ship visit, or two inbound and one outbound. Additionally, the duration of tugboat usage per ship visit was equal to 30 percent longer than a container vessel harbor transit plus docking durations, to account for tug movement to and from the assist locations and standby modes.

Composite emission factors for main and auxiliary engines on assist tugboats were developed from a year 2005 POLA inventory of tugboat engine sizes and model years (POLA 2006f). A gradual replacement of older tugboat engines with new engines meeting EPA Tier 2 standards (USEPA 1999a) was assumed based on default marine engine lifetimes (CARB 2004b).

For the CEQA and NEPA Baseline conditions of 2003, the diesel fuel used in tugboats is assumed to have an average sulfur content of 0.19 percent (1,900 ppm), which is based on a survey of current marine fuel suppliers at the Port. The sulfur content limit was reduced to 500 ppm starting January 2006 and dropped to 15 ppm starting September 2006. The fuel sulfur content limits starting in 2006 are required for California harbor craft in accordance with California Diesel Fuel Regulations (CARB 2004a). The analysis assumed that a total of three tugboats would assist a container ship per round trip visit.

Terminal Equipment

Terminal equipment includes diesel-powered yard tractors, RTGs, top picks, sidepicks, forklifts, and yard sweepers. The dock cranes used to lift containers on and off container ships are electric-powered.

Emission factors used to estimate future year terminal equipment emissions were derived from the Berths 136-147 year 2001 terminal equipment composite emission factors developed for the *2001 PEI*. Deterioration rates obtained from the CARB OFFROAD2007 Emissions Model and equipment replacement rates (every 15 years) were applied to these 2001 factors in annual steps to develop future year composite emission factors. The future year composite factors decreased from 2001 values, as new equipment with cleaner emission standards replaced older higher-emitting equipment.

Terminal equipment power demands for each year of the proposed Project (annual horsepower-hours) were estimated by multiplying year 2001 equipment usages by the ratio of future Project year annual cargo throughput divided by the year 2001 annual cargo throughput. For any Project year that exceeded 8000 annual TEUs per acre, equipment power demand was increased from this ratio to simulate overly crowded terminal conditions. These annual equipment power demands were then multiplied by the future Project year composite emission factors to estimate annual emissions for equipment horsepower categories.

Emission factors for SO_x were determined from the fuel consumption rate of the terminal equipment and the sulfur content of the diesel fuel used in the equipment. The sulfur content in diesel fuel was assumed to be 500 ppm prior to September 2006 and 15 ppm starting September 2006. These values represent the maximum allowable sulfur content in diesel fuel sold in California (CARB 2004a).

Trucks

Emissions from on-road, heavy-duty diesel trucks that haul containers to and from the Project site were calculated with emission factors generated by the EMFAC2007 on-road mobile source model (CARB 2006d). Registration information for approximately 7,200 on-road trucks that serviced San Pedro Bay Ports container terminals in the year 2003 (Starcrest 2004) was used to develop the truck fleet age distribution used in EMFAC2007. To estimate future year emission factors, the age distribution of the baseline truck fleet was increased by the time step between year 2003 and each future Project year to determine the truck fleet age distribution for each Project year. The EMFAC2007 model outputs show that emission factors will steadily decline in future years, as older trucks are replaced with newer, cleaner trucks that meet the required state and federal on-road engine emission standards.

Other assumptions regarding on-road truck operations include the following:

- Truck trips destined to off-site rail yards traveled an average one-way trip distance of 9.0 miles. Trucks destined to local deliveries (non-rail) were given an average one-way trip distance of 20 miles, which is an approximate distance to the center of the Los Angeles Basin from the Port. This average trip distance is supported by the Rail study done for the Port of Los Angeles (REF). Trucks destined for deliveries outside of the SCAB were given an average trip distance of 90 miles. Truck trips numbers were obtained from the traffic analysis (Chapter 3.10) and are based upon truck counts taken on the busiest days at the Port.
- The distribution pattern of Project truck trips that occurred with roadways adjacent to the Project site was provided by the traffic study (MMA 2005).
- In 2003, each truck trip was assumed to travel 10 percent of the distance at 10 mph, 50 percent at 25 mph, and 40 percent at 55 mph. In 2007, to account for increased traffic congestion, each truck trip would travel 10 percent of the trip distance at 10 mph, 60 percent at 25 mph, and 30 percent at 55 mph. In 2015 and beyond, these values would change to 10 percent of the trip distance at 10 mph, 70 percent at 25 mph, and 20 percent at 55 mph.
- Each truck trip includes off-site and on-site idling durations. Off-site duration would occur for 30 minutes. On-terminal durations occurred for 33 minutes in year 2003 and would occur for 15 minutes in subsequent years, based upon the current and expected operational characteristics of the Berths 136-147 terminal (TraPac Inc. 2005).
- The number of truck trips is based upon the maximum capacity of the terminal.

Trains and Rail Yard Equipment

Emissions associated with hauling containers by rail include yard locomotive emissions during switching activities at the rail yards, line-haul locomotive emissions during transport within the SCAB and idling at the rail yards, and emissions from rail yard equipment used to load and unload containers onto the railcars. All of these emission sources would use diesel fuel.

Locomotive future year emission factors were developed as a function of USEPA nationwide locomotive emission standard implementation schedule (USEPA 1998b). In general, locomotive emission factors decline in future years, as older locomotives are gradually replaced with newer locomotives meeting USEPA-tiered emission standards.

The emission factors for the yard locomotives at the proposed Berths 136-147 Terminal rail yard were adjusted to account for the commitment by PHL to replace their existing yard locomotives with engines that meet the Tier 2 standard. Locomotive engine replacements for the entire PHL fleet will begin in the third quarter of 2006 and end by the third quarter of 2007, as defined in CAAP measure RL-1.

Idling times for line-haul locomotives at the rail yards were adjusted in response to the 2005 CARB/Railroad Statewide Agreement. Specifically, idling times during train assembly were reduced from 1.9 hours determined by the *PEIs* to 1.0 hour starting in 2007 to account for restrictions on idling and the phase-in of anti-idling devices.

Prior to September 2006, the analysis assumed that diesel fuel used in yard locomotives had an average sulfur content of 500 ppm, as California on-road diesel fuel was used in these locomotives. Since January 2007, yard locomotives have used diesel fuel with a maximum sulfur content of 15 ppm, in accordance with California Diesel Fuel Regulations (CARB 2004b). Line-haul locomotives were assumed to use diesel fuel with an average sulfur content of 2,200 ppm before June 2007. The USEPA Nonroad Diesel Fuel Rule limits fuel sulfur content for line-haul locomotives to 500 ppm in June 2007 and 15 ppm in January 2012 (USEPA 2004).

Emissions from cargo handling rail yard equipment were calculated using the methods identified above for terminal equipment.

Other assumptions regarding rail operations include the following:

- The amount of containers moving through the Project on-dock and off-dock rail yards for each year of the proposed Project was provided by the Port Rail Master Plan (Parsons 2006). Trains associated with the Berths 136-147 rail yard would transport 552,709/700,800 TEUs in years 2015/2025. Trucks would transport 109,594/174,379 TEUs of intermodal cargo in years 2015/2025 to and from the Carson and Los Angeles rail yards.
- A one-way train trip length is based upon the eastern train route distance between the Berths 136-147 terminal and the edge of the SCAB, or 106 miles.
- Each inbound train trip (into the Port) would transport an average of 90 containers (167 TEUs) plus empty railcars. Each outbound train trip (to inland locations) would transport an average of 240 containers (444 TEUs) (Yang Ming/MTC Terminal 2003).

Greenhouse Gases

GHG emissions associated with the proposed Project and alternatives were calculated based on methodologies provided in the California Climate Action Registry's *General Reporting Protocol*, version 2.2 (CCAR, 2007). The General Reporting Protocol is the guidance document that the POLA and other CCAR members must use to prepare annual port-wide GHG inventories for the Registry. Therefore, for consistency, the General Reporting Protocol was also used in this study. However, to adapt the Protocol for NEPA/CEQA purposes, a modification to the Protocol's operational and geographical boundaries was necessary, as discussed later in this section.

Construction

The Project-related construction sources for which GHG emissions were calculated include:

- Off-road diesel construction equipment
- On-road trucks

- Marine cargo vessels used to deliver equipment to the site
- Worker commute vehicles

Operations

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

- Ships
- Tugboats
- Terminal equipment
- Railyard equipment
- On-road trucks
- Trains
- Fugitive HFC emissions from refers
- AMP electricity consumption (for the mitigated project)
- On-terminal electricity consumption
- Worker commute vehicles

The adaptation of the General Reporting Protocol methodologies to these project-specific emission sources is described in Appendix D.1.3

GHG Operational and Geographical Boundaries

Under CCAR's General Reporting Protocol, emissions associated with project construction and operations would be divided into 3 categories:

- Scope 1: Direct emissions from sources owned or operated by the Port
- Scope 2: Indirect emissions from purchased and consumed electricity
- Scope 3: Indirect emissions from sources not owned or operated by the Port

Examples of Scope 1 sources for LAHD or the proposed Project tenant would be cargo handling equipment, LAHD vehicles, POLA-based yard locomotives (switching locomotives), and POLA-based tugboats. Scope 2 emissions would be indirect GHG emissions from electricity consumption on the terminal. Because the proposed Project tenant and/or POLA generally do not own ships, main line locomotives, trucks, and construction equipment, these mobile sources would be considered Scope 3 emissions.

CCAR does not require Scope 3 emissions to be reported because they are considered to belong to another reporting entity (i.e., whomever owns, leases, or operates the sources), and that entity would report these emissions as Scope 1 emissions in its own inventory. Virtually all trucks, line haul locomotives, ships, tugboats, and construction equipment fall under this category. As a result, when used for NEPA and 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 NEPA/CEQA document, GHG emissions were calculated for all project-related sources (Scope 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, including ships. Therefore, for those sources that travel out of California (ships, trucks, and line haul locomotives), the GHG emissions were based on that portion of their travel that is within California borders. 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 CCAR's goal of reporting all GHG emissions within the State of California (CCAR, 2007b).

3.2.4.4 Proposed Project Impacts and Mitigation

Impact AQ-1: Proposed Project construction would produce emissions that would exceed SCAQMD emission significance thresholds.

Tables 3.2-18 and 3.2-19 present the unmitigated daily air emissions that would occur from each Project Phase 1 and 2 construction activity. These data show that most of the proposed construction activities are estimated to produce emissions that would exceed the daily SCAQMD NO_x threshold of 100 pounds. Dredging and disposal and rip-rap placement would produce the greatest amounts of emissions from the proposed construction activities. The main contributors to emissions from these activities include (1) transit and hoteling of general cargo vessels during crane and sheetpiles deliveries, (2) tugboats that deliver dike rock and transport dredge sediments, (3) clamshell dredge equipment, (4) barge equipment used to place rip-rap and wharf pilings, and (5) earth-moving equipment. Fugitive dust from earth-moving activities would contribute to the majority of PM emissions during upland construction activities, while PM emissions from all other construction activities mainly would take the form of combustive DPM.

To determine the significance of Project emissions based upon criterion **Impact AQ-1**, the analysis reviewed the proposed construction schedule to determine a peak daily period of activity and resulting peak daily emissions for comparison to the SCAQMD daily emission thresholds. These data are shown in Tables 3.2-18 and 3.2-19 for Phase 1 and 2 construction activities.

Table 3.2-18. Daily Emissions for Proposed Project Construction Activities – Phase 1

Construction Project/Activity	Emissions (pounds per day)					
	VOC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Wharf Improvements at Berths 144-147						
Wharf Demolition	13	39	126	0	7	6
Remove 2 Existing Cranes at Berth 144	5	17	97	0	5	4
Piledriving-Sheet Piles	46	112	1,246	675	93	87
Rip-Rap Placement	34	87	667	1	35	33
Dredge and Disposal	26	95	273	0	11	10
Piledriving-Waterside Piles	10	51	118	0	5	4
Piledriving-Landside Piles	11	57	126	0	5	5
Replace Existing Wharf	36	138	335	0	14	13
Upgrade Existing Wharf	15	65	131	0	6	6
Install 3 Cranes at Berth 144	46	115	1,245	675	93	87
78-Acre Backland Improvements at Berths 142-147						
Building Demolition	12	43	116	0	42	12
Backland Improvements	15	58	147	0	87	23
Construct a New Administration Building, Main Gate, and Worker Parking Lot						
Construct Administration Building	6	23	41	0	16	5
Construct New Main Gate	2	8	17	0	28	7
Improve/Pave Demolished Areas and Parking	15	58	147	0	74	20
Demolish Existing Admin. Building/Gate	12	43	116	0	42	12
Construct a New Maintenance and Repair Facility						
Construct Maintenance and Repair Facility	7	26	47	0	43	11
Improve/Pave Demolished Areas and M & R	15	58	147	0	74	20
Demolish Existing M & R Facility	12	43	116	0	42	12
Harry Bridges Blvd. Realignment						
Street Removals	17	64	154	0	34	12
Street Improvements	37	202	415	0	31	19
Sewer Installation	4	16	34	0	2	2
Water Systems Installation	4	16	34	0	2	2
Storm Drain Installation	8	32	71	0	4	3
Construct a 46-Acre Rail Yard at Berth 200	21	66	139	0	62	18
9 Acres of Backland Improve. at Berths 134-135	15	58	147	0	60	17
Construct the Berths 142-147 12-Acre ICTF and 19-Acre Backlands						
Rail Track Removal	6	21	54	0	2	2
Rail Yard Construction	21	66	139	0	62	18
Backland Improvements	15	58	147	0	87	23
Existing Cranes Removal at Berth 136	5	17	97	0	5	4
Construct Harry Bridges Blvd. Buffer						
Landscape Installation	11	39	81	0	32	11
Grading/Earthmoving	21	83	191	0	116	31
Install Cranes at Berths 136 & 144	46	115	1,245	675	93	87
Worker Commuter Vehicles	4	49	4	0	30	28

Table 3.2-18. Daily Emissions for Proposed Project Construction Activities – Phase 1 (continued)

Construction Project/Activity	Emissions (pounds per day)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Peak Daily Emissions – CEQA Impact (1) (2)	**126**	443	**1,845**	**676**	**424**	**161**
Mitigated Peak Daily Emissions – CEQA Impact	74	299	**1,459**	**541**	**205**	**97**
Peak Daily Emissions – NEPA Impact (3)	**111**	494	**983**	1	**380**	**120**
Mitigated Peak Daily Emissions – NEPA Impact (4)	56	262	**783**	1	**171**	**65**
SCAQMD Daily Significance Thresholds	**75**	**550**	**100**	**150**	**150**	**55**

Notes:(1) Peak daily construction emissions of all pollutants except PM_{10}/$PM_{2.5}$ would occur from: (a) Installation of 3 cranes at berth 144, (b) Construction of new main gate, (c) Construction of new maintenance and repair facility, (d) Sewer installation at the Harry Bridges Blvd realignment, (e) Construction of a 46-Acre rail yard at berth 200, (f) 9 Acres of backland improvements at Berths 134-135, (g) Landscape installation at the Harry Bridges Blvd. Buffer, and (f) commuting of workers. However, this is an overestimation, as all equipment during these activities would not operate together in the same day.

(2) Peak daily construction emissions of PM_{10}/$PM_{2.5}$ would occur from: (a) Rip-Rap placement during wharf improvements at Berths 144-147, (b) Backland improvements at Berths 142-147, (c) Construction of new administration building, (d) Construction of new maintenance and repair facility, (e) Street removals during the Harry Bridges Blvd. realignment, (f) Construction of a 46-Acre Rail Yard at Berth 200, and (g) Grading and earthmoving during for the Harry Bridges Blvd buffer construction, and (f) commuting of workers.

(3) Equal to Project construction emissions in this table minus NFAB construction emissions presented in Table 3.2-TBD.

(4) Equal to Project mitigated construction emissions minus NFAB mitigated construction emissions.

Table 3.2-19. Daily Emissions for Proposed Project Construction Activities – Phase 2

Construction Project/Activity	Emissions (pounds per day)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
10-Acre Northwest Slip Fill						
Dredge Dike Toe	17	58	197	0	9	8
Rip-Rap Placement	29	79	623	1	32	30
Channel Dredging	13	32	319	0	16	15
Disposal into Dike	83	201	1,985	3	100	93
10-Acre Backland Improvements at Berth 131	10	43	83	0	57	15
Wharf Construction at Berth 136						
Piledriving-Sheet Piles	45	113	1,236	675	93	87
Piledriving-Waterside Piles	6	26	60	0	3	2
Piledriving-Landside Piles	7	31	63	0	3	3
Dike Filling	3	11	25	0	1	1
Wharf Construction	30	131	263	0	11	10
Peak Daily Emissions – CEQA/NEPA Impact (1)	**97**	233	**2,304**	3	116	**109**
Mitigated Peak Daily Emissions – CEQA/NEPA Impact	56	180	**1,476**	2	72	**67**
SCAQMD Daily Significance Thresholds	**75**	**550**	**100**	**150**	**150**	**55**

CEQA Impact Determination

During a peak day of activity, the proposed Project's Phase 1 construction would produce significant levels of VOC, NO_x, SO_x, PM_{10}, and $PM_{2.5}$ emissions and Phase 2 construction would produce significant levels of VOC, NO_x, and $PM_{2.5}$ emissions under CEQA. In regard to PM_{10}/$PM_{2.5}$ emissions, the overwhelming majority of this pollutant emitted during Phase 1 construction would occur in the form of fugitive dust. However, almost all $PM_{2.5}$ emissions during Phase 2 construction would occur from diesel fuel combustion.

NEPA Impact Determination

During a peak day of activity, the proposed Project's Phase 1 construction would produce significant levels of VOC, NO_x, PM_{10}, and $PM_{2.5}$ emissions and Phase 2 construction would produce significant levels of VOC, NO_x, and $PM_{2.5}$ emissions under NEPA.

Mitigation Measures

Mitigation measures for proposed Project construction were derived, where feasible, from the proposed NNI measures, Port of Los Angeles Community Advisory Committee (PCAC) recommended measures, the SPBP CAAP and in consultation with the Port. A complete proposed Project feasibility review of the NNI and PCAC measures is included in Appendix B. The following mitigation measures would reduce criteria pollutant emissions associated with project construction. All mitigation measures (**AQ-1** through **AQ-5**) would apply to Phases 1 and 2 of construction.

MM AQ-1: Expanded VSR Program. All cargo ships used for terminal crane and sheetpile deliveries shall comply with the expanded VSRP of 12 knots from 40 nm from Point Fermin to the Precautionary Area.

The average cruise speed for a general cargo vessel is 14.7 knots (Starcrest 2005). A reduction in speed to 12 knots in the 40-mile to Precautionary Area trip segment would reduce the main engine load factor from 83 percent to 45 percent, due to the cubic relationship of load factor to speed. This would produce a corresponding reduction in transit emissions from vessel main engines within the outer SCAQMD waters by about 20 percent, depending on the pollutant.

MM AQ-2: Fleet Modernization for On-Road Trucks. All on-road heavy-duty diesel trucks with a gross vehicle weight rating (GVWR) of 33,000 pounds or greater used on-site or to transport materials to and from the site shall comply with year 2007 emission standards.

The effectiveness of this measure was determined by assuming that the (1) Phase 1 mitigated construction truck fleet was 50 percent 2007 SCAB average fleet and 50 percent compliant with the year 2007 standards and (2) Phase 2 mitigated construction truck fleet was a 2015 average fleet and 100 percent compliant with the year 2007 standards. Use of the EMFAC2007 emission factor model determined that the emission reductions associated with this mitigation measure would range from 9 to 15 percent in Phase 1 and 34 to 57 percent in Phase 2, depending upon the pollutant. Because SO_x emissions are proportional to the fuel sulfur content, no appreciable change would occur in SO_x emissions.

MM AQ-3: Fleet Modernization for Construction Equipment. All off-road diesel-powered construction equipment greater than 50 hp, except derrick barges and marine vessels, shall achieve the Tier 2 emission standards in Phase 1 construction and Tier 4 emission standards in Phase 2 construction, as defined in the USEPA Nonroad Diesel Engine Rule (USEPA 1998 and 2004). Equipment not designated Tier 2 by the manufacturer may achieve the emissions requirement by retrofitting the equipment with an CARB-Verified Diesel Emission Control System (VDECS) and/or by the use of an CARB-verified emulsified fuel.

Use of equipment with cleaner Tier 2 or Tier 4 emission standards would produce fewer air emissions, compared to the statewide average fleet of construction equipment that was assumed in the unmitigated emission calculations. The emission reductions associated with this mitigation measure would be as high as 68 percent in Phase 1 and 95 percent in Phase 2, depending upon the pollutant and equipment horsepower category. Although all new equipment sold by 2006/2015 would have to comply with the Tier 2/4 standards, these requirements do not apply to existing equipment. Therefore, this mitigation measure would force an earlier turnover of the existing construction equipment to lower-emitting models.

MM AQ-4: Best Management Practices (BMPs). LAHD shall implement a process by which to select additional BMPs to further reduce air emissions during construction if it is determined that the proposed construction equipment exceed any SCAQMD significance threshold. The following types of measures would be required on construction equipment: (a) use of diesel oxidation catalysts and catalyzed diesel particulate traps; (b) maintain equipment according to manufacturers' specifications; (c) restrict idling of construction equipment to a maximum of 10 minutes when not in use; and (d) install high-pressure fuel injectors on construction equipment vehicles. The LAHD shall determine the BMPs once the contractor identifies and secures a final equipment list.

Since the final construction equipment list has not yet been determined, this mitigation is not quantified in this study.

MM AQ-5: Additional Fugitive Dust Controls. The calculation of fugitive dust (PM) from Project earth-moving activities assumes a 75 percent reduction from uncontrolled levels to simulate rigorous watering of the site and use of other measures (listed below) to ensure Project compliance with SCAQMD Rule 403. The construction contractor shall further reduce fugitive dust emissions to 90 percent from uncontrolled levels. The Project construction contractor shall specify and implement dust-control methods that will achieve this control level in a SCAQMD Rule 403 dust control plan. The construction contractor shall designate personnel to monitor the dust control program and to order increased watering, as necessary, to ensure a 90 percent control level. Their duties 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 shall be watered one additional time per day beyond that required by Rule 403.
- Contractors shall apply approved non-toxic chemical soil stabilizers to all inactive construction areas or replace groundcover in disturbed areas.

- Construction contractors shall provide temporary wind fencing around sites being graded or cleared.
- Trucks hauling dirt, sand, or gravel shall be covered or shall maintain at least 2 feet of freeboard in accordance with Section 23114 of the California Vehicle Code.
- Construction contractors shall install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off tires of vehicles and any equipment leaving the construction site.
- The grading contractor shall suspend all soil disturbance activities when winds exceed 25 mph or when visible dust plumes emanate from a site; disturbed areas shall be stabilized if construction is delayed.

MM AQ-18A: General Mitigation Measure. For any of the above mitigation measures (**MM AQ-1** through **AQ-5**), 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.

Residual Impacts

Tables 3.2-18 and 3.2-19 show that implementation of **Mitigation Measures AQ-1** through **AQ-3** and **AQ-5** would reduce Project construction emissions. **Mitigation Measures AQ-4 and AQ 18A,** which were not included in the mitigated emission calculations, would further reduce construction emissions. These data show that mitigated construction emissions under CEQA would exceed the (1) NO_x, SO_x, PM_{10}, and $PM_{2.5}$ SCAQMD emission thresholds during Phase 1 and (2) NO_x, PM_{10},and $PM_{2.5}$ SCAQMD emission thresholds during Phase 2. As a result, these emissions would remain significant under CEQA. The data in Tables 3.2-18 and 3.2-19 also show that mitigated construction emissions under NEPA would exceed the (1) NO_x and SO_x SCAQMD emission thresholds during Phase 1 and (2) NO_x and $PM_{2.5}$ SCAQMD emission thresholds during Phase 2. As a result, these emissions would remain significant under NEPA.

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

A dispersion modeling analysis was performed to estimate the ambient impact of construction emissions from the proposed Project. The analysis focused on the peak day of Phase 1 construction activities, as Phase 2 construction emissions mainly occur from off-site activities (dredge, dike construction, and dredge material transport) whose impacts are not compared to the SCAQMD ambient air quality thresholds (SCAQMD 2006). Due to the relatively low magnitude of onsite construction emissions, Phase 2 construction would produce less than significant ambient air quality impacts. Appendix D2 contains documentation of the Project construction emissions dispersion modeling analysis.

Table 3.2-20 presents the maximum offsite ground level concentrations of criteria pollutants estimated for Phase 1 construction activities without mitigation. These data show that the maximum total 1-hour NO_2 concentration of 1,039 µg/m^3 would exceed the SCAQMD threshold of 338 µg/m^3. Additionally, the maximum offsite 24-hour $PM_{10}/PM_{2.5}$ incremental impacts would exceed the SCAQMD threshold of 10.4 µg/m^3.

Table 3.2-20. Maximum Offsite Ambient Concentrations – Proposed Project Phase 1 Construction without Mitigation

Pollutant	*Averaging Time*	*Maximum Impact from Phase 1 Emissions (µg/m^3)*	*Background Pollutant Concentration (µg/m^3)*	*Total Maximum Phase 1 Impact (µg/m^3)*	*SCAQMD Threshold[a] (µg/m^3)*
NO_2	1-hour	776	263	**1,039**	338
CO	1-hour	1,086	6,629	7,715	23,000
	8-hour	305	5,371	5,676	10,000
PM_{10}	24-hour	**110**	-	-	10.4
$PM_{2.5}$	24-hour	**35**	-	-	10.4

[a] Exceedances of the thresholds are indicated in bold. The thresholds for PM10 are incremental thresholds and therefore only impacts from Project emissions without background pollutant concentrations are compared to the thresholds. The thresholds for NO_2 and CO are combined thresholds and therefore impacts from Project emissions plus background pollutant concentrations are compared to the thresholds.

[b] Construction schedules are assumed to be 8 hours per day, 5 days per week, and 52 weeks per year.

[c] In accordance with SCAQMD guidance (SCAQMD, 2005), ship transit emissions, tugboat emissions, and offsite haul truck transport emissions are considered offsite emissions and were not included in the modeling. However, ship hoteling and onsite truck emissions were included in the modeling.

[d] NO_2 concentrations were calculated assuming a 25.8 percent conversion rate from NO_x to NO_2 (SCAQMD, 2003c). This conversion rate assumes the maximum impact locations occur within 500 meters of the majority of emission sources that contribute to this impact. This is a conservative approach, as the majority of emission sources that contribute to the maximum NO_2 impact are within 200 meters of this location and the SCAQMD NO_x to NO_2 conversion factor for this distance is 11.4 percent.

CEQA Impact Determination

Without mitigation, the proposed Project's Phase 1 construction emissions would produce impacts that would exceed the SCAQMD 1-hour NO_2 and 24-hour $PM_{10}/PM_{2.5}$ ambient thresholds. Therefore, these represent significant air quality impacts under CEQA.

NEPA Impact Determination

Without mitigation, the proposed Project's Phase 1 construction emissions would produce impacts that would exceed the SCAQMD 1-hour NO_2 and 24-hour $PM_{10}/PM_{2.5}$ ambient thresholds. Therefore, these significant air quality impacts under NEPA are identical to those estimated under CEQA.

Mitigation Measures

Implementation of **Mitigation Measures AQ-1** through **AQ-5** would reduce NO_2 and/or PM_{10} emissions during Project construction. Table 3.2-21 presents the maximum offsite ground level concentrations of NO_2, CO, PM_{10}, and $PM_{2.5}$ estimated for Phase 1 construction activities after mitigation. These data show that **Mitigation Measures AQ-1** through **AQ-5** would reduce all pollutant impacts.

Table 3.2-21. Maximum Offsite Ambient Concentrations – Proposed Project Phase 1 Construction After Mitigation

Pollutant	*Averaging Time*	*Maximum Impact from Phase 1 Emissions (μg/m³)*	*Background Pollutant Concentration (μg/m³)*	*Total Maximum Phase 1 Impact (μg/m³)*	*SCAQMD Threshold[a] (μg/m³)*
NO_2	1-hour	656	263	**919**	338
CO	1-hour	569	6,629	7,198	23,000
	8-hour	163	5,371	5,534	10,000
PM_{10}	24-hour	**47**	-	**-**	10.4
$PM_{2.5}$	24-hour	**16**	-	**-**	10.4

[a] Exceedances of the thresholds are indicated in bold. The thresholds for PM_{10} are incremental thresholds and therefore only impacts from Project emissions without background pollutant concentrations are compared to the thresholds. The thresholds for NO_2 and CO are combined thresholds and therefore impacts from Project emissions plus background pollutant concentrations are compared to the thresholds.

[b] Construction schedules are assumed to be 8 hours per day, 5 days per week, and 52 weeks per year.

[c] In accordance with SCAQMD guidance (SCAQMD, 2005), ship transit emissions, tugboat emissions, and offsite haul truck transport emissions are considered offsite emissions and were not included in the modeling. However, ship hoteling and onsite truck emissions were included in the modeling.

[d] NO_2 concentrations were calculated assuming a 25.8 percent conversion rate from NO_x to NO_2 (SCAQMD, 2003c). This conversion rate assumes the maximum impact locations occur within 500 meters of the majority of emission sources that contribute to this impact. This is a conservative approach, as the majority of emission sources that contribute to the maximum NO_2 impact are within 200 meters of this location and the SCAQMD NO_x to NO_2 conversion factor for this distance is 11.4 percent.

Residual Impacts

Implementation of **Mitigation Measures AQ-1** through **AQ-5** would reduce ambient pollutant impacts from Phase 1 construction. However, with mitigation, the Project Phase 1 construction emissions would produce impacts that would exceed the SCAQMD 1-hour NO_2 and 24-hour PM_{10}/$PM_{2.5}$ ambient thresholds. As a result, Project residual impacts would remain significant for 1-hour NO_2 and 24-hour PM_{10}/$PM_{2.5}$ under CEQA and NEPA.

Impact AQ-3: The proposed Project would result in operational emissions that exceed 10 tons per year of VOCs and SCAQMD thresholds of significance.

Table 3.2-22 summarizes the unmitigated annual average daily emissions that would occur from the operation of the Berths 136-147 Terminal Project for Project milestone years of 2007, 2015, 2025, and 2038. Project emissions are compared to the CEQA Baseline (2003) and NEPA Baseline emissions to determine CEQA and NEPA significance, respectively.

Table 3.2-22. Average Daily Emissions Associated with the Operation of the Berths 136-147 Terminal Proposed Project

Project Scenario/Activity	Emissions (pounds per day)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2007						
Ships – Fairway Transit	80	185	2,355	1,383	197	185
Ships – Precautionary Area Transit	15	31	312	194	27	26
Ships – Harbor Transit	23	29	216	109	22	20
Ships – Docking	8	8	60	26	6	6
Ships – Hoteling Aux. Sources	42	153	1,505	1,440	128	120
Tugs – Cargo Vessel Assist	2	13	79	0	3	3
Terminal Equipment	122	444	1,420	1	61	56
On-road Trucks	916	3,111	8,288	6	576	385
Trains	109	255	1,524	136	58	53
Rail Yard Equipment	21	82	237	0	11	10
Worker Commuter Vehicles	10	140	18	0	15	14
Relocated PHL Rail Yard	4	7	54	1	1	1
Project Year 2007 Total	**1,352**	**4,457**	**16,067**	**3,297**	**1,106**	**880**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change CEQA Baseline - Year 2007	**167**	**380**	**2,596**	**573**	**84**	**49**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	Y	N	Y	Y	N	N
NEPA Baseline (NFAB)	**1,099**	**3,475**	**14,136**	**3,197**	**958**	**748**
Net Change from NFAB Year 2007	**253**	**982**	**1,931**	**100**	**148**	**132**
Exceeds SCAQMD Threshold?	Y	Y	Y	N	N	Y
Project Year 2015						
Ships – Fairway Transit	105	233	2,823	1,643	240	225
Ships – Precautionary Area Transit	25	46	411	238	37	35
Ships – Harbor Transit	34	43	326	158	33	31
Ships – Docking	12	12	91	38	10	9
Ships – Hoteling Aux. Sources	69	237	2,455	2,205	208	195
Tugs – Cargo Vessel Assist	3	13	72	0	3	3
Terminal Equipment	83	605	1,174	1	48	44
On-road Trucks	513	2,890	8,482	10	592	352
Trains	119	326	1,658	1	44	40
Rail Yard Equipment	11	87	148	0	6	6
Worker Commuter Vehicles	12	161	21	0	22	21
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2015 Total	**987**	**4,662**	**17,691**	**4,296**	**1,243**	**960**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change CEQA Baseline 2003 - Year 2015	**(198)**	**586**	**4,220**	**1,572**	**221**	**129**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**Y**	**Y**	**Y**	**Y**	**Y**
NEPA Baseline (NFAB)	**428**	**2,031**	**5,399**	**906**	**388**	**195**
Net Change from NFAB Year 2015	**559**	**2,631**	**12,293**	**3,390**	**855**	**765**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**

Table 3.2-22. Average Daily Emissions Associated with the Operation of the Berths 136-147 Terminal Proposed Project (continued)

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2025						
Ships – Fairway Transit	139	302	3,602	2,087	307	288
Ships – Precautionary Area Transit	34	61	518	289	48	45
Ships – Harbor Transit	46	57	435	207	44	41
Ships – Docking	16	15	121	50	13	12
Ships – Hoteling Aux. Sources	95	322	3,386	2,968	286	268
Tugs – Cargo Vessel Assist	3	15	67	0	3	3
Terminal Equipment	48	970	365	2	14	13
On-road Trucks	277	1,412	3,773	12	393	137
Trains	132	430	1,913	2	48	44
Rail Yard Equipment	5	111	38	0	1	1
Worker Commuter Vehicles	8	109	14	0	24	22
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2025 Total	**804**	**3,812**	**14,260**	**5,619**	**1,182**	**875**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2025	**(381)**	**(265)**	**789**	**2,895**	**160**	**44**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**Y**	**Y**	**Y**	**N**
NEPA Baseline (NFAB)	**380**	**2,112**	**5,290**	**930**	**359**	**191**
Net Change from NFAB Year 2025	**424**	**1,700**	**8,971**	**4,689**	**823**	**685**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
Project Year 2038						
Ships – Fairway Transit	139	302	3,602	2,087	307	288
Ships – Precautionary Area Transit	34	61	518	289	48	45
Ships – Harbor Transit	46	57	435	207	44	41
Ships – Docking	16	15	121	50	13	12
Ships – Hoteling Aux. Sources	95	322	3,386	2,968	286	268
Tugs – Cargo Vessel Assist	3	15	60	0	3	2
Terminal Equipment	59	1,362	221	3	16	14
On-road Trucks	330	1,168	3,067	12	367	113
Trains	112	430	1,678	2	40	37
Rail Yard Equipment	4	111	15	0	1	1
Worker Commuter Vehicles	4	50	5	0	30	28
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2038 Total	**843**	**3,901**	**13,136**	**5,620**	**1,155**	**850**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2038	**(342)**	**(175)**	**(336)**	**2,896**	**133**	**19**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**Y**	**N**	**N**
NEPA Baseline (NFAB)	**373**	**2,278**	**5,104**	**930**	**357**	**189**
Net Change from NFAB Year 2038	**470**	**1,624**	**8,032**	**4,689**	**798**	**662**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**

The main contributors to Project operational emissions include (1) terminal equipment, (2) on-road trucks, (3) container ships in cruise mode outside of the Port breakwater, and (4) vessels at berth in hoteling mode. With time, vessel sources would produce a greater percentage of total Project emissions. This is the case, as these sources are not currently subject to agency-adopted requirements to meet lower emissions standards in the future. Conversely, all other Project source categories have future emission standards that will substantially reduce their emissions with time, due to the replacement of old with new vehicles. Additionally, shifting a large percentage of Project rail cargo from offsite rail yards to the on-site rail yard would produce emissions savings.

Table 3.2-23 summarizes peak daily unmitigated emissions estimated for the operation of the Berths 136-147 Terminal Project in years 2007, 2015, 2025, and 2038. As discussed in Section 3.2.2.4., peak daily emissions are presented to comply with SCAQMD reporting requirements. Project emissions are compared to the CEQA Baseline (2003) and NEPA Baseline emissions to determine CEQA and NEPA significance, respectively. However, the annual average daily emissions discussed in Table 3.2-20 more adequately express typical Port operations. Additionally, peak daily emissions occur infrequently and are based upon a lesser known and therefore more theoretical set of assumptions on which to determine significance.

The peak daily emission estimates for Project operations include the following assumptions that were chosen to identify a scenario that would occur with some regularity, rather than a scenario that would produce extreme daily emissions. Development of this type of scenario provides for a more meaningful determination of significance for future Project peak daily scenarios, as it is expected that these scenarios could occur several days per year.

- Ships at berth: (1) in 2007, one 3,000 to 5,000 TEU and one 5,000 to 6,000 TEU capacity vessel and (2) in 2015 and all future years, one 3,000 to 5,000 TEU, one 5,000 to 6,000 TEU, and one 8,000 to 9,000 TEU capacity vessel.
- Throughput across the berth is dependent upon 10 cranes in 2007 and 12 cranes beginning in 2015. Daily vessel crane service rates include the following: (1) four cranes on a 3,000 to 5,000 TEU capacity vessel at 2,992 TEUs, (2) five cranes on a 5,000 to 6,000 TEU capacity vessel at 3,740 TEUs, and (3) six cranes on a 8,000 to 9,000 TEU capacity vessel at 4,488 TEUs per day. Beginning in year 2015, daily crane service time increases from 16 to 21 hours and 4-, 5-, and 6- crane daily production rates increase to 3,927, 4,909, and 5,890 TEUs. This increased level of activity is used to maximize peak daily emissions. However, its future occurrence is speculative and not assumed in calculations of future Project annual average daily emissions.
- The following vessels would perform a round trip transit in and out of the Port in the following project years: (1) 2007, one 3,000 to 5,000 TEU capacity vessel and (2) 2015 and thereafter, one 8,000 to 9,000 TEU capacity vessel.
- The following truck trips and gate cargo throughputs would occur during each Project year: (1) in 2007, 5,675 trips and 10,499 TEUs, (2) in 2015, 6,028 trips and 11,152 TEUs, and (3) in 2025 and 2038, 7,053 trips and 13,049 TEUs.

Table 3.2-23. Peak Daily Emissions Associated with the Operation of the Berths 136-147 Terminal Proposed Project

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2007						
Ships – Fairway Transit	117	265	3,260	1,913	276	258
Ships – Precautionary Area Transit	28	57	527	312	47	44
Ships – Harbor Transit	41	52	392	191	40	37
Ships – Docking	14	14	109	46	12	11
Ships – Hoteling Aux. Sources	78	267	2,789	2,468	236	221
Tugs – Cargo Vessel Assist	5	24	147	0	6	6
Terminal Equipment	702	2,561	8,184	5	352	324
On-road Trucks	1,254	4,259	11,347	9	788	528
Trains	89	208	1,245	111	47	43
Rail Yard Equipment	17	67	193	0	9	8
Worker Commuter Vehicles	10	140	18	0	15	14
Relocated PHL Rail Yard	4	7	54	1	1	1
Project Year 2007 Total	**2,360**	**7,921**	**28,266**	**5,055**	**1,828**	**1,495**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2007	**383**	**986**	**5,255**	**1,205**	**222**	**166**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
NEPA Baseline (NFAB)	**1,927**	**6,417**	**24,193**	**4,191**	**1,498**	**1,195**
Net Change from NFAB Year 2007	**434**	**1,504**	**4,073**	**864**	**331**	**301**
Exceeds SCAQMD Threshold?	**Y**	**N**	**Y**	**Y**	**Y**	**Y**
Project Year 2015						
Ships – Fairway Transit	222	441	4,809	2,716	421	394
Ships – Precautionary Area Transit	66	102	757	380	73	69
Ships – Harbor Transit	75	92	700	320	71	67
Ships – Docking	26	25	195	76	21	20
Ships – Hoteling Aux. Sources	124	419	4,426	3,857	373	350
Tugs – Cargo Vessel Assist	4	24	127	0	5	5
Terminal Equipment	397	2,899	5,625	6	228	209
On-road Trucks	703	3,957	11,613	14	811	481
Trains	119	326	1,658	1	44	40
Rail Yard Equipment	11	88	149	0	6	6
Worker Commuter Vehicles	8	109	14	0	24	22
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2015 Total	**1,758**	**8,489**	**30,102**	**7,372**	**2,078**	**1,664**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change CEQA Baseline - Year 2015	**(219)**	**1,554**	**7,091**	**3,521**	**472**	**335**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**Y**	**Y**	**Y**	**Y**	**Y**
NEPA Baseline (NFAB)	**804**	**4,461**	**7,754**	**1,453**	**542**	**277**
Net Change from NFAB Year 2015	**954**	**4,028**	**22,347**	**5,919**	**1,537**	**1,387**
Project Year 2015 Total	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**

Table 3.2-23. Peak Daily Emissions Associated with the Operation of the Berths 136-147 Terminal Proposed Project (continued)

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2025						
Ships – Fairway Transit	222	441	4,809	2,716	421	394
Ships – Precautionary Area Transit	66	102	757	380	73	69
Ships – Harbor Transit	75	92	700	320	71	67
Ships – Docking	26	25	195	76	21	20
Ships – Hoteling Aux. Sources	124	419	4,426	3,857	373	350
Tugs – Cargo Vessel Assist	4	24	105	0	5	4
Terminal Equipment	182	3,680	1,383	8	53	48
On-road Trucks	379	1,933	5,165	17	538	188
Trains	134	437	1,943	2	49	45
Rail Yard Equipment	5	113	39	0	1	1
Worker Commuter Vehicles	4	55	6	0	30	28
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2025 Total	**1,224**	**7,327**	**19,558**	**7,377**	**1,636**	**1,215**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2025	**(753)**	**392**	**(3,453)**	**3,526**	**29**	**(114)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**Y**	**N**	**N**
NEPA Baseline (NFAB)	**527**	**4,163**	**6,811**	**1,426**	**479**	**249**
Net Change from NFAB Year 2025	**698**	**3,164**	**12,747**	**5,951**	**1,157**	**966**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
Project Year 2038						
Ships – Fairway Transit	222	441	4,809	2,716	421	394
Ships – Precautionary Area Transit	66	102	757	380	73	69
Ships – Harbor Transit	75	92	700	320	71	67
Ships – Docking	26	25	195	76	21	20
Ships – Hoteling Aux. Sources	124	419	4,426	3,857	373	350
Tugs – Cargo Vessel Assist	4	24	94	0	4	4
Terminal Equipment	160	3,680	596	8	42	39
On-road Trucks	451	1,600	4,198	17	502	155
Trains	114	437	1,704	2	41	37
Rail Yard Equipment	4	113	15	0	1	1
Worker Commuter Vehicles	4	50	5	0	30	28
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2038 Total	**1,253**	**6,989**	**17,529**	**7,377**	**1,581**	**1,164**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2038	**(725)**	**54**	**(5,481)**	**3,526**	**(25)**	**(165)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**Y**	**N**	**N**
NEPA Baseline (NFAB)	**513**	**4,102**	**6,634**	**1,426**	**476**	**246**
Net Change from NFAB Year 2038	**739**	**2,887**	**10,895**	**5,951**	**1,106**	**918**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**

- The following train trips and associated cargo throughputs at off-site/on-site rail yards would occur during each Project year: (1) in 2007, 2 trips at an off-site rail yard and 1,224 TEUs, (2) in 2015, 1/2 trips at an off-site/on-site rail yard and 1,836 TEUs, and (4) in 2025 and 2038, 1/3 trips at an off-site/on-site rail yard and 2,448 TEUs.
- Rail yard cargo handling equipment usage. The equipment usage associated with this activity is a function of throughput and equal to those used to estimate average daily emissions for each Project year.
- Peak day container yard cargo handling equipment usage is a function of the wharf and gate throughput identified for each Project year. Peak daily emissions generated by cargo handling equipment were estimated by multiplying the annual CHE emissions estimated for each Project year times the container yard peak daily TEUs divided by the Project year annual throughput in TEUs.

CEQA Impact Determination

The data in Table 3.2-22 show that in the following Project years, the net change in average daily operational emissions between the unmitigated Project and CEQA Baseline would exceed the following SCAQMD daily thresholds: (1) in 2007, VOC, NO_x, and SO_x; (2) in 2015, all thresholds except VOC; (3) in 2025, NO_x, SO_x, and PM_{10}; and (4) in 2038, SO_x. The net change in VOC emissions between the unmitigated Project and CEQA Baseline also would exceed 10 tons in Project year 2007 (See Table D1.2-PP-39 in Appendix D1).

The data in Table 3.2-23 show that during a peak day of activity in the following Project years, operational emissions between the unmitigated Project and CEQA Baseline would exceed the following SCAQMD daily thresholds: (1) in 2007, all thresholds; (2) in 2015, all thresholds except VOC; (3) in 2025 and 2038, the SO_x threshold. As a result, these exceedances of the SCAQMD emission thresholds represent significant levels of emissions produced during the operation of the proposed Project under CEQA.

NEPA Impact Determination

The data in Table 3.2-22 show that during each Project year, the net change in average daily operational emissions between the unmitigated Project and NEPA Baseline would exceed all SCAQMD daily thresholds. Additionally, the net change in VOC emissions between the unmitigated Project and NEPA Baseline would exceed 10 tons for each Project year (See Table D1.2-NFAB-Mit-43 in Appendix D1).

The data in Table 3.2-23 show that during a peak day of activity, emissions between the unmitigated Project and NEPA Baseline would exceed all SCAQMD daily thresholds during each Project year. As a result, these exceedances of the SCAQMD emission thresholds represent significant levels of emissions produced during the operation of the proposed Project under NEPA.

Mitigation Measures

Mitigation measures for proposed Project operations were derived, where feasible, from the proposed NNI measures, PCAC recommended measures, San Pedro Bays Ports CAAP, and in consultation with the Port. All feasible measures were selected. A review of the feasibility of the Project to implement the NNI and PCAC measures is included in Appendix B. Table 3.2-24 details how the Project mitigation measures compare to those identified in the San Pedro Bays Ports CAAP. The following mitigation measures would reduce criteria pollutant emissions associated with Project operations.

MM AQ-6: Alternative Maritime Power (AMP). Ships calling at the Berths 136-147 Terminal shall use AMP while hoteling in the Port in the following percentages:

- 2009 - 25 percent of total ship calls
- 2010 - 40 percent of total ship calls
- 2012 - 50 percent of total ship calls
- 2015 - 80 percent of total ship calls
- 2018 - 100 percent of total ship calls

Use of AMP would enable ships to turn off their auxiliary engines during hoteling and eliminate all air pollutants from these sources. The only source of direct emissions from hoteling activities would occur from small diesel-fired boilers.

MM AQ-7: Yard Tractors. All yard tractors operated at the Berths 136-147 Terminal, including the on-dock rail facility, shall implement the following measures.

- Beginning in 2007, all new yard tractors shall be either (1) the cleanest available NO_x alternative-fueled engine meeting 0.015 Gm/Hp-Hr for PM or (2) the cleanest available NO_x diesel-fueled engine meeting 0.015 Gm/Hp-Hr for PM. If there are no engines available that meet 0.015 Gm/Hp-Hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest Verified Diesel Emissions Controls (VDEC).
- Beginning in 2007, all new yard tractors shall be either (1) the cleanest available NO_x alternative-fueled engine meeting 0.015 Gm/Hp-Hr for PM or (2) the cleanest available NO_x diesel-fueled engine meeting 0.015 Gm/Hp-Hr for PM. If there are no engines available that meet 0.015 Gm/Hp-Hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest Verified Diesel Emissions Controls (VDEC).

The effectiveness of **MM AQ-7** was assessed by assuming that all yard tractors have clean diesel engines. According to 2001 terminal equipment usage records at the Berths 136-147 Terminal, yard tractors produce the majority of power output of all terminal equipment. As a result, this mitigation measure would substantially reduce emissions of VOC, CO, NO_x, and PM from Project terminal and rail yard equipment. For example, implementation of the Tier 4 non-road engine standards in year 2010 would reduce NO_x and DPM emissions from unmitigated Project diesel-powered yard tractors by approximately 96 and 95 percent, respectively. With time, implementation of **MM AQ-7** would result in less mitigation effectiveness as the Project future baseline (unmitigated) fleet gradually turns over to Tier 4 standard

Table 3.2-24. Comparison between San Pedro Bay Ports Clean Air Action Plan Control Measures and Berths 136-147 Terminal EIS/EIR Proposed Mitigation Measures

SPBP Measure #	*SPBP Measure Name*	*SPBP Measure Description*	*EIS/EIR Mitigation Measure (MM)*	*Discussion*
HDV-1	Performance Standards for On-Road Heavy-Duty Vehicles (HDVs)	All frequent caller trucks and semi-frequent caller container trucks model year (MY) 1992 and older will meet or be cleaner than the EPA 2007 on-road emissions standard (0.015 g/bhp-hr for PM) and the cleanest available NO_x at time of replacement. Semi-frequent caller container trucks MY1993-2003 will be equipped with the maximum CARB verified emissions reduction technologies currently available.	**MM AQ-9:** Fleet Modernization for On-Road Trucks. Heavy-duty diesel trucks entering the Berths 136-147 Terminal shall achieve the USEPA 2007 Tier 4 emission standards for on-road heavy-duty diesel engines (USEPA 2001) in the following percentages:15% in 2007, 30% in 2008, 50% in 2009, 70% in 2010, and 100% in or newer 2012 and thereafter.	**MM AQ-9** complies with the overall truck modernization program described in the CAAP. The Port is largely responsible for this mitigation measure through a truck program being developed as part of the CAAP. The terminal operator will be responsible for ensuring gate restrictions and tracking.
HDV-2	Alternative Fuel Infrastructure for Heavy-Duty Natural Gas Vehicles	Construct LNG or compressed natural gas (CNG) refueling stations.	No applicable measure.	This measure will be implemented directly by the Ports. The Port of Long Beach, in conjunction with the Port of Los Angeles, recently released a RFP seeking proposals to design, construct and operate a public LNG fueling and maintenance facility on Port of Los Angeles property.
OGV-1	OGV Vessel Speed Reduction (VSR)	OGVs that call at the SPB Ports shall not exceed 12 knots (kts) within 20 nautical miles (nm) of Point Fermin (extending to 40 nm in future).	**MM AQ-10:** Vessel Speed Reduction Program. Vessels that call at the Berths 136-147 Terminal shall comply with the VSRP of 12 kts within 40 nm of Point Fermin by the following schedule: 2008 – 95% of total ship calls.	**MM AQ-10** complies with **OGV-1**. The CAAP targets a 95% compliance rate through lease provisions.

Table 3.2-24. Comparison between San Pedro Bay Ports Clean Air Action Plan Control Measures and Berths 136-147 Terminal EIS/EIR Proposed Mitigation Measures (continued)

SPBP Measure #	*SPBP Measure Name*	*SPBP Measure Description*	*EIS/EIR Mitigation Measure (MM)*	*Discussion*
OGV-2	Reduction of At-Berth OGV Emissions	Each Port will develop the infrastructure required to provide shore-power capabilities to all container and cruise ship berths. On a case-by-case basis, other vessel types, like specially outfitted tankers or reefer terminals, will be evaluated for the application of shore-power.	**MM AQ-6:** Alternative Maritime Power (AMP). The following percentages of total ship calls at the Berths 136-147 Terminal shall use AMP while hoteling in the Port: 25% in 2009, 40% in 2010, 50% in 2012, 80% in 2015, and 100% in 2020 and thereafter.	**MM AQ-6** complies with **OGV-2**. The CAAP calls for 106 AMP'd ship calls at Berth 136-147 by the end of fiscal year 2010/2011 with an eventual goal of 100% pending technical feasibility. The Project assumes 322 ship calls by 2010 with 40%, or 128 ships, using AMP while at berth. The Project reaches 100% compliance by 2020 as all ships calling at the Berth 136-147 Terminal are upgraded with appropriate AMP technology. Therefore, the Project mitigation exceeds CAAP standards.
OGV-3	OGV Auxiliary Engine Fuel Standards	Require ship's auxiliary engines to operate using MGO fuels with sulfur content ≤0.2% S in their auxiliary engines, while inside the VSR zone (described in SPBP-OGV1). The program would start out at 20 nm from Point Fermin and would be expanded to 40 nm from Point Fermin	**MM AQ-11:** Vessels that call at the Berths 136-147 Terminal shall use marine gas oil (MGO) with a sulfur content of 0.2 percent or less in auxiliary engines, main engines, and boilers within 40 nm of Point Fermin (including hotelling for non-AMP ships) at the following annual participation rates: 10% in 2009, 20% in 2010, 50% in 2012, 100% in 2015 and thereafter.	**MM AQ-11** complies with **OGV-4** and **OGV-5.** The CAAP assumes full compliance of **OGV-4** and **OGV-5** pending technical feasibility and fuel availability. The phase-in schedule for **MM AQ-11** allows time for technical equipment upgrades, including installing new tanks and piping, on ships. These measures go beyond the existing CARB regulation by requiring <0.2% S MGO (prior to 2010) in both auxiliary and main engines, instead of requiring <0.5% S MDO or MGO for only OGV auxiliary engines.
OGV-4	OGV Main Engine Fuel Standards	Require ship's main engines to operate using MGO fuels with sulfur content ≤0.2% S in their main engines, while inside the VSR zone (described in SPBP-OGV1). The program would start out at 20 nm from Point Fermin and would be expanded to 40 nm from Point Fermin		

Table 3.2-24. Comparison between San Pedro Bay Ports Clean Air Action Plan Control Measures and Berths 136-147 Terminal EIS/EIR Proposed Mitigation Measures (continued)

SPBP Measure #	*SPBP Measure Name*	*SPBP Measure Description*	*EIS/EIR Mitigation Measure (MM)*	*Discussion*
OGV-5	OGV Main & Auxiliary Engine Emissions Improvements	Focus on reducing DPM, NO_x, and SO_x emissions from OGV main engines and auxiliary engines. The goal of this measure is to reduce main and auxiliary engine DPM, NO_x, and SO_x emissions by 90%. The first engine emissions reduction technology for this measure will be the use of MAN B&W slide valves for main engines.	**MM AQ-12: Slide Valves in Ship Main Engines.** Vessels that call at the Berths 136-147 Terminal shall be equipped with slide valves or equivalent on main engines in the following percentages: 15% in 2008, 25% in 2010, 50% in 2012, 95% in 2015 and thereafter. **MM AQ-13: New Vessel Builds.** All new vessel builds shall incorporate NO_x and PM control devices on auxiliary and main engines. NO_x and PM control devices include, but are not limited to,the following technology where appropriate: (1) selective catalytic reduction (SCR) technology, (2) exhaust gas recirculation, (3) in line fuel emulsification technology, (4) diesel particulate filters (DPFs), or exhaust scrubbers (5) common rail and (6) Low NO_x burners for boilers.	**MMs AQ-12** and **AQ-13** fully comply with **OGV-5**.

Table 3.2-24. Comparison between San Pedro Bay Ports Clean Air Action Plan Control Measures and Berths 136-147 Terminal EIS/EIR Proposed Mitigation Measures (continued)

SPBP Measure #	*SPBP Measure Name*	*SPBP Measure Description*	*EIS/EIR Mitigation Measure (MM)*	*Discussion*
CHE-1	Performance Standards for CHE	Sets fuel neutral purchase requirements for CHE, starting in 2007. Requires by 2010, all yard tractors operating at the ports will have the cleanest engines meeting EPA on-road 2007 or Tier IV engine standards for PM and NO_x. All remaining CHE less than 750 hp will meet at a minimum the 2007 or Tier IV standards for PM and NO_x by 2012. Requires that all remaining CHE greater than 750 hp to meet Tier IV standards for PM and NO_x by 2014 and prior to that, be equipped with the cleanest available VDEC.	**MM AQ-7: Yard Tractors.** All yard tractors operated at the Berths 136-147 Terminal, including the on-dock rail facility, shall implement the following measures. (1) Beginning in 2007, all new yard tractors shall be either (a) the cleanest available NO_x alternative-fueled engine meeting 0.015 Gm/Hp-Hr for PM or (b) the cleanest available NO_x diesel-fueled engine meeting 0.015 Gm/Hp-Hr for PM. If there are no engines available that meet 0.015 Gm/Hp-Hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest Verified Diesel Emissions Controls (VDEC). (2) Beginning in 2007, all new yard tractors shall be either (a) the cleanest available NO_x alternative-fueled engine meeting 0.015 Gm/Hp-Hr for PM or (b) the cleanest available NO_x diesel-fueled engine meeting 0.015 Gm/Hp-Hr for PM. If there are no engines available that meet 0.015 Gm/Hp-Hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest Verified Diesel Emissions Controls (VDEC).	**MMs AQ-7** and **AQ-8** comply with **CHE-1.**

Table 3.2-24. Comparison between San Pedro Bay Ports Clean Air Action Plan Control Measures and Berths 136-147 Terminal EIS/EIR Proposed Mitigation Measures (continued)

SPBP Measure #	*SPBP Measure Name*	*SPBP Measure Description*	*EIS/EIR Mitigation Measure (MM)*	*Discussion*
CHE-1 (continued)	Performance Standards for CHE		**MM AQ-8: Low-NO_x and low-PM emission standards for top picks, fork lifts, toppicks, fork lifts, reach stackers, rubber-tired gantries, and straddle carriers.** All diesel-powered terminal equipment at the Berths 136-147 Terminal, including the on-dock rail facility, shall implement the following measures: (1) Beginning in 2007, all terminal equipment shall be either (a) the cleanest available NO_x alternative-fueled engine meeting 0.015 Gm/Hp-Hr for PM or (b) the cleanest available NO_x diesel-fueled engine meeting 0.015 Gm/Hp-Hr for PM. If there are no engines available that meet 0.015 Gm/Hp-Hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest VDEC. (2) By 2013, all non-yard tractor terminal equipment les than 750 Hp shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards. (3) by 2015, all terminal equipment shall meet USEPA Tier IV non-road emission standards	

Table 3.2-24. Comparison between San Pedro Bay Ports Clean Air Action Plan Control Measures and Berths 136-147 Terminal EIS/EIR Proposed Mitigation Measures (continued)

SPBP Measure #	*SPBP Measure Name*	*SPBP Measure Description*	*EIS/EIR Mitigation Measure (MM)*	*Discussion*
HC-1	Performance Standards for Harbor Craft	This measure will focus on harbor craft that have not already been repowered/retrofitted (including construction related harbor craft like dredges and support vessels). When candidate vessels are identified, the Ports will assist/require the owner/operator to repower or retrofit propulsion and auxiliary engines. For non-construction related candidates, Ports staff will assist the owners in applying for Carl Moyer Program incentive funding for the cleanest available engine that meets the emissions and cost effectiveness requirements. It should be noted, that several tugs operating at the Port of Long Beach are home-ported on private property (not Port property) and therefore will not be affected by this measure.	No mitigation assumed	This measure is a Portwide measure. Terminal operators and shipping lines do not have a direct contractual relationship with tugboat operators and may be limited in providing the infrastructure necessary to implement **HC-1**. The Ports of Los Angeles and Long Beach shall implement **HC-1** through a Port-wide Program as described in the CAAP. The Project air quality analysis assumes that a portion of the Port tugboat fleet will be re-powered through the CARB Carl Moyer Program.
RL-1	PHL Rail Switch Engine Modernization	A voluntary program initiated by the Ports in conjunction with PHL to modernize switcher locomotives used in Port service to meet Tier 2 locomotive engine standards and initiate the use of fuel emulsion in those engines. Also includes evaluation of alternative-powered switch engines including LNG and hybrid locomotives. In addition, a locomotive DOC and DPF will be evaluated and based on a successful demonstration, will be applied to all Tier 2 switcher locomotives. Also restricts future purchases to the cleanest locomotives available.	No mitigation assumed.	No mitigation assumed. Since the PHL Agreement is an existing program, the measure is assumed as part of the Project.

Table 3.2-24. Comparison between San Pedro Bay Ports Clean Air Action Plan Control Measures and Berths 136-147 Terminal EIS/EIR Proposed Mitigation Measures (continued)

SPBP Measure #	*SPBP Measure Name*	*SPBP Measure Description*	*EIS/EIR Mitigation Measure (MM)*	*Discussion*
RL-2	Existing Class 1 Railroad Operations	Effects only existing Class 1 railroad operations on Port property. Lays out stringent goals for switcher, helper, and long haul locomotives operating on Port properties. By 2011, all diesel-powered Class 1 switcher and helper locomotives entering Port facilities will be 90% controlled for PM and NO_x, will use 15-minute idle restrictors, and after January 1, 2007, the use of ULSD fuels. Starting in 2012 and fully implemented by 2014, the fleet average for Class 1 long haul locomotives calling at Port properties will be Tier III equivalent (Tier 2 equipped with DPF and SCR or new locomotives meeting Tier 3) PM and NO_x and will use 15-minute idle restrictors. Class 1 long haul locomotives will operate on USLD while on Port properties by the end of 2007. Technologies to get to these levels of reductions will be validated through the Technology Advancement Program.	No mitigation assumed.	**RL-2** affects only existing Class 1 rail yards (Class I rail yards are BNSF and UP). The Ports of Los Angeles and Long Beach shall implement **RL-2** through a Port-wide Program as described in the CAAP. The Port is meeting with the Class I rail yards to discuss implementation of the Port-wide Program **RL-3** effects all new or redeveloped rail yards. Mitigation for the Project on-dock rail yard is applied under **RL-3** below.
RL-3	New and Redeveloped Rail Yards	New rail facilities, or modifications to existing rail facilities located on Port property, will incorporate the cleanest locomotive technologies, meet the requirements specified in SPBP-RL2, utilize “clean” CHE and HDV, and utilize available “green-container” transport systems.	**MM AQ-14: Clean Rail Yard Standards**: The new on-dock rail facility at Berths 136-147 shall incorporate the cleanest locomotive technologies into their operations.	**MM AQ-14** complies with **RL-3.** The new Berth 136-147 on-dock rail yard will incorporate the cleanest locomotive technologies/measures. These include diesel-electric hybrids, multiple engine generator sets, use of alternative fuels, DPFs, SCR, idling shut-off devices, and idling exhaust hoods. However, because some of these systems are not yet available, but are expected to be available within the next few years, this measure has not been quantified.

engines with new purchases beginning in 2012. By 2026, both the Project future baseline and mitigated fleets would be all Tier 4 engines with nearly identical emission rates. The Federal Register (June 29, 2004) listed the Tier 4 engine PM standards at 0.015 g/Hp-Hr. However, the Tier 4 PM standard is conventionally reported as 0.01 g/Hp-Hr. While this mitigation measure uses the conventional standard, the more conservative 0.015 g/Hp-Hr was used in the analysis.

MM AQ-8: Low- NO_x **and low–PM emission standards for top picks, forklifts, reach stackers, rubber-tired gantries (RTGs), and straddle carriers.** All diesel-powered terminal equipment other then yard tractors at the Berths 136-147 Terminal, including the on-dock rail facility, shall implement the following measures.

- Beginning in 2007, all non-yard tractor purchases shall be either (1) the cleanest available NO_x alternative-fueled engine meeting 0.015 Gm/Hp-Hr for PM or (2) the cleanest available NO_x diesel-fueled engine meeting 0.015 Gm/Hp-Hr for PM. If there are no engines available that meet 0.015 Gm/Hp-Hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest VDEC.
- By the end of 2012, all non-yard tractor terminal equipment less than 750 Hp shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards.
- By the end of 2014, all terminal equipment shall meet USEPA Tier 4 non-road engine standards.

Implementation of **MM AQ-8** was assessed by assuming that all yard tractors have clean diesel engines. For example, implementation of the Tier 4 non-road engine standards in year 2010 would reduce NO_x and DPM emissions from unmitigated Project diesel-powered top picks and RTGs by approximately 95 and 93 percent, respectively. The Federal Register (June 29, 2004) listed the Tier 4 engine PM standards at 0.015 g/Hp-Hr. However, the Tier 4 PM standard is conventionally reported as 0.01 g/Hp-Hr. While this mitigation measure uses the conventional standard, the more conservative 0.015 g/Hp-Hr was used in the analysis.

MM AQ-9: Fleet Modernization for On-Road Trucks. Heavy-duty diesel trucks entering the Berths 136-147 Terminal shall achieve USEPA 2007 emission standards for on-road heavy-duty by the following percentages:

- 15 percent in 2007
- 30 percent in 2008
- 50 percent in 2009
- 70 percent in 2010
- 90 percent in 2011
- 100 percent in 2012, and thereafter

The effectiveness of this measure was determined by using the EMFAC2007 emission factor model. The Port truck fleet mix was adjusted in the EMFAC2007 model to account for the required percentages of 2007-compliant trucks. The emission reductions varied depending on the pollutant, year, and vehicle speed. For example, in 2010 (assuming 70 percent of the trucks in the Project fleet are 2007-compliant) the measure would reduce emissions from trucks traveling at 25 mph by 72 percent for VOC, 76 percent for CO, 71 percent for NO_x, and 77 percent for DPM.

MM AQ-10: Vessel Speed Reduction Program. Vessels that call at the Berths 136-147 Terminal shall comply with the VSRP of 12 knots within 40 nautical miles (nm) of Point Fermin by the following schedule:

- 2008 – 95 percent of total ship calls

The VSRP currently is a voluntary program. This mitigation measure requires vessels calling at the Berths 136-147 Terminal to participate in the VSRP at rates higher than current operations. The average cruise speed for a container vessel ranges from about 18 to 25 knots, depending on the size of a ship (larger ships generally cruise at higher speeds). For a ship with a 24-knot cruise speed, for example, a reduction in speed to 12 knots reduces the main engine load factor from about 83 to 10 percent, due to the cubic relationship of load factor to speed. The corresponding reduction in overall container ship transit emissions (main engine, auxiliary engines, and boiler) from the SCAQMD overwater boundary to the berth, is approximately 19 percent for VOC, 37 percent for CO, 56 percent for NO_x, 58 percent for SO_x, and 53 percent for PM_{10}.

While the goal of this mitigation measure is a 100 percent compliance rate, this air quality analysis only assumed a compliance rate of 95 percent. The 5 percent differential is based upon the assumption that on occasion, a ship would be unable to slow to 12 knots due to time limitations (for instance, a storm at sea has slowed the ship down). By only analyzing a compliance rate of 95 percent, this analysis is a worst-case analysis.

MM AQ-11: Ship Auxiliary Engine, Main Engine, and Boiler Fuel Improvement Program. Vessels that call at the Berths 136-147 Terminal shall use marine gas oil (MGO) with a sulfur content of 0.2 percent or less in auxiliary engines, main engines, and boilers within 40 nm of Point Fermin (including hoteling for non-AMP ships) at the following annual participation rates:

- 2009 - 10 percent of total ship calls
- 2010 - 20 percent of total ship calls
- 2012 - 50 percent of total ship calls
- 2015 - 100 percent of total ship calls

Use of MGO with a 0.2 percent sulfur content in the main engines, auxiliary engines, and boilers would reduce emissions of NO_x, SO_x, and PM by approximately 10, 93, and 65 percent, respectively, compared to residual fuel with a sulfur content of 2.7 percent (Port 2005c). Other pollutants are assumed to be unaffected by this measure. This mitigation measure assumes that these fuels would be readily available by the required dates. The phase-in schedule for **MM AQ-11** also allows time for technical equipment upgrades on the vessels, including installing new tanks and piping.

MM AQ-12: Slide Valves in Ship Main Engines. Vessels that call at the Berths 136-147 Terminal shall be equipped with slide valves or equivalent on main engines in the following percentages:

- 2008 - 15 percent of total ship calls
- 2010 - 25 percent of total ship calls
- 2012 - 50 percent of total ship calls
- 2015 - 95 percent of total ship calls

Recent emission tests conducted on ship main engines have shown that engines equipped with slide valves produce lower VOC, NO_x, and PM emissions than engines with standard valves. Test data provided by engine manufacturer MAN B&W show VOC, NO_x, and PM reductions of 30, 30, and 25 percent at engine loads greater than 50 percent. At engine loads of less than 25 percent, the emission reductions of VOC, NO_x, and PM were measured at approximately 85, 30, and 60 percent (MAN B&W Diesel A/S, 2004).

For the mitigated emission calculations, high-load emission reductions of 30, 30, and 25 percent for VOC, NO_x, and PM were assigned to ships during fairway and precautionary area transit. Low-load emission reductions of 85, 30, and 60 percent for VOC, NO_x, and PM were assigned to ships during harbor transit, turning, and docking (where load factors range from 2 to 4 percent). Emissions of CO and SO_x were assumed to be unaffected by this measure.

MM AQ-13: New Vessel Builds. All new vessel builds shall incorporate NO_x and PM control devices on auxiliary and main engines. These control devices include, but are not limited to the following technologies, where appropriate: (1) selective catalytic reduction (SCR) technology, (2) exhaust gas recirculation, (3) in line fuel emulsification technology, (4) diesel particulate filters (DPFs) or exhaust scrubbers, (5) common rail, and (6) Low NO_x burners for boilers.

This measure focuses on reducing DPM, NO_x, and SO_x emissions from main engines and auxiliary engines. OGV engine standards have not kept pace with other engine standards such as trucks and terminal equipment. New vessels destined for California service should be built with these technologies. As new orders for ships are placed, the Ports believe it is essential that the following elements be incorporated into future vessel design and construction:

1. Work with engine manufacturers to incorporate all emissions reduction technologies/options when ordering main and auxiliary engines, such as slide valves, common rail, and exhaust gas recirculation.
2. Design in extra fuel storage tanks and appropriate piping to run both main and auxiliary engines on a separate/cleaner fuel.
3. Incorporate SCR or an equally effective combination of engine controls. If SCR systems are not commercially available at the time of engine construction, design in space and access for main and auxiliary engines to facilitate installation of SCR or other retrofit devices at a future date.

MM AQ-14: Clean Rail Yard Standards: The Berth 136-147 on dock-rail facility shall incorporate the cleanest locomotive technologies into their operations.

The new Berth 136-147 on-dock rail yard will incorporate the cleanest locomotive technologies/measures. These include diesel-electric hybrids, multiple engine generator sets, use of alternative fuels, DPFs, SCR, idling shut-off devices, and idling exhaust hoods. Because some of these systems are not yet available, but are expected to be available within the next few years, this measure has not been quantified.

MM AQ-15: Reroute Cleaner Ships. The Berths 136-147 Terminal operator shall use ships meeting IMO MARPOL Annex VI NO_x emissions limits for Category 3 engines to the greatest extent possible when scheduling ship visits.

Under the IMO MARPOL Annex VI, the NO_x emission limit applies to Category 3 engines installed on new vessels retroactive to the year 2000. Although Annex VI was entered into force in May 2005, most engine manufacturers and shipbuilders have been voluntarily complying with the emission limit since 2000 (City of Los Angeles 2005). Some ship engines manufactured before 2000 possibly could meet or fall below the Annex VI emission limit and, as a result, also could present an opportunity for shippers to route their cleanest ships to the Port of Los Angeles (City of Los Angeles 2005). For main propulsion engines (<130 rpm engine speed), the new NO_x limit is about 6 percent lower than the unmitigated emission factor used in this study. To quantify the effectiveness of this measure, the additional percentage of ships meeting the Annex VI NO_x emission limit was assumed to equal the percentage of ships complying with the AMP mitigation measures (**MM AQ-6**) because the AMP-capable ships would be manufactured during or after 2000. NO_x emissions from non-AMP ships were calculated using the conventional Entec (2002) NO_x emission factor.

MM AQ-16: Truck Idling Reduction Measures. The Berths 136-147 Terminal operator shall ensure that truck idling is reduced at the Terminal. Potential methods to reduce idling include, but are not limited to, the following: (1) operator shall maximize the durations when the main gates are left open, including during off-peak hours, (2) operator shall implement a container tracking and appointment-based truck delivery and pick-up system to minimize truck queuing, and (3) operator shall design gate to exceed truck flow capacity to ensure queuing is minimized.

This measure would reduce on-terminal truck idling emissions of all pollutants. Because the effectiveness of this measure has not been established, **MM AQ-16** is not quantified in this study.

MM AQ-17: Periodic Review of New Technology and Regulations. The Port shall require the Berths 136-147 tenant to review, in terms of feasibility, any Port-identified or other new emissions-reduction technology, and report to the Port. Such technology feasibility reviews shall take place at the time of the Port's consideration of any lease amendment or facility modification for the Berths 136-147 property. If the technology is determined by the Port to be feasible in terms of cost, technical and operational feasibility, the tenant shall work with the Port to implement such technology.

Potential technologies that may further reduce emission and/or result in cost-savings benefits for the tenant may be identified through future work on the CAAP. Over the course of the lease, the tenant and the Port shall work together to identify potential new technology. Such technology shall be studied for feasibility, in terms of cost, technical and operational feasibility. The effectiveness of this measure depends on the advancement of new technologies and the outcome of future feasibility or pilot studies. As discussed in Section 3.2.4.1, if the tenant requests future Project changes that would require environmental clearance and a lease amendment, future CAAP mitigation measures would be incorporated into the new lease at that time.

MM AQ-18B: General Mitigation Measure. For any of the above mitigation measures (**MM AQ-6** through **AQ-16**), 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.

Residual Impacts

Implementation of **Mitigation Measures AQ-6** through **AQ-18B** would substantially reduce Project operational emissions from unmitigated levels. However, given the uncertainty of implementing **Mitigation Measures AQ-13** through **AQ-18B**, the mitigated emission analysis only considered the effects of **Mitigation Measures AQ-6** through **AQ-12.**

From a CEQA perspective, Table 3.2-25 shows that proposed Project average daily operational emissions after mitigation would exceed the NO_x and SO_x SCAQMD daily thresholds in 2007. The net change in annual emissions between the mitigated Project and CEQA Baseline would not exceed the criterion of 10 tons per year VOC in any project year (See Table D1.2.PPMit-43 in Appendix D1). By 2015, the mitigated Project would produce lower average daily emissions of all pollutants compared to the CEQA baseline.

The data in Table 3.2-26 show that during a peak day of activity, the net change in emissions between the mitigated Project and CEQA Baseline would exceed the VOC, NO_x, and SO_x SCAQMD daily thresholds in 2007 and would remain below all thresholds in 2015 and thereafter. As a result, these exceedances of the SCAQMD emission thresholds represent significant levels of emissions produced during the operation of the mitigated Project under CEQA. By 2015, the mitigated Project would produce lower peak daily emissions of all pollutants compared to the CEQA baseline.

From a NEPA perspective, the data in Table 3.2-25 show that in the following years, the net change in average daily emissions between the mitigated Project and NEPA

Baseline would exceed the following SCAQMD daily thresholds: (1) in 2007, NO_x; (2) in 2015, VOC and NO_x; (3) in 2025, all pollutants; and (4) in 2038, all pollutants except PM_{10}. The net change in VOC emissions between the mitigated Project and NEPA Baseline would exceed the annual threshold of 10 tons in year 2015 and thereafter (See Table D1.2--NFAB-43 in Appendix D1).

The data in Table 3.2-26 show that during a peak day of activity, emissions from the mitigated Project compared to the NEPA Baseline would exceed the following SCAQMD daily thresholds: (1) in 2007, all thresholds except CO; (2) in 2015, VOC, CO, and NO_x; and (3) in 2025 and 2038, all pollutants except SO_x. As a result, these exceedances of the SCAQMD emission thresholds represent significant levels of emissions produced during the operation of the Project under NEPA.

Table 3.2-25. Mitigated Average Daily Emissions Associated with Operation of the Proposed Project

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2007						
Ships – Fairway Transit	80	185	2,355	1,383	197	185
Ships – Precautionary Area Transit	15	31	312	194	27	26
Ships – Harbor Transit	23	29	216	109	22	20
Ships – Docking	8	8	60	26	6	6
Ships – Hoteling Aux. Sources	42	153	1,505	1,440	128	120
Tugs – Cargo Vessel Assist	2	13	79	0	3	3
Terminal Equipment	122	444	1,420	1	61	56
On-road Trucks	698	2,239	6,819	6	458	278
Trains	109	255	1,524	136	58	53
Railyard Equipment	21	82	237	0	11	10
Worker Commuter Vehicles	10	140	18	0	15	14
Relocated PHL Rail Yard	4	7	54	1	1	1
Project Year 2007 Total	**1,135**	**3,585**	**14,598**	**3,297**	**989**	**772**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2007	**(50)**	**(491)**	**1,127**	**573**	**(33)**	**(59)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**Y**	**Y**	**N**	**N**
NEPA Baseline (NFAB)	**1,099**	**3,475**	**14,136**	**3,197**	**958**	**748**
Net Change from NFAB Year 2007	**36**	**110**	**462**	**100**	**31**	**24**
Exceeds SCAQMD Threshold?	**N**	**N**	**Y**	**N**	**N**	**N**
Project Year 2015						
Ships – Fairway Transit	23	156	1,088	64	24	23
Ships – Precautionary Area Transit	7	46	299	40	7	6
Ships – Harbor Transit	10	43	260	31	6	6
Ships – Docking	3	12	72	8	2	2
Ships – Hoteling Aux. Sources	18	98	609	768	30	28
Tugs – Cargo Vessel Assist	3	13	72	0	3	3
Terminal Equipment	80	605	90	1	5	4
On-road Trucks	208	733	1,842	10	301	84
Trains	119	326	1,637	1	43	40
Railyard Equipment	11	119	11	0	1	1
Worker Commuter Vehicles	12	161	21	0	22	21
Relocated PHL Rail Yard	2	9	30	0	0	0
Project Year 2015 Total	**496**	**2,321**	**6,033**	**924**	**444**	**216**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change CEQA Baseline - Year 2015	**(689)**	**(1,756)**	**(7,438)**	**(1,800)**	**(578)**	**(615)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
NEPA Baseline (NFAB)	**428**	**2,031**	**5,399**	**906**	**388**	**195**
Net Change from NFAB Year 2015	**68**	**290**	**634**	**18**	**55**	**21**
Exceeds SCAQMD Threshold?	**Y**	**N**	**Y**	**N**	**N**	**N**

Table 3.2-25. Mitigated Average Daily Emissions Associated with Operation of the Proposed Project (continued)

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2025						
Ships – Fairway Transit	31	205	1,357	78	30	29
Ships – Precautionary Area Transit	10	60	374	47	9	8
Ships – Harbor Transit	14	57	348	37	9	8
Ships – Docking	4	15	96	10	2	2
Ships – Hoteling Aux. Sources	7	80	213	937	26	25
Tugs – Cargo Vessel Assist	3	15	67	0	3	3
Terminal Equipment	48	970	152	2	8	7
On-road Trucks	240	849	2,136	12	349	97
Trains	132	430	1,885	2	47	44
Railyard Equipment	14	157	14	0	1	1
Worker Commuter Vehicles	8	109	14	0	24	22
Relocated PHL Rail Yard	2	9	6	0	0	0
Project Year 2025 Total	**512**	**2,957**	**6,663**	**1,125**	**509**	**245**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change CEQA Baseline - Year 2025	**(672)**	**(1,120)**	**(6,809)**	**(1,599)**	**(513)**	**(586)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
NEPA Baseline (NFAB)	**380**	**2,112**	**5,290**	**930**	**359**	**191**
Net Change from NFAB Year 2025	**132**	**845**	**1,373**	**195**	**150**	**55**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
Project Year 2038						
Ships – Fairway Transit	31	205	1,357	78	30	29
Ships – Precautionary Area Transit	10	60	374	47	9	8
Ships – Harbor Transit	14	57	348	37	9	8
Ships – Docking	4	15	96	10	2	2
Ships – Hoteling Aux. Sources	7	80	213	937	26	25
Tugs – Cargo Vessel Assist	3	15	60	0	3	2
Terminal Equipment	67	1,362	213	3	11	10
On-road Trucks	247	846	2,161	12	346	94
Trains	112	430	1,650	2	39	36
Railyard Equipment	14	157	14	0	1	1
Worker Commuter Vehicles	4	50	5	0	30	28
Relocated PHL Rail Yard	2	9	5	0	0	0
Project Year 2038 Total	**515**	**3,287**	**6,499**	**1,126**	**506**	**243**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2038	**(670)**	**(790)**	**(6,973)**	**(1,598)**	**(515)**	**(588)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
NEPA Baseline (NFAB)	**414**	**2,358**	**5,382**	**186**	**387**	**216**
Net Change from NFAB Year 2038	**142**	**1,009**	**1,395**	**196**	**149**	**55**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**Y**	**N**	**Y**

Table 3.2-26. Mitigated Peak Daily Emissions Associated with Operation of the Proposed Project

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2007						
Ships – Fairway Transit	117	265	3,260	1,913	276	258
Ships – Precautionary Area Transit	28	57	527	312	47	44
Ships – Harbor Transit	41	52	392	191	40	37
Ships – Docking	14	14	109	46	12	11
Ships – Hoteling Aux. Sources	78	267	2,789	2,468	236	221
Tugs – Cargo Vessel Assist	5	24	147	0	6	6
Terminal Equipment	702	2,561	8,184	5	352	324
On-road Trucks	956	3,065	9,336	9	628	380
Trains	89	208	1,245	111	47	43
Railyard Equipment	17	67	193	0	9	8
Worker Commuter Vehicles	10	140	18	0	15	14
Relocated PHL Rail Yard	4	7	54	1	1	1
Project Year 2007 Total	**2,063**	**6,728**	**26,255**	**5,055**	**1,668**	**1,348**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change from CEQA Baseline - Year 2007	**85**	**(207)**	**3,244**	**1,205**	**61**	**19**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**Y**	**N**	**Y**	**Y**	**N**	**N**
NEPA Baseline (NFAB)	**1,927**	**6,417**	**24,193**	**4,191**	**1,498**	**1,195**
Net Change from NFAB Year 2007	**136**	**310**	**2,062**	**864**	**171**	**153**
Exceeds SCAQMD Threshold?	**Y**	**N**	**Y**	**Y**	**Y**	**Y**
Project Year 2015						
Ships – Fairway Transit	47	324	1,764	92	39	36
Ships – Precautionary Area Transit	17	102	554	59	13	12
Ships – Harbor Transit	22	92	556	50	14	13
Ships – Docking	7	25	154	13	4	4
Ships – Hoteling Aux. Sources	16	124	553	1,215	39	37
Tugs – Cargo Vessel Assist	4	24	127	0	5	5
Terminal Equipment	385	2,899	433	6	22	20
On-road Trucks	285	1,004	2,522	14	412	115
Trains	119	326	1,636	1	43	40
Railyard Equipment	2	24	2	0	0	0
Worker Commuter Vehicles	8	109	14	0	24	22
Relocated PHL Rail Yard	2	9	30	0	0	0
Project Year 2015 Total	**915**	**5,060**	**8,346**	**1,450**	**616**	**304**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change CEQA Baseline - Year 2015	**(1,062)**	**(1,875)**	**(14,665)**	**(2,401)**	**(991)**	**(1,025)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
NEPA Baseline (NFAB)	**804**	**4,461**	**7,754**	**1,453**	**542**	**277**
Net Change from NFAB Year 2015	**111**	**600**	**591**	**(3)**	**74**	**27**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**N**	**N**	**N**

Table 3.2-26. Mitigated Peak Daily Emissions Associated with Operation of the Proposed Project (continued)

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2025						
Ships – Fairway Transit	47	324	1,764	92	39	36
Ships – Precautionary Area Transit	17	102	554	59	13	12
Ships – Harbor Transit	22	92	556	50	14	13
Ships – Docking	7	25	154	13	4	4
Ships – Hoteling Aux. Sources	8	102	273	1,198	34	31
Tugs – Cargo Vessel Assist	4	24	105	0	5	4
Terminal Equipment	182	3,680	577	8	29	27
On-road Trucks	329	1,162	2,924	16	478	133
Trains	134	437	1,914	2	48	44
Railyard Equipment	15	160	15	0	1	1
Worker Commuter Vehicles	4	55	6	0	30	28
Relocated PHL Rail Yard	2	9	6	0	0	0
Project Year 2025 Total	**772**	**6,170**	**8,847**	**1,438**	**694**	**333**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change from CEQA Baseline - Year 2025	**(1,205)**	**(765)**	**(14,163)**	**(2,413)**	**(913)**	**(995)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
NEPA Baseline (NFAB)	**527**	**4,163**	**6,811**	**1,426**	**479**	**249**
Net Change from NFAB Year 2025	**246**	**2,007**	**2,037**	**12**	**215**	**84**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**N**	**Y**	**Y**
Project Year 2038						
Ships – Fairway Transit	47	324	1,764	92	39	36
Ships – Precautionary Area Transit	17	102	554	59	13	12
Ships – Harbor Transit	22	92	556	50	14	13
Ships – Docking	7	25	154	13	4	4
Ships – Hoteling Aux. Sources	8	102	273	1,198	34	31
Tugs – Cargo Vessel Assist	4	24	94	0	4	4
Terminal Equipment	182	3,680	577	8	29	27
On-road Trucks	338	1,159	2,959	17	474	129
Trains	114	437	1,675	2	40	37
Railyard Equipment	15	160	15	0	1	1
Worker Commuter Vehicles	4	50	5	0	30	28
Relocated PHL Rail Yard	2	9	5	0	0	0
Project Year 2038 Total	**761**	**6,162**	**8,631**	**1,438**	**681**	**322**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change from CEQA Baseline - Year 2038	**(1,216)**	**(773)**	**(14,379)**	**(2,413)**	**(925)**	**(1,007)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
NEPA Baseline (NFAB)	**513**	**4,102**	**6,634**	**1,426**	**476**	**246**
Net Change from NFAB Year 2038	**248**	**2,060**	**1,997**	**12**	**206**	**76**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**N**	**Y**	**Y**

Impact AQ-4: Proposed Project operations would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance.

A dispersion modeling analysis was performed to estimate the ambient impact of operational emissions from the proposed Project. The analysis focused on year 2010, as Project operational sources would produce the highest amount of daily and annual emissions during this year within and adjacent to the Berths 136-147 terminal. In other words, this scenario would produce the highest Project ambient impacts within the Port region, even in comparison to years 2007 through 2009 and 2015, when Project construction emissions would combine and overlap with operational emissions. Appendix D2 contains documentation of the Project operational emissions dispersion modeling analysis.

Table 3.2-27 presents the maximum offsite ground level concentrations of criteria pollutants estimated for Project operations without mitigation. These data show that total maximum NO_2 concentrations would exceed the 1-hour and annual SCAQMD thresholds. Additionally, Project operations would exceed the SCAQMD 24-hour PM_{10}/$PM_{2.5}$ thresholds of 2.5 $\mu g/m^3$.

A modeling was performed to evaluate the ambient impact of CO emissions from Project on-road auto and truck traffic generated by the Project. Table 3.2-27 shows that maximum impacts from these sources would remain below both the 1-hour and 8-hour CO significance criteria. The location of these maximum impacts would occur within the Buffer Area adjacent to Harry Bridges Boulevard.

CEQA Impact Determination

Proposed Project operations would contribute to significant levels of 1-hour and annual NO_2 and 24-hour PM_{10} and $PM_{2.5}$ concentrations under CEQA.

NEPA Impact Determination

Proposed Project operations would contribute to significant levels of 1-hour and annual NO_2 and 24-hour PM_{10} and $PM_{2.5}$ concentrations under NEPA.

Mitigation Measures

Implementation of **Mitigation Measures AQ-6** through **AQ-18** would substantially reduce the ambient impact of Project operational emissions from unmitigated levels. However, given the uncertainty of implementing **Mitigation Measures AQ-13** through **AQ-18**, the mitigated dispersion modeling analysis only considered the effects of **Mitigation Measures AQ-6** through **AQ-12.**

Table 3.2-28 presents the maximum off-site ground level concentrations of criteria pollutants estimated for Project operations after mitigation. These data show that **Mitigation Measures AQ-6** through **AQ-12** would reduce all pollutant impacts, but 1-hour and annual NO_2 and 24-hour PM_{10} and $PM_{2.5}$ CEQA and NEPA increments would still exceed the SCAQMD ambient thresholds.

Table 3.2-27. Maximum Offsite Ambient Concentrations – Proposed Project Operations Without Mitigation

Pollutant	*Averaging Time*	*Maximum Impact from Project Emissions (µg/m³)*	*Background Pollutant Concentration (µg/m³)*	*Total Maximum Project Impact (µg/m³)*	*SCAQMD Threshold[a] (µg/m³)*
NO_2[b]	1-hour	**1,946**	263	**2,209**	338
	Annual	39	54	**93**	56
CO	1-hour	2,791	6,629	9,420	23,000
	8-hour	723	5,371	6,094	10,000
		Maximum Impact from Project Emissions (µg/m³)	*Maximum Impact from CEQA Baseline Emissions (µg/m³)*	*Maximum CEQA Increment (µg/m³)* [c]	
PM_{10}	24-hour	51.9	24.1	**27.9**	2.5
$PM_{2.5}$	24-hour	47.8	22.1	**25.7**	2.5
		Maximum Impact from Project Emissions (µg/m³)	*Maximum Impact from NEPA Baseline Emissions (µg/m³)*	*Maximum NEPA Increment (µg/m³)* [d]	
PM_{10}	24-hour	46.2	17.9	**28.8**	2.5
$PM_{2.5}$	24-hour	43.0	16.5	**26.5**	2.5
		Maximum Impact from Project On-Road Emissions (µg/m³)	*Maximum Impact from CEQA Baseline On-Road Emissions (µg/m³)*	*Maximum CEQA On-Road Sources Increment (µg/m³)* [ce]	
CO	1-hour	629	145	484	1,150
	8-hour	155	37	118	518
		Maximum Impact from Project On-Road Emissions (µg/m³)	*Maximum Impact from NEPA Baseline On-Road Emissions (µg/m³)*	*Maximum NEPA On-Road Sources Increment (µg/m³)* [de]	
CO	1-hour	642	145	497	1,150
	8-hour	156	33	123	518

[a] Exceedances of the thresholds are indicated in bold. The thresholds for PM_{10}/$PM_{2.5}$ are incremental thresholds and therefore only impacts from Project emissions without background pollutant concentrations are compared to the thresholds. The thresholds for NO_2 and CO are combined thresholds and therefore impacts from Project emissions plus background pollutant concentrations are compared to the thresholds.

[b] NO_2 concentrations based upon source/maximum impact locations distances of either 500 or 1000 meters. The NO_x to NO_2 conversion rates for these distances were 25.8 and 46.7 percent (SCAQMD, 2003c). This is a conservative approach, as the majority of emission sources that contribute to the maximum NO_2 impact are closer than 500 meters from this location.

[c] Equal to Project impact minus CEQA Baseline impact.

[d] Equal to Project impact minus NEPA Baseline (NFAB) impact.

[e] Represents the highest incremental impacts within 0.25 miles of a sensitive receptor.

Table 3.2-28. Maximum Offsite Ambient Concentrations – Proposed Project Operations After Mitigation

Pollutant	*Averaging Time*	*Maximum Impact from Project Emissions (µg/m³)*	*Background Pollutant Concentration (µg/m³)*	*Total Maximum Project Impact (µg/m³)*	*SCAQMD Threshold [a] (µg/m³)*
NO_2 [b]	1-hour	**1,542**	263	**1,805**	338
	Annual	27	54	**81**	56
CO	1-hour	2,427	6,629	9,056	23,000
	8-hour	524	5,371	5,895	10,000
		Maximum Impact from Project Emissions (µg/m³)	*Maximum Impact from CEQA Baseline Emissions (µg/m³)*	*Maximum CEQA Increment (µg/m³) [c]*	
PM_{10}	24-hour	21.7	10.6	**11.1**	2.5
$PM_{2.5}$	24-hour	20.0	9.8	**10.2**	2.5
		Maximum Impact from Project Emissions (µg/m³)	*Maximum Impact from NEPA Baseline Emissions (µg/m³)*	*Maximum NEPA Increment (µg/m³) [d]*	
PM_{10}	24-hour	30.0	22.2	**7.7**	2.5
$PM_{2.5}$	24-hour	27.5	20.4	**7.1**	2.5
		Maximum Impact from Project On-Road Emissions (µg/m³)	*Maximum Impact from CEQA Baseline On-Road Emissions (µg/m³)*	*Maximum CEQA On-Road Sources Increment (µg/m³) [ce]*	
CO	1-hour	153	82	71	1,150
	8-hour	38	30	8	518
		Maximum Impact from Project On-Road Emissions (µg/m³)	*Maximum Impact from NEPA Baseline On-Road Emissions (µg/m³)*	*Maximum NEPA On-Road Sources Increment (µg/m³) [de]*	
CO	1-hour	169	133	36	1,150
	8-hour	42	33	9	518

[a] Exceedances of the thresholds are indicated in bold. The thresholds for PM_{10}/$PM_{2.5}$ are incremental thresholds and therefore only impacts from Project emissions without background pollutant concentrations are compared to the thresholds. The thresholds for NO_2 and CO are combined thresholds and therefore impacts from Project emissions plus background pollutant concentrations are compared to the thresholds.

[b] NO_2 concentrations based upon source/maximum impact locations distances of either 500 or 1000 meters. The NO_x to NO_2 conversion rates for these distances were 25.8 and 46.7 percent (SCAQMD, 2003c). This is a conservative approach, as the majority of emission sources that contribute to the maximum NO_2 impact are closer than 500 meters from this location.

[c] Equal to Project impact minus CEQA Baseline impact.

[d] Equal to Project impact minus NEPA Baseline (NFAB) impact.

[e] Represents the highest incremental impacts within 0.25 miles of a sensitive receptor.

Residual Impacts

Proposed Project residual air quality impacts would remain significant after mitigation for 1-hour and annual NO_2 and 24-hour PM_{10} and $PM_{2.5}$ impacts under CEQA and NEPA.

Impact AQ-5: The proposed Project would not create objectionable odors at the nearest sensitive receptor.

Operation of the proposed Project would increase air pollutants due to the combustion of diesel fuel. Some individuals may sense that diesel combustion emissions are objectionable in nature, although quantifying the odorous impacts of these emissions to the public is difficult. The mobile nature of most Project emission sources would help to disperse proposed Project emissions. Additionally, the distance between proposed Project emission sources and the nearest residents is expected to be far enough to allow for adequate dispersion of these emissions to below objectionable odor levels.

<u>CEQA Impact Determination</u>

Proposed Project operations would produce less than significant odor impacts under CEQA.

<u>NEPA Impact Determination</u>

Proposed Project operations would produce less than significant odor impacts under NEPA.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Impact AQ-6: The proposed Project would expose receptors to significant levels of toxic air contaminants (TACs).

The following presents the results of a health risk assessment (HRA) that was used to quantify the significance of public health effects generated by Project emissions of TACs. The Project HRA was conducted in accordance with a Protocol developed in consultation with the CARB and SCAQMD (POLA 2005b). The HRA evaluated cancer and non-cancer effects, which is consistent with quantitative health impact analyses used for purposes of CEQA and NEPA documentation. Estimates of Project health effects included the evaluation of (1) operational emissions from the expanded Berths 136-147 terminal and relocated Pier A rail yard operated by PHL and (2) DPM emissions from Project construction. Appendix D3 of this EIS/EIR presents documentation of the Project HRA and Section 3.2.5 provides a synopsis of this report. Appendix D4 presents the emissions calculations used to develop the HRA. Since the Project would generate emissions of DPM, **Impact AQ-6** also discusses the effects of ambient particulate matter (PM) on increased mortality and morbidity.

Significance of Project Health Impacts

Emissions of TACs from Project operational sources would occur from the (1) internal combustion of diesel or residual fuels in ships, tugboats, terminal equipment, locomotives, and trucks and (2) external combustion of diesel or residual fuels in OGV service boilers. Emissions of TACs from Project construction sources would occur from the internal combustion of diesel fuels in construction equipment and associated harbor craft. For health effects resulting from long-term exposure to Project diesel emissions, the Project HRA only considered DPM emissions, in accordance with the Office of Environmental Health Hazard Assessment (OEHHA) guidance (OEHHA 2003). In regard to acute non-cancer effects from Project diesel sources, OEHHA assesses both criteria pollutants and chemicals that are subsets of VOCs and particulate matter.

For the determination of significance from a CEQA standpoint, this HRA determined the incremental increase in health effects values due to the proposed Project by estimating the net change in impacts between the proposed Project and CEQA Baseline conditions. For the determination of significance from a NEPA standpoint, this HRA determined the incremental increase in health effects values due to the proposed Project by estimating the net change in impacts between the proposed Project and NEPA Baseline. Both of these incremental health effects values (proposed Project minus CEQA Baseline and proposed Project minus NEPA Baseline) were compared to the health risk thresholds identified in Section 3.2.4.2 to determine their significance.

To estimate cancer risk impacts, DPM emissions were projected over a 70-year period, from 2007 through 2076. This 70-year projection of emissions was done for each Project Alternative and the CEQA Baseline and NEPA Baseline to enable a proper calculation of cancer risk increments between each Project Alternative and the baseline scenarios. To calculate the 70-year emissions, estimates of activity levels and emission factors were made for each year from 2007 through 2076. Yearly equipment activity levels from 2007 through 2038 were interpolated from Project years 2007, 2010, 2015, 2025, and 2038 for the proposed Project and NEPA Baseline. Activity levels after 2038 were held constant at their 2038 values. For the CEQA Baseline, activity levels were held constant at their 2003 values for all years. Where applicable, yearly emission factors were allowed to decrease with time in accordance with currently adopted regulations.

Project construction activities would occur between 2007 and 2016. The analysis divided total DPM emissions from construction by 70 years to create 70-year annual average DPM emission rates. The analysis then added these emissions to the 70-year annual average operational DPM emissions to estimate total Project cancer effects.

The HRA estimated health impacts to several population subgroups (receptors), including residential, off-site occupational, sensitive, student, and recreational. Each of these receptor types has specific air pollutant exposure duration and breathing rate factors, as presented in Appendix D3.

To estimate Project non-cancer effects, the HRA focused on Project operations in year 2010, as this was determined in consideration of annual emissions and their locations to be the year with the greatest incremental impacts between the Project and baseline conditions. Operational emissions in year 2010 would produce the highest Project ambient impacts within the Port region, even in comparison to years 2007 through 2009 and 2015, when Project construction emissions would combine and overlap with operational emissions. Illnesses associate with non-cancer effects include cardiovascular or respiratory diseases, exacerbation of asthma, acute and chronic bronchitis, decrease in lung function, and mortality.

Table 3.2-29 presents estimates of cancer risk, chronic (annual) non-cancer hazard index, and acute non-cancer hazard index impacts that correspond to the maximum CEQA increment (proposed Project minus CEQA Baseline) and NEPA increment (proposed Project minus NEPA Baseline). All other incremental health impacts within the modeling domain would be less than those shown in Table 3.2-29.

Table 3.2-29. Maximum Health Impacts due to the Proposed Project Without Mitigation

Health Impact	*Receptor Type*	MAXIMUM PREDICTED INCREMENTAL IMPACTS[1]						*Significance Threshold*[3]
		Proposed Project	*CEQA Baseline*	*CEQA Increment*[2]	*Proposed Project*	*NEPA Baseline*	*NEPA Increment*[2]	
Cancer Risk	Residential	272×10^{-6}	117×10^{-6}	**155×10^{-6}**	272×10^{-6}	43×10^{-6}	**229×10^{-6}**	10×10^{-6}
	Occupational	146×10^{-6}	49×10^{-6}	**98×10^{-6}**	146×10^{-6}	20×10^{-6}	**127×10^{-6}**	
	Sensitive	183×10^{-6}	70×10^{-6}	**113×10^{-6}**	183×10^{-6}	30×10^{-6}	**153×10^{-6}**	
	Student	3.8×10^{-6}	1.5×10^{-6}	2.4×10^{-6}	3.8×10^{-6}	0.6×10^{-6}	3.2×10^{-6}	
	Recreational	109×10^{-6}	48×10^{-6}	**61×10^{-6}**	115×10^{-6}	20×10^{-6}	**95×10^{-6}**	
Chronic Hazard Index	Residential	0.50	0.32	0.18	0.57	0.25	0.32	1.0
	Occupational	0.89	0.57	0.32	0.86	0.39	0.47	
	Sensitive	0.38	0.22	0.16	0.38	0.18	0.20	
	Student	0.31	0.20	0.11	0.31	0.14	0.17	
	Recreational	0.83	0.46	0.37	0.85	0.38	0.47	
Acute Hazard Index[4]	Residential	3.60	2.47	**1.13**	3.60	1.83	**1.77**	1.0
	Occupational	4.01	2.62	**1.39**	4.57	2.38	**2.19**	
	Sensitive	3.35	2.33	**1.02**	3.35	1.72	**1.63**	
	Student	2.77	1.92	0.85	2.77	1.42	**1.35**	
	Recreational	4.65	3.21	**1.44**	4.76	2.47	**2.29**	

Notes:

(1) Data represent project scenario impacts that contribute to maximum CEQA/NEPA incremental impacts.

(2) The CEQA Increment represents proposed Project impact minus CEQA Baseline impact. The NEPA Increment represents proposed Project impact minus NEPA Baseline impact.

(3) Exceedances of the significance criteria are in bold. The significance thresholds only apply to the CEQA and NEPA increments.

(4) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type.

Figures D3-10 through D3-14 in Appendix D3 show the distribution of predicted residential cancer risks within the modeling domain for the following scenarios: (1) CEQA Baseline (also presented in Figure 3.2-1), (2) NEPA Baseline, (3) unmitigated Project, (4) unmitigated CEQA increment (unmitigated Project minus CEQA Baseline), and (5) unmitigated NEPA increment (unmitigated Project minus NEPA Baseline). As an explanation of the incremental cancer risks presented in these figures, the Project unmitigated CEQA cancer risk increment shown in Figure D3-13 is obtained by subtracting the data in Figure D3-10 (CEQA Baseline cancer risk) from Figure D3-12 (unmitigated Project cancer risk).

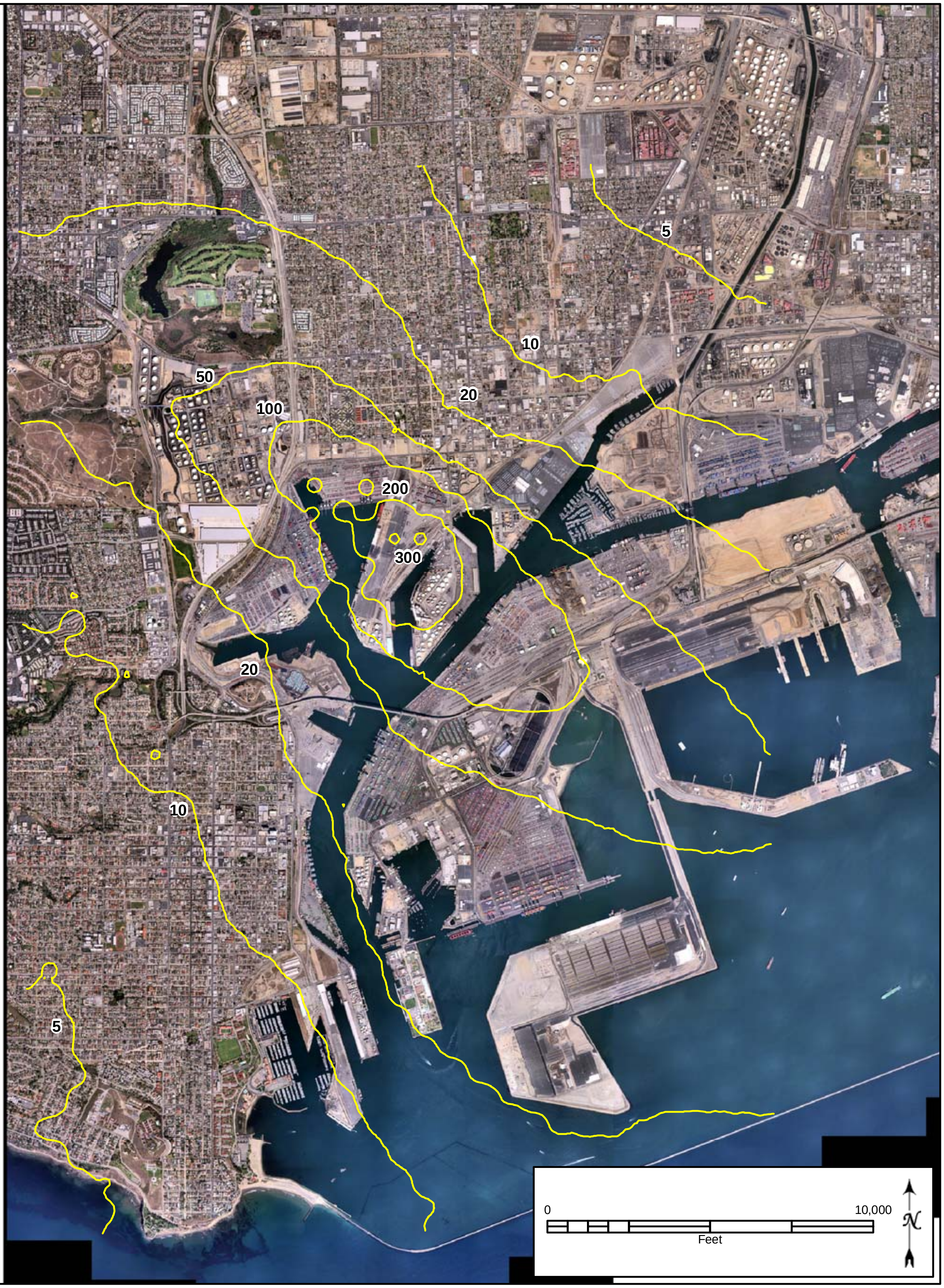

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Figure 3.2-1. CEQA Baseline Residential Cancer Risk Estimate - Berths 136-147 Terminal Project EIS/EIR.

CEQA Impact Determination

Table 3.2-29 shows that the maximum CEQA increment for residential cancer risk is predicted to be 155 in a million (155×10^{-6}). This risk value exceeds the significance criterion of 10 in a million (10×10^{-6}) risk; this impact would be significant under CEQA. This impact would occur just northeast of the intersection of C Street and Mar Vista Avenue in Wilmington. The maximum cancer risk increments at an off-site occupational (near the corner of Fries Avenue and La Paloma Street), sensitive, and recreational receptor also would exceed the 10 in a million significance criterion. The maximum cancer risk increment at a student receptor would be less than significant.

The prediction for the maximum CEQA increment for acute non-cancer effects would exceed the 1.0 hazard index significance criterion at residential, occupational, and recreational receptors in proximity to the Project terminal. The maximum occupational and recreational impacts would occur along Fries Avenue south of Pier A Street and in the southwest portion of the HBB Buffer. The maximum CEQA increment for acute non-cancer effects to student receptor types would remain below the 1.0 hazard index significance criterion. The prediction for the maximum CEQA increment for chronic non-cancer effects would remain below the significance criterion of 1.0 at all receptor types.

The main contributors of Project emissions to the maximum residential cancer risk location northeast of the intersection of C Street and Mar Vista Avenue include (1) 70 percent by ship hoteling, (2) 12 percent by terminal and rail yard equipment, (3) 9 percent by off-site trucks, and (4) 4 percent by on-terminal trucks. Container vessel emissions that occur outside of the Port within the precautionary area and fairway zones would contribute approximately 1 percent of the total cancer risk at this location. Operational emissions from the relocated PHL rail yard would contribute to less than 0.1 percent of the risk at this location.

NEPA Impact Determination

Table 3.2-29 shows that the maximum NEPA increment for residential cancer risk predicted for the unmitigated proposed Project is 229 in a million (229×10^{-6}), which exceeds the significance criterion of 10 in a million risk; this impact would be significant under NEPA. This impact would occur just northeast of the intersection of C Street and Mar Vista Avenue, in the same location as the CEQA incremental impact. The maximum cancer risk increments at an off-site occupational (also near the corner of Fries Avenue and La Paloma Street), sensitive, and recreational receptor also would exceed the 10 in a million significance criterion.

The prediction for the maximum NEQA increment for acute non-cancer effects would exceed the 1.0 hazard index significance criterion at all receptor types in proximity to the Project terminal. These maximum impacts would occur (1) in the vicinity of C Street and Gulf Avenue (residential), (2) along La Paloma Street (occupational), (3) near Wilmington Boulevard and D Street (sensitive), (4) at Hawaiian Avenue Elementary School (student), and (5) in the southern portion of the HBB Buffer (recreational). The prediction for the maximum NEPA increment for chronic non-cancer effects would remain well below the 1.0 hazard index significance criterion at all receptor types.

Mitigation Measures

Consistent with the approach taken to mitigate **Impacts AQ-3 and AQ-4**, the mitigated HRA considered the ability of **Mitigation Measures AQ-6** through **AQ-12** to reduce Project emissions of TACs.

Residual Impacts

Figures D3-15 through D3-17 in Appendix D3 show the distribution of predicted residential cancer risks for the (1) mitigated Project, (2) mitigated CEQA increment (mitigated Project minus CEQA Baseline) (also shown in Figure 3.2-2), and (3) mitigated NEPA increment (mitigated Project minus NEPA Baseline).

Table 3.2-30 summarizes the maximum health impacts predicted to occur from the operation of the proposed Project with mitigation. An analysis was not performed for mitigated chronic non-cancer effects, due to the minimal unmitigated values of the Project increments. Table 3.2-30 shows that the maximum CEQA increment for residential cancer risk predicted for the mitigated Project is reduced to 1.4 in a million (1.4×10^{-6}), which is less than the significance criterion of 10 in a million. The location of this impact is near Berth 202 within the Consolidated Slip Marina in association with a live aboard. Table 3.2-30 also shows that the maximum mitigated Project CEQA cancer risk increments at other receptor types would remain below the 10 in a million significance criterion. Review of Figure D3-16 in Appendix D3 shows that the mitigated Project would produce lower residential cancer risks compared to the CEQA Baseline within the entire modeling domain except for a small area that encompasses the Consolidated Slip that is northeast of the Berths 136-147 terminal.

The main contributors of Project emissions to the maximum mitigated CEQA residential cancer risk location within the Consolidated Slip Marina include (1) 30 percent by locomotives that haul cargo along the rail line that parallels Alameda Street, (2) 20 percent by ships hoteling (mainly from boiler emissions), (3) 17 percent by locomotives within the relocated PHL rail yard, and (4) 12 percent by off-site trucks. Container vessel emissions that occur outside of the Port within the Precautionary area and fairway zones would contribute approximately 2 percent of the total cancer risk at this location.

Table 3.2-30 shows that the mitigated Project would reduce maximum CEQA increments for acute non-cancer effects to below the 1.0 hazard index significance criterion at all receptor types.

The maximum NEPA increment for residential, occupational, and sensitive cancer risks predicted for the mitigated Project is 20, 10.1, and 13.6 in a million, meaning that the mitigated Project would produce significant cancer risks compared to the NEPA Baseline to these receptor types. The location of the maximum residential impact is just northeast of the intersection of C Street and Mar Vista Avenue, in the same location as the maximum NEPA incremental impact for the unmitigated Project. This location differs from the location of the maximum CEQA incremental residential cancer risk for the mitigated Project. This is due to the differences in the locations and magnitudes of emissions between these four scenarios. As an example, the following main contributors of Project emissions to maximum mitigated NEPA residential cancer risk at this impact location differ from those that produced the maximum mitigated

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Figure 3.2-2. Proposed Project Mitigated minus CEQA Baseline Residential Cancer Risk Estimate Berths 136-147 Terminal Project EIS/EIR.

Table 3.2-30. Maximum Health Impacts due to the Proposed Project After Mitigation

		MAXIMUM PREDICTED IMPACT[1]						
Health Impact	*Receptor Type*	*Mitigated Proposed Project*	*CEQA Baseline*	*CEQA Increment*[2]	*Mitigated Proposed Project*	*No Federal Action Baseline*	*NEPA Increment*[2]	*Significance Threshold*[3]
Cancer Risk	Residential	15.0×10^{-6}	13.6×10^{-6}	1.4×10^{-6}	62.7×10^{-6}	42.7×10^{-6}	**20.0×10^{-6}**	10×10^{-6}
	Occupational	2.9×10^{-6}	1.6×10^{-6}	1.3×10^{-6}	29.6×10^{-6}	19.5×10^{-6}	**10.1×10^{-6}**	
	Sensitive	4.8×10^{-6}	7.3×10^{-6}	$-2.5. \times 10^{-6}$	43.2×10^{-6}	29.6×10^{-6}	**13.6×10^{-6}**	
	Student	$.01 \times 10^{-6}$	0.2×10^{-6}	-0.1×10^{-6}	0.9×10^{-6}	0.6×10^{-6}	0.3×10^{-6}	
	Recreational	14.7×10^{-6}	16.7×10^{-6}	-2.0×10^{-6}	28.0×10^{-6}	19.8×10^{-6}	8.2×10^{-6}	
Acute Hazard Index[4]	Residential	1.85	1.72	0.13	2.51	1.87	0.64	1.0
	Occupational	2.44	2.23	0.21	3.19	2.38	0.81	
	Sensitive	1.12	1.05	0.07	2.32	1.72	0.60	
	Student	1.53	1.45	0.08	1.93	1.42	0.51	
	Recreational	3.19	3.21	(0.02)	3.32	2.47	0.85	

Notes:
(1) Data represent project scenario impacts that contribute to maximum CEQA/NEPA incremental impacts.
(2) The CEQA Increment represents proposed Project impact minus CEQA Baseline impact. The NEPA Increment represents proposed Project impact minus No Federal Action baseline impact.
(3) Exceedances of the significance criteria are in bold. The significance thresholds only apply to the CEQA and NEPA increments.
(4) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type.
(5) Mitigation measures quantified in this HRA for the Mitigated Project include **AQ-6** through **AQ-12.** The HRA did not consider mitigated chronic non-cancer effects, as these unmitigated effects were less than significant.

CEQA residential cancer risk: (1) 39 percent by ships hoteling (mainly from boiler emissions), (2) 31 percent by terminal and rail yard equipment, (3) 16 percent by off-site trucks, and (4) 5 percent by on-terminal trucks. Container vessel emissions that occur outside of the Port within the Precautionary area and fairway zones would contribute approximately 0.5 percent of the total cancer risk at this location.

Table 3.2-30 shows that the mitigated Project would reduce maximum NEPA increments for acute non-cancer effects to below the 1.0 hazard index significance criterion at all receptor locations. As a result, acute non-cancer impacts from the mitigated Project would be less than significant under NEPA.

HRA Baseline and Source Impact Contributions and Locations

Significance of the cancer HRA is determined by comparing the maximum increment of the Project minus baseline scenario to the 10 in a million threshold. The CEQA increment represents Project impact minus CEQA Baseline impact. The NEPA Increment represents Project impact minus NEPA baseline impact. HRA results are based upon the relationships between emission source locations and strengths and receptor impact locations. Since source strengths vary between the proposed Project, mitigated Project, and the baseline scenarios, the potential exists for the locations of the maximum increments for the Project scenarios in comparison to the baseline conditions to differ. For example, Table 3.2-30 reports the maximum residential CEQA increment at 1.4 in a million for the mitigated Project. This impact occurs near Berth 202 within the Consolidated Slip Marina because on-dock rail sources do not exist with the CEQA Baseline and therefore they do not cancel out these emissions that occur with the mitigated Project. As a result, the maximum difference in emissions and impacts between these two scenarios occurs in the location of these sources east of the Berths 136-147 Terminal. Table 3.2-30 also shows that the maximum residential NEPA increment is 20 in a million for the mitigated Project. On-dock rail sources exist with the NEPA Baseline and therefore they cancel out these emissions that occur with the mitigated Project. As a result, the maximum residential NEPA increment is dominated by emissions from hoteling and terminal equipment mitigated Project sources, which shifts the impact location to near the intersection of C Street and Mar Vista Avenue.

Particulates: Morbidity & Mortality

Of great concern to public health are the particles small enough to be inhaled into the deepest parts of the lung. Respirable particles (particulate matter less than about 10 micrometers in diameter [PM_{10}]) can accumulate in the respiratory system and aggravate health problems such as asthma, bronchitis and other lung diseases. Children, the elderly, exercising adults, and those suffering from asthma are especially vulnerable to adverse health effects of PM_{10} and $PM_{2.5}$.

The Proposed Project will emit DPM during project construction and operation. This discussion addresses potential health effects caused by DPM emissions and discusses existing standards and thresholds developed by regulatory agencies to address health impacts.

Health Effects of DPM Emissions

Epidemiological studies substantiate the correlation between the inhalation of ambient PM and increased mortality and morbidity (CARB2002 and CARB2007). Recently, CARB conducted a study to assess the potential health effects associated with exposure to air pollutants arising from ports and goods movement in the State (CARB2006a and CARB2006b). CARB's assessment evaluated numerous studies and research efforts, and focused on PM and ozone as they represent a large portion of known risk associated with exposure to outdoor air pollution. CARB's analysis of various studies allowed large-scale quantification of the health effects associated with emission sources. CARB's assessment quantified premature deaths and increased cases of disease linked to exposure to PM and ozone from ports and goods movement. Table 3.2-A presents the statewide PM and ozone health effects identified by CARB (CARB2006b).

In addition, although epidemiologic studies are numerous, few toxicology studies have investigated the responses of human subjects specifically exposed to DPM, and the available epidemiologic studies have not measured the DPM content of the outdoor pollution mix. CARB has made quantitative estimates of the public health impacts of DPM based on the assumption that DPM is as toxic as the general ambient PM mixture (CARB2006c).

Table 3.2-A: Annual 2005 Statewide PM and Ozone Health Effects Associated with Ports and Goods Movement in California[1]

Health Outcome	*Cases Per Year*	*Uncertainty Range (Cases per Year)* [2]
Premature Death	2,400	720 to 4,100
Hospital Admissions (respiratory causes)	2,000	1,200 to 2,800
Hospital Admissions (cardiovascular causes)	830	530 to 1,300
Asthma and Other Lower Respiratory Symptoms	62,000	24,000 to 99,000
Acute Bronchitis	5,100	-1,200 to 11,000
Work Loss Days	360,000	310,000 to 420,000
Minor Restricted Activity Days	3,900,000	2,200,000 to 5,800,000
School Absence Days	1,100,000	460,000 to 1,800,000

Notes:

[1] Does not include the contributions from particle sulfate formed from SO_X emissions, which is being addressed with several ongoing emissions, measurement, and modeling studies.

[2] Range reflects uncertainty in health concentration-response functions, but not in emissions or exposure estimates. A negative value as a lower bound of the uncertainty range is not meant to imply that exposure to pollutants is beneficial; rather, it is a reflection of the adequacy of the data used to develop these uncertainty range estimates.

CARB's study concluded that there are significant uncertainties involved in quantitatively estimating the health effects of exposure to outdoor air pollution. Uncertain elements include emission and population exposure estimates, concentration-response functions, baseline rates of mortality and morbidity that are entered into concentration response functions, and occurrence of additional not-quantified adverse health effects (CARB, 2006). Many of these elements have a factor-of-two uncertainty. Numerous new studies, ongoing and proposed, will likely increase scientific knowledge and provide better estimates of DPM health effects.

It should be noted that PM in ambient air is a complex mixture that varies in size and chemical composition, as well as varying spatially and temporally. Different types of particles may cause different effects with different time courses, and perhaps only in susceptible individuals. The interaction between PM and gaseous co-pollutants adds additional complexity because in ambient air pollution, a number of pollutants tend to co-occur and have strong inter-relationships with each other (e.g., PM, SO_2, NO_2 , CO, and O_3) (AQMD2007, CARB2006a, and CARB 2006b).

Nevertheless, various studies have been published over the past ten years that substantiate the correlation between the inhalation of ambient PM and increased cases of premature death from heart and/or lung diseases (Pope et al., 1995, 2002; Jerrett et al. 2005, Krewski et al., 2001). Studies such as these and studies that have followed since serve as the fundamental basis for PM air quality standards promulgated by AQMD, CARB, U.S. EPA, and the World Health Organization.

Existing CEQA Thresholds

Concentration Thresholds

Regulatory agencies set protective health-based short and long-term ambient concentration standards designed "in consideration of public health, safety, and welfare, including, but not limited to, health, illness, irritation to the senses, aesthetic value, interference with visibility, and effects on the economy" (Health and Safety Code Section 39606(a)(2)). Ambient Air Quality Standards (AAQS) specify concentrations and durations of exposure to air pollutants that reflect the relationships between the intensity and composition of air pollution and undesirable effects. The fundamental objective of an AAQS is to provide a basis for preventing or abating adverse health or welfare effects of air pollution.

In developing the AAQS, federal, state, and local air quality regulatory agencies consider existing health science literature and recommendations from Office of Environmental Health Hazard Assessment (OEHHA). Standards are set to ensure that sensitive population sub-groups are protected from exposure to levels of pollutants that may cause adverse health effects. In the case of PM, CAAQS are peer reviewed by the Air Quality Advisory Committee (AQAC), an external scientific peer review committee, comprised of world-class scientists in the PM field.

Within the SCAB, the SCAQMD furthermore identifies localized ambient significance thresholds. 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. The localized standards for PM are more stringent than either the NAAQS or the CAAQS. SCAQMD's localized significance threshold for PM_{10} and $PM_{2.5}$ is 10.4 μg/m3 and 2.5 μg/m3 for construction and operation, respectively. These values were developed based on CARB guidance and epidemiological studies showing significant toxicity (resulting in mortality and morbidity) related to exposure to fine particles. The Proposed Project conducted dispersion analysis to determine ambient air concentrations and determined localized significance (Section 3.2.4.4)

Emission Thresholds

PM emissions also affect air quality on a regional basis. When fugitive dust enters the atmosphere, the larger particles of dust typically fall quickly to the ground, but smaller particles less than 10 microns in diameter may remain suspended for longer periods, giving the particles time to travel across a regional area affecting receptors at some distance from the original emissions source.

For this reason, the SCAQMD established mass daily thresholds for construction and operational activities for PM. The mass daily thresholds are emissions-based thresholds used to assess the potential significance of criteria air pollutants on the regional level. Emissions that exceed the regional significance thresholds are mass daily emissions that may have significant adverse regional effects. The Proposed Project quantified mass daily emissions and determined significance (Section 3.2.4.4).

HRA Thresholds

SCAQMD specifies thresholds for cancer risk and noncancer chronic and acute hazard impacts. The cancer risk calculation methodology accounts for the cancer potency of a pollutant and the expected dose for exposure pathways. For chronic non-cancer and acute exposures, maximum annual concentrations and peak daily concentrations, respectively are compared with the OEHHA Reference Exposure Levels (REL), which are used as indicators of potential adverse non-cancer health effects. The RELs are concentrations, at or below which no adverse health effects are anticipated in the general human population and are based on the most sensitive relevant adverse health effect reported in the medical and toxicological literature. RELs are designed to protect the most sensitive individuals in the population by the inclusion of margins of safety.

Risk assessment and health impact determination methodologies rely on risk assessment health values published by OEHHA, which in turn are based on results of numerous toxicology and epidemiology studies. For DPM, OEHHA has established health values for cancer and non-cancer chronic effects to be used in quantification of health impacts. The Proposed Project quantified both cancer risk and non-cancer chronic impacts from DPM exposure, per OEHHA risk assessment methodology.

In addition, the Port has adopted SCAQMD's CEQA threshold of 10 in a million excess cancer risk and a 1.0 Hazard Index in evaluating new projects (section 3.2.5). The thresholds set by EPA, CARB, and SCAQMD for localized, regional and toxic impacts are designed to account for health impacts, such as premature deaths, cardiac and respiratory hospitalizations, asthma, lost work/school days. The Proposed Project has quantified localized, regional and toxic impacts of DPM (Section 3.2.5).

Quantifying Morbidity and Mortality

CARB's recent study (CARB2006a and CARB2006b) used a health effects model, based on multiple epidemiological studies, which quantified expected non-cancer impacts of mortality and morbidity from ambient PM exposure (for example premature deaths, cardiac and respiratory hospitalizations, asthma and other lower respiratory symptoms, and lost work/school days). The study focused on large-scale applications such as the benefits of attaining the State air quality standard for $PM_{2.5}$, the impacts of goods movement emissions on a statewide and broad regional level, and the impacts from combined operations at the Ports of Los Angeles and Long Beach (CARB2006a and CARB2006b).

CARB staff have stated that it would be neither appropriate nor meaningful to apply the health effects model used in the CARB study to quantify the mortality and morbidity impacts of PM on a project of the proposed Project's size because values quantified for a specific location would fall within the margin of error for their methodology (CARB2007). Because CARB's methodology was designed for larger-scaled projects affecting a much larger population, the methodology may not be sensitive enough to provide accurate results for projects affecting much smaller populations. The proposed Project is located in Wilmington and, based on the health risk assessment completed for this Project, the potential health impacts of PM emissions will largely be restricted to an area 4 miles east-west by 6 miles north-south around the terminal area (about 20,000 people). In contrast, CARB's study looked at a 40 mile by 50 mile area with a population of over 400,000 people. In addition CARB is also in the process of updating the health information that relates changes in $PM_{2.5}$ exposures to premature death. A public workshop was held on August 21, 2006 to discuss our approach for revising the methodology. A formal review of the updated methodology and analysis will be conducted by a peer review committee composed of experts in the fields of epidemiology, health impacts quantification and economics (personal communications, CARB staff).

Due to potential scale issues, Port staff also contacted OEHHA to discuss an appropriate methodology to assess the potential morbidity and mortality impacts from the Project. OEHHA is in the process of developing further guidance on health impacts from PM exposure. This guidance will be released later this summer for public comment and peer review. In the absence of further guidance, staff was directed to the "Public Hearing to Consider Amendments to Ambient Air Quality Standards for Particulate Matter and Sulfates" (CARB 2002). This document pools together different research papers and epidemiological studies and describes how different impacts of morbidity and mortality (for example, long-term mortality, chronic bronchitis, and hospital admissions for asthma) were quantified in considering AAQS revisions for PM. The document used concentration-response (C-R) functions to determine morbidity and mortality impacts. C-R fucntions are equations that relate the change in the number of adverse health effect incidences in a population to a change in pollutant concentration experienced by that population. Normally, epidemiological studies are used to estimate the relationship between a pollutant and a particular health endpoint at different locations. Most common C-R functions are represented in log-linear form.

This is the basic form of a C-R function:

$$\Delta y = y_0 (e^{\beta \Delta PM} - 1) * \text{population}$$

where:

Δy = changes in the incidence of a health endpoint corresponding to a particular change in PM

y_0 = baseline incidence rate per person

β = coefficient (PM_{10}: 0.00231285); this coefficient is based on the relative risk that is associated with a particular concentration and varies from one study to another.

ΔPM = change in PM concentration

Using the guidance presented in the document, and using a coefficient based on a 1.12 relative risk that is associated with a mean change of 24.5 $\mu g/m^3$(CARB/OEHHA 2002), the following represents the result of a sample calculation for long-term mortality due to PM_{10} for the proposed Project (without mitigation). The calculation is dependent on the following:

- Location: Intersection of E Street and Neptune Avenue, Wilmington
- Population (>25 years of age): 3,305 within a 0.3-mile radius (extending to Harry Bridges Blvd.)

- Change in annual PM_{10} concentration: 0.1 $\mu g/m^3$ (unmitigated peak project minus CEQA baseline, as shown in Figure 3.2-3)

The increase in incidence of long-term mortality corresponding to this change in PM_{10} concentration was calculated to be: 0.006848 cases per year.

However, as shown in Section 3.2.5, proposed **Mitigation Measures AQ-6** through **AQ-16** are expected to reduce DPM emissions relative to baseline DPM emissions, thereby reducing potential impacts on morbidity and mortality.

According to the CARB/OEHHA document, the standard error of the β coefficient is 0.0006023 for PM_{10}.

It is important to note that the parameters in the C-R functions can vary widely depending on the study. For example, some studies exclude accidental deaths from their mortality counts while others include all deaths. Furthermore, some studies consider only members of a particular subgroup of the population, e.g., individuals 30 and older, while other studies consider the entire population in the study location. When applying a C-R function from an epidemiological study to estimate changes in the incidence of a health endpoint corresponding to a particular change in PM in a location, it is important to use the appropriate value of parameters for the C-R function. That is, the measure of PM, the type of population, and the characterization of the health endpoint should be the same as or as close as possible to those used in the study that estimated the C-R function. The sample analysis presented here attempted to use parameters as closely related to the chosen C-R function as possible.

Among the uncertainties in the risk estimates is the degree of transferability of the concentration-response functions to California. Many of the epidemiologic studies used by CARB/OEHHA do include several California cities, but not all. For example, the C-R function for long-term mortality (Krewski et al., 2000) included eight California cities out of a total of 63 cities. Another uncertainty stems from the issue of co-pollutants. Specifically, it is possible that some of the estimated health effects include the effects of both PM and other correlated pollutants. Finally, the studies used in developing the C-R functions do not usually take into consideration estimates of averting behaviors. Examples of averting behaviors include measures that prevent symptoms from occurring in the first place, such as avoiding strenuous exertion on days with high PM, staying indoors, the use of filters, etc.

However, perhaps the most compelling use limitation of C-R functions for site-specific projects is the consideration of whether it is valid to apply the C-R functions to changes in PM concentrations that are far below the ambient concentration. For example, the CARB/OEHHA analysis applied a threshold of 18 $\mu g/m^3$ for the long-term mortality C-R function because this was the lowest concentration level observed in the long-term mortality studies evaluated. In other words, CARB/OEHHA assumed that the C-R functions were continuous and differentiable down to threshold levels. In the case of trying to quantify project-specific impacts, it may not be appropriate to use C-R functions that were developed with a threshold significantly higher than the change in PM due to the project.

Impact AQ-7: The proposed Project would not conflict with or obstruct implementation of an applicable AQMP.

Proposed Project operation would produce emissions of nonattainment pollutants primarily in the form of diesel exhaust. The 2003 AQMP proposes emission reduction measures that are designed to bring the South Coast Air Basin into attainment of the state and national ambient air quality standards. The attainment strategies in this plan includes 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 operation would comply with these control measures. The SCAQMD also adopts AQMP control measures into the SCAQMD rules and regulations, which are then used to regulate sources of air pollution in the South Coast Air Basin. Therefore, compliance with these requirements would ensure that the proposed Project would not conflict with or obstruct implementation of the AQMP.

The Port of Los Angeles regularly provides SCAG with its Portwide cargo forecasts for development of the AQMP. Therefore, the attainment demonstrations included in the 2003 AQMP account for the emissions generated by projected future growth at the Port. Because one objective of the proposed Project is to accommodate growth in cargo throughput at the Port, the AQMP accounts for the Project and conforms to the SIP.

CEQA Impact Determination

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

NEPA Impact Determination

The proposed Project would not conflict with or obstruct implementation of the AQMP; therefore, impacts would be less than significant under NEPA.

Mitigation Measures

Impacts would be less than significant; therefore, mitigation is not required.

Residual Impacts

Residual impacts would be less than significant under CEQA and NEPA.

Impact AQ-8: The proposed Project would produce GHG emissions that would exceed CEQA and NEPA baseline levels.

Climate change, as it relates to man-made GHG emissions, is by nature a global impact. An individual project does not generate enough GHG emissions to significantly influence global climate change by itself (AEP, 2007). The issue of global climate change is, therefore, a cumulative impact. Nevertheless, for the purposes of this EIS/EIR, the LAHD has opted to address GHG emissions as a project-level impact. In actuality, an appreciable impact on global climate change would only occur when the project's GHG emissions combine with GHG emissions from other man-made activities on a global scale.

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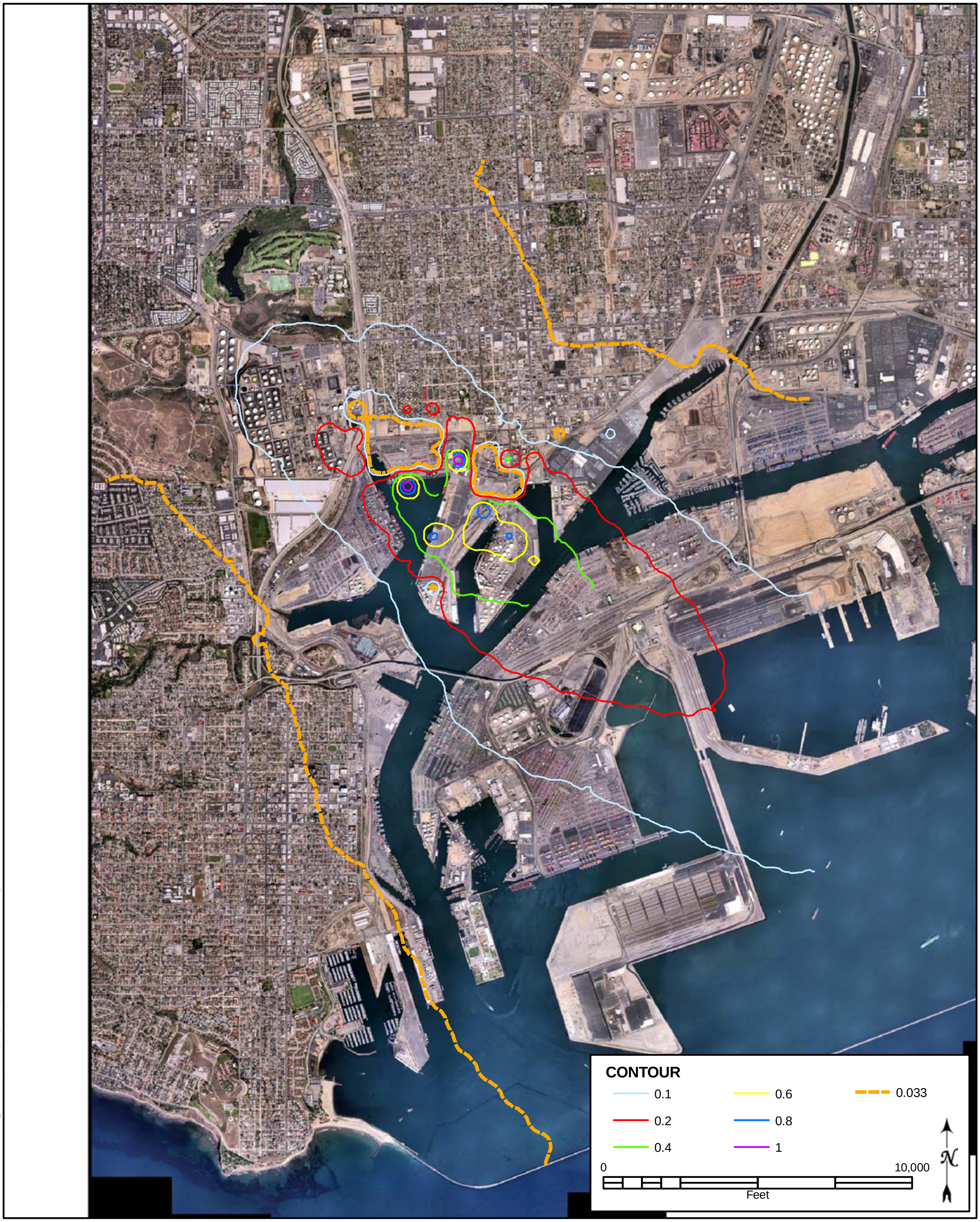

Figure 3.2-3. Unmitigated Proposed Project minus CEQA Baseline Annual DPM concentrations (ug/m3)

Table 3.2-31 summarizes the total GHG construction emissions associated with the proposed Project. The emissions are totaled over the entire multiple-year construction period. The construction sources for which GHG emissions were calculated include off-road diesel equipment, on-road trucks, marine cargo vessels used to deliver equipment to the site, and worker commute vehicles.

Table 3.2-31. Total GHG Emissions from Berths 136-147 Terminal Construction Activities - Proposed Project

Construction Activity	TOTAL EMISSIONS (METRIC TONS)			
	CO_2	CH_4	N_2O	CO_2e
Phase 1				
Wharf Improvements at Berths 144-147	3,537	0.50	0.04	3,560
78 Acres of Backland Improvement at Berths 142-147	350	0.05	0.01	353
Construct a New Admin. Bldg, Main Gate, & Worker Parking Lot	217	0.03	0.00	219
Construct a New Maintenance & Repair Facility-Berths 136-147	300	0.05	0.00	303
Harry Bridges Blvd. Realignment	447	0.05	0.01	451
Construction of a 46-Acre Rail Yard at Berth 200	1,410	0.17	0.03	1,422
9 Acres of Backland Improvements at Berths 134-135	34	0.00	0.00	34
Construction of B142-147 12-Ac ICTF & 19-Ac Backlands	548	0.07	0.01	553
Existing Cranes Removal at Berth 136	8	0.00	0.00	8
Construction of Harry Bridges Blvd. Buffer	1,198	0.17	0.02	1,207
Install Cranes at Berth 136 & Berth 144	120	0.02	0.00	121
Phase 2				
10-Acre Northwest Slip Fill	1,357	0.19	0.01	1,366
10-Acres of Backland Improvement at Berth 131	44	0.01	0.00	44
Berth 136 Wharf Extension	932	0.13	0.01	938
Worker Vehicles	2,218	0.36	0.35	2,335
Total Emissions	**12,721**	**1.79**	**0.49**	**12,911**

One metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

Table 3.2-32 summarizes the annual unmitigated GHG emissions that would occur within California from operation of the Berths 136-147 Terminal Project. The emission sources for which GHG emission were calculated include ships, tugboats, terminal and rail yard equipment, on-road trucks, trains, fugitive refrigerant losses from reefers, on-terminal electricity usage, and worker commute vehicles. The table also shows the net change in the Project's GHG emissions relative to both the CEQA and NEPA baselines.

CEQA Impact Determination

Table 3.2-32 shows that in each future project year, annual operational CO_2e emissions would increase relative to the CEQA baseline. These increases are considered a significant impact under CEQA.

NEPA Impact Determination

Table 3.2-32 shows that in each future project year, annual operational CO_2e emissions would increase relative to the NEPA baseline. Because no NEPA significance threshold has been established, no determination of significance has been made for this impact.

Table 3.2-32. Annual Operational GHG Emissions - Berths 136-147 Terminal - Proposed Project without Mitigation

Project Scenario/Source Type	METRIC TONS PER YEAR						
	CO_2	*CH_4*	*N_2O*	*HFC-125*	*HFC-134a*	*HFC-143a*	*CO_2e*
Year 2007							
Ships	81,191	10.7	0.7				81,641
Tugboats	731	0.1	0.0				735
Terminal & Railyard Equipment	20,551	3.3	0.2				20,695
Trucks	229,901	11.5	5.8				231,927
Trains	40,158	5.6	0.4				40,399
Reefer Refrigerant Losses				0.06	0.13	0.07	590
AMP Usage							0
On-Terminal Electricity Usage	4,616	0.0	0.0				4,623
Worker Vehicles	1,226	0.2	0.2				1,291
Year 2007 Total	**378,374**	**31.5**	**7.3**	**0.06**	**0.13**	**0.07**	**381,901**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project Minus CEQA Baseline	**76,151**	**6.3**	**1.4**	**0.01**	**0.02**	**0.01**	**76,829**
NEPA Baseline	369,017	30.7	7.2	0.06	0.13	0.07	372,462
Project Minus NEPA Baseline	**9,357**	**0.8**	**0.1**	**0.00**	**0.00**	**0.00**	**9,439**
Year 2015							
Ships	112,177	14.9	1.0				112,799
Tugboats	781	0.1	0.0				786
Terminal & Railyard Equipment	31,816	5.2	0.4				32,040
Trucks	415,426	20.4	10.2				419,020
Trains	49,675	6.9	0.5				49,973
Reefer Refrigerant Losses				0.09	0.22	0.11	944
AMP Usage							0
On-Terminal Electricity Usage	7,393	0.1	0.0				7,405
Worker Vehicles	1,942	0.3	0.3				2,037
Year 2015 Total	**619,210**	**47.8**	**12.4**	**0.09**	**0.22**	**0.11**	**625,003**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project Minus CEQA Baseline	**316,986**	**22.6**	**6.5**	**0.04**	**0.11**	**0.05**	**319,931**
NEPA Baseline	494,217	35.2	10.4	0.08	0.18	0.09	498,977
Project minus NEPA Baseline	**124,992**	**12.6**	**2.0**	**0.01**	**0.03**	**0.02**	**126,026**
Year 2025							
Ships	145,730	19.3	1.3				146,539
Tugboats	871	0.1	0.0				876
Terminal & Railyard Equipment	52,220	8.5	0.6				52,587

Table 3.2-32. Annual Operational GHG Emissions - Berths 136-147 Terminal - Proposed Project without Mitigation (continued)

Project Scenario/Source Type	METRIC TONS PER YEAR						
	CO_2	*CH_4*	*N_2O*	*HFC-125*	*HFC-134a*	*HFC-143a*	*CO_2e*
Year 2025 (continued)							
Trucks	489,233	23.6	11.8				493,391
Trains	65,487	9.1	0.7				65,881
Reefer Refrigerant Losses				0.12	0.29	0.15	1,291
AMP Usage							0
On-Terminal Electricity Usage	10,106	0.1	0.0				10,123
Worker Vehicles	2,129	0.3	0.3				2,232
Year 2025 Total	**765,777**	**61.0**	**14.7**	**0.12**	**0.29**	**0.15**	**772,919**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project Minus CEQA Baseline	**463,554**	**35.9**	**8.8**	**0.08**	**0.18**	**0.09**	**467,846**
NEPA Baseline	470,192	35.9	9.2	0.09	0.21	0.10	474,715
Project minus NEPA Baseline	**295,585**	**25.1**	**5.5**	**0.04**	**0.09**	**0.04**	**298,204**
Year 2038							
Ships	145,730	19.3	1.3				146,539
Tugboats	871	0.1	0.0				876
Terminal & Railyard Equipment	52,220	8.5	0.6				52,587
Trucks	489,233	23.6	11.8				493,391
Trains	65,487	9.1	0.7				65,881
Reefer Refrigerant Losses				0.12	0.29	0.15	1,291
AMP Usage							0
On-Terminal Electricity Usage	10,106	0.1	0.0				10,123
Worker Vehicles	2,389	0.3	0.3				2,502
Year 2038 Total	**766,037**	**61.1**	**14.8**	**0.12**	**0.29**	**0.15**	**773,189**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project Minus CEQA Baseline	**463,814**	**35.9**	**8.8**	**0.08**	**0.18**	**0.09**	**468,116**
NEPA Baseline	470,225	35.9	9.2	0.09	0.21	0.10	474,748
Project minus NEPA Baseline	**295,812**	**25.2**	**5.6**	**0.04**	**0.09**	**0.04**	**298,440**

One metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.
CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2800 for HFC-125; 1300 for HFC-134a; and 3800 for HFC-143a.

Mitigation Measures

Measures that reduce electricity consumption or fossil fuel usage from Project emission sources would reduce proposed GHG emissions. The following operational mitigation measures already developed for criteria pollutant emissions (**Impact AQ-3**) would also reduce GHG emissions:

MM AQ-6: Alternative Maritime Power (AMP). Ships calling at the Berths 136-147 Terminal shall use AMP while hoteling in the Port in the following percentages:

- 2009 - 25 percent of total ship calls
- 2010 - 40 percent of total ship calls
- 2012 - 50 percent of total ship calls
- 2015 - 80 percent of total ship calls
- 2018 - 100 percent of total ship calls

The use of electricity from the power grid would reduce GHG emissions during hoteling because electricity can be produced more efficiently at centralized power plants than from auxiliary engines on ships. In addition, a fraction of the LADWP's electricity is generated from renewable sources such as hydroelectric, which further reduces its GHG emissions on a per kW-hr basis.[2] As a result, a hoteling ship using AMP would reduce its auxiliary power GHG emissions by about 47 percent compared to a ship using its auxiliary engines for power.

MM AQ-10: Vessel Speed Reduction Program. Vessels that call at the Berths 136-147 Terminal shall comply with the VSRP of 12 knots within 40 nautical miles (nm) of Point Fermin by the following schedule:

- 2008 – 95 percent of total ship calls

The average cruise speed for a container vessel ranges from about 18 to 25 knots, depending on the size of a ship (larger ships generally cruise at higher speeds). For a ship with a 24-knot cruise speed, for example, a reduction in speed to 12 knots reduces the main engine load factor from about 83 to 10 percent, due to the cubic relationship of load factor to speed. The corresponding reduction in overall container ship transit GHG emissions (main and auxiliary engines) from the California overwater border to the Precautionary Area is approximately 70 percent.

MM AQ-14: Clean Rail Yard Standards: The Berth 136-147 on dock rail facility shall incorporate the cleanest locomotive technologies into its operations.

Technologies that reduce fuel consumption or use alternative fuels would reduce GHG emissions. These include diesel-electric hybrids, multiple engine generator sets, use of alternative fuels, and idling shut-off devices. Because some of these systems are not yet available, but are expected to be available within the next few years, this measure has not been quantified.

This mitigation measure targets GHG emissions from locomotives operating at the Berth 136-147 railyard. The unmitigated emissions from locomotives at the Berth 136-147 railyard represent about 2 percent of project-generated train emissions and 0.1 percent of overall project GHG emissions. Although not quantified in this analysis,

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[2] The 2006 power mix for LADWP was 47 percent from coal, 30 percent from natural gas, 13 percent from hydroelectric, 8 percent from nuclear, and 2 percent from other renewable sources (biomass, geothermal, solar, and wind). Source: LADWP, *Power Content Label. Annual Report of Actual Electricity Purchases for LADWP. Calendar Year 2006*.

implementation of this measure is expected to reduce the Project's GHG emissions by less than 0.1 percent.

MM AQ-16: Truck Idling Reduction Measures. The Berths 136-147 Terminal operator shall ensure that truck idling is reduced at the Terminal. Potential methods to reduce idling include, but are not limited to, the following: (1) operator shall maximize the durations when the main gates are left open, including during off-peak hours, (2) operator shall implement a container tracking and appointment-based truck delivery and pick-up system to minimize truck queuing, and (3) operator shall design gate to exceed truck flow capacity to ensure queuing is minimized.

A reduction in truck idling at the terminal would reduce fuel consumption and, therefore, GHG emissions. The unmitigated emissions from trucks idling at the Berth 136-147 terminal represent about 1 percent of project-generated truck emissions and about 0.5 percent of overall project GHG emissions. Although not quantified in this analysis, implementation of this measure is expected to reduce the Project's GHG emissions by less than 0.5 percent.

The following additional mitigation measures specifically target the Project's 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). The strategies proposed in these two reports for the commercial/industrial sector are listed in Table 3.2-33, along with an applicability determination for the proposed Project.

MM AQ-19 (LEED) – The main terminal building shall obtain the Leadership in Energy and Environmental Design (LEED) gold certification level.

LEED certification is made at one of the following four levels, in ascending order of environmental sustainability: certified, silver, gold, and platinum. The certification level is determined on a point-scoring basis, where various points are given for design features that address the following areas (U.S. Green Building Council, 2005):

- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality
- Innovation & Design Process

As a result, a LEED-certified building will be more energy efficient, thereby reducing GHG emissions compared to a conventional building design.

Electricity consumption at the on-terminal buildings represents about 7 percent of on-terminal electrical consumption and about 0.1 percent of overall project GHG emissions. Although not quantified in this analysis, implementation of this measure is expected to reduce the Project's GHG emissions by less than 0.1 percent.

Table 3.2-33. 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	**MM AQ-14** (locomotives) and AQ-16 (trucks); also a regulatory measure 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
Transportation Refrigeration Units, Off Road Electrification, Port Electrification	**MM AQ-6** (AMP for ships); off-loaded reefers are electrified as part of the project; also a future regulatory measure is planned by CARB
Alternative Fuels: Biodiesel blends	Future regulatory measure planned by CARB
Alternative Fuel: Ethanol vehicles or enhanced ethanol/gasoline blends	Future regulatory measure planned by CARB
Heavy Duty Vehicle Emissions Reduction Measures	**MM AQ-10** (VSRP for ships) and AQ-16 (trucks); Port-wide CAAP measure HDV2 (trucks); also a regulatory measure implemented by CARB
Reduced Venting in Gas Systems	Not applicable to project
Building Operations Strategy	
Recycling	**MM AQ-23;** also a regulatory measure implemented by the Integrated Waste Management Board
Building Energy Efficiency	**MM AQ-19, AQ-20, AQ-21, AQ-24;** also a regulatory measure implemented by the California Energy Commission
Green Buildings Initiative	Future regulatory measure planned by the State and Consumer Services and Cal/EPA
California Solar Initiative	**MM AQ-22**; also a 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-20 (Compact Fluorescent Light Bulbs) – All interior terminal building lighting shall use compact fluorescent light bulbs. Fluorescent light bulbs produce less waste heat and use substantially less electricity than incandescent light bulbs.

Although not quantified in this analysis, implementation of this measure is expected to reduce the Project's GHG emissions by less than 0.1 percent.

MM AQ-21 (Energy Audit) – The tenant shall conduct a third party energy audit every five years and install innovative power saving technology where feasible, such as power factor correction systems and lighting power regulators. Such systems help to maximize usable electric current and eliminate wasted electricity, thereby lowering overall electricity use.

This mitigation measure primarily targets large on-terminal electricity consumers such as on-terminal lighting and shoreside electric gantry cranes. These sources consume the majority of on-terminal electricity, and account for about 1 percent of overall project GHG emissions. Therefore, implementation of power saving technology at the terminal could reduce overall project GHG emissions by a fraction of 1 percent.

MM AQ-22 (Solar Panels) – The applicant shall install solar panels on the main terminal building.

Solar panels would provide the terminal building with a clean source of electricity to replace some of its fossil fuel-generated electricity use. Although not quantified in this analysis, implementation of this measure is expected to reduce the Project's GHG emissions by less than 0.1 percent.

MM AQ-23 (Recycling) – The terminal buildings shall achieve a minimum of 40 percent recycling by 2012 and 60 percent recycling by 2015. Recycled materials shall include:

- White and colored paper
- Post-it notes
- Magazines
- Newspaper
- File folders
- All envelopes including those with plastic windows
- All cardboard boxes and cartons
- All metal and aluminum cans
- Glass bottles and jars
- All plastic bottles

In general, products made with recycled materials require less energy and raw materials to produce than products made with unrecycled materials. This savings in energy and raw material use translates into GHG emission reductions. The effectiveness of this mitigation measure was not quantified due to the lack of a standard emission estimation approach.

MM AQ-24 (Tree Planting) – The applicant shall plant shade trees around the main terminal building. Trees act as insulators from weather thereby decreasing energy requirements. Onsite trees also provide carbon storage (AEP 2007).

Although not quantified, implementation of this measure is expected to reduce the Project's GHG emissions by less than 0.1 percent.

In addition to the project-specific mitigation measures identified above, the replacement of 6 existing electric shoreside gantry cranes with 5 new cranes (as part of the proposed Project) would reduce electricity usage on a per-lift basis. The Port estimates that the new cranes would be 10 to 20 percent more energy efficient than the replaced cranes. Although not quantified, this improvement in gantry crane energy efficiency would reduce the Project's overall GHG emissions by approximately 0.1 percent.

Future Port-wide greenhouse gas emission reductions are also anticipated through AB 32 rule promulgation. However, such reductions have not yet been quantified, as AB 32 implementation is still under development by the CARB.

Residual Impacts

Table 3.2-34 summarizes the annual mitigated GHG emissions that would occur within California from operation of the Berths 136-147 Terminal Project. The effects of **Mitigation Measures AQ-6** (AMP for ships) and **AQ-10** (VSRP for ships) were included in the emission estimates. The potential effects of the remaining mitigation measures **(AQ-14, AQ-16, AQ-19, AQ-20, AQ-21, AQ-22, AQ-23,** and **AQ-24)** are described qualitatively under each measure's heading (above).

Table 3.2-34. Annual Operational GHG Emissions - Berths 136-147 Terminal —. Proposed Project with Mitigation

Project Scenario/Source Type	METRIC TONS PER YEAR						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Year 2007							
Ships	81,191	10.7	0.7				81,641
Tugboats	731	0.1	0.0				735
Terminal & Railyard Equipment	20,551	3.3	0.2				20,695
Trucks	229,901	11.5	5.8				231,927
Trains	40,158	5.6	0.4				40,399
Reefer Refrigerant Losses				0.06	0.13	0.07	590
AMP Usage	0	0.0	0.0				0
On-Terminal Electricity Usage	4,616	0.0	0.0				4,623
Worker Vehicles	1,226	0.2	0.2				1,291
Year 2007 Total	**378,374**	**31.5**	**7.3**	**0.06**	**0.13**	**0.07**	**381,901**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**76,151**	**6.3**	**1.4**	**0.01**	**0.02**	**0.01**	**76,829**
NEPA Baseline	369,017	30.7	7.2	0.06	0.13	0.07	372,462
Project minus NEPA Baseline	**9,357**	**0.8**	**0.1**	**0.00**	**0.00**	**0.00**	**9,439**
Year 2015							
Ships	49,203	6.7	0.5				49,491
Tugboats	781	0.1	0.0				786
Terminal & Railyard Equipment	31,816	5.2	0.4				32,040
Trucks	415,426	20.4	10.2				419,020
Trains	49,675	6.9	0.5				49,973
Reefer Refrigerant Losses				0.09	0.22	0.11	944
AMP Usage	7,656	0.1	0.0				7,668
On-Terminal Electricity Usage	7,393	0.1	0.0				7,405
Worker Vehicles	1,942	0.3	0.3				2,037
Year 2015 Total	**563,892**	**39.7**	**11.9**	**0.09**	**0.22**	**0.11**	**569,364**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**261,669**	**14.5**	**6.0**	**0.04**	**0.11**	**0.05**	**264,291**
NEPA Baseline	494,217	35.2	10.4	0.08	0.18	0.09	498,977
Project minus NEPA Baseline	**69,675**	**4.5**	**1.5**	**0.01**	**0.03**	**0.02**	**70,387**

Table 3.2-34. Annual Operational GHG Emissions - Berths 136-147 Terminal - Proposed Project with Mitigation (continued)

Project Scenario/Source Type	METRIC TONS PER YEAR						
	CO_2	*CH_4*	*N_2O*	*HFC-125*	*HFC-134a*	*HFC-143a*	*CO_2e*
Year 2025							
Ships	59,147	8.1	0.6				59,493
Tugboats	871	0.1	0.0				876
Terminal & Railyard Equipment	52,220	8.5	0.6				52,587
Trucks	489,233	23.6	11.8				493,391
Trains	65,487	9.1	0.7				65,881
Reefer Refrigerant Losses				0.12	0.29	0.15	1,291
AMP Usage	13,281	0.1	0.1				13,302
On-Terminal Electricity Usage	10,106	0.1	0.0				10,123
Worker Vehicles	2,129	0.3	0.3				2,232
Year 2025 Total	**692,475**	**49.9**	**14.1**	**0.12**	**0.29**	**0.15**	**699,175**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**390,252**	**24.7**	**8.1**	**0.08**	**0.18**	**0.09**	**394,102**
NEPA Baseline	470,192	35.9	9.2	0.09	0.21	0.10	474,715
Project minus NEPA Baseline	**222,283**	**14.0**	**4.9**	**0.04**	**0.09**	**0.04**	**224,460**
Year 2038							
Ships	59,147	8.1	0.6				59,493
Tugboats	871	0.1	0.0				876
Terminal & Railyard Equipment	52,220	8.5	0.6				52,587
Trucks	489,233	23.6	11.8				493,391
Trains	65,487	9.1	0.7				65,881
Reefer Refrigerant Losses				0.12	0.29	0.15	1,291
AMP Usage	13,281	0.1	0.1				13,302
On-Terminal Electricity Usage	10,106	0.1	0.0				10,123
Worker Vehicles	2,389	0.3	0.3				2,502
Year 2038 Total	**692,735**	**49.9**	**14.1**	**0.12**	**0.29**	**0.15**	**699,445**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**390,512**	**24.7**	**8.2**	**0.08**	**0.18**	**0.09**	**394,372**
NEPA Baseline	470,225	35.9	9.2	0.09	0.21	0.10	474,748
Project minus NEPA Baseline	**222,510**	**14.0**	**4.9**	**0.04**	**0.09**	**0.04**	**224,697**

One metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2800 for HFC-125; 1300 for HFC-134a; and 3800 for HFC-143a.

Overall project emissions of CO_2e would be reduced by 8 percent by implementing VSRP. Even when accounting for the electricity used in AMP, overall project emissions of CO_2e would be reduced by 2 percent by fully implementing AMP. The use of electricity from the power grid would reduce GHG emissions during hoteling because electricity can be produced more efficiently at centralized power plants than from auxiliary engines on ships or from renewable generation sources. Table 3.2-34 shows that the mitigated Project's CO_2e emissions would increase relative to CEQA and NEPA baseline levels. Therefore, after mitigation, the Project's GHG impacts would remain significant under CEQA.

3.2.4.5 Project Alternatives Impacts and Mitigation

3.2.4.5.1 Alternative 1 - No Project Alternative

Impact AQ-1: Alternative 1 would not produce construction emissions that would exceed a SCAQMD emission significance threshold.

CEQA Impacts

No Project Alternative (Alternative 1) would not include any construction within the water or on existing backlands at the Berths 136-147 Terminal. Therefore, the Alternative would not produce any construction air quality impacts under CEQA.

NEPA Impacts

No federal action would occur for the No Project Alternative; thus, no impacts to air quality would result under NEPA

Mitigation Measures

Mitigation is not required.

Residual Impacts

There would be no residual impacts under CEQA.

Impact AQ-2: Alternative 1 construction would not result in offsite ambient air pollutant concentrations that would exceed a SCAQMD threshold of significance.

CEQA Impacts

As discussed in **Impact AQ-1**, Alternative 1 would not produce any construction air quality impacts under CEQA.

NEPA Impacts

No federal action would occur for the No Project Alternative; thus, no impacts to air quality would result under NEPA

Mitigation Measures

Mitigation is not required.

Residual Impacts

There would be no residual impacts under CEQA.

Impact AQ-3: Alternative 1 would result in operational emissions that exceed 10 tons per year of VOCs and SCAQMD thresholds of significance.

Tables 3.2-35 and 3.2-36 summarize the estimates of future unmitigated average and peak daily emissions that would occur from the operation of the No Project Alternative.

Table 3.2-35. Average Daily Emissions Associated with Operation of the No Project Alternative 1

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2007						
Ships – Fairway Transit	80	185	2,355	1,383	197	185
Ships – Precautionary Area Transit	15	31	312	194	27	26
Ships – Harbor Transit	23	29	216	109	22	20
Ships – Docking	8	8	60	26	6	6
Ships – Hoteling Aux. Sources	42	153	1,505	1,440	128	120
Tugs – Cargo Vessel Assist	2	13	79	0	3	3
Terminal Equipment	122	444	1,420	1	61	56
On-road Trucks	916	3,111	8,288	6	576	385
Trains	109	255	1,524	136	58	53
Railyard Equipment	21	82	237	0	11	10
Worker Commuter Vehicles	9	121	16	0	13	12
Relocated PHL Rail Yard	4	7	54	1	1	1
Project Year 2007 Total	**1,351**	**4,438**	**16,065**	**3,297**	**1,104**	**878**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2007	**166**	**361**	**2,593**	**573**	**82**	**47**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**Y**	**N**	**Y**	**Y**	**N**	**N**
Project Year 2015						
Ships – Fairway Transit	89	202	2,509	1,470	212	199
Ships – Precautionary Area Transit	19	39	370	222	33	31
Ships – Harbor Transit	29	36	275	136	28	26
Ships – Docking	10	10	76	33	8	8
Ships – Hoteling Aux. Sources	57	201	2,038	1,878	173	162
Tugs – Cargo Vessel Assist	3	13	71	0	3	3
Terminal Equipment	64	469	911	1	37	34
On-road Trucks	421	2,287	6,664	8	474	272
Trains	116	318	1,617	1	43	39
Railyard Equipment	11	89	151	0	6	6
Worker Commuter Vehicles	8	109	14	0	15	14
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2015 Total	**829**	**3,782**	**14,726**	**3,749**	**1,032**	**793**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change CEQA Baseline - Year 2015	**(356)**	**(294)**	**1,254**	**1,026**	**10**	**(38)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**Y**	**Y**	**N**	**N**

Table 3.2-35. Average Daily Emissions Associated with Operation of the No Project Alternative 1 (continued)

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2025						
Ships – Fairway Transit	109	244	2,963	1,728	251	236
Ships – Precautionary Area Transit	25	47	429	249	38	36
Ships – Harbor Transit	36	45	347	168	35	33
Ships – Docking	12	12	96	41	10	10
Ships – Hoteling Aux. Sources	74	255	2,653	2,358	224	210
Tugs – Cargo Vessel Assist	2	13	59	0	3	2
Terminal Equipment	33	676	254	2	10	9
On-road Trucks	211	1,058	2,845	8	292	98
Trains	122	398	1,771	1	45	41
Railyard Equipment	5	108	37	0	1	1
Worker Commuter Vehicles	6	84	11	0	19	17
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2025 Total	**638**	**2,948**	**11,495**	**4,556**	**929**	**693**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2025	**(547)**	**(1,129)**	**(1,977)**	**1,832**	**(92)**	**(138)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**Y**	**N**	**N**
Project Year 2038						
Ships – Fairway Transit	109	244	2,963	1,728	251	236
Ships – Precautionary Area Transit	25	47	429	249	38	36
Ships – Harbor Transit	36	45	347	168	35	33
Ships – Docking	12	12	96	41	10	10
Ships – Hoteling Aux. Sources	74	255	2,653	2,358	224	210
Tugs – Cargo Vessel Assist	2	13	53	0	2	2
Terminal Equipment	29	676	110	2	8	7
On-road Trucks	244	891	2,366	8	274	81
Trains	104	398	1,554	1	37	34
Railyard Equipment	4	108	14	0	1	1
Worker Commuter Vehicles	3	36	3	0	21	0
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2038 Total	**645**	**2,733**	**10,617**	**4,556**	**904**	**650**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2038	**(540)**	**(1,344)**	**(2,855)**	**1,832**	**(118)**	**(181)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**Y**	**N**	**N**

Table 3.2-36. Peak Daily Emissions Associated with the No Project Alternative 1

Project Scenario/Activity	Emissions (pounds per day)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2007						
Ships – Fairway Transit	68	160	2,076	1,230	174	163
Ships – Precautionary Area Transit	13	31	350	231	30	28
Ships – Harbor Transit	22	28	205	110	21	20
Ships – Docking	8	8	57	27	6	6
Ships – Hoteling Aux. Sources	78	267	2,789	2,468	236	221
Tugs – Cargo Vessel Assist	5	24	147	0	6	6
Terminal Equipment	702	2,561	8,184	5	352	324
On-road Trucks	1,254	4,259	11,347	9	788	528
Trains	89	208	1,245	111	47	43
Railyard Equipment	17	67	193	0	9	8
Worker Commuter Vehicles	10	137	18	0	15	14
Relocated PHL Rail Yard	4	7	54	1	1	1
Project Year 2007 Total	**2,269**	**7,757**	**26,665**	**4,191**	**1,685**	**1,361**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change CEQA Baseline - Year 2007	**292**	**822**	**3,655**	**341**	**78**	**32**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**Y**	**N**	**N**
Project Year 2015						
Ships – Fairway Transit	117	265	3,260	1,913	276	258
Ships – Precautionary Area Transit	28	57	527	312	47	44
Ships – Harbor Transit	41	52	392	191	40	37
Ships – Docking	14	14	109	46	12	11
Ships – Hoteling Aux. Sources	100	353	3,562	3,304	303	284
Tugs – Cargo Vessel Assist	4	24	127	0	5	5
Terminal Equipment	413	3,013	5,846	7	237	218
On-road Trucks	576	3,131	9,124	11	648	372
Trains	114	314	1,595	1	42	39
Railyard Equipment	11	88	149	0	6	6
Worker Commuter Vehicles	10	135	17	0	19	17
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2015 Total	**1,432**	**7,454**	**24,738**	**5,785**	**1,635**	**1,291**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change CEQA Baseline - Year 2015	**(545)**	**519**	**1,728**	**1,934**	**28**	**(38)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**Y**	**Y**	**N**	**N**

Table 3.2-36. Peak Daily Emissions Associated with the No Project Alternative 1

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2025						
Ships – Fairway Transit	175	374	4,309	2,489	371	347
Ships – Precautionary Area Transit	43	78	678	381	62	58
Ships – Harbor Transit	61	77	599	286	60	56
Ships – Docking	21	21	166	69	18	17
Ships – Hoteling Aux. Sources	100	353	3,562	3,304	303	284
Tugs – Cargo Vessel Assist	4	24	94	0	4	4
Terminal Equipment	176	3,549	1,334	8	51	47
On-road Trucks	288	1,448	3,896	12	400	134
Trains	96	314	1,396	1	35	32
Railyard Equipment	4	85	29	0	1	1
Worker Commuter Vehicles	7	92	12	0	21	19
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2025 Total	**976**	**6,422**	**16,104**	**6,550**	**1,325**	**999**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change CEQA Baseline - Year 2025	**(1,001)**	**(513)**	**(6,906)**	**2,700**	**(281)**	**(330)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**Y**	**N**	**N**
Project Year 2038						
Ships – Fairway Transit	175	374	4,309	2,489	371	347
Ships – Precautionary Area Transit	43	78	678	381	62	58
Ships – Harbor Transit	61	77	599	286	60	56
Ships – Docking	21	21	166	69	18	17
Ships – Hoteling Aux. Sources	100	353	3,562	3,304	303	284
Tugs – Cargo Vessel Assist	4	24	94	0	4	4
Terminal Equipment	154	3,549	575	8	41	38
On-road Trucks	334	1,220	3,239	12	375	111
Trains	82	314	1,224	1	29	27
Railyard Equipment	3	85	11	0	1	1
Worker Commuter Vehicles	4	43	4	0	26	24
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2038 Total	**982**	**6,144**	**14,492**	**6,550**	**1,290**	**966**
CEQA Baseline - Year 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change CEQA Baseline - Year 2038	**(995)**	**(791)**	**(8,518)**	**2,700**	**(317)**	**(363)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**Y**	**N**	**N**

CEQA Impact Determination

The data in Table 3.2-35 show that in the following years, the net change in average daily emissions between the unmitigated Alternative 1 and CEQA Baseline would exceed the following SCAQMD daily thresholds: (1) in 2007, VOC, NO_x, SO_x; (2) in 2015, NO_x and SO_x; and (3) in 2025 and 2038, NO_x. The net change in VOC emissions between Alternative 1 and the CEQA Baseline also would exceed 10 tons in 2007 (See Table D1.2-NP-38 in Appendix D1).

The data in Table 3.2-35 show that in the following years, the net change in peak daily emissions between the unmitigated Alternative 1 and CEQA Baseline would exceed the following SCAQMD daily thresholds: (1) in 2007, all pollutants except PM_{10} and $PM_{2.5}$; (2) in 2015, NO_x and SO_x; and (3) in 2025 and 2038, SO_x. As a result, these exceedances of the SCAQMD emission thresholds represent significant levels of emissions produced during the operation of Alternative 1 under CEQA.

NEPA Impact Determination

No federal action would occur for the No Project Alternative; thus, no impacts to air quality would result under NEPA

Mitigation Measures

Mitigation measures are not applicable to Alternative 1 during No Project operations, as this alternative would not involve approval of new uses at Berths 136-147.

Residual Impacts

As there are no applicable mitigation measures, impacts would remain significant under CEQA.

Impact AQ-4: Alternative 1 operations would result in offsite ambient air pollutant concentrations that would exceed a SCAQMD threshold of significance.

Ambient pollutant impacts produced from the operation of Alternative 1 were estimated by multiplying the results of the operational dispersion modeling analysis for the proposed Project by the ratio of Alternative 1 to proposed Project operational emissions that would occur within the Berths 136-147 terminal and in direct proximity to the facility during the year 2010. Emission sources considered in this comparison include (1) OGV and tug harbor transit within 1 mile of Berths 136-147, (2) OGV hoteling, (3) terminal and rail yard equipment, (4) trains and truck within 1 mile of the terminal, and (5) locomotives within the Pier A railyard. This approach produced adequate results, as the operational locations and activities of most emission sources are similar for both the proposed Project and Project Alternative scenarios.

Table 3.2-37 presents the maximum offsite ground level concentrations of criteria pollutants estimated for the operation of Alternative 1 without mitigation. These data show that total maximum NO_2 concentrations would exceed the 1-hour and annual SCAQMD thresholds. Additionally, operation of Alternative 1 would produce maximum

CEQA and NEPA increments for 24-hour $PM_{10}/PM_{2.5}$ concentrations that would exceed the SCAQMD $PM_{10}/PM_{2.5}$ threshold of 2.5 µg/m³.

Table 3.2-37. Maximum Offsite Ambient Concentrations – Alternative 1 Operations Without Mitigation

Pollutant	*Averaging Time*	*Maximum Impact from No Project Emissions (µg/m³)*	*Background Pollutant Concentration (µg/m³)*	*Total Maximum No Project Impact (µg/m³)*	*SCAQMD Threshold a (µg/m³)*
NO_2	1-hour	1,498	263	**1,761**	338
	Annual	30	54	**84**	56
CO	1-hour	2,222	6,629	8,851	23,000
	8-hour	576	5,371	5,947	10,000
				Maximum CEQA Increment (µg/m³) [b]	
PM_{10}	24-hour			**16.5**	2.5
$PM_{2.5}$	24-hour			**15.5**	2.5

[a] Exceedances of the thresholds are indicated in bold. The thresholds for $PM_{10}/PM_{2.5}$ are incremental thresholds and therefore only impacts from project emissions without background pollutant concentrations are compared to the thresholds. The thresholds for NO_2 and CO are combined thresholds and therefore impacts from project emissions plus background pollutant concentrations are compared to the thresholds.

[b] Equal to No Project impact minus CEQA Baseline impact. There are no NEPA impacts associated with the No Project Alternative.

[d] NO_2 concentrations based upon source/maximum impact locations distances of either 500 or 1000 meters. The NO_x to NO_2 conversion rates for these distances were 25.8 and 46.7 percent (SCAQMD, 2003c). This is a conservative approach, as the majority of emission sources that contribute to the maximum NO_2 impact are closer than 500 meters of this location.

CEQA Impact Determination

Operation of Alternative 1 would contribute to significant levels of 1-hour and annual NO_2 and 24-hour PM_{10} and $PM_{2.5}$ concentrations under CEQA.

NEPA Impact Determination

No federal action would occur for the No Project Alternative; thus, no impacts to air quality would result under NEPA.

Mitigation Measures

Mitigation measures are not applicable to Alternative 1 during No Project operations, as this alternative would not involve approval of new uses at Berths 136-147.

Residual Impacts

With no mitigation required, there would be no residual impacts.

Impact AQ-5: Alternative 1 would not create objectionable odors at the nearest sensitive receptor.

CEQA Impacts

Operation of the proposed Project would not create objectionable odors at the nearest sensitive receptors. Since Alternative 1 would produce lower operational emissions compared to the proposed Project, this alternative would produce less than significant impacts under CEQA in regard to criterion **AQ-5**.

NEPA Impacts

No federal action would occur for the No Project Alternative; thus, no impacts to air quality would result under NEPA

Mitigation Measures

No mitigation required

Residual Impacts

With no mitigation required, residual impacts would be less than significant.

AQ-6: Alternative 1 would expose receptors to significant levels of TACs.

An analysis to evaluate public cancer risks generated by No Project operational emissions of TACs was performed by the same methods used for the proposed Project cancer analysis. Non-cancer effects from No Project TACs were estimated by multiplying the results of the proposed Project non-cancer analysis with the ratio of No Project to proposed Project operational emissions that would occur within Berths 136-147 Terminal and in direct proximity to the facility during the year 2010. This approach produced adequate results, as the operational locations and activities of most emission sources are similar for both the proposed Project and Project Alternative scenarios. Table 3.2-38 presents the results of these analyses for each receptor type.

Figures D3-18 and D3-19 in Appendix D3 show the distribution of predicted residential cancer risks for (1) No Project (also shown in Figure 3.2-4) and (2) No Project CEQA increment (unmitigated Alternative 1 minus CEQA Baseline).

CEQA Impact Determination

The data in Table 3.2-38 show that the maximum CEQA increment for residential cancer risk predicted for the unmitigated No Project Alternative is 107 in a million (107 $\times 10^{-6}$), which exceeds the significance criterion of 10 in a million. The location of this impact is near the intersection of C Street and Mar Vista Avenue in Wilmington. The maximum cancer risk increments at a residential, occupational, sensitive, and recreational receptor also would exceed the 10 in a million significance criterion. The maximum cancer risk increment at a student receptor would be less than significant. The maximum CEQA increments for non-cancer effects would not exceed the significance criterion of 1.0 at any receptor type. Therefore, operational activities from the No Project Alternative would produce significant cancer risks under CEQA.

Table 3.2-38. Maximum Health Impacts due to the No Project Alternative without Mitigation.

Health Impact	*Receptor Type*	MAXIMUM PREDICTED IMPACT[1]			*Significance Threshold3*
		No Project	*CEQA Baseline*	*CEQA Increment*[2]	
Cancer Risk	Residential	224×10^{-6}	117×10^{-6}	**107×10^{-6}**	10 × 10-6
	Occupational	97×10^{-6}	48×10^{-6}	**49×10^{-6}**	
	Sensitive	134×10^{-6}	70×10^{-6}	**64×10^{-6}**	
	Student	2.8×10^{-6}	1.5×10^{-6}	1.3×10^{-6}	
	Recreational	103×10^{-6}	$55. \times 10^{-6}$	**48×10^{-6}**	
Chronic Hazard Index	Residential			0.07	1.0
	Occupational			0.13	
	Sensitive			0.08	
	Student			0.04	
	Recreational			0.19	
Acute Hazard Index[4]	Residential			0.37	1.0
	Occupational			0.54	
	Sensitive			0.31	
	Student			0.26	
	Recreational			0.45	

Notes: (1) Data represent project scenario impacts that contribute to maximum CEQA incremental impacts.

(2) The CEQA Increment represents No Project impact minus CEQA Baseline impact. However, non-cancer increments estimated by factoring proposed Project incremental results with the ratio of No Project/proposed Project emissions.

(3) Exceedances of the significance criteria are in bold. The significance thresholds only apply to the CEQA increments.

(4) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type.

No federal action would occur for the No Project Alternative; thus, no impacts to Health Impacts would result under NEPA

NEPA Impact Determination

No federal action would occur for the No Project Alternative; thus, no impacts to air quality would result under NEPA.

Mitigation Measures

Mitigation measures are not applicable to Alternative 1 during No Project operations, as this alternative would not involve approval of new uses at Berths 136-147.

Residual Impacts

With no mitigation measures applicable, residual impacts would remain significant.

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Figure 3.2-4. Alternative 1 (No Project) Unmitigated Residential Cancer Risk Estimate - Berths 136-147 Terminal Project EIS/EIR.

Impact AQ-7: Alternative 1 would not conflict with or obstruct implementation of an applicable AQMP.

Similar to the proposed Project, Alternative 1 would comply with the 2003 AQMP emission reduction measures that are designed to bring the SCAB into attainment of the state and national ambient air quality standards. The No Project would accommodate lower cargo throughputs at the Port compared to the proposed Project. Since the 2003 AQMP assumes growth associated with the proposed Project, Alternative 1 would not exceed the future growth projections in the 2003 AQMP and it would not conflict with or obstruct implementation of the SIP.

CEQA Impact Determination

In regard to criterion **AQ-7**, the No Project Alternative would produce less than significant impacts under CEQA.

NEPA Impact Determination

No federal action would occur for the No Project Alternative; thus, no impacts to air quality would result under NEPA

Mitigation Measures

No mitigation required.

Residual Impacts

With no mitigation required, there would be less than significant residual impacts.

Impact AQ-8: Alternative 1 would produce GHG emissions that would exceed CEQA and NEPA baseline levels.

Table 3.2-39 summarizes the annual GHG emissions that would occur within California from the operation of the No Project Alternative.

CEQA Impact Determination

The data in Table 3.2-39 show that in each future project year, annual CO_2e emissions would increase from CEQA baseline levels. As a result, the No Project Alternative would produce significant levels of GHG emissions under CEQA.NEPA Impact Determination

The data in Table 3.2-39 show that in 2007, 2025, and 2038, annual CO_2e emissions would increase from NEPA baseline levels. CO_2e emissions in 2015 would be less than NEPA baseline levels.

Mitigation Measures

Mitigation measures are not applicable to Alternative 1 during No Project operations, as this alternative would not introduce new uses to Berths 136-147.

Table 3.2-39. Annual Operational GHG Emissions - Berths 136-147 Terminal — Alternative 1

Project Scenario/Source Type	METRIC TONS PER YEAR						
	CO_2	*CH_4*	*N_2O*	*HFC-125*	*HFC-134a*	*HFC-143a*	*CO_2e*
Year 2007							
Ships	81,191	10.7	0.7				81,641
Tugboats	731	0.1	0.0				735
Terminal & Railyard Equipment	20,551	3.3	0.2				20,695
Trucks	232,432	11.6	5.8				234,481
Trains	40,158	5.6	0.4				40,399
Reefer Refrigerant Losses				0.06	0.13	0.07	590
AMP Usage							0
On-Terminal Electricity Usage	4,616	0.0	0.0				4,623
Worker Vehicles	1,061	0.2	0.2				1,117
Year 2007 Total	**380,739**	**31.6**	**7.4**	**0.06**	**0.13**	**0.07**	**384,280**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**78,516**	**6.4**	**1.4**	**0.01**	**0.02**	**0.01**	**79,208**
Year 2015							
Ships	98,312	13.0	0.9				98,856
Tugboats	764	0.1	0.0				769
Terminal & Railyard Equipment	25,521	4.2	0.3				25,701
Trucks	292,612	14.4	7.2				295,149
Trains	49,796	6.9	0.5				50,095
Reefer Refrigerant Losses				0.07	0.17	0.08	732
AMP Usage							0
On-Terminal Electricity Usage	5,733	0.0	0.0				5,742
Worker Vehicles	1,499	0.2	0.2				1,572
Year 2015 Total	**474,237**	**38.9**	**9.1**	**0.07**	**0.17**	**0.08**	**478,617**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**172,014**	**13.7**	**3.2**	**0.02**	**0.06**	**0.03**	**173,544**
Year 2025							
Ships	118,573	15.7	1.1				119,231
Tugboats	764	0.1	0.0				769
Terminal & Railyard Equipment	37,623	6.1	0.4				37,887
Trucks	310,880	15.0	7.5				313,529
Trains	62,275	8.7	0.6				62,649
Reefer Refrigerant Losses				0.09	0.21	0.10	917
AMP Usage							0
On-Terminal Electricity Usage	7,180	0.1	0.0				7,192
Worker Vehicles	1,580	0.2	0.2				1,656
Year 2025 Total	**538,875**	**45.9**	**9.9**	**0.09**	**0.21**	**0.10**	**543,829**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**236,652**	**20.7**	**4.0**	**0.04**	**0.10**	**0.05**	**238,757**

Table 3.2-39. Annual Operational GHG Emissions - Berths 136-147 Terminal — Alternative 1 (continued)

Project Scenario/Source Type	METRIC TONS PER YEAR						
	CO_2	*CH_4*	*N_2O*	*HFC-125*	*HFC-134a*	*HFC-143a*	*CO_2e*
Year 2038							
Ships	118,573	15.7	1.1				119,231
Tugboats	764	0.1	0.0				769
Terminal & Railyard Equipment	37,623	6.1	0.4				37,887
Trucks	310,880	15.0	7.5				313,529
Trains	62,275	8.7	0.6				62,649
Reefer Refrigerant Losses				0.09	0.21	0.10	917
AMP Usage							0
On-Terminal Electricity Usage	7,180	0.1	0.0				7,192
Worker Vehicles	1,697	0.2	0.2				1,777
Year 2038 Total	**538,993**	**45.9**	**9.9**	**0.09**	**0.21**	**0.10**	**543,951**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**236,769**	**20.8**	**4.0**	**0.04**	**0.10**	**0.05**	**238,878**

One metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.
CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2800 for HFC-125; 1300 for HFC-134a; and 3800 for HFC-143a.
No federal action would occur for the No Project Alternative; thus, no impacts to air quality would result under NEPA

Residual Impacts

Impacts would remain significant under CEQA.

NEPA Impact Determination

No federal action would occur for the No Project Alternative; thus, no impacts to air quality would result under NEPA

3.2.4.5.2 Alternative 2 - Reduced Project: Proposed Project Without the 10-Acre Fill

Impact AQ-1: Construction of Alternative 2 would produce emissions that would exceed SCAQMD emission significance thresholds.

Construction activities associated with the Reduced Project Alternative (Alternative 2) are identical to the proposed Project Phase 1 activities, as the Alternative would not construct Phase 2. Table 3.2-18 presents the unmitigated daily air emissions associated with the proposed Project Phase 1 and Alternative 2 construction activities.

CEQA Impact Determination

During a peak day of activity, construction of Alternative 2 would produce significant levels of VOC, NO_x, SO_x, PM_{10}, and $PM_{2.5}$ emissions. In regard to $PM_{10}/PM_{2.5}$ emissions, the overwhelming majority of this pollutant emitted during construction would occur in the form of fugitive dust.

NEPA Impact Determination

During a peak day of activity, construction of Alternative 2 would produce significant levels of NO_x and SO_x emissions under NEPA.

Mitigation Measures

To reduce construction emissions from Alternative 2, **Mitigation Measures AQ-1** through **AQ-5** would apply to this alternative.

Residual Impacts

Table 3.2-18 shows that implementation of **Mitigation Measures AQ-1** through **AQ-3** and **AQ-5** would reduce construction emissions from Alternative 2. **Mitigation Measures AQ-4,** which was not included in the mitigated emission calculations, would further reduce construction emissions. These data show that mitigated emissions from construction of Alternative 2 under CEQA would exceed the VOC, NO_x, SO_x, PM_{10}, and $PM_{2.5}$ SCAQMD emission thresholds. As a result, these emissions would remain significant under CEQA. The data in Table 3.2-18 also show that mitigated construction emissions under NEPA would exceed the NO_x and SO_x SCAQMD emission thresholds. As a result, mitigated construction emissions from Alternative 2 would remain significant under NEPA.

Impact AQ-2: Construction of Alternative 2 would result in offsite ambient air pollutant concentrations that would exceed a SCAQMD threshold of significance.

Table 3.2-20 presents the maximum offsite ground level concentrations of criteria pollutants estimated for Alternative 2 construction activities without mitigation.

CEQA Impact Determination

Without mitigation, construction emissions from Alternative 2 would produce impacts that would exceed the SCAQMD 1-hour NO_2 and 24-hour PM_{10} and $PM_{2.5}$ ambient thresholds. Therefore, these represent significant air quality impacts under CEQA.

NEPA Impact Determination

Without mitigation, construction emissions from Alternative 2 would produce impacts that would exceed the SCAQMD 1-hour NO_2 and 24-hour PM_{10} and $PM_{2.5}$ ambient thresholds. Therefore, these represent significant air quality impacts under NEPA.

Mitigation Measures

Table 3.2-21 presents the maximum offsite ground level pollutant concentrations estimated for the construction of Alternative 2 after mitigation. These data show that **Mitigation Measures AQ-1** through **AQ-3** and **AQ-5** would reduce all pollutant impacts, but not to less than the SCAQMD ambient thresholds for NO_2, PM_{10}, or $PM_{2.5}$.

Residual Impacts

Implementation of **Mitigation Measures AQ-1** through **AQ-3** and **AQ-5** would reduce ambient pollutant impacts from construction of Alternative 2. However, with mitigation, Alternative 2 construction emissions would produce impacts that would exceed the SCAQMD 1-hour NO_2 and 24-hour $PM_{10}/PM_{2.5}$ ambient thresholds. As a result, Alternative 2 residual impacts would remain significant for 1-hour NO_2 and 24-hour $PM_{10}/PM_{2.5}$ under CEQA and NEPA.

Impact AQ-3: Alternative 2 would result in operational emissions that exceed 10 tons per year of VOCs and SCAQMD thresholds of significance.

Alternative 2 would produce operational emissions that are (1) approximately two percent greater than those estimated for the proposed Project in year 2007 and (2) equal to those estimated for the proposed Project in years 2015, 2025, and 2038. The higher Alternative 2 emissions in 2007 are due to slightly a higher throughput at this time compared to the Project. As a result, emissions and ambient impacts produced from Alternative 2 are essentially equal to those estimated for the proposed Project. Table 3.2-22 summarizes the estimates of unmitigated average daily emissions that would occur from the operation of Alternative 2. Table 3.2-23 summarizes the estimates of unmitigated peak daily emissions that would occur from the operation of Alternative 2.

CEQA Impact Determination

The data in Table 3.2-22 show that in the following Project years, the net change in average daily operational emissions between the unmitigated Project and CEQA Baseline would exceed the following SCAQMD daily thresholds: (1) in 2007, VOC, NO_x, and SO_x; (2) in 2015, all thresholds except VOC; (3) in 2025, NO_x, SO_x, and pm; and (4) in 2038, SO_x. The net change in VOC emissions between the unmitigated Project and CEQA Baseline also would exceed 10 tons in Project year 2007 (See Table D1.2-PP-39 in Appendix D1).

The data in Table 3.2-23 show that during a peak day of activity in the following Project years, operational emissions between the unmitigated Project and CEQA Baseline would exceed the following SCAQMD daily thresholds: (1) in 2007, all thresholds; (2) in 2015, all thresholds except VOC; (3) in 2025 and 2038, the SO_x threshold. As a result, these exceedances of the SCAQMD emission thresholds represent significant levels of emissions produced during the operation of the proposed Project under CEQA.

NEPA Impact Determination

The data in Table 3.2-22 show that during each Project year, the net change in average daily operational emissions between the unmitigated Project and NEPA Baseline would exceed all SCAQMD daily thresholds. Additionally, the net change in VOC emissions between the unmitigated Project and NEPA Baseline would exceed 10 tons for each Project year (See Table D1.2-NFAB-Mit-43 in Appendix D1).

The data in Table 3.2-23 show that during a peak day of activity, emissions between the unmitigated Project and NEPA Baseline would exceed all SCAQMD daily thresholds during each Project year. As a result, these exceedances of the SCAQMD emission thresholds represent significant levels of emissions produced during the operation of the proposed Project under NEPA.

Mitigation Measures

To reduce operational emissions from Alternative 2, **Mitigation Measures AQ-6** through **AQ-18** would apply to this alternative.

Residual Impacts

From a CEQA perspective, Table 3.2-25 shows that proposed Project average daily operational emissions after mitigation would exceed the NO_x and SO_x SCAQMD daily thresholds in 2007. The net change in annual emissions between the mitigated Project and CEQA Baseline would not exceed the criterion of 10 tons per year VOC in any project year (See Table D1.2.PPMit-43 in Appendix D1). By 2015, the mitigated Project would produce lower average daily emissions of all pollutants compared to the CEQA baseline.

The data in Table 3.2-26 show that during a peak day of activity, the net change in emissions between the mitigated Project and CEQA Baseline would exceed the VOC, NO_x, and SO_x SCAQMD daily thresholds in 2007 and would remain below all thresholds in 2015 and thereafter. As a result, these exceedances of the SCAQMD emission thresholds represent significant levels of emissions produced during the operation of the mitigated Project under CEQA. By 2015, the mitigated Project would produce lower peak daily emissions of all pollutants compared to the CEQA baseline.

From a NEPA perspective, the data in Table 3.2-25 show that in the following years, the net change in average daily emissions between the mitigated Project and NEPA Baseline would exceed the following SCAQMD daily thresholds: (1) in 2007, NO_x; (2) in 2015, VOC and NO_x; (3) in 2025, all pollutants; and (4) in 2038, all pollutants except SO_x. The net change in VOC emissions between the mitigated Project and NEPA Baseline would exceed the annual threshold of 10 tons in year 2015 and thereafter (See Table D1.2--NFAB-43 in Appendix D1).

The data in Table 3.2-26 show that during a peak day of activity, emissions from the mitigated Project compared to the NEPA Baseline would exceed the following SCAQMD daily thresholds: (1) in 2007, all thresholds except CO; (2) in 2015, VOC, CO, and NO_x; and (3) in 2025 and 2038, all pollutants except SO_x. As a result, these exceedances of the SCAQMD emission thresholds represent significant levels of emissions produced during the operation of the Project under NEPA.

Impact AQ-4: Operation of Alternative 2 would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance.

Table 3.2-27 presents the maximum offsite ground level concentrations of criteria pollutants estimated for Alternative 2 operations without mitigation. These data show that total maximum NO_2 concentrations would exceed the 1-hour and annual SCAQMD thresholds. Additionally, operation of the alternative would exceed the SCAQMD $PM_{10}/PM_{2.5}$ threshold of 2.5 $\mu g/m^3$ under CEQA and NEPA.

CEQA Impact Determination

Operation of Alternative 2 would contribute to significant levels of 1-hour and annual NO_2 and 24-hour PM_{10} and $PM_{2.5}$ concentrations under CEQA.

NEPA Impact Determination

Operation of Alternative 2 would contribute to significant levels of 1-hour and annual NO_2 and 24-hour PM_{10} and $PM_{2.5}$ concentrations under NEPA.

Mitigation Measures

Table 3.2-28 presents the maximum off-site ground level concentrations of criteria pollutants estimated for Alternative 2 operations due to the effects of **Mitigation Measures AQ-6** through **AQ-12**.

Residual Impacts

Alternative 2 residual air quality impacts would be significant for 1-hour NO_2 and 1-hour and annual NO_2 and 24-hour PM_{10} and $PM_{2.5}$ under CEQA and NEPA.

Impact AQ-5: Alternative 2 would not create objectionable odors at the nearest sensitive receptor.

Operation of Alternative 2 would produce nearly identical odorous impacts as those estimated for the proposed Project.

CEQA Impact Determination

Operation of Alternative 2 would produce less than significant odor impacts under CEQA.

NEPA Impact Determination

Operation of Alternative 2 would produce less than significant odor impacts under NEPA.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Impact AQ-6: Alternative 2 would expose receptors to significant levels of TACs.

Table 3.2-29 presents estimates of individual lifetime cancer risk, chronic non-cancer hazard index, and acute non-cancer hazard index for impacts that correspond to the maximum CEQA increment (Alternative 2 minus CEQA Baseline) and NEPA increment (Alternative 2 minus NEPA). Figures D3-11 through D3-13 in Appendix D3 show the distribution of residential cancer risks predicted for (1) Alternative 2, (2) unmitigated CEQA increment (unmitigated Alternative 2 minus CEQA Baseline), and (3) NEPA increment (unmitigated Alternative 2 minus NEPA Baseline).

CEQA Impact Determination

The maximum unmitigated CEQA increment for residential cancer risk is predicted to be 88 in a million. This risk value exceeds the significance criterion of 10 in a million. The maximum cancer risk increments at an occupational, sensitive, and recreational receptor also would exceed the 10 in a million significance criterion. The maximum cancer risk increment at a student receptor would be less than significant.

The prediction for the maximum CEQA increment for acute non-cancer effects would exceed the 1.0 hazard index significance criterion at all receptor types in proximity to the Project terminal except student. The prediction for the maximum CEQA increment for chronic non-cancer effects would remain below the significance criterion of 1.0 at all receptor types.

NEPA Impact Determination

The maximum unmitigated NEPA increment for residential cancer risk is 229 in a million, which exceeds the significance criterion of 10 in a million. The prediction for the maximum NEQA increment for acute non-cancer effects would exceed the 1.0 hazard index significance criterion at all receptor types in proximity to the Project terminal. The prediction for the maximum NEPA increment for chronic non-cancer effects would remain below the 1.0 hazard index significance criterion at all receptor types.

Mitigation Measures

Consistent with the approach taken to mitigate health impacts from the proposed Project, the mitigated HRA considered the ability of **Mitigation Measures AQ-6** through **AQ-12** to reduce emissions of TACs from Alternative 2. Table 3.2-30 summarizes the maximum health impacts predicted to occur at each receptor type due to the operation of Alternative 2 with mitigation. Figures D3-14 through D3-16 in Appendix D3 show the distribution of residential cancer risks predicted for (1) mitigated Alternative 2, (2) mitigated CEQA increment, and (3) mitigated NEPA increment.

Residual Impacts

Table 3.2-30 shows that the maximum NEPA increment for residential, occupational, and sensitive cancer risks predicted for the mitigated Project is 20, 10.1, and 13.6 in a million. As a result, the mitigated Project would produce significant cancer risks compared to the NEPA Baseline to these receptor types. Implementation of **Mitigation Measures AQ-6** through **AQ-12** would reduce all other predicted cancer and non-cancer public health impacts from Alternative 2 to less than significant levels under CEQA and NEPA.

Impact AQ-7: Alternative 2 would not conflict with or obstruct implementation of an applicable AQMP.

Similar to the proposed Project, Alternative 2 would comply with the 2003 AQMP emission reduction measures that are designed to bring the SCAB into attainment of the state and national ambient air quality standards. Alternative 2 would be consistent with the Port growth projections in the 2003 AQMP and it would not conflict with or obstruct implementation of the SIP.

CEQA Impact Determination

In regard to criterion **AQ-7**, Alternative 2 would produce less than significant impacts under CEQA.

NEPA Impact Determination

In regard to criterion **AQ-7**, Alternative 2 would produce less than significant impacts under NEPA.

Mitigation Measures

Impacts would be less than significant; therefore, mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Impact AQ-8: Alternative 2 would produce GHG emissions that would exceed 2003 baseline levels.

Table 3.2-40 summarizes the total GHG construction emissions associated with Alternative 2. The annual GHG emissions that would occur within California from the operation of Alternative 2 would be nearly identical to the proposed Project, as shown in Table 3.2-32.

CEQA Impact Determination

The data in Table 3.2-32 show that in each future project year, annual operational CO_2e emissions would increase from CEQA baseline levels. As a result, Alternative 2 would produce significant levels of GHG emissions under CEQA.

NEPA Analysis

The data in Table 3.2-32 show that in each future project year, annual operational CO_2e emissions would increase from NEPA baseline levels.

Mitigation Measures

Measures that reduce fuel usage and electricity consumption from Alternative 2 emission sources would reduce proposed GHG emissions. Project mitigation measures that would accomplish this effect include **AQ-6, AQ-10, AQ-14, AQ-16, AQ-19, AQ-20, AQ-21, AQ-22, AQ-23,** and **AQ-24.**

Table 3.2-40. Total GHG Emissions from Berths 136-147 Terminal Construction Activities — Alternative 2

Construction Activity	Total Emissions (metric tons)			
	CO_2	CH_4	N_2O	CO_2e
Wharf Improvements at Berths 144-147	3,613	0.53	0.04	3,637
89 Acres of Backland Improvement at Berths 142-147	392	0.05	0.01	395
Construct a New Admin. Bldg, Main Gate, and Worker Parking Lot	217	0.03	0.00	219
Construct a New Maintenance and Repair Facility-Berths 136-147	300	0.05	0.00	303
Harry Bridges Blvd. Realignment	447	0.05	0.01	451
Construction of a 46-Acre Rail Yard at Berth 200	1,410	0.17	0.03	1,422
5 Acres of Backland Improvements at Berts 134-135	19	0.00	0.00	19
Construction of B142-147 12-Acre ICTF and 19-Acre Backlands	548	0.07	0.01	553
Existing Cranes Removal at Berth 136	8	0.00	0.00	8
Construction of Harry Bridges Blvd. Buffer	1,198	0.17	0.02	1,207
Install Cranes at Berth 136 & Berth 144	120	0.02	0.00	121
Worker Vehicles	1,613	0.26	0.26	1,698
Total Emissions	**9,885**	**1.39**	**0.37**	**10,031**

One metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

The annual GHG emissions that would occur within California from the operation of Alternative 2 with mitigation would be similar to the proposed Project with mitigation, shown in Table 3.2-34. The effects of Mitigation Measures AQ-6 (AMP for ships) and AQ-10 (VSRP for ships) were included in the emission estimates. The potential effects of the remaining mitigation measures (**AQ-14, AQ-16, AQ-19, AQ-20, AQ-21, AQ-22, AQ-23,** and **AQ-24**) are described qualitatively under each measure's heading in Section 3.2.4.4, Impact **AQ-8**, for the proposed Project.

Residual Impacts

Impacts would remain significant under CEQA.

3.2.4.5.3 Alternative 3 - Reduced Wharf

Impact AQ-1: Construction of Alternative 3 would produce emissions that would exceed SCAQMD emission significance thresholds.

Construction activities associated with the Reduced Wharf Alternative (Alternative 3) are similar to the proposed Project Phase 1 activities, except that the alternative would not construct 705 feet of new wharf at Berths 144-147. Alternative 3 does not include any of the proposed Project Phase 2 construction activities. The alternative would produce the same peak daily construction emissions as those identified in Table 3.2-18. However, the Alternative would produce fewer total construction emissions compared to the proposed Project. Appendix D.1.2 present calculations of emissions that would occur from construction of Alternative 3.

CEQA Impact Determination

During a peak day of activity, construction of Alternative 3 would produce significant levels of VOC, NO_x, SO_x, PM_{10}, and $PM_{2.5}$ emissions. In regard to $PM_{10}/PM_{2.5}$ emissions, the overwhelming majority of this pollutant emitted during construction would occur in the form of fugitive dust.

NEPA Impact Determination

During a peak day of activity, construction of Alternative 3 would produce significant levels of NO_x and SO_x emissions under NEPA.

Mitigation Measures

To reduce construction emissions from Alternative 3, **Mitigation Measures AQ-1** through **AQ-5** would apply to this alternative.

Residual Impacts

Table 3.2-18 presents the mitigated daily construction emissions associated with Alternative 3. Mitigated emissions from construction of Alternative 3 under CEQA would exceed the VOC, NO_x, SO_x, PM_{10}, and $PM_{2.5}$ SCAQMD emission thresholds. As a result, these emissions would remain significant under CEQA. Mitigated construction emissions under NEPA would exceed the NO_x and SO_x SCAQMD emission thresholds. As a result, mitigated construction emissions from Alternative 3 would remain significant under NEPA.

Impact AQ-2: Construction of Alternative 3 would result in offsite ambient air pollutant concentrations that would exceed a SCAQMD threshold of significance.

Peak daily emissions used to evaluate ambient impacts from the construction of Alternative 3 would be identical to those evaluated for the proposed Project. Therefore, the data in Table 3.2-20 represent the maximum offsite ground level concentrations of criteria pollutants that would occur for Alternative 3 construction activities without mitigation.

CEQA Impact Determination

Without mitigation, construction emissions from Alternative 3 would produce impacts that would exceed the SCAQMD 1-hour NO_2 and 24-hour PM_{10} and $PM_{2.5}$ ambient thresholds. Therefore, these represent significant air quality impacts under CEQA.

NEPA Impact Determination

Without mitigation, construction emissions from Alternative 3 would produce impacts that would exceed the SCAQMD 1-hour NO_2 and 24-hour PM_{10} and $PM_{2.5}$ ambient thresholds. Therefore, these represent significant air quality impacts under NEPA.

Mitigation Measures

To reduce construction emissions from Alternative 3, **Mitigation Measures AQ-1** through **AQ-5** would apply to this alternative. Table 3.2-21 presents the maximum offsite ground level pollutant concentrations estimated for construction of Alternative 3 after mitigation. These data show that **Mitigation Measures AQ-1** through **AQ-5** would reduce all pollutant impacts, but not to less than the SCAQMD ambient thresholds for NO_2, PM_{10}, or $PM_{2.5}$.

Residual Impacts

Implementation of **Mitigation Measures AQ-1** through **AQ-5** would reduce ambient pollutant impacts from construction of Alternative 3. However, with mitigation, construction emissions from the Alternative would produce impacts that would exceed the SCAQMD 1-hour NO_2 and 24-hour PM_{10}/$PM_{2.5}$ ambient thresholds. As a result, Alternative 3 residual impacts would remain significant for 1-hour NO_2 and 24-hour PM_{10}/$PM_{2.5}$ under CEQA and NEPA.

Impact AQ-3: Alternative 3 would result in operational emissions that exceed 10 tons per year of VOCs and SCAQMD thresholds of significance.

Tables 3.2-41 and 3.2-42 present estimates of unmitigated average and peak daily emissions that would occur from the operation of Alternative 3.

CEQA Impact Determination

The data in Table 3.2-41 show that in the following Project years, the net change in average daily emissions between the unmitigated Alternative 3 and CEQA Baseline would exceed the following SCAQMD daily thresholds: (1) in 2007, VOC, NO_x, and SO_x; (2) in 2015, NO_x and SO_x; and (3) in 2025 and thereafter, SO_x. The net change in VOC emissions between the unmitigated Alternative 3 and CEQA Baseline also would exceed 10 tons in 2007 (See Table D1.2-Alt3-38 in Appendix D1).

The data in Table 3.2-42 show that during a peak day of activity, emissions between Alternative 3 and CEQA Baseline would exceed the following SCAQMD daily thresholds: (1) in 2007, VOC, CO, NO_x, and SO_x; (2) in 2015, NO_x and SO_x; and (3) in 2025 and 2038, SO_x. As a result, these exceedances of the SCAQMD emission thresholds represent significant levels of emissions produced during the operation of Alternative 3 under CEQA.

NEPA Impact Determination

The data in Table 3.2-41 show that in the following years, the net change in average daily emissions between Alternative 3 and NEPA Baseline would exceed the following SCAQMD daily thresholds: (1) in 2007, VOC, CO, NO_x, and $PM_{2.5}$ and (2) in 2015 and thereafter, all pollutants. The net change in VOC emissions between Alternative 3 and NEPA Baseline also would exceed 10 tons in all Project years (See Table D1.2-NFAB-43 in Appendix D1).

Table 3.2-41. Average Daily Operational Emissions Associated with the Reduced Wharf Alternative

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2007						
Ships – Fairway Transit	79	182	2,316	1,361	194	182
Ships – Precautionary Area Transit	14	31	307	190	27	25
Ships – Harbor Transit	22	28	212	107	22	20
Ships – Docking	8	8	59	26	6	6
Ships – Hoteling Aux. Sources	42	150	1,484	1,419	127	119
Tugs – Cargo Vessel Assist	2	12	77	0	3	3
Terminal Equipment	120	437	1,397	1	60	55
On-road Trucks	901	3,060	8,154	6	566	379
Trains	108	251	1,500	134	57	52
Railyard Equipment	21	81	233	0	10	10
Worker Commuter Vehicles	10	137	18	0	15	14
Relocated PHL Rail Yard	4	7	54	1	1	1
Project Year 2007 Total	**1,330**	**4,386**	**15,811**	**3,244**	**1,088**	**866**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2007	**146**	**309**	**2,340**	**521**	**67**	**35**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**Y**	**N**	**Y**	**Y**	**N**	**N**
NEPA Baseline (NFAB)	**1,099**	**3,475**	**14,136**	**3,197**	**958**	**748**
Net Change from NFAB Year 2007	**232**	**910**	**1,675**	**48**	**130**	**118**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**N**	**N**	**Y**
Project Year 2015						
Ships – Fairway Transit	97	221	2,734	1,602	231	216
Ships – Precautionary Area Transit	21	42	404	244	36	33
Ships – Harbor Transit	31	39	299	148	30	28
Ships – Docking	11	11	83	36	9	8
Ships – Hoteling Aux. Sources	61	214	2,169	2,006	184	173
Tugs – Cargo Vessel Assist	3	15	79	0	3	3
Terminal Equipment	71	516	1,002	1	41	37
On-road Trucks	436	2,466	7,245	9	505	301
Trains	102	280	1,426	1	38	35
Railyard Equipment	9	74	126	0	5	5
Worker Commuter Vehicles	10	135	17	0	19	17
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2015 Total	**854**	**4,023**	**15,615**	**4,048**	**1,101**	**858**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change CEQA Baseline - Year 2015	**(331)**	**(54)**	**2,144**	**1,325**	**79**	**27**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**Y**	**Y**	**N**	**N**
NEPA Baseline (NFAB)	**428**	**2,031**	**5,399**	**906**	**388**	**195**
Net Change from NFAB Year 2015	**426**	**1,992**	**10,216**	**3,142**	**713**	**663**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**

Table 3.2-41. Average Daily Operational Emissions Associated with the Reduced Wharf Alternative (continued)

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2025						
Ships – Fairway Transit	131	292	3,552	2,072	301	282
Ships – Precautionary Area Transit	29	57	514	299	46	43
Ships – Harbor Transit	43	54	416	202	42	39
Ships – Docking	15	15	115	49	12	12
Ships – Hoteling Aux. Sources	88	304	3,164	2,815	268	251
Tugs – Cargo Vessel Assist	3	16	71	0	3	3
Terminal Equipment	36	734	276	2	11	10
On-road Trucks	213	1,087	2,905	9	302	106
Trains	128	418	1,859	2	47	43
Railyard Equipment	5	108	37	0	1	1
Worker Commuter Vehicles	7	92	12	0	21	19
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2025 Total	**701**	**3,185**	**12,951**	**5,450**	**1,055**	**809**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2025	**(484)**	**(892)**	**(520)**	**2,727**	**33**	**(22)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**Y**	**N**	**N**
NEPA Baseline (NFAB)	**380**	**2,112**	**5,290**	**930**	**359**	**191**
Net Change from NFAB Year 2025	**321**	**1,073**	**7,662**	**4,521**	**696**	**619**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
Project Year 2038						
Ships – Fairway Transit	131	292	3,552	2,072	301	282
Ships – Precautionary Area Transit	29	57	514	299	46	43
Ships – Harbor Transit	43	54	416	202	42	39
Ships – Docking	15	15	115	49	12	12
Ships – Hoteling Aux. Sources	88	304	3,164	2,815	268	251
Tugs – Cargo Vessel Assist	3	16	64	0	3	3
Terminal Equipment	45	1,031	167	2	12	11
On-road Trucks	254	900	2,362	9	282	87
Trains	109	418	1,630	2	39	36
Railyard Equipment	4	108	14	0	1	1
Worker Commuter Vehicles	4	43	4	0	26	24
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2038 Total	**726**	**3,244**	**12,033**	**5,451**	**1,033**	**789**
CEQA Baseline - Year 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2038	**(459)**	**(832)**	**(1,439)**	**2,727**	**11**	**(42)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**Y**	**N**	**N**
NEPA Baseline (NFAB)	**373**	**2,278**	**5,104**	**930**	**357**	**189**
Net Change from NFAB Year 2038	**354**	**967**	**6,930**	**4,521**	**676**	**600**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**

Table 3.2-42. Peak Daily Operational Emissions Associated with the Reduced Wharf Alternative

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2007						
Ships – Fairway Transit	68	160	2,076	1,230	174	163
Ships – Precautionary Area Transit	13	31	350	231	30	28
Ships – Harbor Transit	22	28	205	110	21	20
Ships – Docking	8	8	57	27	6	6
Ships – Hoteling Aux. Sources	78	267	2,789	2,468	236	221
Tugs – Cargo Vessel Assist	5	24	147	0	6	6
Terminal Equipment	695	2,537	8,105	5	349	321
On-road Trucks	1,234	4,190	11,164	9	775	519
Trains	89	208	1,245	111	47	43
Railyard Equipment	17	67	193	0	9	8
Worker Commuter Vehicles	10	137	18	0	15	14
Relocated PHL Rail Yard	4	7	54	1	1	1
Project Year 2007 Total	**2,242**	**7,664**	**26,404**	**4,191**	**1,669**	**1,349**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change from CEQA Baseline - Year 2007	**265**	**729**	**3,393**	**341**	**62**	**20**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**Y**	**N**	**N**
NEPA Baseline (NFAB)	**1,927**	**6,417**	**24,193**	**4,191**	**1,498**	**1,195**
Net Change from NFAB Year 2007	**315**	**1,247**	**2,211**	**0**	**171**	**154**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**N**	**Y**	**Y**
Project Year 2015						
Ships – Fairway Transit	175	374	4,309	2,489	371	347
Ships – Precautionary Area Transit	43	78	678	381	62	58
Ships – Harbor Transit	61	77	599	286	60	56
Ships – Docking	21	21	166	69	18	17
Ships – Hoteling Aux. Sources	100	353	3,562	3,304	303	284
Tugs – Cargo Vessel Assist	4	24	127	0	5	5
Terminal Equipment	359	2,622	5,087	6	206	189
On-road Trucks	476	2,638	7,719	9	543	318
Trains	119	326	1,658	1	44	40
Railyard Equipment	11	88	149	0	6	6
Worker Commuter Vehicles	10	135	17	0	19	17
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2015 Total	**1,381**	**6,743**	**24,101**	**6,546**	**1,636**	**1,338**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change CEQA Baseline - Year 2015	**(597)**	**(192)**	**1,091**	**2,695**	**30**	**9**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**Y**	**Y**	**N**	**N**
NEPA Baseline (NFAB)	**804**	**4,461**	**7,754**	**1,453**	**542**	**277**
Net Change from NFAB Year 2015	**576**	**2,283**	**16,346**	**5,093**	**1,095**	**1,061**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**

Table 3.2-42. Peak Daily Operational Emissions Associated with the Reduced Wharf Alternative (continued)

Project Scenario/Activity	Emissions (pounds per day)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2025						
Ships – Fairway Transit	175	374	4,309	2,489	371	347
Ships – Precautionary Area Transit	43	78	678	381	62	58
Ships – Harbor Transit	61	77	599	286	60	56
Ships – Docking	21	21	166	69	18	17
Ships – Hoteling Aux. Sources	100	353	3,562	3,304	303	284
Tugs – Cargo Vessel Assist	4	24	94	0	4	4
Terminal Equipment	143	2,882	1,083	7	41	38
On-road Trucks	285	1,450	3,877	12	403	140
Trains	100	326	1,450	1	37	34
Railyard Equipment	4	85	29	0	1	1
Worker Commuter Vehicles	7	92	12	0	21	19
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2025 Total	**944**	**5,769**	**15,890**	**6,550**	**1,320**	**998**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change from CEQA Baseline - Year 2025	**(1,033)**	**(1,166)**	**(7,121)**	**2,699**	**(286)**	**(331)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**Y**	**N**	**N**
NEPA Baseline (NFAB)	**527**	**4,163**	**6,811**	**1,426**	**479**	**249**
Net Change from NFAB Year 2025	**417**	**1,606**	**9,079**	**5,124**	**842**	**749**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
Project Year 2038						
Ships – Fairway Transit	175	374	4,309	2,489	371	347
Ships – Precautionary Area Transit	43	78	678	381	62	58
Ships – Harbor Transit	61	77	599	286	60	56
Ships – Docking	21	21	166	69	18	17
Ships – Hoteling Aux. Sources	100	353	3,562	3,304	303	284
Tugs – Cargo Vessel Assist	4	24	94	0	4	4
Terminal Equipment	125	2,882	467	7	33	31
On-road Trucks	348	1,232	3,234	13	387	119
Trains	85	326	1,272	1	30	28
Railyard Equipment	3	85	11	0	1	1
Worker Commuter Vehicles	4	43	4	0	26	24
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2038 Total	**970**	**5,501**	**14,427**	**6,550**	**1,294**	**968**
CEQA Baseline – Year 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change from CEQA Baseline - Year 2038	**(1,007)**	**(1,434)**	**(8,584)**	**2,700**	**(312)**	**(361)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**Y**	**N**	**N**
NEPA Baseline (NFAB)	**513**	**4,102**	**6,634**	**1,426**	**476**	**246**
Net Change from NFAB Year 2038	**456**	**1,399**	**7,793**	**5,124**	**819**	**722**
Exceeds SCAQMD Threshold?	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**

The data in Table 3.2-42 show that during a peak day of activity, emissions between Alternative 3 and NEPA Baseline would exceed the following SCAQMD daily thresholds: (1) in 2007, all pollutants except SO_x and (2) in 2015, 2025, and 2038, all pollutants. As a result, these exceedances of the SCAQMD emission thresholds represent significant levels of emissions produced during the operation of Alternative 3 under NEPA.

Mitigation Measures

To reduce operational emissions from Alternative 3, **Mitigation Measures AQ-6** through **AQ-18** would apply to this alternative.

Residual Impacts

From a CEQA perspective, Table 3.2-43 shows that Alternative 3 average daily operational emissions after mitigation only would exceed the SCAQMD daily NO_x and SO_x thresholds in 2007. Additionally, the net change in annual VOC emissions between Alternative 3 and CEQA Baseline would not exceed 10 tons in any Project year (See Table D1.2-Alt3Mit-34 in Appendix D1). By 2015, the mitigated Alternative 3 would produce lower average daily emissions of all pollutants compared to the CEQA baseline.

The data in Table 3.2-44 show that during a peak day of activity, the net change in emissions between Alternative 3 and CEQA Baseline only would exceed the SCAQMD daily NO_x threshold in 2007. As a result, this exceedance of the SCAQMD emission thresholds represents significant levels of emissions produced during the operation of the mitigated Alternative 3 under CEQA. By 2015, the mitigated Alternative 3 would produce lower peak daily emissions of all pollutants, compared to the CEQA baseline.

From a NEPA perspective, the data in Table 3.2-43 show that the net change in average daily mitigated emissions between Alternative 3 and NEPA Baseline would exceed the following SCAQMD daily thresholds during the following Project years: (1) in 2007, NO_x and (2) in 2025 and 2038, VOC, NO_x, and SO_x. The net change in annual VOC emissions between Alternative 3 and the NEPA Baseline would not exceed 10 tons in any future year (See Table D1.2-NFAB-43 in Appendix D1). In 2015, the mitigated Alternative 3 would produce the same daily emissions as the NEPA Baseline, since operations and throughputs are identical between the two scenarios.

The data in Table 3.2-44 show that during a peak day of activity, mitigated emissions between Alternative 3 and NEPA Baseline would exceed the following SCAQMD daily thresholds during the following Project years: (1) in 2007, NO_x and (2) in 2025 and 2038, VOC and NO_x. As a result, these exceedances of the SCAQMD emission thresholds represent significant levels of emissions produced during the operation of the mitigated Alternative 3 under NEPA.

Table 3.2-43. Mitigated Average Daily Operational Emissions Associated with the Reduced Wharf Alternative

Project Scenario/Activity	Emissions (pounds per day)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2007						
Ships – Fairway Transit	79	182	2,316	1,361	194	182
Ships – Precautionary Area Transit	14	31	307	190	27	25
Ships – Harbor Transit	22	28	212	107	22	20
Ships – Docking	8	8	59	26	6	6
Ships – Hoteling Aux. Sources	42	150	1,484	1,419	127	119
Tugs – Cargo Vessel Assist	2	12	77	0	3	3
Terminal Equipment	120	437	1,397	1	60	55
On-road Trucks	687	2,203	6,709	6	451	273
Trains	108	251	1,500	134	57	52
Railyard Equipment	21	81	233	0	10	10
Worker Commuter Vehicles	10	140	18	0	15	14
Relocated PHL Rail Yard	4	7	54	1	1	1
Project Year 2007 Total	**1,117**	**3,530**	**14,366**	**3,244**	**973**	**760**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change CEQA Baseline - Year 2007	**(68)**	**(547)**	**895**	**521**	**(48)**	**(71)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**Y**	**Y**	**N**	**N**
NEPA Baseline (NFAB)	**1,099**	**3,475**	**14,136**	**3,197**	**958**	**748**
Net Change from NFAB Year 2007	**18**	**55**	**230**	**48**	**15**	**12**
Exceeds SCAQMD Threshold?	**N**	**N**	**Y**	**N**	**N**	**N**
Project Year 2015						
Ships – Fairway Transit	20	144	1,081	65	23	22
Ships – Precautionary Area Transit	6	42	292	43	7	6
Ships – Harbor Transit	9	39	240	32	6	6
Ships – Docking	3	11	66	8	2	2
Ships – Hoteling Aux. Sources	16	92	551	746	28	26
Tugs – Cargo Vessel Assist	3	15	79	0	3	3
Terminal Equipment	69	516	77	1	4	4
On-road Trucks	176	620	1,544	9	255	71
Trains	102	280	1,408	1	37	34
Railyard Equipment	9	102	9	0	0	0
Worker Commuter Vehicles	12	161	21	0	22	21
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2015 Total	**428**	**2,031**	**5,399**	**906**	**389**	**196**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change CEQA Baseline - Year 2015	**(757)**	**(2,046)**	**(8,073)**	**(1,818)**	**(633)**	**(635)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
NEPA Baseline (NFAB)	**428**	**2,031**	**5,399**	**906**	**388**	**195**
Net Change from NFAB Year 2015	**-**	**-**	**-**	**-**	**1**	**1**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**

Table 3.2-43. Mitigated Average Daily Operational Emissions Associated with the Reduced Wharf Alternative (continued)

Project Scenario/Activity	Emissions (pounds per day)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2025						
Ships – Fairway Transit	28	193	1,364	80	30	28
Ships – Precautionary Area Transit	9	57	376	49	9	8
Ships – Harbor Transit	13	54	334	38	8	8
Ships – Docking	4	15	92	10	2	2
Ships – Hoteling Aux. Sources	7	79	210	924	26	24
Tugs – Cargo Vessel Assist	3	16	71	0	3	3
Terminal Equipment	36	734	115	2	6	5
On-road Trucks	185	654	1,647	9	269	75
Trains	128	418	1,832	2	46	42
Railyard Equipment	14	153	14	0	1	1
Worker Commuter Vehicles	8	109	14	0	24	22
Relocated PHL Rail Yard	2	9	30	0	0	0
Project Year 2025 Total	**437**	**2,489**	**6,099**	**1,114**	**424**	**219**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2025	**(748)**	**(1,588)**	**(7,372)**	**(1,609)**	**(598)**	**(612)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
NEPA Baseline (NFAB)	**380**	**2,112**	**5,290**	**930**	**359**	**191**
Net Change from NFAB Year 2025	**57**	**378**	**810**	**185**	**65**	**28**
Exceeds SCAQMD Threshold?	**Y**	**N**	**Y**	**Y**	**N**	**N**
Project Year 2038						
Ships – Fairway Transit	28	193	1,364	80	30	28
Ships – Precautionary Area Transit	9	57	376	49	9	8
Ships – Harbor Transit	13	54	334	38	8	8
Ships – Docking	4	15	92	10	2	2
Ships – Hoteling Aux. Sources	7	79	210	924	26	24
Tugs – Cargo Vessel Assist	3	16	64	0	3	3
Terminal Equipment	51	1,031	162	2	8	7
On-road Trucks	190	652	1,666	9	267	73
Trains	109	418	1,604	2	38	35
Railyard Equipment	14	153	14	0	1	1
Worker Commuter Vehicles	4	43	4	0	26	24
Relocated PHL Rail Yard	2	9	30	0	0	0
Project Year 2038 Total	**433**	**2,717**	**5,920**	**1,115**	**417**	**213**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2038	**(752)**	**(1,359)**	**(7,552)**	**(1,608)**	**(604)**	**(618)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
NEPA Baseline (NFAB)	**373**	**2,278**	**5,104**	**930**	**357**	**189**
Net Change from NFAB Year 2038	**60**	**440**	**816**	**185**	**60**	**24**
Exceeds SCAQMD Threshold?	**Y**	**N**	**Y**	**Y**	**N**	**N**

Table 3.2-44. Mitigated Peak Daily Operational Emissions Associated with the Reduced Wharf Alternative

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2007						
Ships – Fairway Transit	68	160	2,076	1,230	174	163
Ships – Precautionary Area Transit	13	31	349	219	28	27
Ships – Harbor Transit	22	28	204	93	19	18
Ships – Docking	8	8	57	22	6	5
Ships – Hoteling Aux. Sources	78	267	2,747	1,996	187	175
Tugs – Cargo Vessel Assist	5	24	147	0	6	6
Terminal Equipment	695	2,536	8,104	5	349	321
On-road Trucks	941	3,016	9,185	9	617	374
Trains	89	208	1,245	111	47	43
Railyard Equipment	17	67	193	0	9	8
Worker Commuter Vehicles	10	140	18	0	15	14
Relocated PHL Rail Yard	4	7	54	1	1	1
Project Year 2007 Total	**1,949**	**6,492**	**24,379**	**3,686**	**1,458**	**1,155**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change from CEQA Baseline - Year 2007	**(28)**	**(443)**	**1,369**	**(165)**	**(148)**	**(174)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**Y**	**N**	**N**	**N**
NEPA Baseline (NFAB)	**1,927**	**6,417**	**24,193**	**4,191**	**1,498**	**1,195**
Net Change from NFAB Year 2007	**22**	**75**	**186**	**(505)**	**(39)**	**(40)**
Exceeds SCAQMD Threshold?	**N**	**N**	**Y**	**N**	**N**	**N**
Project Year 2015						
Ships – Fairway Transit	34	260	1,658	94	35	32
Ships – Precautionary Area Transit	12	78	493	58	11	11
Ships – Harbor Transit	19	77	482	47	12	11
Ships – Docking	6	21	133	12	3	3
Ships – Hoteling Aux. Sources	20	135	684	1,222	42	39
Tugs – Cargo Vessel Assist	4	24	127	0	5	5
Terminal Equipment	349	2,622	392	6	20	18
On-road Trucks	241	849	2,114	12	349	98
Trains	119	326	1,636	1	43	40
Railyard Equipment	2	24	2	0	0	0
Worker Commuter Vehicles	12	161	21	0	22	21
Relocated PHL Rail Yard	2	9	30	0	0	0
Project Year 2015 Total	**821**	**4,585**	**7,773**	**1,453**	**543**	**278**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change CEQA Baseline - Year 2015	**(1,157)**	**(2,350)**	**(15,237)**	**(2,397)**	**(1,064)**	**(1,051)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
NEPA Baseline (NFAB)	**804**	**4,461**	**7,754**	**1,453**	**542**	**277**
Net Change from NFAB Year 2015	**17**	**124**	**19**	**0**	**1**	**1**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**

Table 3.2-44. Mitigated Peak Daily Operational Emissions Associated with the Reduced Wharf Alternative (continued)

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2025						
Ships – Fairway Transit	34	260	1,658	94	35	32
Ships – Precautionary Area Transit	12	78	493	58	11	11
Ships – Harbor Transit	19	77	482	47	12	11
Ships – Docking	6	21	133	12	3	3
Ships – Hoteling Aux. Sources	8	102	273	1,198	34	31
Tugs – Cargo Vessel Assist	4	24	105	0	5	4
Terminal Equipment	131	2,640	414	6	21	19
On-road Trucks	251	887	2,238	13	365	101
Trains	100	326	1,429	1	36	33
Railyard Equipment	11	120	11	0	1	1
Worker Commuter Vehicles	8	109	14	0	24	22
Relocated PHL Rail Yard	2	9	6	0	0	0
Project Year 2025 Total	**587**	**4,652**	**7,256**	**1,429**	**546**	**269**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change from CEQA Baseline - Year 2025	**(1,390)**	**(2,283)**	**(15,754)**	**(2,421)**	**(1,061)**	**(1,060)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
NEPA Baseline (NFAB)	**527**	**4,163**	**6,811**	**1,426**	**479**	**249**
Net Change from NFAB Year 2025	**61**	**489**	**446**	**3**	**67**	**20**
Exceeds SCAQMD Threshold?	**Y**	**N**	**Y**	**N**	**N**	**N**
Project Year 2038						
Ships – Fairway Transit	34	260	1,658	94	35	32
Ships – Precautionary Area Transit	12	78	493	58	11	11
Ships – Harbor Transit	19	77	482	47	12	11
Ships – Docking	6	21	133	12	3	3
Ships – Hoteling Aux. Sources	8	102	273	1,198	34	31
Tugs – Cargo Vessel Assist	4	24	94	0	4	4
Terminal Equipment	131	2,640	414	6	21	19
On-road Trucks	258	885	2,265	13	362	99
Trains	85	326	1,251	1	30	27
Railyard Equipment	11	120	11	0	1	1
Worker Commuter Vehicles	4	50	5	0	30	28
Relocated PHL Rail Yard	2	9	5	0	0	0
Project Year 2038 Total	**575**	**4,591**	**7,084**	**1,429**	**542**	**266**
CEQA Baseline – Year 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change from CEQA Baseline - Year 2038	**(1,402)**	**(2,344)**	**(15,926)**	**(2,421)**	**(1,065)**	**(1,063)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
NEPA Baseline (NFAB)	**513**	**4,102**	**6,634**	**1,426**	**476**	**246**
Net Change from NFAB Year 2038	**62**	**488**	**450**	**3**	**66**	**20**
Exceeds SCAQMD Threshold?	**Y**	**N**	**Y**	**N**	**N**	**N**

Impact AQ-4: Operation of Alternative 3 would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance.

Table 3.2-45 presents the maximum offsite ground level concentrations of criteria pollutants estimated to occur from Alternative 3 operations without mitigation. These data show that total maximum NO_2 concentrations would exceed the 1-hour and annual SCAQMD thresholds. Additionally, operation of the alternative would exceed the SCAQMD $PM_{10}/PM_{2.5}$ threshold of 2.5 µg/m^3 under CEQA and NEPA.

Table 3.2-45. Maximum Offsite Ambient Concentrations – Alternative 3 Operations Without Mitigation

Pollutant	*Averaging Time*	*Maximum Impact from Alternative 3 Emissions (µg/m^3)*	*Background Pollutant Concentration (µg/m^3)*	*Total Maximum Alternative 3 Impact (µg/m^3)*	*SCAQMD Threshold[a] (µg/m^3)*
NO_2	1-hour	1,661	263	**1,924**	338
	Annual	33	54	**87**	56
CO	1-hour	2,373	6,629	9,002	23,000
	8-hour	615	5,371	5,886	10,000
				Maximum CEQA Increment (µg/m^3)[b]	
PM_{10}	24-hour			**20.4**	2.5
$PM_{2.5}$	24-hour			**18.8**	2.5
				Maximum NEPA Increment (µg/m^3)[c]	
PM_{10}	24-hour			**18.5**	2.5
$PM_{2.5}$	24-hour			**17.4**	2.5

[a] Exceedances of the thresholds are indicated in bold. The thresholds for $PM_{10}/PM_{2.5}$ are incremental thresholds and therefore only impacts from project emissions without background pollutant concentrations are compared to the thresholds. The thresholds for NO_2 and CO are combined thresholds and therefore impacts from project emissions plus background pollutant concentrations are compared to the thresholds.
[b] Equal to Alternative 3 impact minus CEQA Baseline impact.
[c] Equal to Alternative 3 impact minus NEPA Baseline (NFAB) impact.
[d] NO_2 concentrations based upon source/maximum impact locations distances of either 500 or 1000 meters. The NO_x to NO_2 conversion rates for these distances were 25.8 and 46.7 percent (SCAQMD, 2003c). This is a conservative approach, as the majority of emission sources that contribute to the maximum NO_2 impact are closer than 500 meters from this location.

CEQA Impact Determination

Operation of Alternative 3 would contribute to significant levels of 1-hour and annual NO_2 and 24-hour PM_{10} and $PM_{2.5}$ concentrations under CEQA.

NEPA Impact Determination

Operation of Alternative 3 would contribute to significant levels of 1-hour and annual NO_2 and 24-hour PM_{10} and $PM_{2.5}$ concentrations under NEPA.

Mitigation Measures

Implementation of **Mitigation Measures AQ-6** through **AQ-18** would substantially reduce the ambient impact of unmitigated operational emissions from Alternative 3. However, given the uncertainty of implementing some measures, the mitigated dispersion modeling analysis only considered the effects of **Mitigation Measures AQ-6** through **AQ-12.** Table 3.2-46 presents the maximum off-site ground level concentrations of criteria pollutants estimated for Alternative 3 operations after mitigation.

Table 3.2-46. Maximum Offsite Ambient Concentrations – Alternative 3 Operations After Mitigation

Pollutant	*Averaging Time*	*Maximum Impact from Alternative 3 Emissions ($\mu g/m^3$)*	*Background Pollutant Concentration ($\mu g/m^3$)*	*Total Maximum Alternative 3 Impact ($\mu g/m^3$)*	*SCAQMD Threshold[a] ($\mu g/m^3$)*
NO_2	1-hour	1,324	263	**1,587**	470
	Annual	23	54	**77**	100
CO	1-hour	2,079	6,629	8,708	23,000
	8-hour	449	5,371	5,820	10,000
				Maximum CEQA Increment ($\mu g/m^3$) [b]	
PM_{10}	24-hour			**8.2**	2.5
$PM_{2.5}$	24-hour			**7.5**	2.5
				Maximum NEPA Increment ($\mu g/m^3$) [c]	
PM_{10}	24-hour			**0.0**	2.5
$PM_{2.5}$	24-hour			**0.0**	2.5

[a] Exceedances of the thresholds are indicated in bold. The thresholds for $PM_{10}/PM_{2.5}$ are incremental thresholds and therefore only impacts from project emissions without background pollutant concentrations are compared to the thresholds. The thresholds for NO_2 and CO are combined thresholds and therefore impacts from project emissions plus background pollutant concentrations are compared to the thresholds.

[b] Equal to Alternative 3 impact minus CEQA Baseline impact.

[c] Equal to Alternative 3 impact minus NEPA Baseline (NFAB) impact. Since operations and emissions are identical for both scenarios, the difference in impacts between the 2 scenarios is 0.

[d] NO_2 concentrations based upon source/maximum impact locations distances of either 500 or 1000 meters. The NO_x to NO_2 conversion rates for these distances were 25.8 and 46.7 percent (SCAQMD, 2003c). This is a conservative approach, as the majority of emission sources that contribute to the maximum NO_2 impact are closer than 500 meters of this location.

Residual Impacts

Alternative 3 residual air quality impacts would be significant for 1-hour and annual NO_2 and 24-hour PM_{10} and $PM_{2.5}$ concentrations under CEQA and NEPA.

Impact AQ-5: Alternative 3 would not create objectionable odors at the nearest sensitive receptor.

Operation of Alternative 3 would produce similar to slightly lower odorous impacts compared to the proposed Project.

CEQA Impact Determination

Operation of Alternative 3 would produce less than significant odor impacts under CEQA.

NEPA Impact Determination

Operation of Alternative 3 would produce less than significant odor impacts under NEPA.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Impact AQ-6: Alternative 3 would expose receptors to significant levels of TACs.

An analysis to evaluate public cancer risks generated by Alternative 3 operational emissions of TACs was performed by the same methods used for the proposed Project cancer analysis. Non-cancer effects from Alternative 3 TACs were estimated by multiplying the results of the proposed Project non-cancer analysis with the ratio of Alternative 3 to proposed Project operational emissions that would occur within Berths 136-147 Terminal and in direct proximity to the facility during the year 2010. Table 3.2-47 presents the results of these analyses for each receptor type. Figures D3-20 through D3-22 in Appendix D3 show the distribution of predicted residential cancer risks for (1) unmitigated Alternative 3, (2) unmitigated CEQA increment (unmitigated Alternative 3 minus CEQA Baseline), and (3) unmitigated NEPA increment (unmitigated Alternative 3 minus NEPA Baseline).

CEQA Impact Determination

The maximum CEQA increment for residential cancer risk is predicted to be 122 in a million. This risk value exceeds the significance criterion of 10 in a million. The maximum cancer risk increments at occupational, sensitive, and recreational receptors also would exceed the 10 in a million significance criterion. The maximum cancer risk increment at a student receptor would be less than significant.

The maximum CEQA increment for chronic and acute non-cancer effects to all receptor types would remain below the significance criterion of 1.0.

NEPA Impact Determination

The maximum NEPA increment for residential cancer risk predicted for the unmitigated Alternative 3 is 197 in a million, which exceeds the significance criterion of 10 in a million. The maximum cancer risk increments at occupational, sensitive, and recreational receptors also would exceed the 10 in a million significance criterion. The maximum cancer risk increment at a student receptor would be less than significant. The maximum NEPA increment for chronic and acute non-cancer effects to all receptor types would remain below the significance criterion of 1.0.

Table 3.2-47. Maximum Health Impacts due to Alternative 3 Without Mitigation

Health Impact	*Receptor Type*	MAXIMUM PREDICTED IMPACT[1]						*Significance Threshold*[3]
		Alternative 3	*CEQA Baseline*	*CEQA Increment*[2]	*Alternative 3*	*NEPA Baseline*	*NEPA Increment*[2]	
Cancer Risk	Residential	239×10^{-6}	117×10^{-6}	**122×10^{-6}**	239×10^{-6}	43×10^{-6}	**197×10^{-6}**	10×10^{-6}
	Occupational	114×10^{-6}	48×10^{-6}	**67×10^{-6}**	114×10^{-6}	16×10^{-6}	**99×10^{-6}**	
	Sensitive	155×10^{-6}	70×10^{-6}	**85×10^{-6}**	155×10^{-6}	30×10^{-6}	**125×10^{-6}**	
	Student	3.3×10^{-6}	1.5×10^{-6}	1.8×10^{-6}	3.3×10^{-6}	0.6×10^{-6}	2.6×10^{-6}	
	Recreational	97×10^{-6}	49×10^{-6}	**49×10^{-6}**	102×10^{-6}	20×10^{-6}	**82×10^{-6}**	
Chronic Hazard Index	Residential			0.11			0.11	1.0
	Occupational			0.19			0.04	
	Sensitive			0.11			0.07	
	Student			0.07			0.00	
	Recreational			0.25			0.05	
Acute Hazard Index[4]	Residential			0.61			**1.25**	1.0
	Occupational			0.82			**1.53**	
	Sensitive			0.54			**1.15**	
	Student			0.45			0.95	
	Recreational			0.77			**1.61**	

Notes:

(1) Data represent project scenario impacts that contribute to maximum CEQA/NEPA incremental impacts.

(2) The CEQA Increment represents Alternative 3 impact minus CEQA Baseline impact. The NEPA Increment represents Alternative 3 impact minus NEPA baseline impact. However, non-cancer increments estimated by factoring proposed Project incremental results with the ratio of Alternative 3/proposed Project emissions.

(3) Exceedances of the significance criteria are in bold. The significance thresholds only apply to the CEQA and NEPA increments.

(4) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type.

Mitigation Measures

Consistent with the approach taken to mitigate health impacts from the proposed Project, the mitigated HRA considered the ability of **Mitigation Measures AQ-6** through **AQ-12 to** reduce emissions of TACs from Alternative 3.

Table 3.2-48 summarizes the maximum health impacts predicted to occur at each receptor type due to the operation of Alternative 3 with mitigation. An analysis was not performed for mitigated chronic non-cancer effects, due to the minimal unmitigated values of the Alternative increments. Figures D3-23 through D3-25 in Appendix D3 show the distribution of predicted residential cancer risks for (1) mitigated Alternative 3, (2) mitigated CEQA increment (mitigated Alternative 3 minus CEQA Baseline), and (3) mitigated NEPA increment (mitigated Alternative 3 minus NEPA Baseline).

Table 3.2-48. Maximum Health Impacts due to Alternative 3 after Mitigation.

Health Impact	*Receptor Type*	MAXIMUM PREDICTED IMPACT[1]						*Significance Threshold*[3]
		Alternative 3	*CEQA Baseline*	*CEQA Increment*[2]	*Alternative 3*	*NEPA Baseline*	*NEPA Increment*[2]	
Cancer Risk	Residential	13.9×10^{-6}	13.6×10^{-6}	0.4×10^{-6}	51.9×10^{-6}	42.7×10^{-6}	9.2×10^{-6}	10×10^{-6}
	Occupational	2.8×10^{-6}	1.6×10^{-6}	1.6×10^{-6}	20.7×10^{-6}	15.7×10^{-6}	5.0×10^{-6}	
	Sensitive	2.9×10^{-6}	5.7×10^{-6}	-2.8×10^{-6}	30.2×10^{-6}	24.5×10^{-6}	5.7×10^{-6}	
	Student	0.1×10^{-6}	0.1×10^{-6}	0.0×10^{-6}	0.6×10^{-6}	0.5×10^{-6}	0.1×10^{-6}	
	Recreational	12.4×10^{-6}	16.7×10^{-6}	4.3×10^{-6}	23.4×10^{-6}	19.8×10^{-6}	3.6×10^{-6}	
Acute Hazard Index[4]	Residential			-0.12			0.00	1.0
	Occupational			-0.12			0.00	
	Sensitive			-0.08			0.00	
	Student			-0.13			0.00	
	Recreational			-0.45			0.00	

Notes:

(1) Data represent project scenario impacts that contribute to maximum CEQA/NEPA incremental impacts.

(2) The CEQA Increment represents Alternative 3 impact minus CEQA Baseline impact. The NEPA Increment represents Alternative 3 impact minus NEPA baseline impact. However, non-cancer increments estimated by factoring proposed Project incremental results with the ratio of Alternative 3/proposed Project emissions.

(3) Exceedances of the significance criteria are in bold. The significance thresholds only apply to the CEQA and NEPA increments.

(4) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type.

An analysis was not performed for chronic non-cancer effects, due to the minimal unmitigated values of the Alternative increments

Residual Impacts

Implementation of **Mitigation Measures AQ-6** through **AQ-12 would** reduce predicted cancer and non-cancer public health impacts from Alternative 3 to less than significant levels under CEQA and NEPA. Review of Figure D3-24 in Appendix D3 shows that the mitigated Alternative 3 would produce lower residential cancer risks compared to the CEQA Baseline within the entire modeling domain except for a small area that encompasses the Consolidated Slip that is northeast of the Berths 136-147 terminal. In 2010, the mitigated Alternative 3 would produce the same daily emissions as the NEPA Baseline, since operations and throughputs are identical between the two scenarios. As a result, the net change in non-cancer impacts between the two scenarios is zero.

Impact AQ-7: Alternative 3 would not conflict with or obstruct implementation of an applicable AQMP.

Similar to the proposed Project, Alternative 3 would comply with the 2003 AQMP emission reduction measures that are designed to bring the SCAB into attainment of the state and national ambient air quality standards. Alternative 3 would accommodate slightly lower cargo throughputs at the Port compared to the proposed Project. Since the 2003 AQMP assumes growth associated with the proposed Project, Alternative 3 would not exceed the future growth projections in the 2003 AQMP and it would not conflict with or obstruct implementation of the SIP.

CEQA Impact Determination

In regard to criterion **AQ-7**, Alternative 3 would produce less than significant impacts under CEQA.

NEPA Impact Determination

In regard to criterion **AQ-7**, Alternative 3 would produce less than significant impacts under NEPA.

Mitigation Measures

Impacts would be less than significant; therefore, mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Impact AQ-8: Alternative 3 would produce GHG emissions that would exceed 2003 baseline levels.

Table 3.2-49 summarizes the total GHG construction emissions associated with Alternative 3. Table 3.2-50 summarizes the annual GHG emissions that would occur within California from the operation of Alternative 3.

Table 3.2-49. Total GHG Emissions from Berths 136-147 Terminal Construction Activities — Alternative 3

Construction Activity	TOTAL EMISSIONS (METRIC TONS)			
	CO_2	*CH_4*	*N_2O*	*CO_2e*
Wharf Improvements at Berths 144-147	237	0.03	0.00	238
78 Acres of Backland Improvement at Berths 142-147	392	0.05	0.01	395
Construct a New Admin. Bldg, Main Gate, and Worker Parking Lot	217	0.03	0.00	219
Construct a New Maintenance and Repair Facility-Berths 136-147	300	0.05	0.00	303
Harry Bridges Blvd. Realignment	447	0.05	0.01	451
Construction of a 46-Acre Rail Yard at Berth 200	1,410	0.17	0.03	1,422
9 Acres of Backland Improvements at Berths 134-135	19	0.00	0.00	19
Construction of B142-147 12-Acre ICTF and 19-Acre Backlands	548	0.07	0.01	553
Existing Cranes Removal at Berth 136	8	0.00	0.00	8
Construction of Harry Bridges Blvd. Buffer	1,198	0.17	0.02	1,207
Install Cranes at Berth 136 & Berth 144	120	0.02	0.00	121
Worker Vehicles	1,613	0.26	0.26	1,698
Total Emissions	**6,509**	**0.90**	**0.34**	**6,631**

One metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

Table 3.2-50. Annual Operational GHG Emissions - Berths 136-147 Terminal - Alternative 3

Project Scenario/Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Year 2007							
Ships	81,191	10.7	0.7				81,641
Tugboats	731	0.1	0.0				735
Terminal & Railyard Equipment	20,551	3.3	0.2				20,695
Trucks	228,683	11.5	5.7				230,699
Trains	40,158	5.6	0.4				40,399
Reefer Refrigerant Losses				0.06	0.13	0.07	590
AMP Usage							0
On-Terminal Electricity Usage	4,616	0.0	0.0				4,623
Worker Vehicles	1,207	0.2	0.2				1,270
Year 2007 Total	**377,136**	**31.5**	**7.3**	**0.06**	**0.13**	**0.07**	**380,652**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**74,913**	**6.3**	**1.4**	**0.01**	**0.02**	**0.01**	**75,579**
NEPA Baseline	369,017	30.7	7.2	0.06	0.13	0.07	372,462
Project minus NEPA Baseline	**8,119**	**0.8**	**0.1**	**0.00**	**0.00**	**0.00**	**8,190**
Year 2015							
Ships	106,523	14.1	0.9				107,113
Tugboats	854	0.1	0.0				859
Terminal & Railyard Equipment	27,147	4.4	0.3				27,337
Trucks	359,790	17.7	8.8				362,902
Trains	42,576	5.9	0.4				42,832
Reefer Refrigerant Losses				0.08	0.18	0.09	806
AMP Usage							0
On-Terminal Electricity Usage	6,308	0.1	0.0				6,318
Worker Vehicles	1,649	0.2	0.2				1,730
Year 2015 Total	**544,847**	**42.5**	**10.8**	**0.08**	**0.18**	**0.09**	**549,898**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**242,624**	**17.3**	**4.9**	**0.03**	**0.07**	**0.04**	**244,825**
NEPA Baseline	494,217	35.2	10.4	0.08	0.18	0.09	498,977
Project minus NEPA Baseline	**50,630**	**7.3**	**0.4**	**0.00**	**0.00**	**0.00**	**50,921**
Year 2025							
Ships	141,978	18.8	1.3				142,766
Tugboats	924	0.1	0.0				930
Terminal & Railyard Equipment	40,487	6.6	0.5				40,771
Trucks	376,402	18.2	9.1				379,601
Trains	63,600	8.9	0.6				63,983
Reefer Refrigerant Losses				0.11	0.25	0.13	1,100
AMP Usage							0
On-Terminal Electricity Usage	8,609	0.1	0.0				8,623
Worker Vehicles	1,811	0.2	0.3				1,898
Year 2025 Total	**633,811**	**52.9**	**11.8**	**0.11**	**0.25**	**0.13**	**639,671**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**331,588**	**27.7**	**5.8**	**0.06**	**0.14**	**0.07**	**334,598**
NEPA Baseline	470,192	35.9	9.2	0.09	0.21	0.10	474,715
Project minus NEPA Baseline	**163,619**	**17.0**	**2.6**	**0.02**	**0.04**	**0.02**	**164,955**

Table 3.2-50. Annual Operational GHG Emissions - Berths 136-147 Terminal — Alternative 3 (continued)

Project Scenario/Source Type	METRIC TONS PER YEAR						
	CO_2	*CH_4*	*N_2O*	*HFC-125*	*HFC-134a*	*HFC-143a*	*CO_2e*
Year 2038							
Ships	141,978	18.8	1.3				142,766
Tugboats	924	0.1	0.0				930
Terminal & Railyard Equipment	40,487	6.6	0.5				40,771
Trucks	376,402	18.2	9.1				379,601
Trains	63,600	8.9	0.6				63,983
Reefer Refrigerant Losses				0.11	0.25	0.13	1,100
AMP Usage							0
On-Terminal Electricity Usage	8,609	0.1	0.0				8,623
Worker Vehicles	2,035	0.3	0.3				2,131
Year 2038 Total	**634,035**	**52.9**	**11.8**	**0.11**	**0.25**	**0.13**	**639,903**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**331,812**	**27.7**	**5.9**	**0.06**	**0.14**	**0.07**	**334,831**
NEPA Baseline	470,225	35.9	9.2	0.09	0.21	0.10	474,748
Project minus NEPA Baseline	**163,810**	**17.0**	**2.6**	**0.02**	**0.04**	**0.02**	**165,155**

One metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2800 for HFC-125; 1300 for HFC-134a; and 3800 for HFC-143a.

CEQA Impact Determination

The data in Table 3.2-50 show that in each future project year, annual operational CO_2e emissions would increase from CEQA baseline levels. As a result, Alternative 3 would produce significant levels of GHG emissions under CEQA.

NEPA Analysis

The data in Table 3.2-50 show that in each future project year, annual operational CO_2e emissions would increase from NEPA baseline levels.

Mitigation Measures

Measures that reduce fuel usage and electricity consumption from Alternative 3 emission sources would reduce proposed GHG emissions. Project mitigation measures that would accomplish this effect include **AQ-6, AQ-10, AQ-14, AQ-16, AQ-19, AQ-20, AQ-21, AQ-22, AQ-23,** and **AQ-24.**

The annual GHG emissions that would occur within California from the operation of Alternative 3 with mitigation are shown in Table 3.2-51. The effects of **Mitigation Measures AQ-6** (AMP for ships) and AQ-10 (VSRP for ships) were included in the emission estimates. The potential effects of the remaining mitigation measures (**AQ-14, AQ-16, AQ-19, AQ-20, AQ-21, AQ-22, AQ-23,** and **AQ-24**) are described qualitatively under each measure's heading in Section 3.2.4.4, **Impact AQ-8**, for the proposed Project.

Table 3.2-51. Annual Operational GHG Emissions - Berths 136-147 Terminal — Alternative 3 with Mitigation

Project Scenario/Source Type	METRIC TONS PER YEAR						
	CO_2	*CH_4*	*N_2O*	*HFC-125*	*HFC-134a*	*HFC-143a*	*CO_2e*
Year 2007							
Ships	81,191	10.7	0.7				81,641
Tugboats	731	0.1	0.0				735
Terminal & Railyard Equipment	20,551	3.3	0.2				20,695
Trucks	228,683	11.5	5.7				230,699
Trains	40,158	5.6	0.4				40,399
Reefer Refrigerant Losses				0.06	0.13	0.07	590
AMP Usage	0	0.0	0.0				0
On-Terminal Electricity Usage	4,616	0.0	0.0				4,623
Worker Vehicles	1,207	0.2	0.2				1,270
Year 2007 Total	**377,136**	**31.5**	**7.3**	**0.06**	**0.13**	**0.07**	**380,652**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**74,913**	**6.3**	**1.4**	**0.01**	**0.02**	**0.01**	**75,579**
NEPA Baseline	369,017	30.7	7.2	0.06	0.13	0.07	372,462
Project minus NEPA Baseline	**8,119**	**0.8**	**0.1**	**0.00**	**0.00**	**0.00**	**8,190**
Year 2015							
Ships	49,184	6.7	0.5				49,471
Tugboats	854	0.1	0.0				859
Terminal & Railyard Equipment	27,147	4.4	0.3				27,338
Trucks	359,790	17.7	8.8				362,902
Trains	42,576	5.9	0.4				42,832
Reefer Refrigerant Losses				0.08	0.18	0.09	806
AMP Usage	6,710	0.1	0.0				6,720
On-Terminal Electricity Usage	6,308	0.1	0.0				6,318
Worker Vehicles	1,649	0.2	0.2				1,730
Year 2015 Total	**494,217**	**35.2**	**10.4**	**0.08**	**0.18**	**0.09**	**498,977**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**191,994**	**10.0**	**4.4**	**0.03**	**0.07**	**0.04**	**193,904**
NEPA Baseline	494,217	35.2	10.4	0.08	0.18	0.09	498,977
Project minus NEPA Baseline	**0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.00**	**0**
Year 2025							
Ships	60,473	8.2	0.6				60,826
Tugboats	924	0.1	0.0				930
Terminal & Railyard Equipment	40,487	6.6	0.5				40,773
Trucks	376,402	18.2	9.1				379,601
Trains	63,600	8.9	0.6				63,983
Reefer Refrigerant Losses				0.11	0.25	0.13	1,100
AMP Usage	12,366	0.1	0.1				12,386
On-Terminal Electricity Usage	8,609	0.1	0.0				8,623
Worker Vehicles	1,811	0.2	0.3				1,898
Year 2025 Total	**564,672**	**42.4**	**11.1**	**0.11**	**0.25**	**0.13**	**570,118**

Table 3.2-51. Annual Operational GHG Emissions - Berths 136-147 Terminal — Alternative 3 with Mitigation (continued)

Project Scenario/Source Type	METRIC TONS PER YEAR						
	CO_2	*CH_4*	*N_2O*	*HFC-125*	*HFC-134a*	*HFC-143a*	*CO_2e*
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**262,449**	**17.2**	**5.2**	**0.06**	**0.14**	**0.07**	**265,046**
NEPA Baseline	470,192	35.9	9.2	0.09	0.21	0.10	474,715
Project minus NEPA Baseline	**94,480**	**6.5**	**2.0**	**0.02**	**0.04**	**0.02**	**95,403**
Year 2038							
Ships	60,473	8.2	0.6				60,826
Tugboats	924	0.1	0.0				930
Terminal & Railyard Equipment	40,487	6.6	0.5				40,773
Trucks	376,402	18.2	9.1				379,601
Trains	63,600	8.9	0.6				63,983
Reefer Refrigerant Losses				0.11	0.25	0.13	1,100
AMP Usage	12,366	0.1	0.1				12,386
On-Terminal Electricity Usage	8,609	0.1	0.0				8,623
Worker Vehicles	2,035	0.3	0.3				2,131
Year 2038 Total	**564,896**	**42.4**	**11.2**	**0.11**	**0.25**	**0.13**	**570,351**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**262,673**	**17.2**	**5.2**	**0.06**	**0.14**	**0.07**	**265,279**
NEPA Baseline	470,225	35.9	9.2	0.09	0.21	0.10	474,748
Project minus NEPA Baseline	**94,671**	**6.5**	**2.0**	**0.02**	**0.04**	**0.02**	**95,603**

One metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2800 for HFC-125; 1300 for HFC-134a; and 3800 for HFC-143a.

Residual Impacts

Impacts would remain significant under CEQA.

3.2.4.5.4 Alternative 4 - Omni Terminal

Impact AQ-1: Alternative 4 would produce construction emissions that would exceed a SCAQMD emission significance threshold.

Construction impacts associated with the Omni Terminal Alternative (Alternative 4) would be less than those identified for the proposed Project, as the alternative would not include (1) Phase 1 wharf improvements at Berths 142-147, rail yard construction, and wharf improvements at Berths 136-139 or (2) Phase 2 construction activities. Table 3.2-52 presents a summary of construction emissions associated with Alternative 4.

Table 3.2-52. Daily Emissions from Construction of Alternative 4

Construction Project/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
78-Acre Backland Improvements at Berths 142-147						
Building Demolition	12	43	116	0	42	12
Backland Improvements	15	58	147	0	87	23
Construct a New Administration Building, Main Gate, and Worker Parking Lot						
Construct Administration Building	6	23	41	0	16	5
Construct New Main Gate	2	8	17	0	28	7
Improve/Pave Demolished Areas and Parking	15	58	147	0	74	20
Demolish Existing Admin. Building/Gate	12	43	116	0	42	12
Construct a New Maintenance and Repair Facility						
Construct Maintenance and Repair Facility	7	26	47	0	43	11
Improve/Pave Demolished Areas and M & R	15	58	147	0	74	20
Demolish Existing M & R Facility	12	43	116	0	42	12
Harry Bridges Blvd. Realignment						
Street Removals	17	64	154	0	34	12
Street Improvements	37	202	415	0	31	19
Sewer Installation	4	16	34	0	2	2
Water Systems Installation	4	16	34	0	2	2
Storm Drain Installation	8	32	71	0	4	3
9 Acres of Backland Improv. Berths 134-135	15	58	147	0	60	17
Construct Harry Bridges Blvd. Buffer						
Landscape Installation	11	39	81	0	32	11
Grading/Earthmoving	21	83	191	0	116	31
Worker Commuter Vehicles	3	35	3	0	21	20
Peak Daily CEQA Emissions (1) (2)	**90**	427	**844**	1	**318**	**101**
Mitigated Peak Daily CEQA Emissions	49	228	**679**	1	**258**	**145**
SCAQMD Daily Significance Thresholds	**75**	**550**	**100**	**150**	**150**	**55**

Notes:

(1) Peak daily emissions of all pollutants except PM_{10}/$PM_{2.5}$ would occur from: (a) 78-acres of backland improvements at Berths 142-147, (b) construction of a new administration building, (c) construction of a new maintenance and repair facility, (d) street improvements at the Harry Bridges Blvd. realignment, (e) grading/earthmoving at the new Harry Bridges Blvd landscaped area, and (f) commuting of workers. However, this is an overestimation, as all equipment during these activities would not operate together in the same day.

(2) Peak daily PM_{10}/$PM_{2.5}$ emissions would occur from the same set of activities that produce peak CO, VOC, NO_x, and SO_x emissions with one exception: instead of street improvements at the Harry Bridges Blvd. realignment, the street removals will be a contributor to the peak day.

CEQA Impact Determination

The data in Table 3.2-52 show that peak daily unmitigated emissions during construction of Alternative 4 would exceed the SCAQMD daily thresholds for VOC, NO_x, PM_{10}, and $PM_{2.5}$. As a result, these emissions would be significant under CEQA.

NEPA Impact Determination

No federal action would occur for the Alternative 4; thus, no impacts to air quality would result under NEPA..

Mitigation Measures

To reduce construction emissions from Alternative 4, **Mitigation Measures AQ-1** through **AQ-5** would apply to this alternative.

Residual Impacts

The data in Table 3.2-52 show that mitigated emissions from construction of Alternative 4 under CEQA would exceed the NO_x, PM_{10}, and $PM_{2.5}$ SCAQMD emission thresholds. As a result, these emissions would remain significant under CEQA.

Impact AQ-2: Construction of Alternative 4 would result in offsite ambient air pollutant concentrations that would exceed a SCAQMD threshold of significance.

Peak daily emissions of NO_2 and PM_{10} from construction of Alternative 4 would amount to approximately 39 and 75 percent of those estimated for the proposed Project, as shown in Table 3.2-20. Therefore, applying these same reductions to the maximum offsite ground level concentrations of unmitigated criteria pollutants identified for the proposed Project determined that construction emissions from Alternative 4 also would exceed the 1-hour NO_2 and SCAQMD 24-hour PM_{10} and $PM_{2.5}$ SCAQMD ambient thresholds.

CEQA Impact Determination

Without mitigation, construction emissions from Alternative 4 would produce significant 1-hour NO_2 and 24-hour PM_{10} and $PM_{2.5}$ ambient impacts under CEQA.

NEPA Impact Determination

No federal action would occur for the Alternative 4; thus, no impacts to air quality would result under NEPA.

Mitigation Measures

Implementation of **Mitigation Measures AQ-1** through **AQ-5** would reduce all pollutant impacts from construction of Alternative 4. However, ambient pollutant impacts would still exceed the 1-hour NO_2 and 24-hour PM_{10} and $PM_{2.5}$ SCAQMD thresholds.

Residual Impacts

With implementation of **Mitigation Measures AQ-1** through **AQ-5** construction emissions from Alternative 4 would produce significant 1-hour NO_2 and 24-hour PM_{10} and $PM_{2.5}$ ambient impacts under CEQA.

Impact AQ-3: Operational emissions from Alternative 4 would remain below the 10 tons per year of VOC and SCAQMD daily emission significance thresholds.

Tables 3.2-53 and 3.2-54 provide summaries of the unmitigated average and peak daily emissions that would occur from the operation of Alternative 4.

CEQA Impact Determination

The data in Table 3.2-53 show that operation of the unmitigated Alternative 4 during all Project years would produce less than average daily emissions of all pollutant compared to the CEQA Baseline. Additionally, operation of the unmitigated Alternative 4 would produce lower annual VOC emissions compared to the CEQA Baseline during all project years (See Table D1.2-Alt4-41 in Appendix D1). As a result, average daily operations of Alternative 4 would produce less than significant air quality impacts under CEQA in regard to criterion **AQ-3**.

The data in Table 3.2-54 also show that during a peak day of operation for all Project years, the unmitigated Alternative 4 would produce lower peak daily emissions of all pollutant compared to the CEQA Baseline. As a result, peak daily operations of Alternative 4 would produce less than significant air quality impacts under CEQA in regard to criterion **AQ-3**.

NEPA Impact Determination

No federal action would occur for the Alternative 4; thus, no impacts to air quality would result under NEPA.

Mitigation Measures

Mitigation is not required, although implementation of **Mitigation Measures AQ-6** through **AQ-12** would substantially reduce annual average and peak daily emissions from the operation of Alternative 4 in all Project years.

Residual Impacts

Impacts would be less than significant under CEQA.

Impact AQ-4: Alternative 4 operations would result in offsite ambient air pollutant concentrations that would exceed a SCAQMD threshold of significance.

Ambient pollutant impacts produced from the operation of Alternative 4 were estimated by multiplying the results of the operational dispersion modeling analysis for the proposed Project by the ratio of Alternative 4 to proposed Project operational emissions that would occur within Berths 136-147 Terminal and in direct proximity to the facility during the year 2010. Since Alternative 4 would produce lower $PM_{10}/PM_{2.5}$ emissions and impacts compared to the CEQA Baseline, no analysis was performed for these pollutants.

Table 3.2-53. Average Daily Operational Emissions Associated with the Omni Terminal Alternative

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2007						
Ships – Fairway Transit	26	59	749	440	63	59
Ships – Precautionary Area Transit	5	10	99	61	9	8
Ships – Harbor Transit	7	9	70	35	7	7
Ships – Docking	3	2	19	9	2	2
Ships – Hoteling Aux. Sources	14	49	487	462	41	39
Tugs – Cargo Vessel Assist	1	5	33	0	1	1
Terminal Equipment	39	144	461	0	20	18
On-road Trucks	297	1,009	2,689	2	320	150
Trains	36	83	495	44	19	17
Railyard Equipment	7	27	77	0	3	3
Worker Commuter Vehicles	3	45	6	0	5	4
Relocated PHL Rail Yard	4	7	54	1	1	1
Project Year 2007 Total	**441**	**1,450**	**5,238**	**1,053**	**492**	**310**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2007	**(744)**	**(2,627)**	**(8,234)**	**(1,670)**	**(530)**	**(521)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
Project Year 2015						
Ships – Fairway Transit	37	83	1,037	609	88	82
Ships – Precautionary Area Transit	7	16	153	94	13	13
Ships – Harbor Transit	11	14	110	55	11	10
Ships – Docking	4	4	29	13	3	3
Ships – Hoteling Aux. Sources	21	76	765	709	65	61
Tugs – Cargo Vessel Assist	2	9	48	0	2	2
Terminal Equipment	25	185	353	0	14	13
On-road Trucks	157	854	2,488	3	359	137
Trains	43	117	596	0	16	14
Railyard Equipment	4	33	56	0	2	2
Worker Commuter Vehicles	3	45	6	0	6	6
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2015 Total	**317**	**1,444**	**5,671**	**1,484**	**581**	**344**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change CEQA Baseline - Year 2015	**(868)**	**(2,633)**	**(7,801)**	**(1,240)**	**(441)**	**(487)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**

Table 3.2-53. Average Daily Operational Emissions Associated with the Omni Terminal Alternative (continued)

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2025						
Ships – Fairway Transit	40	90	1,095	640	93	87
Ships – Precautionary Area Transit	9	17	158	93	14	13
Ships – Harbor Transit	13	16	125	62	13	12
Ships – Docking	4	4	34	14	4	3
Ships – Hoteling Aux. Sources	26	88	913	811	77	72
Tugs – Cargo Vessel Assist	1	8	35	0	2	1
Terminal Equipment	10	200	75	0	3	3
On-road Trucks	71	358	965	3	329	78
Trains	41	133	590	0	15	14
Railyard Equipment	2	36	12	0	0	0
Worker Commuter Vehicles	2	31	4	0	7	6
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2025 Total	**221**	**989**	**4,037**	**1,624**	**556**	**291**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change CEQA Baseline - Year 2025	**(964)**	**(3,088)**	**(9,435)**	**(1,100)**	**(466)**	**(541)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
Project Year 2038						
Ships – Fairway Transit	40	90	1,095	640	93	87
Ships – Precautionary Area Transit	9	17	158	93	14	13
Ships – Harbor Transit	13	16	125	62	13	12
Ships – Docking	4	4	34	14	4	3
Ships – Hoteling Aux. Sources	26	88	913	811	77	72
Tugs – Cargo Vessel Assist	1	8	32	0	1	1
Terminal Equipment	12	281	46	1	3	3
On-road Trucks	83	302	803	3	322	72
Trains	35	133	518	0	12	11
Railyard Equipment	1	36	5	0	0	0
Worker Commuter Vehicles	1	12	1	0	7	7
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2038 Total	**227**	**995**	**3,760**	**1,624**	**548**	**283**
CEQA Baseline – Year 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change CEQA Baseline - Year 2038	**(958)**	**(3,082)**	**(9,712)**	**(1,100)**	**(474)**	**(548)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**

Table 3.2-54. Peak Daily Operational Emissions Associated with the Omni Terminal Alternative 4.

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2007						
Ships – Fairway Transit	68	160	2,076	1,230	174	163
Ships – Precautionary Area Transit	13	31	350	231	30	28
Ships – Harbor Transit	22	28	205	110	21	20
Ships – Docking	8	8	57	27	6	6
Ships – Hoteling Aux. Sources	22	86	773	836	67	63
Tugs – Cargo Vessel Assist	5	24	147	0	6	6
Terminal Equipment	261	951	3,040	2	131	120
On-road Trucks	407	1,382	3,681	3	256	171
Trains	89	208	1,245	111	47	43
Railyard Equipment	17	67	193	0	9	8
Worker Commuter Vehicles	10	137	18	0	15	14
Relocated PHL Rail Yard	4	7	54	1	1	1
Project Year 2007 Total	**925**	**3,090**	**11,839**	**2,550**	**762**	**643**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change from CEQA Baseline - Year 2007	**(1,053)**	**(3,845)**	**(11,171)**	**(1,300)**	**(844)**	**(686)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
Project Year 2015						
Ships – Fairway Transit	68	160	2,076	1,230	174	163
Ships – Precautionary Area Transit	13	31	350	231	30	28
Ships – Harbor Transit	22	28	205	110	21	20
Ships – Docking	8	8	57	27	6	6
Ships – Hoteling Aux. Sources	22	86	762	712	54	51
Tugs – Cargo Vessel Assist	4	24	127	2	5	5
Terminal Equipment	151	1,106	2,145	2	87	80
On-road Trucks	218	1,184	3,451	4	245	141
Trains	76	209	1,063	1	28	26
Railyard Equipment	7	59	99	0	4	4
Worker Commuter Vehicles	10	135	17	0	19	17
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2015 Total	**601**	**3,038**	**10,382**	**2,320**	**674**	**540**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change CEQA Baseline - Year 2015	**(1,376)**	**(3,897)**	**(12,628)**	**(1,531)**	**(933)**	**(789)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**

Table 3.2-54. Peak Daily Operational Emissions Associated with the Omni Terminal Alternative 4.

Project Scenario/Activity	Emissions (pounds per day)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2025						
Ships – Fairway Transit	117	265	3,260	1,913	276	258
Ships – Precautionary Area Transit	28	57	527	312	47	44
Ships – Harbor Transit	41	52	392	191	40	37
Ships – Docking	14	14	109	46	12	11
Ships – Hoteling Aux. Sources	35	122	1,246	1,139	106	99
Tugs – Cargo Vessel Assist	4	24	105	2	5	4
Terminal Equipment	58	1,174	441	3	17	15
On-road Trucks	99	496	1,336	4	137	46
Trains	64	209	930	1	23	22
Railyard Equipment	2	57	19	0	1	1
Worker Commuter Vehicles	7	92	12	0	21	19
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2025 Total	**473**	**2,571**	**8,408**	**3,611**	**684**	**557**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change from CEQA Baseline - Year 2025	**(1,504)**	**(4,364)**	**(14,603)**	**(240)**	**(922)**	**(772)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
Project Year 2038						
Ships – Fairway Transit	117	265	3,260	1,913	276	258
Ships – Precautionary Area Transit	28	57	527	312	47	44
Ships – Harbor Transit	41	52	392	191	40	37
Ships – Docking	14	14	109	46	12	11
Ships – Hoteling Aux. Sources	35	122	1,246	1,139	106	99
Tugs – Cargo Vessel Assist	4	24	94	0	4	4
Terminal Equipment	50	1,155	187	3	13	12
On-road Trucks	115	418	1,110	4	129	38
Trains	54	209	816	1	20	18
Railyard Equipment	2	57	8	0	1	0
Worker Commuter Vehicles	4	43	4	0	26	24
Relocated PHL Rail Yard	2	9	30	0	1	1
Project Year 2038 Total	**467**	**2,424**	**7,784**	**3,609**	**673**	**547**
CEQA Baseline – Year 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change from CEQA Baseline - Year 2038	**(1,510)**	**(4,511)**	**(15,227)**	**(242)**	**(934)**	**(782)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**

Table 3.2-55 presents the maximum offsite ground level concentrations of criteria pollutants estimated to occur from the operation of Alternative 4 without mitigation. These data show that total maximum NO_2 concentrations would exceed the 1-hour and annual SCAQMD thresholds.

Table 3.2-55. Maximum Offsite Ambient Concentrations – Alternative 4 Operations Without Mitigation

Pollutant	*Averaging Time*	*Maximum Impact from No Project Emissions (μg/m³)*	*Background Pollutant Concentration (μg/m³)*	*Total Maximum No Project Impact (μg/m³)*	*SCAQMD Threshold [a] (μg/m³)*
NO_2	1-hour	624	263	**887**	338
	Annual	12	54	**66**	56
CO	1-hour	869	6,629	7,498	23,000
	8-hour	225	5,371	5,596	10,000

[a] Exceedances of the thresholds are indicated in bold. The thresholds for NO_2 and CO are combined thresholds and therefore impacts from project emissions plus background pollutant concentrations are compared to the thresholds.
[d] NO_2 concentrations based upon source/maximum impact locations distances of either 500 or 1000 meters. The NO_x to NO_2 conversion rates for these distances were 25.8 and 46.7 percent (SCAQMD, 2003c). This is a conservative approach, as the majority of emission sources that contribute to the maximum NO_2 impact are closer than 500 meters from this location.

CEQA Impact Determination

Operational emissions from Alternative 4 would contribute to significant levels of 1-hour and annual NO_2 concentrations under CEQA.

NEPA Impact Determination

No federal action would occur for the Alternative 4; thus, no impacts to air quality would result under NEPA.

Mitigation Measures

Implementation of **Mitigation Measures AQ-6** through **AQ-18** would substantially reduce the ambient impact of unmitigated operational emissions from Alternative 4. However, given the uncertainty of implementing some measures, the mitigated dispersion modeling analysis only considered the effects of **Mitigation Measures AQ-6** through **AQ-12.** Table 3.2-56 presents the maximum off-site ground level concentrations of criteria pollutants estimated for Alternative 4 operations after mitigation.

Residual Impacts

Alternative 4 residual air quality impacts would be significant for 1-hour and annual NO_2 under CEQA.

Impact AQ-5: Alternative 4 would not create objectionable odors at the nearest sensitive receptor.

Table 3.2-56. Maximum Offsite Ambient Concentrations – Alternative 4 Operations after Mitigation

Pollutant	*Averaging Time*	*Maximum Impact from No Project Emissions (µg/m³)*	*Background Pollutant Concentration (µg/m³)*	*Total Maximum No Project Impact (µg/m³)*	*SCAQMD Threshold[a] (µg/m³)*
NO_2	1-hour	485	263	**748**	338
	Annual	9	54	**63**	56
CO	1-hour	747	6,629	7,376	23,000
	8-hour	161	5,371	5,532	10,000

[a] Exceedances of the thresholds are indicated in bold. The thresholds for NO_2 and CO are combined thresholds and therefore impacts from project emissions plus background pollutant concentrations are compared to the thresholds.

[d] NO_2 concentrations based upon source/maximum impact locations distances of either 500 or 1000 meters. The NO_x to NO_2 conversion rates for these distances were 25.8 and 46.7 percent (SCAQMD, 2003c). This is a conservative approach, as the majority of emission sources that contribute to the maximum NO_2 impact are closer than 500 meters from this location.

Operation of the proposed Project would not create objectionable odors at the nearest sensitive receptors. Since Alternative 4 would produce lower operational emissions compared to the proposed Project, this alternative would produce less than significant impacts under CEQA in regard to criterion **AQ-5**.

Mitigation Measures

Mitigation is not required.

Residual Impacts

There would be less than significant residual impacts under CEQA.

AQ-6: Alternative 4 would not expose receptors to significant levels of TACs.

An analysis to evaluate public cancer risks generated by Alternative 4 operational emissions of TACs was performed by the same methods used for the proposed Project cancer analysis. Non-cancer effects from Alternative 4 TACs were estimated by multiplying the results of the proposed Project non-cancer analysis with the ratio of Alternative 4 to proposed Project operational emissions that would occur within Berths 136-147 Terminal and in direct proximity to the facility during the year 2010. Table 3.2-57 presents the results of these analyses for each receptor type. Figures D3-26 and D3-27 in Appendix D3 show the distribution of predicted residential cancer risks for (1) unmitigated Alternative 4 and (2) unmitigated CEQA increment (unmitigated Alternative 4 minus CEQA Baseline).

CEQA Impact Determination

Table 3.2-57 shows that the maximum cancer and non-cancer CEQA increments due to Alternative 4 would less than zero and therefore remain below all significance criteria.

Table 3.2-57. Maximum Health Impacts due to Alternative 4 Without Mitigation

Health Impact	*Receptor Type*	MAXIMUM PREDICTED IMPACT[1]			*Significance Threshold*[3]
		Alternative 3	*CEQA Baseline*	*CEQA Increment*[2]	
Cancer Risk	Residential	3.2×10^{-6}	4.5×10^{-6}	-1.3×10^{-6}	10×10^{-6}
	Occupational	0.5×10^{-6}	0.7×10^{-6}	-0.21×10^{-6}	
	Sensitive	4.0×10^{-6}	5.7×10^{-6}	-1.6×10^{-6}	
	Student	0.1×10^{-6}	0.1×10^{-6}	0.0×10^{-6}	
	Recreational	9.4×10^{-6}	12.2×10^{-6}	-2.8×10^{-6}	
Chronic Hazard Inde-x	Residential			-0.16	1.0
	Occupational			-0.29	
	Sensitive			-0.10	
	Student			-0.10	
	Recreational			-0.20	
Acute Hazard Index[4]	Residential			-1.33	1.0
	Occupational			-1.35	
	Sensitive			-1.27	
	Student			-1.04	
	Recreational			-1.74	

Notes:

(1) Data represent project scenario impacts that contribute to maximum CEQA incremental impacts.

(2) The CEQA Increment represents Alternative 4 impact minus CEQA Baseline impact. However, non-cancer increments estimated by factoring proposed Project incremental results with the ratio of Alternative 4/proposed Project emissions.

(3) Exceedances of the significance criteria are in bold. The significance thresholds only apply to the CEQA increments.

(4) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type.

No federal action would occur for the No Project Alternative; thus, no impacts to air quality would result under NEPA.

NEPA Impact Determination

No federal action would occur for the Alternative 4; thus, no impacts to air quality would result under NEPA.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA.

Impact AQ-7: Alternative 4 would not conflict with or obstruct implementation of an applicable AQMP.

Similar to the proposed Project, Alternative 4 would comply with the 2003 AQMP emission reduction measures that are designed to bring the SCAB into attainment of the state and national ambient air quality standards. Alternative 4 would accommodate lower cargo throughputs at the Port compared to the proposed Project or CEQA Baseline. Since the 2003 AQMP assumes growth associated with the proposed Project, Alternative 4 would not exceed the future growth projections in the 2003 AQMP and it would not conflict with or obstruct implementation of the SIP.

CEQA Impact Determination

In regard to criterion **AQ-7**, Alternative 4 would produce less than significant impacts under CEQA.

NEPA Impact Determination

No federal action would occur for the Alternative 4; thus, no impacts to air quality would result under NEPA.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA.

Impact AQ-8: Alternative 4 would produce GHG emissions that would not exceed 2003 baseline levels.

Table 3.2-58 summarizes the total GHG construction emissions associated with Alternative 4. Table 3.2-59 summarizes the annual GHG emissions that would occur within California from the operation of Alternative 4.

CEQA Impact Determination

The data in Table 3.2-59 show that in each future project year, annual operational CO_2e emissions would remain below CEQA baseline levels. As a result, Alternative 4 would produce less than significant levels of GHG emissions under CEQA.

NEPA Impact Determination

No federal action would occur for the Alternative 4; thus, no impacts to air quality would result under NEPA..

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would remain less than significant under CEQA.

Table 3.2-58. Total GHG Emissions from Berths 136-147 Terminal Construction Activities — Alternative 4

Construction Activity	TOTAL EMISSIONS (METRIC TONS)			
	CO_2	*CH_4*	*N_2O*	*CO_2e*
78 Acres of Backland Improvement at Berths 142-147	392	0.05	0.01	395
Construct a New Admin. Bldg, Main Gate, and Worker Parking Lot	217	0.03	0.00	219
Construct a New Maintenance and Repair Facility-Berths 136-147	300	0.05	0.00	303
Harry Bridges Blvd. Realignment	447	0.05	0.01	451
9 Acres of Backland Improvements at Berts 134-135	19	0.00	0.00	19
Construction of Harry Bridges Blvd. Buffer	1,198	0.17	0.02	1,207
Worker Vehicles	714	0.12	0.11	752
Total Emissions	**3,287**	**0.47**	**0.15**	**3,344**

One metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

Table 3.2-59. Annual Operational GHG Emissions - Berths 136-147 Terminal - Alternative 4

Project Scenario/Source Type	*Metric Tons Per Year*						
	CO_2	*CH_4*	*N_2O*	*HFC-125*	*HFC-134a*	*HFC-143a*	*CO_2e*
Year 2007							
Ships	25,896	3.4	0.2				26,040
Tugboats	304	0.0	0.0				306
Terminal & Railyard Equipment	6,669	1.1	0.1				6,716
Trucks	75,404	3.8	1.9				76,069
Trains	13,244	1.8	0.1				13,323
Reefer Refrigerant Losses				0.02	0.04	0.02	191
AMP Usage							0
On-Terminal Electricity Usage	1,498	0.0	0.0				1,500
Worker Vehicles	391	0.1	0.1				412
Year 2007 Total	**123,406**	**10.3**	**2.4**	**0.02**	**0.04**	**0.02**	**124,557**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**-178,817**	**-14.9**	**-3.5**	**-0.03**	**-0.07**	**-0.03**	**-180,516**
Year 2015							
Ships	39,449	5.2	0.4				39,667
Tugboats	514	0.1	0.0				517
Terminal & Railyard Equipment	9,979	1.6	0.1				10,049
Trucks	108,412	5.3	2.7				109,353
Trains	18,545	2.6	0.2				18,656
Reefer Refrigerant Losses				0.03	0.06	0.03	270
AMP Usage							0
On-Terminal Electricity Usage	3,383	0.0	0.0				3,388
Worker Vehicles	549	0.1	0.1				575
Year 2015 Total	**180,830**	**14.9**	**3.4**	**0.03**	**0.06**	**0.03**	**182,476**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**-121,393**	**-10.2**	**-2.5**	**-0.02**	**-0.05**	**-0.02**	**-122,597**

Table 3.2-59. Annual Operational GHG Emissions - Berths 136-147 Terminal - Alternative 4

Project Scenario/Source Type	*Metric Tons Per Year*						
	CO_2	*CH_4*	*N_2O*	*HFC-125*	*HFC-134a*	*HFC-143a*	*CO_2e*
Year 2025							
Ships	42,708	5.7	0.4				42,945
Tugboats	462	0.1	0.0				464
Terminal & Railyard Equipment	11,284	1.8	0.1				11,363
Trucks	104,269	5.0	2.5				105,157
Trains	20,973	2.9	0.2				21,099
Reefer Refrigerant Losses				0.03	0.07	0.03	306
AMP Usage							0
On-Terminal Electricity Usage	3,664	0.0	0.0				3,670
Worker Vehicles	554	0.1	0.1				581
Year 2025 Total	**183,913**	**15.6**	**3.3**	**0.03**	**0.07**	**0.03**	**185,584**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**-118,311**	**-9.6**	**-2.6**	**-0.02**	**-0.04**	**-0.02**	**-119,488**
Year 2038							
Ships	42,708	5.7	0.4				42,945
Tugboats	462	0.1	0.0				464
Terminal & Railyard Equipment	11,284	1.8	0.1				11,363
Trucks	104,269	5.0	2.5				105,157
Trains	20,973	2.9	0.2				21,099
Reefer Refrigerant Losses				0.03	0.07	0.03	306
AMP Usage							0
On-Terminal Electricity Usage	3,664	0.0	0.0				3,670
Worker Vehicles	566	0.1	0.1				592
Year 2038 Total	**183,924**	**15.6**	**3.3**	**0.03**	**0.07**	**0.03**	**185,596**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**-118,299**	**-9.6**	**-2.6**	**-0.02**	**-0.04**	**-0.02**	**-119,477**

One metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2800 for HFC-125; 1300 for HFC-134a; and 3800 for HFC-143a.

No federal action would occur for the No Project Alternative; thus, no impacts to air quality would result under NEPA

3.2.4.5.5 Alternative 5 – Landside Terminal Improvements

Impact AQ-1: Construction of Alternative 5 would produce emissions that would exceed SCAQMD emission significance thresholds.

Equal to the NEPA Baseline, construction activities associated with the Landside Terminal Improvements Alternative (Alternative 5) would include all upland Project elements (existing lands) for backlands or other purposes (e.g., improvement of ground transportation infrastructure and construction of the ICTF), but it would not include any dredging, filling of the Northwest Slip, new wharf construction, or existing wharf improvements. The Alternative does not include any of the proposed

Project Phase 2 construction activities. The alternative would produce the same peak daily construction emissions as those identified in Table 3.2-7. Appendix D.1.1 present calculations of emissions that would occur from construction of Alternative 5.

CEQA Impact Determination

During a peak day of activity, construction of Alternative 5 would produce significant levels of VOC, NO_x, PM_{10}, and $PM_{2.5}$ emissions. In regard to $PM_{10}/PM_{2.5}$ emissions, the overwhelming majority of this pollutant emitted during construction would occur in the form of fugitive dust.

NEPA Impact Determination

No federal action would occur for Alternative 5; thus, no impacts to air quality would result under NEPA.

Mitigation Measures

To reduce construction emissions from Alternative, **Mitigation Measures AQ-1** through **AQ-5** would apply to this alternative.

Residual Impacts

Table 3.2-7 presents the mitigated peak daily construction emissions associated with Alternative 5. Mitigated emissions from construction of the Alternative under CEQA would exceed the NO_x, PM_{10}, and $PM_{2.5}$ SCAQMD emission thresholds. As a result, these emissions would remain significant under CEQA.

Impact AQ-2: Construction of Alternative 5 would result in offsite ambient air pollutant concentrations that would exceed a SCAQMD threshold of significance.

Peak daily emissions used to evaluate ambient impacts from the construction of Alternative 5 would be identical to those evaluated for the proposed Project. Therefore, the data in Table 3.2-20 represent the maximum offsite ground level concentrations of criteria pollutants that would occur for Alternative 5 construction activities without mitigation.

CEQA Impact Determination

Without mitigation, construction emissions from Alternative 5 would produce impacts that would exceed the SCAQMD 1-hour NO_2 and 24-hour PM_{10} and $PM_{2.5}$ ambient thresholds. Therefore, these represent significant air quality impacts under CEQA.

NEPA Impact Determination

No federal action would occur for Alternative 5; thus, no impacts to air quality would result under NEPA.

Mitigation Measures

To reduce construction emissions from Alternative 5, **Mitigation Measures AQ-1** through **AQ-5** would apply to this alternative. Table 3.2-21 presents the maximum offsite ground level pollutant concentrations estimated for construction of Alternative 5 after mitigation. These data show that **Mitigation Measures AQ-1** through **AQ-5** would reduce all pollutant impacts, but not to less than the SCAQMD ambient thresholds for NO_2, PM_{10}, or $PM_{2.5}$.

Residual Impacts

Implementation of **Mitigation Measures AQ-1** through **AQ-5** would reduce ambient pollutant impacts from construction of Alternative 5. However, with mitigation, construction emissions from the Alternative would produce impacts that would exceed the SCAQMD 1-hour NO_2 and 24-hour $PM_{10}/PM_{2.5}$ ambient thresholds. As a result, Alternative 5 residual impacts would remain significant for 1-hour NO_2 and 24-hour $PM_{10}/PM_{2.5}$ under CEQA and NEPA.

Impact AQ-3: Alternative 5 would result in operational emissions that exceed 10 tons per year of VOCs and SCAQMD thresholds of significance.

Tables 3.2-60 and 3.2-61 present estimates of average and peak daily emissions that would occur from the operation of Alternative 5.

CEQA Impact Determination

The data in Table 3.2-60 show that the net change in average daily emissions between Alternative 5 and CEQA Baseline would exceed the NO_x and SO_x SCAQMD daily thresholds in 2007 and would remain below all thresholds thereafter. The net change in VOC emissions between the unmitigated Alternative 5 and CEQA Baseline would not exceed the threshold of 10 tons in any Project year (See Table D1.2-Alt5-44 in Appendix D1).

The data in Table 3.2-61 show that during a peak day of activity, emissions between Alternative 5 and CEQA Baseline would exceed the NO_x SCAQMD daily threshold in 2007 and would remain below all thresholds thereafter.

NEPA Impact Determination

No federal action would occur for Alternative 5; thus, no impacts to air quality would result under NEPA.

Mitigation Measures

Since Alternative 5 includes incorporation of **Mitigation Measures AQ-6** through **AQ-12**, no additional measures are proposed to reduce emissions from this scenario.

Residual Impacts

Average daily emissions of NO_x and SO_x and peak daily emissions of NO_x in year 2007 would remain significant under CEQA.

Table 3.2-60. Average Daily Operational Emissions Associated with the Landside Terminal Improvements Alternative 5

Project Scenario/Activity	Emissions (pounds per day)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2007						
Ships – Fairway Transit	80	185	2,354	1,373	196	184
Ships – Precautionary Area Transit	15	31	312	194	27	26
Ships – Harbor Transit	23	29	216	109	22	20
Ships – Docking	8	8	60	26	6	6
Ships – Hoteling Aux. Sources	42	153	1,505	1,440	128	120
Tugs – Cargo Vessel Assist	2	13	79	0	3	3
Terminal Equipment	122	444	1,420	1	61	56
On-road Trucks	698	2,239	6,819	6	458	278
Trains	109	255	1,524	136	58	53
Railyard Equipment	21	82	237	0	11	10
Worker Commuter Vehicles	10	140	18	0	15	14
Relocated PHL Rail Yard	4	7	54	1	1	1
Project Year 2007 Total	**1,135**	**3,585**	**14,597**	**3,286**	**988**	**771**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2007	**(50)**	**(491)**	**1,126**	**562**	**(34)**	**(60)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**Y**	**Y**	**N**	**N**
Project Year 2015						
Ships – Fairway Transit	18	131	986	59	21	20
Ships – Precautionary Area Transit	6	39	267	39	6	6
Ships – Harbor Transit	9	36	220	29	6	5
Ships – Docking	3	10	61	8	2	2
Ships – Hoteling Aux. Sources	15	86	516	692	26	24
Tugs – Cargo Vessel Assist	3	13	71	0	3	3
Terminal Equipment	62	469	70	1	4	3
On-road Trucks	159	561	1,394	8	231	65
Trains	93	255	1,282	1	34	31
Railyard Equipment	8	92	8	0	0	0
Worker Commuter Vehicles	12	161	21	0	22	21
Relocated PHL Rail Yard	2	9	30	0	0	0
Project Year 2015 Total	**390**	**1,862**	**4,927**	**837**	**355**	**180**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change CEQA Baseline - Year 2015	**(795)**	**(2,214)**	**(8,545)**	**(1,887)**	**(667)**	**(651)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**

Table 3.2-60. Average Daily Operational Emissions Associated with the Landside Terminal Improvements Alternative 5 (continued)

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2025						
Ships – Fairway Transit	23	161	1,136	67	25	23
Ships – Precautionary Area Transit	7	47	314	41	7	7
Ships – Harbor Transit	11	45	279	31	7	6
Ships – Docking	3	12	77	8	2	2
Ships – Hoteling Aux. Sources	5	66	176	772	22	20
Tugs – Cargo Vessel Assist	2	13	59	0	3	2
Terminal Equipment	28	561	88	1	4	4
On-road Trucks	151	534	1,347	8	220	61
Trains	124	406	1,781	1	45	41
Railyard Equipment	14	148	14	0	1	1
Worker Commuter Vehicles	8	109	14	0	24	22
Relocated PHL Rail Yard	2	9	6	0	0	0
Project Year 2025 Total	**380**	**2,112**	**5,290**	**930**	**359**	**191**
CEQA Baseline 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2025	**(805)**	**(1,965)**	**(8,182)**	**(1,794)**	**(663)**	**(641)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
Project Year 2038						
Ships – Fairway Transit	23	161	1,136	67	25	23
Ships – Precautionary Area Transit	7	47	314	41	7	7
Ships – Harbor Transit	11	45	279	31	7	6
Ships – Docking	3	12	77	8	2	2
Ships – Hoteling Aux. Sources	5	66	176	772	22	20
Tugs – Cargo Vessel Assist	2	13	53	0	2	2
Terminal Equipment	39	787	123	2	6	6
On-road Trucks	155	533	1,363	8	218	59
Trains	106	406	1,559	1	37	34
Railyard Equipment	14	148	14	0	1	1
Worker Commuter Vehicles	4	50	5	0	30	28
Relocated PHL Rail Yard	2	9	5	0	0	0
Project Year 2038 Total	**373**	**2,278**	**5,104**	**930**	**357**	**189**
CEQA Baseline - Year 2003	**1,185**	**4,077**	**13,472**	**2,724**	**1,022**	**831**
Net Change from CEQA Baseline - Year 2038	**(812)**	**(1,799)**	**(8,368)**	**(1,793)**	**(665)**	**(643)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**

Table 3.2-61. Peak Daily Operational Emissions Associated with the Landside Terminal Improvements Alternative

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2007						
Ships – Fairway Transit	68	160	2,076	1,230	174	163
Ships – Precautionary Area Transit	13	31	350	231	30	28
Ships – Harbor Transit	22	28	205	110	21	20
Ships – Docking	8	8	57	27	6	6
Ships – Hoteling Aux. Sources	78	267	2,789	2,468	236	221
Tugs – Cargo Vessel Assist	5	24	147	0	6	6
Terminal Equipment	702	2,561	8,184	5	352	324
On-road Trucks	956	3,065	9,336	9	628	380
Trains	89	208	1,245	111	47	43
Railyard Equipment	17	67	193	0	9	8
Worker Commuter Vehicles	10	140	18	0	15	14
Relocated PHL Rail Yard	4	7	54	1	1	1
Project Year 2007 Total	**1,971**	**6,566**	**24,654**	**4,191**	**1,525**	**1,213**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change from CEQA Baseline - Year 2007	**(6)**	**(369)**	**1,644**	**341**	**(82)**	**(115)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**Y**	**Y**	**N**	**N**
Project Year 2015						
Ships – Fairway Transit	34	260	1,658	94	35	32
Ships – Precautionary Area Transit	12	78	493	58	11	11
Ships – Harbor Transit	19	77	482	47	12	11
Ships – Docking	6	21	133	12	3	3
Ships – Hoteling Aux. Sources	20	135	684	1,222	42	39
Tugs – Cargo Vessel Assist	4	24	127	0	5	5
Terminal Equipment	317	2,381	356	5	18	16
On-road Trucks	218	768	1,909	11	316	88
Trains	119	326	1,636	1	43	40
Railyard Equipment	2	24	2	0	0	0
Worker Commuter Vehicles	12	161	21	0	22	21
Relocated PHL Rail Yard	2	9	30	0	0	0
Project Year 2015 Total	**766**	**4,263**	**7,532**	**1,451**	**508**	**267**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change CEQA Baseline - Year 2015	**(1,212)**	**(2,672)**	**(15,478)**	**(2,399)**	**(1,099)**	**(1,062)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**

Table 3.2-61. Peak Daily Operational Emissions Associated with the Landside Terminal Improvements Alternative (continued)

Project Scenario/Activity	EMISSIONS (POUNDS PER DAY)					
	VOC	*CO*	*NO_x*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Project Year 2025						
Ships – Fairway Transit	34	260	1,658	94	35	32
Ships – Precautionary Area Transit	12	78	493	58	11	11
Ships – Harbor Transit	19	77	482	47	12	11
Ships – Docking	6	21	133	12	3	3
Ships – Hoteling Aux. Sources	8	102	273	1,198	34	31
Tugs – Cargo Vessel Assist	4	24	105	0	5	4
Terminal Equipment	114	2,307	362	5	18	17
On-road Trucks	207	731	1,845	10	301	83
Trains	100	326	1,429	1	36	33
Railyard Equipment	11	120	11	0	1	1
Worker Commuter Vehicles	8	109	14	0	24	22
Relocated PHL Rail Yard	2	9	6	0	0	0
Project Year 2025 Total	**527**	**4,163**	**6,811**	**1,426**	**479**	**249**
CEQA Baseline 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change from CEQA Baseline - Year 2025	**(1,451)**	**(2,772)**	**(16,200)**	**(2,424)**	**(1,128)**	**(1,080)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
Project Year 2038						
Ships – Fairway Transit	34	260	1,658	94	35	32
Ships – Precautionary Area Transit	12	78	493	58	11	11
Ships – Harbor Transit	19	77	482	47	12	11
Ships – Docking	6	21	133	12	3	3
Ships – Hoteling Aux. Sources	8	102	273	1,198	34	31
Tugs – Cargo Vessel Assist	4	24	94	0	4	4
Terminal Equipment	114	2,307	362	5	18	17
On-road Trucks	213	729	1,866	11	298	81
Trains	85	326	1,251	1	30	27
Railyard Equipment	11	120	11	0	1	1
Worker Commuter Vehicles	4	50	5	0	30	28
Relocated PHL Rail Yard	2	9	5	0	0	0
Project Year 2038 Total	**513**	**4,102**	**6,634**	**1,426**	**476**	**246**
CEQA Baseline - Year 2003	**1,977**	**6,935**	**23,010**	**3,851**	**1,607**	**1,329**
Net Change from CEQA Baseline - Year 2038	**(1,464)**	**(2,833)**	**(16,376)**	**(2,424)**	**(1,131)**	**(1,083)**
SCAQMD Daily Significance Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds SCAQMD Threshold?	**N**	**N**	**N**	**N**	**N**	**N**

Impact AQ-4: Operation of Alternative 5 would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance.

Table 3.2-62 presents the maximum offsite ground level concentrations of criteria pollutants estimated for Alternative 5 operations. These data show that total maximum NO_2 concentrations would exceed the 1-hour and annual SCAQMD thresholds. Additionally, operation of the alternative would exceed the SCAQMD PM_{10}/$PM_{2.5}$ threshold of 2.5 µg/m^3 under CEQA.

Table 3.2-62. Maximum Offsite Ambient Concentrations – Alternative 5 Operations

Pollutant	*Averaging Time*	*Maximum Impact from Alternative 5 Emissions (µg/m^3)*	*Background Pollutant Concentration (µg/m^3)*	*Total Maximum Alternative 5 Impact (µg/m^3)*	*SCAQMD Threshold[a] (µg/m^3)*
NO_2	1-hour	1,072	263	**1,335**	338
	Annual	21	54	**75**	56
CO	1-hour	1,673	6,629	8,302	23,000
	8-hour	433	5,371	5,804	10,000
				Maximum CEQA Increment (µg/m^3)[b]	
PM_{10}	24-hour			**3.7**	2.5
$PM_{2.5}$	24-hour			**3.5**	2.5

[a] Exceedances of the thresholds are indicated in bold. The thresholds for PM_{10}/$PM_{2.5}$ are incremental thresholds and therefore only impacts from project emissions without background pollutant concentrations are compared to the thresholds. The thresholds for NO_2 and CO are combined thresholds and therefore impacts from project emissions plus background pollutant concentrations are compared to the thresholds.

[b] Equal to Alternative 5 impact minus CEQA Baseline impact. There are no NEPA impacts associated with Alternative 5.

[d] NO_2 concentrations based upon source/maximum impact locations distances of either 500 or 1000 meters. The NO_x to NO_2 conversion rates for these distances were 25.8 and 46.7 percent (SCAQMD, 2003c). This is a conservative approach, as the majority of emission sources that contribute to the maximum NO_2 impact are closer than 500 meters from this location.

CEQA Impact Determination

Operation of Alternative 5 would contribute to significant levels of 1-hour and annual NO_2 and 24-hour PM_{10} and $PM_{2.5}$ concentrations under CEQA.

NEPA Impact Determination

No federal action would occur for Alternative 5; thus, no impacts to air quality would result under NEPA.

Mitigation Measures

Since Alternative 5 includes incorporation of **Mitigation Measures AQ-6** through **AQ-12**, no additional measures are proposed to reduce emissions from this scenario.

Residual Impacts

Alternative 5 residual air quality impacts would be significant for 1-hour and annual NO_2 and 24-hour PM_{10} and $PM_{2.5}$ concentrations under CEQA.

Impact AQ-5: Alternative 5 would not create objectionable odors at the nearest sensitive receptor.

Operation of Alternative 5 would produce similar to slightly lower odorous impacts compared to the proposed Project.

CEQA Impact Determination

Operation of Alternative 5 would produce less than significant odor impacts under CEQA.

NEPA Impact Determination

No federal action would occur for Alternative 5; thus, no impacts to air quality would result under NEPA.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA.

Impact AQ-6: Alternative 5 would expose receptors to significant levels of TACs.

An analysis to evaluate public cancer risks generated by Alternative 5 operational emissions of TACs was performed by the same methods used for the proposed Project cancer analysis. Non-cancer effects from Alternative 5 TACs were estimated by multiplying the results of the proposed Project non-cancer analysis with the ratio of Alternative 5 to proposed Project operational emissions that would occur within Berths 136-147 Terminal and in direct proximity to the facility during the year 2010. Table 3.2-63 presents the results of these analyses for each receptor type. Figures D3-28 through D3-29 in Appendix D3 show the distribution of predicted residential cancer risks for (1) Alternative 5 and (2) CEQA increment (Alternative 5 minus CEQA Baseline).

CEQA Impact Determination

The maximum CEQA increment for residential cancer risk is predicted to be -1.4 in a million. In other words, Alternative 5 would produce lower cancer risks at any residential location compared to the CEQA Baseline. This risk value and the incremental risk values for all other receptor types would not exceed the significance criterion of 10 in a million. The maximum CEQA increment for chronic and acute non-cancer effects to all receptor types would remain below the significance criterion of 1.0.

NEPA Impact Determination

No federal action would occur for Alternative 5; thus, no impacts to air quality would result under NEPA

Mitigation Measures

Impacts would be less than significant; therefore, mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA.

Table 3.2-63. Maximum Health Impacts due to Alternative 5 Without Mitigation

Health Impact	*Receptor Type*	MAXIMUM PREDICTED IMPACT[1]			*Significance Threshold*[3]
		Alternative 5	*CEQA Baseline*	*CEQA Increment*[2]	
Cancer Risk	Residential	8.5×10^{-6}	9.8×10^{-6}	-1.4×10^{-6}	10×10^{-6}
	Occupational	2.8×10^{-6}	1.6×10^{-6}	1.2×10^{-6}	
	Sensitive	4.1×10^{-6}	7.3×10^{-6}	-3.2×10^{-6}	
	Student	0.1×10^{-6}	0.2×10^{-6}	-0.1×10^{-6}	
	Recreational	6.8×10^{-6}	12.2×10^{-6}	-5.4×10^{-6}	
Chronic Hazard Index	Residential			-0.08	1.0
	Occupational			-0.14	
	Sensitive			-0.04	
	Student			-0.05	
	Recreational			-0.06	
Acute Hazard Index[4]	Residential			-0.74	1.0
	Occupational			-0.69	
	Sensitive			-0.72	
	Student			-0.59	
	Recreational			-0.97	

Notes:

(1) Data represent project scenario impacts that contribute to maximum CEQA/NEPA incremental impacts.

(2) The CEQA Increment represents Alternative 5 impact minus CEQA Baseline impact. The NEPA Increment represents Alternative 5 impact minus NEPA baseline impact. However, non-cancer increments estimated by factoring proposed Project incremental results with the ratio of Alternative 5/proposed Project emissions.

(3) Exceedances of the significance criteria are in bold. The significance thresholds only apply to the CEQA and NEPA increments.

(4) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type.

No federal action would occur for Alternative 5; thus, no impacts to air quality would result under NEPA

Impact AQ-7: Alternative 5 would not conflict with or obstruct implementation of an applicable AQMP.

Similar to the proposed Project, Alternative 5 would comply with the 2003 AQMP emission reduction measures that are designed to bring the SCAB into attainment of the state and national ambient air quality standards. Alternative 5 would accommodate lower cargo throughputs at the Port compared to the proposed Project. Since the 2003 AQMP assumes growth associated with the proposed Project, Alternative 5 would not exceed the future growth projections in the 2003 AQMP and it would not conflict with or obstruct implementation of the SIP.

<u>**CEQA Impact Determination**</u>

In regard to criterion **AQ-7**, Alternative 5 would produce less than significant impacts under CEQA.

NEPA Impact Determination

No federal action would occur for Alternative 5; thus, no impacts to air quality would result under NEPA.

Mitigation Measures

Impacts would be less than significant; therefore, mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA.

Impact AQ-8: Alternative 5 would produce GHG emissions that would exceed 2003 baseline levels.

Table 3.2-64 summarizes the total GHG construction emissions associated with Alternative 5. Table 3.2-65 summarizes the annual GHG emissions that would occur within California from the operation of Alternative 5. Implementation of AMP and VSRP for ships, consistent with **Mitigation Measures AQ-6** and **AQ-10**, were included in the operational emission estimates for Alternative 5.

CEQA Impact Determination

The data in Table 3.2-65 show that in each future project year, annual operational CO_2e emissions would increase from CEQA baseline levels. As a result, Alternative 5 would produce significant levels of GHG emissions under CEQA.

Table 3.2-64. Total GHG Emissions from Berths 136-147 Terminal Construction Activities — Alternative 5

Construction Activity	TOTAL EMISSIONS (METRIC TONS)			
	CO_2	*CH_4*	*N_2O*	*CO_2e*
78 Acres of Backland Improvement at Berths 142-147	392	0.05	0.01	395
Construct a New Admin. Bldg, Main Gate, and Worker Parking Lot	217	0.03	0.00	219
Construct a New Maintenance and Repair Facility-Berths 136-147	300	0.05	0.00	303
Harry Bridges Blvd. Realignment	447	0.05	0.01	451
Construction of a 46-Acre Rail Yard at Berth 200	1,410	0.17	0.03	1,422
9 Acres of Backland Improvements at Berths 134-135	19	0.00	0.00	19
Construction of B142-147 12-Acre ICTF and 19-Acre Backlands	548	0.07	0.01	553
Construction of Harry Bridges Blvd. Buffer	1,198	0.17	0.02	1,207
Worker Vehicles	857	0.14	0.14	902
Total Emissions	**5,388**	**0.73**	**0.21**	**5,469**

One metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.
CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

Table 3.2-65. Annual Operational GHG Emissions - Berths 136-147 Terminal – Alternative 5

Project Scenario/Source Type	METRIC TONS PER YEAR						
	CO_2	*CH_4*	*N_2O*	*HFC-125*	*HFC-134a*	*HFC-143a*	*CO_2e*
Year 2007							
Ships	81,191	10.7	0.7				81,641
Tugboats	731	0.1	0.0				735
Terminal & Railyard Equipment	20,551	3.3	0.2				20,695
Trucks	232,432	11.6	5.8				234,481
Trains	40,158	5.6	0.4				40,399
Reefer Refrigerant Losses				0.06	0.13	0.07	590
AMP Usage	0	0.0	0.0				0
On-Terminal Electricity Usage	4,616	0.0	0.0				4,623
Worker Vehicles	1,349	0.2	0.2				1,420
Year 2007 Total	**381,028**	**31.7**	**7.4**	**0.06**	**0.13**	**0.07**	**384,584**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**78,804**	**6.5**	**1.5**	**0.01**	**0.02**	**0.01**	**79,511**
Year 2015							
Ships	45,085	6.1	0.4				45,348
Tugboats	764	0.1	0.0				769
Terminal & Railyard Equipment	24,671	4.0	0.3				24,846
Trucks	326,564	16.1	8.0				329,389
Trains	38,748	5.4	0.4				38,981
Reefer Refrigerant Losses				0.07	0.17	0.08	732
AMP Usage	6,313	0.1	0.0				6,323
On-Terminal Electricity Usage	5,733	0.0	0.0				5,742
Worker Vehicles	1,649	0.2	0.2				1,730
Year 2015 Total	**449,527**	**32.0**	**9.4**	**0.07**	**0.17**	**0.08**	**453,859**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**147,304**	**6.9**	**3.5**	**0.02**	**0.06**	**0.03**	**148,787**
Year 2025							
Ships	50,377	6.9	0.5				50,671
Tugboats	764	0.1	0.0				769
Terminal & Railyard Equipment	31,842	5.2	0.4				32,066
Trucks	306,195	14.8	7.4				308,798
Trains	61,799	8.6	0.6				62,170
Reefer Refrigerant Losses				0.09	0.21	0.10	917
AMP Usage	10,371	0.1	0.0				10,387
On-Terminal Electricity Usage	7,180	0.1	0.0				7,192
Worker Vehicles	1,664	0.2	0.2				1,744
Year 2025 Total	**470,192**	**35.9**	**9.2**	**0.09**	**0.21**	**0.10**	**474,715**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**167,969**	**10.7**	**3.3**	**0.04**	**0.10**	**0.05**	**169,643**

Table 3.2-65. Annual Operational GHG Emissions - Berths 136-147 Terminal – Alternative 5 (continued)

Project Scenario/Source Type	METRIC TONS PER YEAR						
	CO_2	*CH_4*	*N_2O*	*HFC-125*	*HFC-134a*	*HFC-143a*	*CO_2e*
Year 2038							
Ships	50,377	6.9	0.5				50,671
Tugboats	764	0.1	0.0				769
Terminal & Railyard Equipment	31,842	5.2	0.4				32,066
Trucks	306,195	14.8	7.4				308,798
Trains	61,799	8.6	0.6				62,170
Reefer Refrigerant Losses				0.09	0.21	0.10	917
AMP Usage	10,371	0.1	0.0				10,387
On-Terminal Electricity Usage	7,180	0.1	0.0				7,192
Worker Vehicles	1,697	0.2	0.2				1,777
Year 2038 Total	**470,225**	**35.9**	**9.2**	**0.09**	**0.21**	**0.10**	**474,748**
CEQA Baseline	302,223	25.2	5.9	0.05	0.11	0.05	305,073
Project minus CEQA Baseline	**168,002**	**10.7**	**3.3**	**0.04**	**0.10**	**0.05**	**169,676**

One metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.
CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2800 for HFC-125; 1300 for HFC-134a; and 3800 for HFC-143a.
No federal action would occur for Alternative 5; thus, no impacts to air quality would result under NEPA

NEPA Impact Determination

No federal action would occur for Alternative 5; thus, no impacts to air quality would result under NEPA

Mitigation Measures

Measures that reduce fuel usage and electricity consumption from Alternative 5 emission sources would reduce proposed GHG emissions. Project mitigation measures that would accomplish this effect include **AQ-6** (already included in Table 3.2-65), **AQ-10** (already included in Table 3.2-65), **AQ-14, AQ-16, AQ-19, AQ-20, AQ-21, AQ-22, AQ-23,** and **AQ-24.**

Residual Impacts

Impacts would remain significant under CEQA.

3.2.4.6 Summary of Impact determinations

Table 3.2-66 summarizes the CEQA and NEPA impact determinations of the proposed Project and its Alternatives related to Air Quality, as described in the detailed discussion in Sections 3.2.4.4 and 3.2.4.5. This table is meant to allow easy comparison between the potential impacts of the Project and its Alternatives with respect to this resource.

Identified potential impacts may be based on Federal, State, or City of Los Angeles significance criteria, Port criteria, and the scientific judgment of the report preparers.

For each type of potential impact, the table describes the impact, notes the CEQA and NEPA 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. Note that impact descriptions for each of the Alternatives are the same as for the Project, unless otherwise noted.

3.2.4.8 Significant Unavoidable Adverse Impacts

3.2.4.8.1 Construction

The proposed Project impact analysis determined that implementation of **Mitigation Measures AQ-1** through **AQ-5** and **AQ-18A**would not reduce peak daily construction emissions of VOC, NO_x, SO_x, PM_{10}, and $PM_{2.5}$ to below their respective SCAQMD significance thresholds. No feasible mitigation measures are available that would further reduce these significant impacts. Therefore, these air quality impacts are considered significant, adverse, and unavoidable.

3.2.4.8.2 Operations

The proposed Project impact analysis determined that implementation of **Mitigation Measures AQ-6** through **AQ-18B** would not reduce daily operational emissions of VOC, NO_x, and SO_x to below their respective SCAQMD significance thresholds in Project year 2007. Implementation of these measures would be unable to mitigate significant 1-hour and annual NO_2 concentrations and 24-hour PM_{10} and $PM_{2.5}$ increments under CEQA and NEPA. Additionally, implementation of these measures would be unable to mitigate significant cancer risks under NEPA. Under CEQA, GHG emissions remain significant and unavoidable even after implementation of **MM AQ-6, AQ-9-10, AQ-14 , AQ-16** and **AQ-19** through **MM AQ-24.** No feasible mitigation measures are available that would further reduce these significance impacts. Therefore, these air quality impacts are considered significant, adverse, and unavoidable.

Table 3.2-66: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Meteorology Associated with the Proposed Project and Alternatives

Alternative	*Environmental Impacts*	*Impact Determination*	*Mitigation Measures*	*Impacts after Mitigation*
		3.2 Air Quality and Meteorology		
Proposed Project	**AQ-1:** Construction would produce emissions that would exceed SCAQMD emission significance thresholds.	CEQA: **Significant** impact for VOC, NO_x, SO_x, PM_{10} and $PM_{2.5}$ emissions in Phase 1 **Significant** impact for VOC, NO_x and $PM_{2.5}$ emissions in Phase 2 Measured pollutants: VOC, CO, NO_x, SO_x, PM_{10} and $PM_{2.5}$	**AQ-1:** Expanded VSR Program **AQ-2:** Fleet Modernization for On-Road Trucks **AQ-3:** Fleet Modernization for Construction Equipment **AQ-4:** Best Management Practices (BMPs) **AQ-5:** Additional Fugitive Dust Controls **AQ-18A:** General Mitigation Measure	CEQA*. **Significant** impact after mitigation from NO_x, SO_X, PM_{10} and $PM_{2.5}$ emissions in Phase 1. **Significant** impact after mitigation from NO_x and $PM_{2.5}$ emissions in Phase 2. Less than significant impact after mitigation for all other pollutants for Phase 2
		NEPA: **Significant** impact for VOC, NO_x, PM_{10}, and $PM_{2.5}$ emissions in Phase 1 Less than significant impact for all other pollutants for Phase	**AQ-1** through **AQ-5**	NEPA*: **Significant** impact after mitigation from NO_x, PM_{10}, and $PM_{2.5}$ emissions in Phase 1 Less than significant impact after mitigation for all other pollutants in Phases 1 and 2
	AQ-2: Construction would result in offsite ambient air pollutant concentrations that would exceed a SCAQMD threshold of significance.	CEQA: **Significant** impact for 1-hr NO_2, 24-hr PM_{10}, and $PM_{2.5}$ emissions in Phase 1 Less than significant impact for all other pollutants in Phase 1 Phase 2 impacts not applicable Measured pollutants: 1-hr NO_2, 1-hr CO, 8-hr CO, 24-hr PM_{10} and 24-hr $PM_{2.5}$	**AQ-1** through **AQ-5**	CEQA: **Significant** impact after mitigation for 1-hr NO_2, 24-hr PM_{10}, and $PM_{2.5}$ emissions in Phase 1
		NEPA: **Significant** impact for 1-hr NO_2, 24-hr PM_{10}, and $PM_{2.5}$ emissions in Phase 1 Less than significant impact for all other pollutants in Phase 1	**AQ-1** through **AQ-5**	NEPA: **Significant** impact after mitigation for 1-hr NO_2, 24-hr PM_{10}, and $PM_{2.5}$ emissions in Phase 1

Table 3.2-66: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Meteorology Associated with the Proposed Project and Alternatives (continued)

Alternative	*Environmental Impacts*	*Impact Determination*	*Mitigation Measures*	*Impacts after Mitigation*
3.2 Air Quality and Meteorology (continued)				
Proposed Project (continued)	**AQ-3:** Operational emissions would exceed 10 tons per year of VOCs and SCAQMD daily thresholds of significance.	CEQA: **Significant** impact for the following project years and pollutants†: 2007: All daily pollutant thresholds. Annual VOC threshold. 2015: All pollutants except VOC 2025: Daily: NO_x, SO_x, and PM_{10} 2038: Daily SO_x Measured pollutants: VOC, CO, NO_x, SO_x, PM_{10} and $PM_{2.5}$ Project Years: 2007, 2015, 2025 and 2038	**AQ-6:** Alternative Maritime Power (AMP) **AQ-7:** Alternative Fuel Yard Tractors **AQ-8:** Low- NO_x and low–PM standards **AQ-9:** Fleet Modernization for On-Road Trucks **AQ-10:** Vessel Speed Reduction Program **AQ-11:** Ship Auxiliary Engine, Main Engine and Boiler Fuel Improvement Program **AQ-12:** Slide Valves in Ship Main Engines **AQ-13:** New Vessel Builds **AQ-14:** Clean Rail Yard Standards **AQ-15:** Reroute Cleaner Ships **AQ-16:** Truck Idling Reduction Measures **AQ-17:** Periodic Review of New Technology and Regulations **AQ-18B:** General Mitigation Measure	CEQA‡. **Significant** impact after mitigation for the following years and pollutants 2007: Daily emissions of VOC, NO_x, and SO_x. Less than significant impact for all other pollutants and years
		NEPA: **Significant** impact for the following project years and pollutants†: 2007, 2015, 2025 and 2038: All daily pollutant thresholds and annual VOC threshold.	**AQ-6** through **AQ-18**	NEPA‡: **Significant** impact after mitigation for the following years and pollutants 2007: All pollutants except CO. 2015: VOC, CO, and NO_x. 2025: All pollutants 2038: All pollutants except SO_x

Table 3.2-66: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Meteorology Associated with the Proposed Project and Alternatives (continued)

Alternative	*Environmental Impacts*	*Impact Determination*	*Mitigation Measures*	*Impacts after Mitigation*
3.2 Air Quality and Meteorology (continued)				
Proposed Project (continued)	**AQ-4:** Operations would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance.	CEQA: **Significant** impact for 1-hr and annual NO_2 and 24-hr $PM_{10}/PM_{2.5}$ Less than significant impact for all other pollutants Measured pollutants: 1-hr NO_2, annual NO_2, 1-hr CO, 8-hr CO, 24-hr PM_{10}, and 24-hr $PM_{2.5}$	**AQ-6** through **AQ-18**	CEQA‡: **Significant** impact after mitigation for 1-hr and annual NO_2 and 24-hr $PM_{10}/PM_{2.5}$ Less than significant impact after mitigation for all other pollutants
		NEPA: **Significant** impact for 1-hr and annual NO_2 and 24-hr $PM_{10}/PM_{2.5}$ Less than significant impact for all other pollutants	**AQ-6** through **AQ-18**	NEPA‡: **Significant** impact after mitigation for 1-hr and annual NO_2 and 24-hr $PM_{10}/PM_{2.5}$ Less than significant impact after mitigation for all other pollutants
	AQ-5: Operations would not create objectionable odors at the nearest sensitive receptor.	CEQA: Less than significant impact NEPA: Less than significant impact	Mitigation not required Mitigation not required	CEQA: Less than significant impact NEPA: Less than significant impact
	AQ-6: Operations would expose receptors to significant levels of TACs.	CEQA: **Significant** impact for cancer risk and acute non-cancer effects. Less than significant impact for chronic non-cancer effects	**AQ-6** through **AQ-12**	CEQA: Less than significant impacts after mitigation
		NEPA: **Significant** impact for cancer risk and acute non-cancer effects Less than significant impact for chronic non-cancer effects	**AQ-6** through **AQ-12**	NEPA: Significant impact for cancer risk after mitigation
	AQ-7: Operations would not conflict with or obstruct implementation of an applicable AQMP.	CEQA: Less than significant impact NEPA: Less than significant impact	Mitigation not required Mitigation not required	CEQA: Less than significant impact NEPA: Less than significant impact
	AQ-8: The proposed Project would produce Green House Gas (GHG) emissions that would exceed 2003 baseline levels.	CEQA: **Significant** impact	**AQ-6, AQ-10**, **AQ-14**, **AQ-16**, **AQ-19 to AQ-24**	CEQA: **Significant** impact after mitigation
		NEPA: No determination of significance	**AQ-6, AQ-10**, **AQ-14**, **AQ-16**, **AQ-19 to AQ-24**	NEPA: No determination of significance

Table 3.2-66: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Meteorology Associated with the Proposed Project and Alternatives (continued)

Alternative	*Environmental Impacts*	*Impact Determination*	*Mitigation Measures*	*Impacts after Mitigation*
3.2 Air Quality and Meteorology (continued)				
Alternative 1	No construction impacts would occur in association with the No Project Alternative, therefore there are no impacts under CEQA for **AQ-1** or **AQ-2**	CEQA: No impact NEPA: Not applicable	Mitigation not required Mitigation not required	CEQA: No impact NEPA: Not applicable
	AQ-3	CEQA: **Significant** impact† for the following project years and pollutants: 2007: VOC, CO, NO_x, and SO_x 2015: NO_x and SO_x 2025 and 2038: SO_x NEPA: Not applicable	No mitigation measures are applicable Mitigation not required	CEQA: **Significant** impact for the same project years and pollutants NEPA: Not applicable
	AQ-4	CEQA: **Significant** impact for 1-hr and annual NO_2 and 24-hr $PM_{10}/PM_{2.5}$ Less than significant impact for all other pollutants NEPA: Not applicable	No mitigation measures are applicable Mitigation not required	CEQA: **Significant** impact for 1-hr and annual NO_2 and 24-hr $PM_{10}/PM_{2.5}$ Less than significant impact for all other pollutants NEPA: Not applicable
	AQ-5	CEQA: Less than significant impact NEPA: Not applicable	Mitigation not required Mitigation not required	CEQA: Less than significant impact NEPA: Not applicable
	AQ-6	CEQA: **Significant** impact for cancer risk Less than significant impact for acute and chronic non-cancer effects NEPA: Not applicable	No mitigation measures are applicable Mitigation not required	CEQA: **Significant** impact for cancer risk Less than significant impact for acute and chronic non-cancer effects NEPA: Not applicable
	AQ-7	CEQA: Less than significant impact	Mitigation not required	CEQA: Less than significant impact
	AQ-8	CEQA: **Significant** impact NEPA: Not applicable	No mitigation measures are applicable Mitigation not required	CEQA: **Significant** impact after mitigation NEPA: Not applicable

Table 3.2-66: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Meteorology Associated with the Proposed Project and Alternatives (continued)

Alternative	*Environmental Impacts*	*Impact Determination*	*Mitigation Measures*	*Impacts after Mitigation*
3.2 Air Quality and Meteorology (continued)				
Alternative 2	**AQ-1**	CEQA: **Significant** impact for VOC, NO_x, SO_x, PM_{10} and $PM_{2.5}$ emissions in Phase 1 **Significant** impact for VOC, NO_x and $PM_{2.5}$ emissions in Phase 2 Measured pollutants: VOC, CO, NO_x, SO_x, PM_{10} and $PM_{2.5}$	**AQ-1** through **AQ-5**	CEQA*. **Significant** impact after mitigation from NO_x, SO_x, PM_{10} and $PM_{2.5}$ emissions in Phase 1. **Significant** impact after mitigation from NO_x and $PM_{2.5}$ emissions in Phase 2. Less than significant impact after mitigation for all other pollutants for Phase 2
		NEPA: **Significant** impact for VOC, NO_x, PM_{10}, and $PM_{2.5}$ emissions in Phase 1 Less than significant impact for all other pollutants for Phase	**AQ-1** through **AQ-5**	NEPA*: **Significant** impact after mitigation from NO_x, PM_{10}, and $PM_{2.5}$ emissions in Phase 1 Less than significant impact after mitigation for all other pollutants in Phases 1 and 2
	AQ-2	CEQA: **Significant** impact for 1-hr NO_2, 24-hr PM_{10}, and $PM_{2.5}$ emissions in Phase 1 Less than significant impact for all other pollutants in Phase 1 Phase 2 impacts not applicable Measured pollutants: 1-hr NO_2, 1-hr CO, 8-hr CO, 24-hr PM_{10} and 24-hr $PM_{2.5}$	**AQ-1** through **AQ-5**	CEQA: **Significant** impact after mitigation for 1-hr NO_2, 24-hr PM_{10}, and $PM_{2.5}$ emissions in Phase 1
		NEPA: **Significant** impact for 1-hr NO_2, 24-hr PM_{10}, and $PM_{2.5}$ emissions in Phase 1 Less than significant impact for all other pollutants in Phase 1	**AQ-1** through **AQ-5**	NEPA: **Significant** impact after mitigation for 1-hr NO_2, 24-hr PM_{10}, and $PM_{2.5}$ emissions in Phase 1

Table 3.2-66: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Meteorology Associated with the Proposed Project and Alternatives (continued)

Alternative	*Environmental Impacts*	*Impact Determination*	*Mitigation Measures*	*Impacts after Mitigation*
3.2 Air Quality and Meteorology (continued)				
Alternative 2 (continued)	**AQ-3:** Operational emissions would exceed 10 tons per year of VOCs and SCAQMD daily thresholds of significance.	CEQA: **Significant** impact for the following project years and pollutants†: 2007: All daily pollutant thresholds. Annual VOC threshold. 2015: All pollutants except VOC 2025: NO_x, SO_x, and PM_{10} 2038: SO_x Measured pollutants: VOC, CO, NO_x, SO_x, PM_{10} and $PM_{2.5}$ Project Years: 2007, 2015, 2025 and 2038	**AQ-6:** Alternative Maritime Power (AMP) **AQ-7:** Alternative Fuel Yard Tractors **AQ-8:** Low- NO_x and low–PM standards **AQ-9:** Fleet Modernization for On-Road Trucks **AQ-10:** Vessel Speed Reduction Program **AQ-11:** Ship Auxiliary Engine, Main Engine and Boiler Fuel Improvement Program **AQ-12:** Slide Valves in Ship Main Engines **AQ-13:** New Vessel Builds **AQ-14:** Clean Rail Yard Standards **AQ-15:** Reroute Cleaner Ships **AQ-16:** Truck Idling Reduction Measures **AQ-17:** Periodic Review of New Technology and Regulations **AQ-18:** General Mitigation Measure	CEQA‡. **Significant** impact after mitigation for the following years and pollutants 2007: Daily emissions of VOC, NO_x, and SO_x. Less than significant impact for all other pollutants and years

Table 3.2-66: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Meteorology Associated with the Proposed Project and Alternatives (continued)

Alternative	*Environmental Impacts*	*Impact Determination*	*Mitigation Measures*	*Impacts after Mitigation*
3.2 Air Quality and Meteorology (continued)				
Alternative 2 (continued)	**AQ-3** (Continued)	NEPA: **Significant** impact for the following project years and pollutants†: 2007, 2015, 2025 and 2038: All daily pollutant thresholds and annual VOC threshold.	**AQ-6** through **AQ-18**	NEPA‡: **Significant** impact after mitigation for the following years and pollutants 2007: All pollutants except CO. 2015: VOC, CO, and NO_x. 2025: All pollutants 2038: All pollutants except SO_x
	AQ-4	CEQA: **Significant** impact for 1-hr and annual NO_2 and 24-hr PM_{10}/$PM_{2.5}$ Less than significant impact for all other pollutants Measured pollutants: 1-hr NO_2, annual NO_2, 1-hr CO, 8-hr CO, 24-hr PM_{10}, and 24-hr $PM_{2.5}$	**AQ-6** through **AQ-18**	CEQA‡: **Significant** impact after mitigation for 1-hr and annual NO_2 and 24-hr PM_{10}/$PM_{2.5}$ Less than significant impact after mitigation for all other pollutants
		NEPA: **Significant** impact for 1-hr and annual NO_2 and 24-hr PM_{10}/$PM_{2.5}$ Less than significant impact for all other pollutants	**AQ-6** through **AQ-18**	NEPA‡: **Significant** impact after mitigation for 1-hr and annual NO_2 and 24-hr PM_{10}/$PM_{2.5}$ Less than significant impact after mitigation for all other pollutants
	AQ-5	CEQA: Less than significant impact NEPA: Less than significant impact	Mitigation not required Mitigation not required	CEQA: Less than significant impact NEPA: Less than significant impact
	AQ-6	CEQA: **Significant** impact for cancer risk and acute non-cancer effects. Less than significant impact for chronic non-cancer effects	**AQ-6** through **AQ-12**	CEQA: Less than significant impacts after mitigation
		NEPA: **Significant** impact for cancer risk and acute non-cancer effects Less than significant impact for chronic non-cancer effects	**AQ-6** through **AQ-12**	NEPA: Significant impact for cancer risk after mitigation
	AQ-7	CEQA: Less than significant impact NEPA: Less than significant impact	Mitigation not required Mitigation not required	CEQA: Less than significant impact NEPA: Less than significant impact

Table 3.2-66: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Meteorology Associated with the Proposed Project and Alternatives (continued)

Alternative	*Environmental Impacts*	*Impact Determination*	*Mitigation Measures*	*Impacts after Mitigation*
3.2 Air Quality and Meteorology (continued)				
Alternative 2 (continued)	**AQ-8**	CEQA: **Significant** impact NEPA: No determination of significance	**AQ-6, AQ-10**, **AQ-14**, **AQ-16**, **AQ-19 to AQ-24** **AQ-6, AQ-10**, **AQ-14**, **AQ-16**, **AQ-19 to AQ-24**	CEQA: **Significant** impact after mitigation NEPA: No determination of significance
Alternative 3	**AQ-1**	CEQA: **Significant** impact for VOC, NO_x, SO_x, PM_{10} and $PM_{2.5}$ emissions Measured pollutants: VOC, CO, NO_x, SO_x, PM_{10} and $PM_{2.5}$ NEPA: **Significant** impact for VOC and NO_x emissions in Phase 1 Less than significant impact for all other pollutants	**AQ-1** through **AQ-5** **AQ-1** through **AQ-5**	CEQA*. **Significant** impact after mitigation from VOC, NO_x, SO_x, PM_{10} and $PM_{2.5}$ emissions Less than significant impact after mitigation for all other pollutants NEPA*: **Significant** impact after mitigation from NO_x and SO_x emissions. Less than significant impact after mitigation for all other pollutants
	AQ-2	CEQA: **Significant** impact for 1-hr NO_2, 24-hr PM_{10}, and $PM_{2.5}$ emissions Less than significant impact for all other pollutants in Phase 1 Measured pollutants: 1-hr NO_2, 1-hr CO, 8-hr CO, 24-hr PM_{10} and 24-hr $PM_{2.5}$ NEPA: **Significant** impact for 1-hr NO_2, 24-hr PM_{10}, and $PM_{2.5}$ emissions Less than significant impact for all other pollutants	**AQ-1** through **AQ-5** **AQ-1** through **AQ-5**	CEQA: **Significant** impact after mitigation for 1-hr NO_2, 24-hr PM_{10}, and $PM_{2.5}$ emissions NEPA: **Significant** impact after mitigation for 1-hr NO_2, 24-hr PM_{10}, and $PM_{2.5}$ emissions
	AQ-3	CEQA: **Significant** impact† for the following project years and pollutants: 2007: Daily VOC, CO, NO_x, and SO_x and annual VOC thresholds. 2015: NO_x and SO_x 2025 and 2038: SO_x	**AQ-6** through **AQ-18**	CEQA: **Significant** impact after mitigation for the following project years and pollutants: 2007: NO_x and SO_x Less than significant impact for all other pollutants and years

Table 3.2-66: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Meteorology Associated with the Proposed Project and Alternatives (continued)

Alternative	*Environmental Impacts*	*Impact Determination*	*Mitigation Measures*	*Impacts after Mitigation*
3.2 Air Quality and Meteorology (continued)				
Alternative 3 (continued)	**AQ-3 (continued)**	NEPA: **Significant** impact[†] for the following project years and pollutants: 2007: All daily pollutant thresholds except SO_x and annual VOC threshold. 2015, 2025, and 2038: All daily pollutant thresholds and annual VOC threshold.	**AQ-6** through **AQ-18**	NEPA: **Significant** impact after mitigation for the following project years and pollutants: 2007: NO_x 2025 and 2038: VOC, NO_x, and SO_x Less than significant impact for all other pollutants and years
	AQ-4	CEQA: **Significant** impact for 1-hr and annual NO_2 and 24-hr $PM_{10}/PM_{2.5}$ Less than significant impact for all other pollutants NEPA: **Significant** impact for 1-hr and annual NO_2 and 24-hr $PM_{10}/PM_{2.5}$ Less than significant impact for all other pollutants	**AQ-6** through **AQ-18** **AQ-6** through **AQ-18**	CEQA[‡]: **Significant** impact after mitigation for 1-hr and annual NO_2 and 24-hr $PM_{10}/PM_{2.5}$ Less than significant impact after mitigation for all other pollutants NEPA[‡]: **Significant** impact after mitigation for 1-hr and annual NO_2 and 24-hr $PM_{10}/PM_{2.5}$ Less than significant impact after mitigation for all other pollutants
	AQ-5	CEQA: Less than significant impact NEPA: Less than significant impact	Mitigation not required Mitigation not required	CEQA: Less than significant impact NEPA: Less than significant impact
	AQ-6	CEQA: **Significant** impact for cancer risk Less than significant impact for acute and chronic non-cancer effects NEPA: **Significant** impact for cancer risk and acute non-cancer effects. Less than significant impact for chronic non-cancer effects	**AQ-6** through **AQ-12** **AQ-6** through **AQ-12**	CEQA: Less than significant impact after mitigation NEPA: Less than significant impact after mitigation

Table 3.2-66: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Meteorology Associated with the Proposed Project and Alternatives (continued)

Alternative	*Environmental Impacts*	*Impact Determination*	*Mitigation Measures*	*Impacts after Mitigation*
3.2 Air Quality and Meteorology (continued)				
Alternative 3 (continued)	**AQ-7**	CEQA: Less than significant impact NEPA: Less than significant impact	Mitigation not required Mitigation not required	CEQA: Less than significant impact NEPA: Less than significant impact
	AQ-8	CEQA: **Significant** impact NEPA: No determination of significance	**AQ-6, AQ-10**, **AQ-14**, **AQ-16**, **AQ-19 to AQ-24** **AQ-6, AQ-10**, **AQ-14**, **AQ-16**, **AQ-19 to AQ-24**	CEQA: **Significant** impact after mitigation NEPA: No determination of significance
Alternative 4	**AQ-1**	CEQA: **Significant** impact for VOC, NO_x, and $PM_{10}/PM_{2.5}$ emissions NEPA: Not applicable	**AQ-1** through **AQ-5** Mitigation not required	CEQA: **Significant** impact after mitigation for NO_x and $PM_{10}/PM_{2.5}$ emissions Less than significant impact after mitigation for all other pollutants NEPA: Not applicable
	AQ-2	CEQA: **Significant** impact for 1-hour NO_2 and 24-hr $PM_{10}/PM_{2.5}$ emissions NEPA: Not applicable	**AQ-1** through **AQ-5** Mitigation not required	CEQA: **Significant** impact after mitigation for 1-hour NO_2 and 24-hr $PM_{10}/PM_{2.5}$ emissions NEPA: Not applicable
	AQ-3	CEQA: Less than significant impact[†] for all project years. NEPA: Not applicable	**AQ-6** though **AQ-12** Mitigation not required	CEQA: Less than significant impact after mitigation. NEPA: Not applicable
	AQ-4	CEQA: **Significant** impact for 1-hr and annual NO_2 concentrations Less than significant impact for all other pollutants	**AQ-6** through **AQ-18**	CEQA[‡]: **Significant** impact after mitigation for 1-hr and annual NO_2 concentrations
	AQ-5	CEQA: Less than significant impact NEPA: Not applicable	Mitigation not required Mitigation not required	CEQA: Less than significant impact NEPA: Not applicable
	AQ-6	CEQA: Less than significant impact. NEPA: Not applicable	Mitigation not required Mitigation not required	CEQA: Less than significant impact NEPA: Not applicable
	AQ-7	CEQA: Less than significant impact NEPA: Not applicable	Mitigation not required Mitigation not required	CEQA: Less than significant impact NEPA: Not applicable

Table 3.2-66: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Meteorology Associated with the Proposed Project and Alternatives (continued)

Alternative	*Environmental Impacts*	*Impact Determination*	*Mitigation Measures*	*Impacts after Mitigation*
3.2 Air Quality and Meteorology (continued)				
Alternative 4 (continued)	**AQ-8**	CEQA: **Significant** impact NEPA: Not applicable	**AQ-6, AQ-10**, **AQ-14**, **AQ-16**, **AQ-19 to AQ-24** Mitigation not required	CEQA: **Significant** impact after mitigation NEPA: Not applicable
Alternative 5	**AQ-1**	CEQA: **Significant** impact for VOC, NO_x, and $PM_{10}/PM_{2.5}$ emissions NEPA: Not applicable	**AQ-1** through **AQ-5** Mitigation not required	CEQA: **Significant** impact after mitigation for NO_x and $PM_{10}/PM_{2.5}$ emissions Less than significant impact after mitigation for all other pollutants NEPA: Not applicable
	AQ-2	CEQA: **Significant** impact for 1-hour NO_2 and 24-hr $PM_{10}/PM_{2.5}$ emissions NEPA: Not applicable	**AQ-1** through **AQ-5** Mitigation not required	CEQA: **Significant** impact after mitigation for 1-hour NO_2 and 24-hr $PM_{10}/PM_{2.5}$ emissions NEPA: Not applicable
	AQ-3	CEQA: **Significant** impact† for the following project years and pollutants: 2007: NO_x and SO_x NEPA: Not applicable	No additional mitigation measures are proposed Mitigation not required	CEQA: **Significant** impact† for the following project years and pollutants: 2007: NO_x and SO_x NEPA: Not applicable
	AQ-4	CEQA: **Significant** impact for 1-hr and annual NO_2 and 24-hr $PM_{10}/PM_{2.5}$ Less than significant impact for all other pollutants NEPA: Not applicable	No additional mitigation measures are proposed Mitigation not required	CEQA‡: **Significant** impact after mitigation for 1-hr and annual NO_2 and 24-hr $PM_{10}/PM_{2.5}$ Less than significant impact after mitigation for all other pollutants NEPA: Not applicable
	AQ-5	CEQA: Less than significant impact NEPA: Not applicable	Mitigation not required Mitigation not required	CEQA: Less than significant impact NEPA: Not applicable

Table 3.2-66: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Meteorology Associated with the Proposed Project and Alternatives (continued)

Alternative	*Environmental Impacts*	*Impact Determination*	*Mitigation Measures*	*Impacts after Mitigation*
3.2 Air Quality and Meteorology (continued)				
Alternative 5 (continued)	**AQ-6**	CEQA: Less than significant impact. NEPA: Not applicable	Mitigation not required Mitigation not required	CEQA: Less than significant impact NEPA: Not applicable
	AQ-7	CEQA: Less than significant impact NEPA: Not applicable	Mitigation not required Mitigation not required	CEQA: Less than significant impact NEPA: Not applicable
	AQ-8	CEQA: **Significant** impact NEPA: Not applicable	No additional mitigation measures are proposed Mitigation not required	CEQA: **Significant** impact after mitigation NEPA: Not applicable

*. Since the final construction equipment mix has not yet been determined, mitigation measure **AQ-4** is not quantified by this study; residual impacts are based on **AQ-1** – **AQ-3** and **AQ-5**.
†. Includes consideration of differences between either annual average or peak day operational emissions from each Project alternative and the CEQA or NEPA Baselines.
‡. Given the uncertainty of implementing mitigation measures **AQ-13** – **AQ-18**, the mitigated emission analysis only considers the effects of mitigation measures **AQ-6** – **AQ-12.**

3.2.4.7 Mitigation Monitoring

Table 3.2-67. Summary of Applicable Mitigation Measures

AQ-1 **The proposed Project construction would produce emissions that would exceed SCAQMD daily emission thresholds of significance.** **AQ-2** **The proposed Project construction would result in off-site ambient air pollutant concentrations that would exceed SCAQMD thresholds of significance.**	
Mitigation Measure	**MM AQ-1:** Ships used for marine terminal crane delivery shall comply with the expanded VSRP of 12 knots between 40 nm from Point Fermin to the Precautionary Area. **MM AQ-2:** All on-road heavy-duty diesel trucks with a GVWR of 33,000 pounds or greater used in the execution of the construction work onsite or used to convey to or from the site concrete reinforcing steel, piles for pile driving, rock products, ready-mix concrete, fill material, base material, or asphalt concrete shall be 2007 model year, or shall be 1994 model year or later and retrofitted with a CARB-verified Level 3 diesel particulate filter. **MM AQ-3:** All off-road diesel-powered construction equipment greater than 50 hp, except derrick barges and marine vessels, shall achieve the Tier 2 emission standards in Phase 1 construction and Tier 4 emission standards in Phase 2 construction, as defined in the USEPA Nonroad Diesel Engine Rule (USEPA 1998 and 2004). Equipment not designated Tier 2 by the manufacturer might meet the emissions requirement by retrofitting the equipment with a CARB-VDECS or by the use of a CARB verified emulsified fuel. **MM AQ-4:** LAHD shall implement a process by which to select additional BMPs to further reduce air emissions during construction if it is determined that the proposed construction equipment exceed any SCAQMD significance threshold. The following types of measures would be required on construction equipment: (a) use of diesel oxidation catalysts and catalyzed diesel particulate traps; (b) maintain equipment according to manufacturers' specifications; (c) restrict idling of construction equipment to a maximum of 10 minutes when not in use; and (d) install high-pressure fuel injectors on construction equipment vehicles. **MM AQ-5:** Additional Fugitive Dust Controls. The construction contractor shall reduce fugitive dust emissions by 90 percent from uncontrolled levels. The Project construction contractor shall specify dust-control methods that will achieve this control level in a SCAQMD Rule 403 dust control plan. **AQ-18A:** General. Any of the above mitigation measures can be replaced by a new and/or alternative technology, provided the technology (1) is CARB-certified, (2) is equal to or exceeds emissions savings as analyzed in this EIS/EIR and, (3) is approved by the Port of Los Angeles.
Timing	During all construction phases for **MM AQ-1** through **MMAQ-5** and **MM AQ-18A**.
Methodology	The LAHD shall include MM AQ-1 through MM AQ-5 in the contract specifications for construction. The LAHD shall determine BMPs once the contractor identifies and secures a final equipment list. LAHD shall monitor implementation of mitigation measures during construction.

Responsible Parties	LAHD.
Residual Impacts	Significant CEQA impacts after mitigation: (1) during Phase 1 construction, VOC, NO_x, SO_x, PM_{10}, and $PM_{2.5}$ emissions and 1-hr NO_2 and 24-hr PM_{10} and $PM_{2.5}$ ambient impacts and (2) during Phase 2 construction NO_x and $PM_{2.5}$ emissions. Significant NEPA impacts after mitigation: (1) during Phase 1 construction, NO_x, PM_{10}, and $PM_{2.5}$ emissions and 1-hr NO_2 and 24-hr PM_{10} and $PM_{2.5}$ ambient impacts and (2) during Phase 2 construction, NO_x and $PM_{2.5}$.
AQ-3 **The proposed Project would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance.** **AQ-4** **The proposed Project would result in off-site ambient air pollutant concentrations that would exceed a SCAQMD threshold of significance.** **AQ-6** **The proposed Project would expose the public to significant levels of TACs.**	
Mitigation Measure	**MM AQ-6:** Ships calling at Berth 136-147 shall use AMP while hoteling at the Port in the following percentages: (a) 2009: 25% of ship calls; (b) 2010: 40% of ship calls; (c) 2012: 50% of ship calls; (d) 2015: 75% of ship calls; and (e) 2020: 95% of ship calls **MM AQ-7:** All yard tractors operated at the Berths 136-147 Terminal, including the on-dock rail facility, shall implement the following measures. • Beginning in 2007, all new yard tractors shall be either (1) the cleanest available NOx alternative-fueled engine meeting 0.01 Gm/Hp-Hr for PM or (2) the cleanest available NOx diesel-fueled engine meeting 0.01 Gm/Hp-Hr for PM. If there are no engines available that meet 0.01 Gm/Hp-Hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest Verified Diesel Emissions Controls (VDEC). • By the end of 2010, all Project yard tractors will meet the USEPA Tier 4 on-road engine standards. **MM AQ-8:** All diesel-powered terminal equipment other then yard tractors at the Berths 136-147 Terminal, including the on-dock rail facility, shall implement the following measures. • Beginning in 2007, all terminal equipment shall be either (1) the cleanest available NO_x alternative-fueled engine meeting 0.01 Gm/Hp-Hr for PM or (2) the cleanest available NO_x diesel-fueled engine meeting 0.01 Gm/Hp-Hr for PM. If there are no engines available that meet 0.01 Gm/Hp-Hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest VDEC. • By the end of 2012, all non-yard tractor terminal equipment less than 750 Hp shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards. • By the end of 2014, all terminal equipment shall meet USEPA Tier 4 non-road engine standards. **MM AQ-9:** Heavy-duty diesel trucks entering the Berths 136-147 Terminal shall achieve the USEPA 2007 Tier 4 emission standards for on-road heavy-duty diesel engines (USEPA 2001) in the following percentages:15% in 2007, 30% in 2008, 50% in 2009, 70% in 2010, and 100% in or newer 2012 and thereafter.

	MM AQ-10: All ships calling at Berth 136-147 shall comply with the expanded VSRP of 12 knots between 40 nm from Point Fermin and the Precautionary Area in the following implementation schedule: 95% in 2008. **MM AQ-11:** Ships calling at Berth 136-147 shall use low-sulfur fuel (maximum sulfur content of 0.2 percent) in auxiliary engines, main engines, and boilers within 40 nm of Point Fermin (including hoteling for non-AMP ships) at the following annual participation rates: (a) 2009: 10 percent of auxiliary engines, main engines, and boilers; (b) 2010: 20 percent of auxiliary engines, main engines, and boilers; (c) 2012: 50 percent of auxiliary engines, main engines, and boilers; (d) 2015: 90 percent of auxiliary engines, main engines, and boilers; and (e) 2018 and thereafter: 95 percent of auxiliary engines, main engines, and boilers. **MM AQ-12:** Ships calling at Berth 136-147 shall be equipped with slide valves or equivalent on main engines in the following percentages: (a) 15 percent in 2008; (b) 25 percent in 2010; (c) 50 percent in 2012; (d) 90 percent in 2015; and (e) 100 percent in 2020. **MM AQ-13:** New Vessel Builds All new vessel builds shall incorporate NO_x and PM control devices on auxiliary and main engines. NO_x and PM control devices include, but are not limited to,the following technology where appropriate: (1) Selective Catalytic Reduction (SCR) technology, (2) exhaust gas recirculation, (3) in line fuel emulsification technology, (4) Diesel Particulate Filters (DPFs), or exhaust scrubbers (5) common rail and (6) Low NO_x burners for boilers. **MM AQ-14:** Clean Rail Yard Standards. The Berth 136-147 on-dock rail yard will incorporate the cleanest locomotive technologies into their operations. **MM AQ-15:** The Berths 136-147 Terminal operator shall use ships meeting IMO MARPOL Annex VI NO_x emissions limits for Category 3 engines to the greatest extent possible when scheduling ship visits. **MM AQ-16:** The Berths 136-147 Terminal operator shall ensure that truck idling is reduced at the Terminal. Potential methods to reduce idling include, but are not limited to, the following: (1) operator shall maximize the durations when the main gates are left open, including during off-peak hours, (2) operator shall implement a container tracking and appointment-based truck delivery and pick-up system to minimize truck queuing, and (3) operator shall design gate to exceed truck flow capacity to ensure queuing is minimized. **MM AQ-17:** The Port shall require the Berths 136-147 tenant to review, in terms of feasibility, any Port-identified or other new emissions-reduction technology, and report to the Port. Such technology feasibility reviews shall take place at the time of the Port's consideration of any lease amendment, facility modification or other discretionary decision for the Berths 136-147 property. If the technology is determined by the Port to be feasible in terms of cost, technical and operational feasibility, the tenant shall work with the Port to implement such technology. **MM AQ-18B:** General. Any of the above mitigation measures can be replaced by a new and/or alternative technology, provided the technology (1) is CARB-certified, (2) is equal to or exceeds emissions savings as analyzed in this EIS/EIR and, (3) is approved by the Port of Los Angeles.
Timing	During operation for MM AQ-6 through MM AQ-18B.
Methodology	The LAHD shall include the mitigation measures in the lease agreements with the tenant.

Responsible Parties	LAHD (for USEPA 2007 trucks, AMP equipment (terminal side), VSRP monitoring, and plan approvals and monitoring) TraPac (for AMP equipment (ship side), Terminal Equipment, Low Sulfur Fuel, VSRP, Slide Valves, and gate operations).
Residual Impacts	Significant CEQA impacts after mitigation: (1) in 2007, VOC, NO_x, and SO_x emissions and (2) 1-hr and annual NO_2 and 24-hr PM_{10} and $PM_{2.5}$ ambient impacts. Significant NEPA impacts after mitigation: (1) in 2007, NO_x; in 2015, VOC and NO_x; and 2025 and 2038, all pollutants except SO_x emissions, (2) 1-hr and annual NO_2 and 24-hr PM_{10} and $PM_{2.5}$ ambient impacts, and (3) significant cancer risk.
AQ-8 **The Proposed Project would produce GHG emissions that would not exceed 2003 baseline levels**	
	MM AQ-6: Ships calling at Berth 136-147 shall use AMP while hoteling at the Port in the following percentages: (a) 2009: 25% of ship calls; (b) 2010: 40% of ship calls; (c) 2012: 50% of ship calls; (d) 2015: 75% of ship calls; and (e) 2020: 95% of ship calls. The use of electricity from the power grid would reduce GHG emissions during hoteling because electricity can be produced more efficiently at centralized power plants than from auxiliary engines on ships. In addition, a fraction of the LADWP's electricity is generated from clean sources such as hydroelectric, wind, and solar energy, which further reduces its GHG emissions on a per kW-hr basis **MM AQ-9:** Heavy-duty diesel trucks entering the Berths 136-147 Terminal shall meet the USEPA 2007 emission standards for on-road heavy-duty diesel engines (USEPA, 2001a) in the following percentages: (a) 15 percent in 2007; (b) 30 percent in 2008; (c) 50 percent in 2009; (d) 70 percent in 2010; (e) 90 percent in 2011; and (f) 100 percent in 2012 and thereafter. New trucks would generally have better fuel efficiency than older trucks, thereby reducing fuel use and GHG emissions on a per-mile basis **MM AQ-10:** All ships calling at Berth 136-147 shall comply with the expanded VSRP of 12 knots between 40 nm from Point Fermin and the Precautionary Area in the following implementation schedule: 95% in 2008Because of the cubic relationship of propulsion engine horsepower to ship speed, ships that slow to 12 knots within 40 nautical miles of Point Fermin would use much less fuel on a per-mile basis. **MM AQ-14:** Clean Rail Yard Standards. The Berth 136-147 on-dock rail yard will incorporate the cleanest locomotive technologies into their operations The use of idling shutoff devices and diesel-electric hybrid locomotives would reduce fuel consumption and, therefore, GHG emissions. **MM AQ-16:** The Berths 136-147 Terminal operator shall ensure that truck idling is reduced at the Terminal. Potential methods to reduce idling include, but are not limited to, the following: (1) operator shall maximize the durations when the main gates are left open, including during off-peak hours, (2) operator shall implement a container tracking and appointment-based truck delivery and pick-up system to minimize truck queuing, and (3) operator shall design gate to exceed truck flow capacity to ensure queuing is minimizedA reduction in truck idling would reduce fuel consumption and, therefore, GHG emissions **MM AQ-19:** LEED The main terminal building shall obtain the Leadership in Energy and Environmental Design (LEED) gold certification level. LEED certification is made at one of the following four levels, in ascending order of

	environmental sustainability: certified, silver, gold, and platinum. The certification level is determined on a point-scoring basis, where various points are given for design features that address the following areas (U.S. Green Building Council, 2005): • Sustainable Sites • Water Efficiency • Energy & Atmosphere • Materials & Resources • Indoor Environmental Quality • Innovation & Design Process As a result, a LEED-certified building will be more energy efficient, thereby reducing GHG emissions compared to a conventional building design. **MM AQ-20:** Compact Fluorescent Light Bulbs All interior terminal building lighting shall use compact fluorescent light bulbs. Fluorescent light bulbs produce less waste heat and use substantially less electricity than incandescent light bulbs. **MM AQ-21** Energy Audit The tenant shall conduct a third party energy audit every five years and install innovative power saving technology where feasible, such as power factor correction systems and lighting power regulators. Such systems help to maximize usable electric current and eliminate wasted electricity, thereby lowering overall electricity use. **MM AQ-22:** Solar Panels The applicant shall install solar panels on the main terminal building. Solar panels would provide the terminal building with a clean source of electricity to replace some of its fossil fuel-generated electricity use. **MM AQ-23: Recycling** The terminal buildings shall achieve a minimum of 40 percent recycling by 2012 and 60 percent recycling by 2015. Recycled materials shall include: • White and colored paper • Post-it notes • Magazines • Newspaper • File folders • All envelopes including those with plastic windows • All cardboard boxes and cartons • All metal and aluminum cans • Glass bottles and jars • All plastic bottles **MM AQ-24:** Tree Planting The applicant shall plant shade trees around the main terminal building
Timing	During operation for MM AQ-6, AQ-9-10, AQ-14 , AQ-16 and AQ-19 through MM AQ-24.
Methodology	The LAHD shall include the mitigation measures in the lease agreements with the tenant.
Responsible Parties	LAHD (MM AQ 19 MM), Tenant (MM AQ 6, 10, 14 & 23) LAHD and Tenant (AQ 9, 20, 22 &24)
Residual Impacts	Significant CEQA impacts after mitigation

3.2.5 Health Risk Assessment

As discussed in Impact AQ-6 for the proposed Project, Project construction and operations would emit Toxic Air Contaminants (TACs) that could affect public health. Therefore, an HRA, conducted pursuant to a Protocol reviewed and approved by both CARB and SCAQMD, was used to evaluate potential health impacts to the public from TACs generated by proposed Project construction and operations (POLA 2005b). The complete HRA report is included in Appendix D3 of this DEIS/DEIR.

Emissions of TACs from Project operational sources would occur from the (1) internal combustion of diesel or residual fuels in ships, tugboats, terminal equipment, locomotives, and trucks and (2) external combustion of diesel or residual fuels in OGV service boilers. Emissions of TACs from Project construction sources would occur from the internal combustion of diesel fuels in construction equipment and associated harbor craft. For health effects resulting from long-term exposure to Project diesel emissions, the Project HRA only considered DPM emissions, in accordance with the Office of Environmental Health Hazard Assessment (OEHHA) guidance (OEHHA 2003). In regard to acute non-cancer effects from Project sources, OEHHA assesses both criteria pollutants and chemicals that are subsets of VOCs and particulate matter.

The HRA considered impacts to residential, occupational, sensitive, student, and recreational receptors. Residential receptors were selected from all residential or zoned residential areas, including the public marinas (for possible live-aboards) located in the East Basin and Cerritos Channel. Although the public marinas are not zoned for residential use, these areas were conservatively treated as potential residential receptors.

The HRA evaluated three different types of health effects: individual lifetime cancer risk, chronic (annual) non-cancer hazard index, and acute non-cancer hazard index. Individual lifetime cancer risk is the additional chance for a person to contract cancer after a lifetime of exposure to Project emissions. The "lifetime" exposure duration assumed in this HRA is 70 years for a residential receptor (OEHHA 2003).

The chronic hazard index is the sum of ratios or hazard quotients of long-term average concentrations of TACs in the air to established reference exposure levels. A chronic hazard index below 1.0 indicates that adverse non-cancer health effects from long-term exposure are not expected. Similarly, the acute hazard index is a ratio of the short-term average concentrations of TACs in the air to established reference exposure levels. An acute hazard index below 1.0 indicates that adverse non-cancer health effects from short-term exposure are not expected.

For the determination of significance from a CEQA standpoint, this HRA determined the incremental increase in health effects values associated with the proposed Project by estimating the net change in impacts between the proposed Project and CEQA baseline conditions. For the determination of significance from a NEPA standpoint, this HRA determined the incremental increase in health effects values associated with the proposed Project by estimating the net change in impacts between the proposed Project and NEPA Baseline. Both of these incremental health effects values (proposed Project minus CEQA

Baseline and proposed Project minus NEPA Baseline) were compared to the health risk thresholds identified in Section 3.2.4.2 to determine their significance.

Table 3.2-68 presents estimates of unmitigated individual lifetime cancer risk, chronic (annual) non-cancer hazard index, and acute non-cancer hazard index for impacts that correspond to the maximum CEQA increment (proposed Project minus CEQA Baseline) and NEPA increment (proposed Project minus NEPA Baseline). All other incremental health impacts within the modeling domain would be les than those shown in Table 3.2-68.

Table 3.2-68. Maximum Health Impacts due to the Proposed Project Without Mitigation

Health Impact	Receptor Type	Maximum Predicted Incremental Impacts[1]						Significance Threshold[3]
		Proposed Project	*CEQA Baseline*	*CEQA Increment*[2]	*Proposed Project*	*NEPA Baseline*	*NEPA Increment*[2]	
Cancer Risk	Residential	272×10^{-6}	117×10^{-6}	**155×10^{-6}**	272×10^{-6}	43×10^{-6}	**229×10^{-6}**	10×10^{-6}
	Occupational	146×10^{-6}	49×10^{-6}	**98×10^{-6}**	146×10^{-6}	20×10^{-6}	**127×10^{-6}**	
	Sensitive	183×10^{-6}	70×10^{-6}	**113×10^{-6}**	183×10^{-6}	30×10^{-6}	**153×10^{-6}**	
	Student	3.8×10^{-6}	1.5×10^{-6}	2.4×10^{-6}	3.8×10^{-6}	0.6×10^{-6}	3.2×10^{-6}	
	Recreational	109×10^{-6}	48×10^{-6}	**61×10^{-6}**	115×10^{-6}	20×10^{-6}	**95×10^{-6}**	
Chronic Hazard Index	Residential	0.50	0.32	0.18	0.57	0.25	0.32	1.0
	Occupational	0.89	0.57	0.32	0.86	0.39	0.47	
	Sensitive	0.38	0.22	0.16	0.38	0.18	0.20	
	Student	0.31	0.20	0.11	0.31	0.14	0.17	
	Recreational	0.83	0.46	0.37	0.85	0.38	0.47	
Acute Hazard Index[4]	Residential	3.60	2.47	**1.13**	3.60	1.83	**1.77**	1.0
	Occupational	4.01	2.62	**1.39**	4.57	2.38	**2.19**	
	Sensitive	3.35	2.33	**1.02**	3.35	1.72	**1.63**	
	Student	2.77	1.92	0.85	2.77	1.42	**1.35**	
	Recreational	4.65	3.21	**1.44**	4.76	2.47	**2.29**	

Notes:

(1) Data represent project scenario impacts that contribute to maximum CEQA/NEPA incremental impacts.

(2) The CEQA Increment represents proposed Project impact minus CEQA Baseline impact. The NEPA Increment represents proposed Project impact minus NEPA Baseline impact.

(3) Exceedances of the significance criteria are in bold. The significance thresholds only apply to the CEQA and NEPA increments.

(4) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type.

Figures D3-10 through D3-14 in Appendix D3 show the distribution of predicted residential cancer risks within the modeling domain for the following scenarios: (1) CEQA Baseline (also shown in Figure 3.2-1), (2) NEPA Baseline, (3) unmitigated Project, (4) unmitigated CEQA increment (unmitigated Project minus CEQA Baseline), and (5) unmitigated NEPA increment (unmitigated Project minus NEPA Baseline). As an explanation of the incremental cancer risks presented in these figures, the Project unmitigated CEQA cancer risk increment shown in Figure D3-13 is obtained by subtracting the data in Figure D3-10 (CEQA Baseline cancer risk) from Figure D3-12 (unmitigated Project cancer risk).

Table 3.2-68 shows that the maximum CEQA increment for residential cancer risk is predicted to be 155 in a million (155×10^{-6}). This risk value exceeds the significance criterion of 10 in a million (10×10^{-6}) risk; this impact would be significant under CEQA. This impact would occur just northeast of the intersection of C Street and Mar Vista Avenue in Wilmington. The maximum cancer risk increments at an off-site occupational (near the corner of Fries Avenue and La Paloma Street), sensitive, and recreational receptor also would exceed the 10 in a million significance criterion. The maximum cancer risk increment at a student receptor would be less than significant.

The prediction for the maximum CEQA increment for acute non-cancer effects would exceed the 1.0 hazard index significance criterion at residential, occupational, and recreational receptors in proximity to the Project terminal. The maximum occupational and recreational impacts would occur along Fries Avenue south of Pier A Street and in the southwest portion of the HBB Buffer. The maximum CEQA increment for acute non-cancer effects to student receptor types would remain below the 1.0 hazard index significance criterion. The prediction for the maximum CEQA increment for chronic non-cancer effects would remain below the significance criterion of 1.0 at all receptor types.

The main contributors of Project emissions to the maximum residential cancer risk location northeast of the intersection of C Street and Mar Vista Avenue include (1) 70 percent by ship hoteling, (2) 12 percent by terminal and rail yard equipment, (3) 9 percent by off-site trucks, and (4) 4 percent by on-terminal trucks. Container vessel emissions that occur outside of the Port within the precautionary area and fairway zones would contribute approximately 1 percent of the total cancer risk at this location. Operational emissions from the relocated PHL rail yard would contribute to less than 0.1 percent of the risk at this location.

Table 3.2-68 shows that the maximum NEPA increment for residential cancer risk predicted for the unmitigated proposed Project is 229 in a million (229×10^{-6}), which exceeds the significance criterion of 10 in a million risk; this impact would be significant under NEPA. This impact would occur just northeast of the intersection of C Street and Mar Vista Avenue, in the same location as the CEQA incremental impact. The maximum cancer risk increments at an off-site occupational (also near the corner of Fries Avenue and La Paloma Street), sensitive, and recreational receptor also would exceed the 10 in a million significance criterion.

The prediction for the maximum NEQA increment for acute non-cancer effects would exceed the 1.0 hazard index significance criterion at all receptor types in proximity to the Project terminal. These maximum impacts would occur (1) in the vicinity of C Street and Gulf Avenue (residential), (2) along La Paloma Street (occupational), (3) near Wilmington Boulevard and D Street (sensitive), (4) at Hawaiian Avenue Elementary School (student), and (5) in the southern portion of the HBB Buffer (recreational). The prediction for the maximum NEPA increment for chronic non-cancer effects would remain well below the 1.0 hazard index significance criterion at all receptor types.

The main contributors of Project emissions to the maximum residential cancer risk location northeast of the intersection of C Street and Mar Vista Avenue include (1) 46 percent by ship hoteling, (2) 22 percent by terminal equipment, (3) 16 percent by off-site trucks, and (4) 7 percent by vessels in harbor transit/docking modes and on-terminal trucks. Operational emissions from the relocated PHL rail yard would contribute to 0.1 percent of the risk at this location. Container vessel emissions that occur outside of the Port within the precautionary area and fairway zones would contribute approximately 2 percent of the total cancer risk at this location.

Table 3.2-69 summarizes the maximum health impacts predicted to occur from the operation of the proposed Project with mitigation. An analysis was not performed for mitigated chronic non-cancer effects, due to the minimal unmitigated values of the Project increments. Table 3.2-69 shows that the maximum CEQA increment for residential cancer risk predicted for the mitigated Project is reduced to 1.4 in a million (1.4×10^{-6}), which is less than the significance criterion of 10 in a million. The location of this impact is near Berth 202 within the Consolidated Slip Marina in association with a live aboard. Table 3.2-69 also shows that the maximum mitigated Project CEQA cancer risk increments at other receptor types would remain below the 10 in a million significance criterion. Review of Figure D3-16 in Appendix D3 shows that the mitigated Project would produce lower residential cancer risks compared to the CEQA Baseline within the entire modeling domain except for a small area that encompasses the Consolidated Slip that is northeast of the Berths 136-147 terminal.

Table 3.2-69. Maximum Health Impacts due to the Proposed Project After Mitigation

		Maximum Predicted Impact[1]						
Health Impact	*Receptor Type*	*Mitigated Proposed Project*	*CEQA Baseline*	*CEQA Increment*[2]	*Mitigated Proposed Project*	*No Federal Action Baseline*	*NEPA Increment*[2]	*Significance Threshold*[3]
Cancer Risk	Residential	15.0×10^{-6}	13.6×10^{-6}	1.4×10^{-6}	62.7×10^{-6}	42.7×10^{-6}	**20.0×10^{-6}**	10×10^{-6}
	Occupational	2.9×10^{-6}	1.6×10^{-6}	1.3×10^{-6}	29.6×10^{-6}	19.5×10^{-6}	**10.1×10^{-6}**	
	Sensitive	4.8×10^{-6}	7.3×10^{-6}	$-2.5. \times 10^{-6}$	43.2×10^{-6}	29.6×10^{-6}	**13.6×10^{-6}**	
	Student	$.01 \times 10^{-6}$	0.2×10^{-6}	-0.1×10^{-6}	0.9×10^{-6}	0.6×10^{-6}	0.3×10^{-6}	
	Recreational	14.7×10^{-6}	16.7×10^{-6}	-2.0×10^{-6}	28.0×10^{-6}	19.8×10^{-6}	8.2×10^{-6}	
Acute Hazard Index[4]	Residential	1.85	1.72	0.13	2.51	1.87	0.64	1.0
	Occupational	2.44	2.23	0.21	3.19	2.38	0.81	
	Sensitive	1.12	1.05	0.07	2.32	1.72	0.60	
	Student	1.53	1.45	0.08	1.93	1.42	0.51	
	Recreational	3.19	3.21	(0.02)	3.32	2.47	0.85	

Notes:

(1) Data represent project scenario impacts that contribute to maximum CEQA/NEPA incremental impacts.

(2) The CEQA Increment represents proposed Project impact minus CEQA Baseline impact. The NEPA Increment represents proposed Project impact minus No Federal Action baseline impact.

(3) Exceedances of the significance criteria are in bold. The significance thresholds only apply to the CEQA and NEPA increments.

(4) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type.

(5) Mitigation measures quantified in this HRA for the Mitigated Project include **AQ-6** through **AQ-12.** The HRA did not consider mitigated chronic non-cancer effects, as these unmitigated effects were less than significant.

The main contributors of Project emissions to the maximum mitigated CEQA residential cancer risk location within the Consolidated Slip Marina include (1) 30 percent by locomotives that haul cargo along the rail line that parallels Alameda Street, (2) 20 percent by ships hoteling (mainly from boiler emissions), (3) 17 percent by locomotives within the relocated PHL rail yard, and (4) 12 percent by off-site trucks. Container vessel emissions that occur outside of the Port within the Precautionary area and fairway zones would contribute approximately 2 percent of the total cancer risk at this location.

Table 3.2-69 shows that the mitigated Project would reduce maximum CEQA increments for acute non-cancer effects to below the 1.0 hazard index significance criterion at all receptor types.

The maximum NEPA increment for residential, occupational, and sensitive cancer risks predicted for the mitigated Project is 20, 10.1, and 13.6 in a million, meaning that the mitigated Project would produce significant cancer risks compared to the NEPA Baseline to these receptor types. The location of the maximum residential impact is just northeast of the intersection of C Street and Mar Vista Avenue, in the same location as the maximum NEPA incremental impact for the unmitigated Project. This location differs from the location of the maximum CEQA incremental residential cancer risk for the mitigated Project. This is due to the differences in the locations and magnitudes of emissions between these four scenarios. As an example, the following main contributors of Project emissions to maximum mitigated NEPA residential cancer risk at this impact location differ from those that produced the maximum mitigated CEQA residential cancer risk: (1) 39 percent by ships hoteling (mainly from boiler emissions), (2) 31 percent by terminal and rail yard equipment, (3) 16 percent by off-site trucks, and (4) 5 percent by on-terminal trucks. Container vessel emissions that occur outside of the Port within the Precautionary area and fairway zones would contribute approximately 0.5 percent of the total cancer risk at this location.

Table 3.2-69 shows that the mitigated Project would reduce maximum NEPA increments for acute non-cancer effects to below the 1.0 hazard index significance criterion at all receptor locations. As a result, acute non-cancer impacts from the mitigated Project would be less than significant under NEPA.

Figures D3-15 through D3-17 in Appendix D3 show the distribution of predicted residential cancer risks for the (1) mitigated Project, (2) mitigated CEQA increment (mitigated Project minus CEQA Baseline) (also shown in Figure 3.2-2), and (3) mitigated NEPA increment (mitigated Project minus NEPA Baseline).

HRA Baseline and Source Impact Contributions and Locations

Significance of the cancer HRA is determined by comparing the maximum increment of the Project minus baseline scenario to the 10 in a million threshold. The CEQA increment represents Project impact minus CEQA Baseline impact. The NEPA Increment represents Project impact minus NEPA baseline impact. HRA results are based upon the relationships between emission source locations and strengths and receptor impact locations. Since source strengths vary between the proposed Project, mitigated Project, and the baseline scenarios, the potential exists for the locations of the maximum increments for the Project scenarios in comparison to the baseline conditions to differ. For example, Table 3.2-55 reports the maximum residential

CEQA increment at 1.4 in a million for the mitigated Project. This impact occurs near Berth 202 within the Consolidated Slip Marina because on-dock rail sources do not exist with the CEQA Baseline and therefore they do not cancel out these emissions that occur with the mitigated Project. As a result, the maximum difference in emissions and impacts between these two scenarios occurs in the location of these sources east of the Berths 136-147 Terminal. Table 3.2-55 also shows that the maximum residential NEPA increment is 20 in a million for the mitigated Project. On-dock rail sources exist with the NEPA Baseline and therefore they cancel out these emissions that occur with the mitigated Project. As a result, the maximum residential NEPA increment is dominated by emissions from hoteling and terminal equipment mitigated Project sources, which shifts the impact location to near the intersection of C Street and Mar Vista Avenue.

Harry Bridges Landscaped Buffer Operations

Several members of the public and organizations requested that the Berths 136-147 Container Terminal EIS/EIR include a discussion of the potential diesel emission health effects to people using the Harry Bridges Buffer Area. The Project air quality analysis determined that the mitigated Project would produce less than significant health impacts (cancer, acute and chronic non-cancer health hazards) to users of the Buffer area. However, due to emissions from Port operations as a whole and other area roadways and industries, airborne cancer and non-cancer levels within the project region are cumulatively significant. In the *Diesel Particulate Matter Exposure Assessment Study for the Ports of Los Angeles and Long Beach*, the CARB estimates that elevated levels of cancer risks due to operational emissions from the Ports of Los Angeles and Long Beach occur within and in proximity to the two Ports (CARB 2006b). The Harry Bridges Buffer Area exists in an area of high existing health risk from air emissions from the Port facilities, local roadways and the Harbor Freeway (I-110), which is similar to other areas in Wilmington and surrounding communities (see Section 4.2.2).

A specific concern raised by the community is the potential health impacts of particulates from the diesel trucks on Harry Bridges Blvd. Concentrations of particulates have been shown to be high near transportation corridors and decline as one moves further from the source. A Southern California study determine that measured concentrations of vehicle-related pollutants, including ultra-fine particles, decreased dramatically 300 feet from freeways, as shown in Figure 3.2-5 (Zhu 2002). There is also growing evidence that close proximity increases the potential for adverse health effects, particularly related to child lung function, asthma and increased medical visits (Brunekreef, 1997, Lin 2000, Venn 2001, Kim 2004, English 1999, CARB 2005; and Section 3.2.2.2). The CARB recommends that land uses where sensitive individuals, such as children and the elderly, are most likely to spend time should be approximately 1000 feet from freeways and high traffic roads, and should be avoided downwind of ports in the most heavily impacted zones (CARB 2005). While the Harry Bridges Buffer Area, as a designated open space, is not considered a sensitive receptor like a dedicated school or daycare center, the possibility does exist that some persons using the site could qualify as sensitive persons, especially children. It is possible that the potentially higher levels of pollutants in this area could exacerbate health conditions of people utilizing the area and be considered a significant indirect effect of permitting public use of the public buffer area.

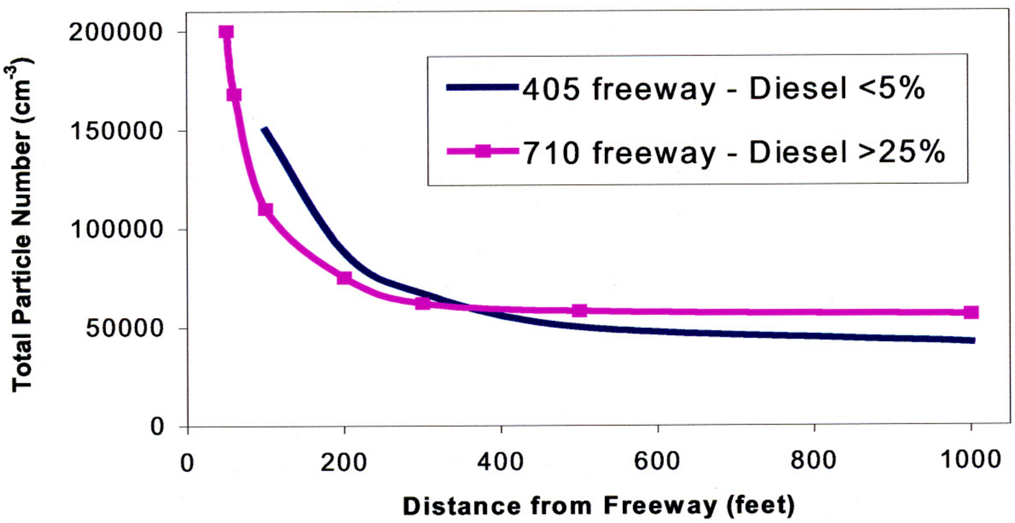

Figure 3.2-5. Decrease in concentration of freeway diesel PM emissions with distance (after Zhu 2002).

An alternative that was considered and rejected was to avoid this possibility by prohibiting public access by fencing off the buffer area. However, constructing the buffer area is consistent with the Harbor-Wilmington Community Plan and helps physically, separate sensitive receptors in the Wilmington community, including residential areas and schools, from Harry Bridges Boulevard and Port facilities. Levels of pollution from both Port facilities and all Port-related trucks traveling along Harry Bridges Boulevard will also substantially diminish in accordance with the recently approved Clean Air Action Plan (LAHD et al. 2006). Specifically, the diesel particulate emissions from trucks are anticipated to diminish by 80 percent over the next five years under the Port's proposed Clean Trucks Program. Current regulations and future rules adopted by the CARB and USEPA also will further reduce air emissions and associated cumulative impacts in the project region.

Uncertainties In Results of Analyses

A great deal of uncertainty is associated with the process of risk assessment. The uncertainty arises from lack of data in many areas, necessitating the use of assumptions. The assumptions used in this HRA are designed to err on the side of health protection to avoid underestimation of risk to the public. Sources of uncertainty, which could either overestimate or underestimate risk include (1) extrapolation of toxicity data in animals to humans, (2) uncertainty in the estimation of emissions, (3) uncertainty in the air dispersion models, and (4) uncertainty in the exposure estimates. Thus, risk estimates generated by an HRA should not be interpreted as the expected rates of disease in the exposed population but rather as estimates of potential risk, based on current knowledge and a number of assumptions. Additionally, the uncertainty factors integrated within the estimates of non-cancer reference exposure levels (RELs) are meant to err on the side of public health protection to avoid underestimation of risk. Risk assessment is best used as a ruler to compare one source with another and to prioritize concerns. Consistent approaches to risk assessment are necessary to fulfill this function (OEHHA 2003).

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