3.2 Air Quality and Meteorology

3.2.1 Introduction

Emissions from construction and operation of the Proposed Action would affect air quality in the immediate project area and the surrounding region. This section includes a description of the affected air quality resources, predicted impacts of each project alternative, and mitigation that would reduce significant impacts.

3.2.2 Environmental Setting

Emissions from construction of the Proposed Action would affect air quality in the immediate project area and the surrounding region. The project site 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.

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 of Los Angeles ("Port" or "POLA") 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) (See 42 U.S.C. §7407). 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), sulfur dioxide (SO_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 for which national or state ambient air quality standards have been established are known as criteria pollutants. The NAAQS and CAAQS are shown in Table 3.2-1.

Table 3.2-1 California and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [a,c]	National Standards [b]	
			Primary [c,d]	Secondary [c,e]
Ozone (O3)	8-hour	0.07 ppm (140 μg/m^3)	0.08 ppm (159 μg/m^3)	Same as primary
	1-hour	0.09 ppm (179 μg/m^3)	---	---
Carbon monoxide (CO)	8-hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	---
	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	---
Nitrogen dioxide (NO2)	Annual	0.03 ppm (56 μg/m^3)	0.053 ppm (100 μg/m^3)	Same as primary
	1-hour	0.18 ppm (338 μg/m^3)	---	---
Sulfur dioxide (SO2)	Annual	---	0.03 ppm (80 μg/m^3)	---
	24-hour	0.04 ppm (105 μg/m^3)	0.14 ppm (365 μg/m^3)	---
	3-hour	---	---	0.5 ppm (1,300 μg/m^3)
	1-hour	0.25 ppm (655 μg/m^3)	---	---
Respirable Particulate Matter (PM10)	Annual	20 μg/m^3 [f]	---	Same as primary
	24-hour	50 μg/m^3	150 μg/m^3	Same as primary
Fine Particulate Matter (PM2.5)	Annual	12 μg/m^3 [h]	15 μg/m^3 [i]	Same as primary
	24-hour	---	35 μg/m^3 [j]	Same as primary
Lead	30-day	1.5 μg/m^3	---	---
	Quarterly	---	1.5 μg/m^3	Same as primary
Hydrogen sulfide	1-hour	0.03 ppm (42 μg/m^3)	---	---
Sulfates	24-hour	25 μg/m^3	---	---
Visibility reducing particles [k]	8-hour (10 AM to 6 PM PST)	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%.	---	---

Notes:
a. California standards for O_3, CO, SO_2 (1 hour), NO_2, PM_{10}, $PM_{2.5}$, and visibility reducing particles, are values that are not to be exceeded. The standards for SO_2 (24-hour), sulfates, lead, hydrogen sulfide, and vinyl chloride standards are not to be equaled or exceeded.
b. National standards, other than those based on annual averages, generally are not to be exceeded more than once a year.
c. Concentration expressed first in units in which it was promulgated. Equivalent units given in parenthesis.
d. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
e. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
f. Measured as an arithmetic mean. New standard promulgated by ARB on June 20, 2002.
g. Measured as an arithmetic mean.
h. New standard promulgated by ARB on June 20, 2002.
i. Three-year average.
j. Three-year average of 95th percentile measurements.
k. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range when relative humidity is less than 70 percent.

The criteria pollutants of primary concern that are assessed in this SEIS/SEIR include O_3, CO, NO_2, 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 3.2-2.

Table 3.2-2. 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) Bronchoconstriction accompanied by symptoms that may include wheezing, shortness of breath, and chest tightness during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM_{10})	(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/PM_{10}notice.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 Action.

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 3.2.5 (Thresholds of Significance).

Since the proposed construction activities would primarily use diesel-powered equipment, 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 the USEPA reclassified the SCAB as a federal CO attainment region, effective June 11, 2007. 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 2007). 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.

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 2007b). 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 35 in 2006. The Port also 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 (Los Angeles Harbor Department [LAHD] 2004).

Table 3.2-3 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 3.2-3 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.

Toxic Air Contaminants

Toxic Air Contaminants (TACs) are identified by the ARB, based upon its own exposure assessments and by health effects assessments conducted by the Office of Environmental Health Hazard Assessment (OEHHA). Some TACs are cancer causing chemicals while others have non-cancer health effects due to short-term acute exposure or longer term chronic exposure for a significant fraction of a lifetime. Some chemicals also produce both carcinogenic and non-cancerous health effects. 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.

Table 3.2-3. 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} ($\mu g/m^3$)	24 hours	150	50	**74** [b]	**63** [b]	**72** [b]	**66** [b]
	Annual	n/a	20	35.9	32.8	33.1	29.7
$PM_{2.5}$ ($\mu g/m^3$)	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 ($\mu g/m^3$)	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 ($\mu g/m^3$)	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 2007a), (ARB 2008), and (USEPA 2006).

µg/m3 micrograms per cubic meter

ppm parts per million

The SCAQMD recently completed the *Multiple Air Toxics Exposure Study III* (*MATES III*), an air toxics monitoring and evaluation study (SCAQMD 2008a). This study used ambient levels of TACs collected from 2004 to 2006 to estimate airborne health risks within the SCAB. *MATES III* is part of the SCAQMD *Environmental Justice Workplan* (SCAQMD 2004). The study follows the *MATES I* and *MATES II* studies, which were based upon monitoring data collected in 1986 to 1987 and 1998 to 1999, respectively (SCAQMD 1987 and 2000). The *MATES III* study estimates that diesel emissions produced about 84 percent of the airborne cancer risk in the SCAB. The population weighted cancer risk for the entire basin was 812 per million, which is a 17 percent reduction from the values estimated in *MATES II*. Due to the prevalence of diesel-powered sources associated with

operations at the San Pedro Bay Ports, *MATES III* identifies that this area has the highest ambient cancer risks due to air emissions of any area within the SCAB.

The ARB also funds a variety of health effects studies within the Port region through their air toxics and environmental health programs. The ARB 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 (ARB 2006a).

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). Additionally, all major Port development projects will include a Health Risk Assessment to further assess project TAC emissions and to target mitigations to reduce their impacts on public health.

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 2007).

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, it requires rigorous modeling analyses to predict the location or magnitude of particle formation from project emissions. The reactions that form secondary $PM_{2.5}$ depend on the presence of other chemicals, which in turn are part of complex chemical processes that occur in the atmosphere. Therefore, the air quality analysis in this EIR focuses on the estimation of direct $PM_{2.5}$ emissions generated by the Proposed Action and their ambient impacts. This approach is consistent with the recommendations of the SCAQMD for calculating $PM_{2.5}$, which focuses only on directly emitted $PM_{2.5}$ (SCAQMD 2006b).

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) then 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 from 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 2007).

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. Little research has been conducted on the presence of UFP from ships and off-road vehicles. The SCAQMD and ARB 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 began sampling for UFPs in 2008. Work is also being done on UFP filter oxidation control technologies, including filters for ships. The POLA actively participates in ARB emissions testing at the POLA. The *2007 Air Quality Management Plan (AQMP)* also recommends that the SCAQMD consider UFP issues in PM and air toxics control strategies. This future research may lead to new PM control measures that will be included in the CAAP.

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 ARB 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. POLA emissions deposit into both local waterways and regional land

areas. Through its CAAP, the POLA will reduce air pollutants from its future operations, which will work towards the goal of reducing atmospheric deposition for purposes of water quality protection. The CAAP will reduce air pollutants that generate both acidic and toxic compounds, include emissions of NO_x, SO_x, and DPM.

Greenhouse Gas Emissions

GHGs are gases that trap heat in the atmosphere. 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. According to the Intergovernmental Panel on Climate Change (IPCC) (IPCC 2007), the atmospheric concentration of CO_2 in 2005 was 379 ppm compared to the pre-industrial levels of 280 ppm. In addition, the Fourth U.S. Climate Action Report concluded, in assessing current trends, that CO_2 emissions increased by 20 percent from 1990-2004, while methane and nitrous oxide emissions decreased by 10 percent and two percent, respectively. There appears to be a close relationship between the increased concentration of GHGs in the atmosphere and global temperatures. For example, the California Climate Change Center reports that by the end of this century, temperatures are expected to rise by 4.7 to 10.5°F due to increased GHG emissions. 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 (for example, estimates include a 30 to 90 percent reduction in snowpack in the Sierra Mountains). Current data suggests that in the next 25 years, in every season of the year, California will experience unprecedented

heat, longer and more extreme heat waves, greater intensity and frequency of heat waves, and longer dry periods. More specifically, the California Climate Change Center (2006) predicted that California could witness the following events:

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

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 GHG 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] 549 U.S. __ (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 World Resources Institute's GHG Protocol Initiative identifies six GHGs generated by human activity that are believed to be contributors to global warming (WRI/WBCSD 2007):

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)

- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF_6)

These are the same six GHGs that are identified in California AB 32 and by the USEPA. Each GHG has a 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_2 on an equal-mass basis. N_2O has a GWP of 310, which means that it has a global warming effect 310 times greater than CO_2 on an equal-mass basis. To account for their GWPs, GHG emissions are often reported as a CO_2 equivalent (CO_2e). The CO_2e is calculated by multiplying the emission of each GHG by its GWP, and adding the results together to produce a single, combined emission rate representing all GHGs.

Appendix C contains an estimate of GHG emissions generated by the Proposed Action. To be consistent with international convention, the GHG emissions in this report are expressed in metric units (metric tons, in this case).

Sustainability and Port Climate Action Plan

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

In accordance with this directive, the Port's Climate Action Plan will cover all currently listed GHG emissions related to the Port's activities (such as Port buildings, and Port workforce operations). The Port will complete annual GHG inventories of the POLA and its customers and report these to the California Climate Action Registry. The first of these inventories will be reported in 2008 for the year 2006.

The POLA, as a Department of the City of Los Angeles and as a Port associated with a major City, is a participant in the Clinton Climate Initiative as a C40 City.

The Port is developing a Sustainability Plan in accordance with the Mayor's Office Directive that will incorporate Port environmental programs and reports, including the Port's Climate Action Plan. The POLA is also a signatory to the State's Sustainable Goods Movement Program, and is participating in the University of Southern California Sustainable Cities Program which is looking at GHGs associated with international goods movement.

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 (grammar schools and high schools), playgrounds, daycare centers, convalescent homes, and hospitals. The nearest sensitive receptors to the areas of proposed construction activities include residents and elementary schools in San Pedro and south Wilmington.

Existing Channel Deepening Project Emissions in 2004

Section 15125 of the CEQA Guidelines requires EIRs to include a description of the physical environmental conditions in the vicinity of the Proposed Action that exist at the time the NOP. The LAHD issued the NOP for the Proposed Action in November 2004. At that time, construction of the Channel Deepening Project was underway and included dredging activities in the Main Channel, installation of drainage structures at the Southwest Slip, fill activities at Pier 300, movement of surcharge at Pier 300, and dike construction at Pier 400. These construction activities included the use of dredge and barge equipment, harbor craft, off-road equipment, and on-road trucks. For this SEIS/SEIR, the air quality analysis uses the emissions that occurred from the Channel Deepening Project in calendar year 2004 as the CEQA and NEPA Baseline to compare to emissions from the alternative of the Proposed Action. The following describes the methods used to estimate year 2004 emissions from these activities.

Activity data used to estimate 2004 construction emissions for the Channel Deepening Project were obtained from project monthly summary reports (Gahagan & Bryant Associates 2004), Port staff (personal communications with John Foxworthy), and documents on the environmental review of previous dredging and disposal projects in the Port (USACE and LAHD 2000 and 2007). Emission factors used to derive source emission rates were obtained from the ARB OFFROAD2007 Emissions Model (ARB 2006b), the EMFAC2007 on-road mobile source emission factor model (ARB 2006c), *Port of Los Angeles Inventory of Air Emissions for Calendar Year 2005* (*PEI*) (Starcrest Consulting Group 2007), *Compilation of Air Pollution Emission Factors, AP-42, Volume I* (USEPA 1995), and the *Air Quality Analysis Guidance Handbook* (SCAQMD 2005a). Appendix C includes data and assumptions used to estimate existing construction emissions.

Table 3.2-4 summarizes the annual emissions estimated for the 2004 Channel Deepening Project construction activities. Daily emissions included in Table 3.2-4 were calculated by dividing annual emission by 365 days.

Table 3.2-4 Annual Emissions Due to Construction of the Channel Deepening Project - CEQA and NEPA Baseline (2004)

Project Year / Activity	EMISSIONS (TONS)					
	VOC	CO	NOx	SOx	PM10	PM2.5
2004						
Pipeline Removal	1.11	5.00	17.17	0.66	0.51	0.47
Dredging/Material Disposal	1.04	5.30	20.69	1.19	0.68	0.63
Wick Drain Installation	0.15	0.70	2.23	0.07	0.08	0.07
Move Surcharge from Area 2 to Area 1	0.18	0.80	2.64	0.08	0.10	0.09
Install Surcharge Gravel Drainage Blanket	0.82	4.47	17.44	1.01	0.54	0.50
Dike Construction Rock Placement	0.37	3.03	14.46	1.25	0.37	0.35
Demolition Activities	1.51	6.65	22.14	0.74	0.68	0.63
Road Work	0.06	0.24	0.66	0.02	0.03	0.03
Cap Area 1	1.38	6.25	19.27	0.61	0.75	0.69
Total Annual Emission	6.62	32.44	116.70	5.62	3.74	3.45
Peak Daily Emissions (Pounds) (1)	68	383	1,556	100	47	43

Notes: (1) Peak daily emissions would occur from the following simultaneous activities: (a) Remove 20" Water Pipeline (No.7), (b) Dredge Element 203/203A to Pier 300, (c) Wick Drain Installation, and (d) Install Gravel.

Greenhouse Gas Emissions

GHG emissions associated with alternatives of the Proposed Action were calculated based on methodologies provided in the California Climate Action Registry (CCAR) *General Reporting Protocol*, version 2.2 (CCAR 2007). The General Reporting Protocol is the guidance document that the Port 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. Table 3.2-5 presents the annual GHG construction emissions associated with the Channel Deepening Project and CEQA and NEPA Baseline in 2004. The GHG emission calculation methodology is described in Appendix C.

3.2.3 Applicable Regulations

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

Table 3.2-5. Annual GHG Emissions due to Construction of the Channel Deepening Project in 2004 - CEQA and NEPA Baseline (2004)

Project Year / Activity	METRIC TONS PER YEAR			
	CO_2	CH_4	N_2O	CO_2e
2004				
Pipeline Removal	1,280	0.19	0.01	1,288
Dredging/Material Disposal	956	0.14	0.01	962
Wick Drain Installation	209	0.03	0.00	211
Move Surcharge from Area 2 to Area 1	226	0.03	0.00	216
Install Surcharge Gravel Drain Blanket	1,192	0.17	0.01	1,199
Dike Construction Rock Placement	737	0.10	0.01	741
Demolition Activities	1,742	0.26	0.02	1,753
Road Work	55	0.01	0.00	55
Cap Area 1	1,752	0.26	0.02	1,763
Hydraulic Dredge - Electrical Generation	5,631	0.04	0.02	5,639
Total GHG Emissions	13,778	1.23	0.11	13,827

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.

Federal Regulations

The federal Clean Air Act (CAA) 42 U.S.C. §§ 7401 et seq. 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.

The CAA delegates the enforcement of the federal standards to the states. In California, the ARB is responsible for enforcing air pollution regulations. 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. The SCAQMD's AQMP is prepared for inclusion in the SIP. Because the SCAB was in nonattainment for certain criteria pollutants, the SCAQMD and SCAG developed the *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 O_3 standard by 2010, while making expeditious progress toward attainment of state standards. Since the SCAB was 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 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 achieving compliance with the new NAAQS for $PM_{2.5}$, 8-hour O_3, PM_{10}, and other planning requirements (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*.

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 dredging equipment, but not 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 1999). For the Proposed Action, this rule is assumed to affect harbor craft.

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 would 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 NAAQS attainment status of the SCAB, a federal action would conform to the SIP if its annual emissions remain below 100 tons of CO and $PM_{2.5}$, 70 tons of PM_{10}, and 25 tons of NO_x and VOCs (USEPA 1993). However, 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) (U.S. Court of Appeals, District of Columbia Circuit 2006). Hence, to conform to the SIP in the SCAB, a federal action also must comply with annual de minimis thresholds of 10 tons of NO_x and VOCs, as the SCAB was in extreme nonattainment of the 1-hour O_3 NAAQS. These de minimis thresholds apply to the proposed construction activities. 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

Table 3.2-6 summarizes the annual emissions estimated for Alternative 1 of the Proposed Action. These data show that Alternative 1 would produce emissions that (1) would exceed the NO_x de minimis threshold of 10 tons per year in 2009 and (2) would remain below all de minimis thresholds in 2010. Due to this NO_x threshold exceedance, a General Conformity Determination would be required for the Proposed Action.

Table 3.2-6 Annual Conformity-Related Emissions for Alternative 1 of the Proposed Action

Project Year / Activity	EMISSIONS (TONS)				
	VOC	CO	NOx	PM10	PM2.5
2009					
Alternative 1 Mitigated Construction Emissions	6.2	45.4	143.8	4.1	3.8
2004 Channel Deepening Project Emissions	(6.6)	(32.4)	(116.7)	(3.7)	(3.5)
Net Annual Emissions – Year 2009	0.1	14.6	32.9	0.6	0.6
2010					
Alternative 1 Mitigated Construction Emissions	0.4	3.0	8.7	0.3	0.2
2004 Channel Deepening Project Emissions	(6.6)	(32.4)	(116.7)	(3.7)	(3.5)
Net Annual Emissions – Year 2009	(5.8)	(27.8)	(102.2)	(3.2)	(3.0)
Annual Conformity Thresholds – Tons	10	100	10	70	100
Note: See Appendix C, Table C-101.					

Discussions with the SCAG in 2000 determined that employment and population growth due to POLA expansion was incorporated into SCAG's regional growth forecasts, which were used in the development of the SIP. Specifically, SCAG incorporated Port impacts by inclusion of the Alameda Corridor project into its plans (SCAG, 2000). These POLA impacts consisted of the direct, indirect, and induced job effects of projected cargo on POLA industries (vessel services, trade services, cargo handling, and inland cargo transportation) and POLA users (export manufacturers and import distributors). Therefore, pursuant to 40 C.F.R. § 93.158(a)(1), construction and operation of the Proposed Action would conform to the SIP. As a result, implementation of the Proposed Action would not (1) cause or contribute to new violations of federal air quality standards, (2) increase the

frequency or severity of existing violations of federal air quality standards, or (3) delay the timely attainment of federal air quality standards.

Construction of the Proposed Action would result in temporary and intermittent increases in air emissions in the project area. However, these short-term increases cannot be avoided and are necessary to achieve the long-term air quality benefits associated with the Proposed Action. Construction emissions would be minimized through the implementation of feasible mitigation measures identified in the Final SEIS/SEIR and would cease upon completion of construction activities.

State Regulations and Agreements

California Clean Air Act

The ARB, 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.

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 (ARB 2004). Harbor craft and intrastate locomotives were originally excluded from the rule, but were later included by a 2004 rule amendment (ARB 2005). Under this rule, diesel fuel used in motor vehicles except harbor craft and intrastate locomotives had been limited to 500 ppm sulfur since 1993. The sulfur limit was reduced to 15 ppm beginning in September 1, 2006. (A federal diesel rule similarly limits sulfur content nationwide for on-road vehicles to 15 ppm which began on October 15, 2006.) Diesel fuel used in harbor craft in the SCAQMD also was limited to 500-ppm sulfur starting January 1, 2006 and reduced to 15-ppm sulfur starting September 1, 2006.

Statewide Portable Equipment Registration Program (PERP)

The PERP establishes a uniform program to regulate portable engines and portable engine-driven equipment units. 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.

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, as well as a market-based cap and trade system, by January 1, 2011, both of which are to become effective on January 1, 2012. AB32 does not identify a significance level of GHG for CEQA/NEPA purposes, nor has the ARB 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) establishment of a statewide goal 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.

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 Baseline for purposes of complying with future GHG emission reduction requirements. The Port is a voluntary member of the Registry and they have 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.

The LAHD had been a member of CCAR since 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.

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 2008b). The most pertinent SCAQMD rules to the Proposed Action are listed below. With the possible exception of dredging equipment, the emission sources associated with the Proposed Action 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) or Rule 1401 (New Source Review of Toxic Air Contaminants). The most pertinent SCAQMD rules that would apply to the Proposed Action include the following:

Rule 201 – Permit to Construct. This rule requires anyone that installs equipment that will emit air contaminants to first obtain a Permit to Construct (PTC). For example, diesel-powered clamshell dredging equipment associated with the proposed construction activities may require a PTC.

Rule 403 – Fugitive Dust. This rule prohibits emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area, such that the dust remains visible beyond the emission source property line. A person conducting active operations shall utilize one or more of the applicable best available control measures to minimize fugitive dust emissions from each fugitive dust source type. Large operations (in excess of 50 acres of disturbed surface area or any earth-moving operation that exceeds 5,000 cubic yards of earthmoving or throughput three times in a year) shall either implement control measures identified in the rule or obtain an approved fugitive dust emissions plan from the SCAQMD. Since the proposed improvements would not qualify as a large operation, the project construction manager would only have to implement best available control measures identified in the rule to minimize fugitive dust emissions from proposed earth-moving and grading activities.

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 operators 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 requirements to notify an intent to disturb ACM, control measures, and ACM removal, handling, and disposal techniques. All proposed

structural demolition activities associated with project construction will comply with the requirements of Rule 1403.

Regulation XIII – New Source Review. This regulation outlines pre-construction review for applicable sources that emit any nonattainment air contaminant, ozone depleting compound, or ammonia. Requirements include (1) employ Best Available Control Technology (BACT), (2) demonstrate with modeling that the new facility will not cause a violation of a state or national ambient air quality standard, or make substantially worse an existing violation and (3) offset its emissions of VOC, NO_x, sulfur oxides (SO_x), and PM_{10} by a ratio of 1.2 to 1.0. Sources subject to New Source Review are required to obtain Permits to Construct (Rule 201) and Operate (Rule 203).

Los Angeles Harbor Department Clean Air Policy

The Port implemented a Clean Air Program in 2001 and began monitoring and measuring air quality in surrounding communities in 2004. Through the Port-wide Emissions Inventory (PEI) process, the Port has been able to identify emission sources and 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 Vessel Speed Reduction Program (VSRP).

In late 2004, the Port developed a plan to reduce air emissions through a number of near-term measures. The measures primarily focused on decreasing NO_x, but also PM and SO_x emissions. In August 2004, a policy shift occurred, and Mayor James K. Hahn established the No Net Increase Task Force to develop a plan that would achieve the goal of No Net Increase (NNI) in air emissions at the Port relative to 2001 levels. The plan identified 68 measures to be applied over the next 25 years that would reduce PM and NO_x emissions to the baseline year of 2001. The 68 measures included (1) near-term measures, (2) agency regulatory efforts, (3) technological innovations, and (4) longer-term measures still in development.

The Port, in conjunction with the Port of Long Beach and with guidance from SCAQMD, CARB, and USEPA, has adopted the San Pedro Bay Ports Clean Air Action Plan (CAAP) to expand upon existing, and develop new emission-reduction strategies (Ports of Los Angeles and Long Beach 2006). The CAAP was initiated in response to a new mayor and Board of Harbor Commissioners. The 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 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 CAAP includes near-term

measures for operational sources that are implemented largely through the CEQA/NEPA process, tariffs, and new leases at both Ports.

POLA Sustainable Construction Guidelines

In February 2008, the POLA Board of Harbor Commissioners adopted the Los Angeles Harbor Department Sustainable Construction Guidelines for Reducing Air Emissions (POLA Construction Guidelines). These guidelines will be used to establish air emission criteria for inclusion in construction bid specifications. The POLA Construction Guidelines will reinforce and require sustainability measures during performance of the contracts, balancing the need to protect the environment, be socially responsible, and provide for the economic development of the Port. Future Board resolutions will expand the Guidelines to cover other aspects of construction, as well as planning and design. These guidelines support the forthcoming Port Sustainability Program.

The intent of the POLA Construction Guidelines is to facilitate the integration of sustainable concepts and practices into all capital projects at the Port, and to phase in the implementation of these procedures in a practical yet aggressive manner. Significant features of the POLA Construction Guidelines include, but are not limited to:

1. All ships and barges used primarily to deliver construction related materials for LAHD construction contracts shall comply with the Vessel Speed Reduction Program and use low-sulfur fuel within 40 nautical miles of Point Fermin.

2. Harbor craft shall meet U.S. EPA Tier 2 engine emission standards and this requirement will increase to U.S. EPA Tier 3 engine emission standards by January 1, 2011.

3. All dredging equipment shall be electric.

4. On-road heavy-duty trucks shall comply with EPA 2004 on-road emission standards for PM_{10} and NO_x and shall be equipped with a CARB verified Level 3 device. Emission standards will increase to EPA 2007 on-road emission standards for PM_{10} and NO_x by January 1, 2012.

5. Construction equipment (excluding on-road trucks, derrick barges, and harbor craft) shall meet U.S. EPA Tier-2 nonroad standards. The requirement will increase to Tier 3 by January 1, 2012, and Tier 4 by January 1, 2015. In addition, construction equipment shall be retrofitted with a California Air Resources Board (CARB) certified Level 3 diesel emissions control device.

6. Comply with SCAQMD Rule 403 regarding Fugitive Dust and other fugitive dust control measures.

7. Additional Best Management Practices, based largely on Best Available Control Technology (BACT), will be required on construction equipment (including on-road trucks) to further reduce air emissions.

This SEIS/SEIR analysis assumes that the Proposed Action alternatives would adopt all applicable Sustainable Construction Guidelines as mitigations, which includes measures 2 through 6. These measures are incorporated into the emission calculations for the mitigated project alternatives scenarios. Mitigation and monitoring requirements for these measures are identified in Section 3.2.10.

3.2.4 Methodology

The following is a presentation of air quality impacts that would occur from construction of the Proposed Action. Air pollutant emissions from the proposed construction activities were calculated using the most current emission factors and methods. Emissions and their impacts were then compared to the criteria identified in Section 3.2.5 to determine their significance. Mitigation measures were applied to proposed activities that would exceed a significance criterion and evaluated as to their effectiveness to reduce proposed impacts.

The proposed construction activities would involve the use of electric- and diesel-powered dredge and barge equipment, tugboats, land-based heavy construction equipment, and haul trucks. The air quality analysis assumed that the unmitigated main engines of hydraulic dredges would be powered by the electrical grid, as (1) these equipment were used for the initial phase of the Channel Deepening Project and (2) it would be prohibitive to obtain an air permit for a diesel-powered unit, given its excessive emissions. Additionally, the analysis assumed that unmitigated earthmoving activities would comply with SCAQMD Rule 403, Fugitive Dust, and that the construction contractor would control fugitive dust emissions by 75 percent from uncontrolled levels. Equipment usage and scheduling needed to calculate proposed construction emissions were developed from the experience of current and past Port dredging and disposal activities (Gahagan & Bryant Associates 2007). Construction of the Proposed Action is expected to begin in early 2009. The proposed construction schedules are presented in Appendix F.

Emission factors used to derive source emission rates were obtained from the ARB OFFROAD2007 Emissions Model (ARB 2006b), the ARB EMFAC2007 on-road mobile source emissions factor model (ARB 2006c), *Port of Los Angeles Inventory of Air Emissions for Calendar Year 2005* (*PEI*) (Starcrest Consulting Group 2007), *Compilation of Air Pollution Emission Factors, AP-42, Volume I* (USEPA 1995), and the *Air Quality Analysis Guidance*

Handbook (SCAQMD 2005a). Table 3.2-7 summarizes the annual emissions estimated for construction activities associated with each project alternative. Appendix C includes data and assumptions used to calculate emissions from construction activities associated with each project alternative.

The air quality analysis generally considered the simultaneous occurrences of all construction activities defined in the proposed construction schedule, rather than only their occurrence at individual construction locations. This approach is preferable, as many of the criteria to evaluate air quality impacts are time-dependent, meaning that it was important to identify the presence of proposed emissions at a given time (such as a per daily basis). However, the analysis also considered the potential for acute air quality impacts to occur at specific locations.

Table 3.2-7. Annual Emissions from Construction Activities for the Channel Deepening Project Alternatives

Alternative / Project Year	EMISSIONS (TONS PER YEAR)					
	VOC	CO	NOx	SOx	PM10	PM2.5
Alternative 1						
2009	14.1	78.5	302.8	0.2	8.9	8.3
2010	1.2	5.8	20.7	0.0	0.6	0.6
Total Emissions	15.35	84.26	323.45	0.23	9.48	8.8
Mitigated Total Emissions – Alternative 1	8.12	61.27	189.88	0.21	4.27	4.0
Alternative 2						
2009	11.1	61.4	236.9	0.2	6.9	6.4
2010	1.5	8.7	33.2	0.0	0.9	0.9
Total Emissions	12.61	70.02	270.15	0.19	7.81	7.3
Mitigated Total Emissions – Alternative 2	6.51	50.00	154.73	0.17	3.56	3.3

CEQA and NEPA Baseline

The CEQA and NEPA Baseline area for the Proposed Action include the general Port area, as well as the area that extends from the Port to the LA-2 disposal site and Santa Catalina Island.

As discussed in Section 1.8.5, the CEQA Baseline will be used for both CEQA and NEPA analysis. 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 this SEIS/SEIR, the time period for the baseline that is used to determine the significance of potential impacts under CEQA and NEPA is the year that the NOP was issued, 2004. In 2004, construction of the Channel Deepening Project was underway and included dredging activities in the Main Channel, installation of drainage structures at the Southwest Slip, fill activities at Pier 300, movement of

surcharge at Pier 300, and dike construction at Pier 400. These construction activities included the use of dredge and barge equipment, harbor craft, off-road equipment, and on-road trucks.

Table 3.2-4 summarizes the annual and peak day emissions estimated for the Channel Deepening Project construction activities in 2004, which are part of the baseline. Additionally, Table 3.2-5 presents the annual GHG emissions produced by the Channel Deepening Project in 2004.

3.2.5 Thresholds of Significance

Thresholds of significance for CEQA and NEPA purposes were established by the City of Los Angeles in the *L.A. CEQA Thresholds Guid*e (City of Los Angeles, 2006). The Thresholds Guide does not directly establish a citywide significance threshold for construction emissions, but instead references the SCAQMD *CEQA Air Quality Handbook* (now the *Air Quality Analysis Guidance Handbook*) and USEPA *AP-42* (USEPA 1995) for assessment methodologies and emission factors. It further places the responsibility on each lead city department to determine the appropriate standards for use. The following City thresholds of significance were used in this study to determine the significance of proposed air quality impacts. An alternative of the Proposed Action would produce a significant impact to air resources if:

AQ-1: Project emissions conflict with or obstruct implementation of the applicable air quality plans (i.e., the 2007 AQMP).

AQ-2: Project emissions exceed any of the following SCAQMD daily thresholds of significance for construction-related emissions: (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 3.2-8) (SCAQMD, 2006c).

Table 3.2-8. 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 2006c.	

AQ-3: Proposed construction emissions result in offsite ambient air pollutant concentrations that exceed any of the SCAQMD thresholds of significance shown in Table 3.2-9. 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 $\mu g/m^3$, as this new standard is the most stringent applicable requirement.

Table 3.2-9. SCAQMD Thresholds for Ambient Air Quality Concentrations Associated with 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	20 ppm (23,000 $\mu g/m^3$)
8-hour average	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.

*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 $\mu g/m^3$, as this new standard is the most stringent applicable requirement.

Source: SCAQMD 2006c.

AQ-4: The project creates objectionable odors at the nearest sensitive receptor.

AQ-5 The project exposes 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-6 The project produces 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 POLA is utilizing the following as its CEQA threshold of significance for purpose of this analysis:

- The Proposed Action 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 AQ-6 CEQA standard being utilized by the POLA, propose a new GHG standard, or make a NEPA impact determination for GHG emissions anticipated to result from any of the alternatives of the Proposed Action. Rather, in compliance with the NEPA implementing regulations, the anticipated emissions relative to the baseline will be disclosed for each alternative of the Proposed Action without expressing a judgment as to their significance.

3.2.6 Impact Analysis and Mitigation Measures

3.2.6.1 Alternative 1: Port Development and Environmental Enhancement

Alternative 1, Port Development and Environmental Enhancement, would consist of disposing dredged material at the following disposal sites: Berths 243-245; Northwest Slip; CSWH Expansion Area; Eelgrass Habitat Area; and LA-2.

A Confined Disposal Facility (CDF) would be created at the Berths 243-245 disposal site and would be covered with clean surcharge to an elevation of approximately +30 feet MLLW, which would remain in place until a future geotechnical investigation/monitoring determines the fill has been consolidated. In the future, if the Port decides to remove the surcharge material, an appropriate CEQA document would be prepared to analyze potential impacts of surcharge removal. Potential environmental impacts of future development of the new 5-acre land area at the Northwest Slip have been addressed in the Berth 136-147 Container Terminal (TraPac) Project Final EIS/EIR, which is summarized in Section 3.14.

Impact AQ-1: Alternative 1 would not conflict with or obstruct implementation of the applicable air quality plans.

Alternative 1 construction activities would produce nonattainment pollutants in the form of combustive and fugitive dust (PM_{10}/$PM_{2.5}$) emissions. The *2007 AQMP* proposes emission reduction measures that are designed to bring the SCAB into attainment of the state and national ambient air quality standards. The attainment strategies in this plan include mobile source control measures and clean fuel programs that are enforced at the state and federal level on engine

manufacturers and petroleum refiners and retailers rather than equipment owners and operators. As a result, Alternative 1 construction equipment 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 SCAB. Some of the PM_{10} emission reduction strategies in the *2007 AQMP* rely on the control of fugitive dust sources, such as construction sites. The SCAQMD has adopted Rule 403 (Fugitive Dust) for this purpose. The Proposed Action construction contractor would comply with Rule 403 by implementing one or more best available control measures (BACMs) identified in Rule 403 during proposed earth-moving activities that emit fugitive dust, in addition to those identified below in the description of Mitigation Measure AQ-2.5. Therefore, compliance with these requirements would ensure that Alternative 1 would not conflict with or obstruct implementation of the applicable air quality plans.

Impact Determination

Construction equipment associated with Alternative 1 would comply with the mobile source control measures and clean fuel programs requirements of the AQMP and the SCAQMD rules and regulations. Therefore, consistency with these assumptions would ensure that Alternative 1 would not conflict with or obstruct implementation of this plan. Impacts would be less than significant under NEPA and CEQA.

Mitigation Measures. Under Alternative 1, no significant adverse impacts would occur; therefore, no mitigation measures are required.

Residual Impacts. No mitigation measures for implementation of Alternative 1 are required. Therefore, no residual impacts would occur.

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

The main sources of emissions associated with construction activities from Alternative 1 include (1) tugboats that deliver dike rock and transport dredge sediments, (2) barge equipment used to place rip-rap, and (3) equipment used to handle surcharge. To determine the significance of Alternative 1 emissions based upon criterion Impact AQ-2, the Alternative 1 construction schedule was reviewed to determine a peak daily period of activity and resulting daily emissions for comparison to the SCAQMD daily emission thresholds. This peak daily period of construction activity would consist of the simultaneous occurrence of (1) quarry run placement during dike construction at the Northwest Slip, (2) quarry run placement during dike construction for the Berths 243-245 disposal site, (3) quarry run placement during dike construction at the

Eelgrass Habitat Area, and (4) surcharge material loading, transporting, and unloading at the CSWH. Construction schedules are included in Appendix F of this SEIS/SEIR.

Table 3.2-10 presents estimates of daily unmitigated emissions that would occur from each construction activity associated with Alternative 1, as well as the peak daily emissions produced by Alternative 1. Proposed Action emissions are compared to the 2004 Baseline emissions to determine significance. These data show that NO_x emissions from most of the proposed activities would exceed the daily SCAQMD NO_x threshold of 100 pounds. Table 3.2-10 shows that the net change in unmitigated peak daily emissions between Alternative 1 construction activities and the baseline activities would exceed the SCAQMD daily thresholds for NO_x. All other resulting emissions between the two scenarios would not exceed a SCAQMD daily emission threshold.

Table 3.2-10 Daily Unmitigated Emissions from Construction Activities for Alternative 1

Alternative / Project Year	Emissions (pounds per day) (1)					
	VOC	CO	NOx	SOx	PM10	PM2.5
Northwest Slip						
Demolition	25	93	266	0	11	10
Trench Excavation	32	122	371	0	11	11
Dike Construction Quarry Run Placement	18	133	568	0	16	15
Coarse Grain Dredging and Transport – Clamshell	33	125	388	1	12	11
Dike Construction Armor Stone Placement	18	133	568	0	16	15
Unload Surcharge Material	25	94	277	0	9	8
Berths 243-245						
Demolition	25	92	264	0	11	10
Trench Excavation	32	122	371	0	11	11
Dike Construction Quarry Run Placement	17	124	529	0	15	14
Dike Construction Armor Stone Placement	17	119	509	0	14	13
Contaminated Sediment Dredging and Transport	33	125	384	0	12	11
Coarse Grain Dredging and Transport - Clamshell	33	125	388	1	12	11
CSWH Expansion						
Trench Excavation	32	122	371	0	11	11
Dike Construction Quarry Run Placement	33	239	1,019	1	28	26
Fine Grain Dredging and Transport - Clamshell	33	125	388	1	12	11
Fine Grain Dredging and Transport - Hydraulic	7	42	173	0	5	5
Unload Surcharge	22	80	243	0	8	7
Eelgrass Habitat Area						
Dike Construction Quarry Run Placement	33	239	1,019	1	28	26
Dike Construction Armor Stone Placement	33	239	1,019	1	28	26
Unload Surcharge Material	25	94	277	0	9	8
Fine Grain Dredging and Transport – Hydraulic	7	42	173	0	5	5
LA-2						
Fine Grain Dredging and Transport - Clamshell	50	282	1,068	0	30	28
SW Slip Surcharge						
Surcharge Loading at SW Slip	41	146	424	0	16	14
Transport of Surcharge Material	0	3	11	0	0	0
Alternative 1 Peak Daily Emissions – Unmitigated (2)	132	725	2,795	2	82	**76**
2004 CEQA Baseline Peak Daily Emissions	(68)	(383)	(1,556)	(99)	(47)	(43)
Net Alternative 1 Peak Daily Unmitigated Emissions (3)	64	342	1,239	(98)	35	33

Alternative / Project Year	EMISSIONS (POUNDS PER DAY) (1)					
	VOC	CO	NOx	SOx	PM10	PM2.5
Alternative 1 Peak Daily Emissions – Mitigated (2)	74	545	1,738	2	37	35
Net Alternative 1 Peak Daily Mitigated Emissions (3)	6	162	182	(98)	(10)	(9)
SCAQMD Daily Significance Thresholds	75	550	100	150	150	**55**

Notes: (1) Bolded data represent significant emissions from an activity or the peak day that would exceed a SCAQMD daily threshold.
(2) Peak daily emissions would occur from the following simultaneous activities: [a] dike construction quarry run placement at the Northwest Slip, [b] dike construction quarry run placement at Berths 243-245, [c] dike construction quarry run placement at the Eelgrass Habitat Area, and (d) load, transport, and unload surcharge material at the CSWH.
(3) Equal to Alternative 1 peak daily emissions minus 2004 CEQA Baseline peak daily emissions.

Impact Determination

Alternative 1 construction activities would produce emissions that would exceed the SCAQMD daily threshold for NO_x. As a result, Alternative 1 would produce significant levels of NO_x emissions under NEPA and CEQA.

Mitigation Measures (MM). The following are the applicable and feasible POLA Sustainable Construction Guidelines that Alternative 1 would implement to reduce criteria pollutant emissions from proposed construction equipment and activities. Since proposed construction activities would finish prior to 2011 when the Guidelines specify the next tier of additional emission controls, there are no other feasible measures that would further reduce criteria pollutant emissions from construction of Alternative 1.

MM AQ-2.1: Fleet Modernization for Construction Equipment. Construction equipment shall adhere to the following requirements:

1. Construction equipment shall incorporate, where feasible, emissions savings technology such as hybrid drives and specific fuel economy standards.
2. Idling shall be restricted to a maximum of 5 minutes when not in use.
3. The following emission standards shall be met:
    i. All off-road diesel-powered construction equipment greater than 50 horsepower (hp) shall meet Tier-2 nonroad emission standards, at a minimum.
    ii. All construction equipment shall be outfitted with Best Available Control Technology (BACT) devices certified by CARB.
    iii. Any emissions-control device used by the Contractor shall achieve emissions reductions no less than what could be achieved by a Level 2 or Level 3 diesel emissions control strategy for a similar-sized engine as defined by CARB regulations.
    iv. A copy of each unit's certified Tier specification, BACT documentation and each unit's CARB or SCAQMD operating permit, shall be provided at the time of mobilization of each applicable unit of equipment.

The above "Tier Specifications" measures shall be met, unless one of the following circumstances exists and the contractor is able to provide proof that any of these circumstances exists:

i. A piece of specialized equipment is unavailable in a controlled form within the State of California, including through a leasing agreement.

ii. A contractor has applied for necessary incentive funds to put controls on a piece of uncontrolled equipment planned for use on the project, but the application process is not yet approved, or the application has been approved, but funds are not yet available.

iii. A contractor has ordered a control device for a piece of equipment planned for use on the project, or the contractor has ordered a new piece of controlled equipment to replace the uncontrolled equipment, but that order has not been completed by the manufacturer or dealer. In addition, for this exemption to apply, the contractor must attempt to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the project has the controlled equipment available for lease.

Use of equipment with cleaner Tier 2 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, depending upon the pollutant and equipment horsepower category. Although all new equipment sold by 2006 would have to comply with the Tier 2 standards, these requirements do not apply to older units in the existing equipment fleet. Therefore, this mitigation measure would force an earlier turnover of the existing construction equipment to lower-emitting models. The mitigated air quality also evaluated implementation of ARB Level 3 PM control devices on all construction equipment, which would reduce DPM emissions by 85 percent from Tier 2 standard levels.

MM AQ-2.2: Fleet Modernization for On-Road Trucks. On-road heavy-duty trucks with a gross vehicle weight rating (GVWR) of 19,500 pounds or greater shall comply with USEPA 2004 on-road emission standards for PM10 and NOx (0.10 Gm/bhp-hr PM10 and 2.0 Gm/bhp-hr NOx). In addition, all on-road trucks shall be outfitted with BACT devices certified by CARB. Any emissions-control device used by the Contractor shall achieve emissions reductions no less than what could be achieved by a Level 3 diesel emissions control strategy for a similar-sized engine as defined by CARB regulations.

A copy of each unit's certified, USEPA rating, BACT documentation, and each unit's CARB or SCAQMD operating permit, shall be provided at the time of mobilization of each applicable unit of equipment.

The above "USEPA Standards" measures shall be met, unless one of the following circumstances exists and the contractor is able to provide proof that any of these circumstances exists:

i. A piece of specialized equipment is unavailable in a controlled form within the State of California, including through a leasing agreement.

ii. A contractor has applied for necessary incentive funds to put controls on a piece of uncontrolled equipment planned for use on the project, but the application process is not yet approved, or the application has been approved, but funds are not yet available.

iii. A contractor has ordered a control device for a piece of equipment planned for use on the project, or the contractor has ordered a new piece of controlled equipment to replace the uncontrolled equipment, but that order has not been completed by the manufacturer or dealer. In addition, for this exemption to apply, the contractor must attempt to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the project has the controlled equipment available for lease.

The mitigated air quality assumed that all project on-road heavy-duty trucks with a GVWR of 19,500 pounds or greater (1) would comply with USEPA 2004 on-road emission standards and (2) would implement ARB Level 3 PM control devices, which would reduce DPM emissions by 85 percent from 2004 standard levels.

MM AQ-2.3: Electrify Dredge Equipment. All dredging equipment shall be electric where available. The mitigated air quality assumed that the main hoist and generator engines on proposed clamshell barges that (1) dredge, (2) remove surcharge from the Southwest Slip, and (3) unload surcharge at the Northwest Slip would replace diesel power with electrical grid power (the hydraulic dredge main engines would be electrified under the unmitigated scenario). Since there are currently no hydraulic or clamshell dredge barges that are completely electric, the mitigated analysis assumes that it is infeasible to electrify all auxiliary diesel-powered equipment on these barges, such as those used for anchor winches and deck generators. Additionally, due to the inaccessibility of the CSWH and Eelgrass sites, clamshell dredges that operate in this location would be unable to connect to the electrical grid.

MM AQ-2.4: Harbor Craft Used In Construction. Harbor craft with a category 1 or 2 marine engine shall meet U.S. EPA Tier 2 marine engine emission standards. The mitigated air quality assumed that all proposed tug boats would comply with the Tier 2 category 1 marine engine emission standards.

MM AQ-2.5: Fugitive Dust Control. 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.

The following fugitive dust reduction measures, at a minimum, shall be included in this plan:

- SCAQMD's Best Available Control Technology (BACT) measures shall be followed on all projects. They are outlined in Table 1 in Rule 403. Large construction projects (on a property which contains 50 or more disturbed acres) shall also follow the BACT measures in Tables 2 and 3 of Rule 403.
- Active grading sites shall be watered four times per day.
- Contractors shall apply approved non-toxic chemical soil stabilizers to all inactive construction areas or replace groundcover in disturbed areas.
- Contractors shall provide temporary wind fencing around sites being graded or cleared.
- Trucks hauling dirt, sand, or gravel shall be covered or shall maintain at least 2 feet of freeboard in accordance with Section 23114 of the California Vehicle Code. ("Spilling Loads on Highways").
- Construction contractors shall install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off tires of vehicles and any equipment leaving the construction site.
- The grading contractor shall suspend all soil disturbance activities when winds exceed 25 miles per hour (mph) or when visible dust plumes emanate from a site; disturbed areas shall be stabilized if construction is delayed.
- Open storage piles (greater than 3 feet tall and a total surface area of 150 square feet) shall be covered with a plastic tarp or chemical dust suppressant.
- Stabilize the materials while loading, unloading and transporting to reduce fugitive dust emissions.
- Belly-dump truck seals shall be checked regularly to remove trapped rocks to prevent possible spillage.
- Comply with track-out regulations and provide water while loading and unloading to reduce visible dust plumes.
- Waste materials shall be hauled off-site immediately.

The calculation of fugitive dust (PM_{10}) 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.

MM AQ-2.6: Additional Best Management Practices (BMPs). The following types of measures are required on construction equipment (including on-road trucks):

1. Use of diesel oxidation catalysts and catalyzed diesel particulate traps.
2. Maintain equipment according to manufacturers' specifications .
3. Restrict idling of construction equipment to a maximum of 5 minutes when not in use.
4. Install high-pressure fuel injectors on construction equipment vehicles.

LAHD shall implement a process by which to select additional BMPs to further reduce air emissions during construction. 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.

Residual Impact. Table 3.2-10 shows that implementation of measures MM AQ-2.1 through MM AQ-2.5 would reduce peak daily emissions from unmitigated levels. Although application of measure MM AQ-2.6 is uncertain, it would further reduce emissions from proposed construction activities. After mitigation, emissions would exceed the SCAQMD daily NO_x significance threshold. Therefore, emissions from Alternative 1 construction activities would produce significant levels of NO_x emissions under NEPA and CEQA. Impacts would be significant and unavoidable.

Impact AQ-3: Emissions from Alternative 1 would substantially contribute to an existing or projected air quality standard violation.

The Alternative 1 project region presently exceeds the state and national ambient standards for O_3, PM_{10}, and $PM_{2.5}$. Emission sources from Alternative 1 construction activities would operate within an area of the Port that extends from the Northwest Slip to the CSWH Expansion Site, or a distance of about four miles. Additionally, some tugboat sources would operate between the Port and either Santa Catalina Island and between the Port and the LA-2 disposal site, both of which are located several miles outside the Port. The dispersion of these emissions over such a large area and the mobile and intermittent nature of most emission sources would minimize the ambient impact of proposed air pollutants within or in proximity to the Port.

The *TraPac FEIS/FEIR* evaluated the ambient impact of proposed construction emissions in regard to significance criterion AQ-3 with the use of dispersion modeling. This analysis evaluated a proposed construction scenario whose emissions (1) would exceed those estimated for Alternative 1, and (2) would occur within a more confined area (within and adjacent to the TraPac Terminal). As a result, this container terminal project would produce more concentrated ambient impacts than Alternative 1 activities. To estimate ambient pollutant impacts from

Alternative 1 that are needed to compare to significance criterion AQ-3, this SEIS/SEIR analysis multiplied the ratio of construction emissions from Alternative 1 and the TraPac project to the results of the dispersion modeling analysis performed for the container terminal project, as presented in Section 3.2, Tables 3.2-18 and 3.2-21 of the *TraPac FEIS/FEIR*. This approach provides a conservative estimate of Alternative 1 ambient impacts, due to point (2) mentioned above. The following are descriptions of ambient impacts estimated for Alternative 1:

1. **CO impacts** – Peak daily CO emissions from the unmitigated TraPac construction project were estimated to be 443 pounds. The TraPac project analysis determined that unmitigated project construction activities would produce 1-hour and 8-hour CO ambient impacts of 1,086 and 305 $\mu g/m^3$, respectively. Adding these to 1-hour and 8-hour CO background values (6,629 and 5,371 $\mu g/m^3$, respectively) produced total project CO impacts of 7,715 and 5,676 $\mu g/m^3$, respectively. These impacts would not exceed the 1-hour and 8-hour CO significance criteria of 23,000 and 10,000 $\mu g/m^3$. The most concentrated amount of unmitigated CO emissions that would occur within an area from Alternative 1 would occur from surcharge loading at the Southwest Slip, at 146 pounds per day. Activities that generate higher daily CO emissions mainly would occur from tugs that transit a large area within or outside the Port (See Table 3.2-10). This emission rate is about 33 percent of the TraPac project rate. Applying this factor of 33 percent to the CO impacts estimated for the TraPac project would result in unmitigated 1-hour and 8-hour CO impacts for Alternative 1 of 357 and 100 $\mu g/m^3$, respectively. Adding these impacts to the CO background values would produce total unmitigated project impacts of 6,986 and 5,471 $\mu g/m^3$, respectively, which would remain below the CO ambient significance criteria. As a result, Alternative 1 would produce less than significant impacts to ambient CO levels.

2. **PM_{10} impacts** – Peak daily unmitigated construction emissions of PM_{10} from the TraPac project would be 424 pounds. The TraPac project analysis estimated that the unmitigated project construction would produce a maximum 24-hour PM_{10} ambient impact of 110 $\mu g/m^3$, which would exceed the SCAQMD significance criterion of 10.4 $\mu g/m^3$. The most concentrated amount of unmitigated PM_{10} emissions that would occur within an area from Alternative 1 would occur during surcharge loading at the Southwest Slip, at 16 pounds per day (See Table 3.2-10). This emission rate is about 4 percent of the TraPac project rate. Applying this factor of 4 percent to the PM_{10} impact estimated for the TraPac project would result in an unmitigated 24-hour PM_{10} impact estimation for Alternative 1 of 4.1 $\mu g/m^3$. Since this impact concentration is below the threshold of significance, ambient PM_{10} impacts from Alternative 1 would be less than significant.

3. **$PM_{2.5}$ impacts** – Peak daily unmitigated construction emissions of $PM_{2.5}$ from the TraPac project would be 161 pounds. The TraPac project analysis estimated that the unmitigated project construction would produce a 24-hour $PM_{2.5}$ ambient impact of 35 $\mu g/m^3$, which would exceed the SCAQMD significance criterion of 10.4 $\mu g/m^3$. The most concentrated amount of unmitigated $PM_{2.5}$ emissions that would occur within an area from Alternative 1 would occur during surcharge loading at the Southwest Slip, at 15 pounds per day (See Table 3.2-10). This emission rate is about 9 percent of the TraPac project rate. Applying this factor of 9 percent to the $PM_{2.5}$ impact estimated for the TraPac project would result in an unmitigated 24-hour $PM_{2.5}$ impact estimation for Alternative 1 of 3.2 $\mu g/m^3$. Since this impact concentration is below the threshold of significance, ambient $PM_{2.5}$ impacts from Alternative 1 would be less than significant.

4. **NO_2 impacts** – Peak daily unmitigated construction emissions of NO_x from the TraPac project would be 1,845 pounds. The TraPac project analysis estimated that the unmitigated project construction would produce a 1-hour NO_2 ambient impact of 776 $\mu g/m^3$, which in combination with the background value of 263 $\mu g/m^3$, would produce a total project impact of 1,039 $\mu g/m^3$, which would exceed the significance criterion of 338 $\mu g/m^3$. The most concentrated amount of unmitigated NO_x emissions that would occur within an area from Alternative 1 would occur from surcharge loading at the Southwest Slip, at 424 pounds per day. Activities that generate higher daily NO_x emissions mainly would occur from tugs that transit a large area within or outside the Port (See Table 3.2-10). This emission rate is about 23 percent of the TraPac project rate. Applying this factor of 23 percent to the NO_2 impact estimated for the TraPac project would result in an unmitigated one-hour NO_2 impact estimation for Alternative 1 of 178 $\mu g/m^3$. Adding this to the background NO_2 value of 263 $\mu g/m^3$ would produce a total unmitigated project impact of 441 $\mu g/m^3$, which would exceed the significance criterion of 338 $\mu g/m^3$. As a result, Alternative 1 would produce significant impacts to ambient NO_2 levels.

Impact Determination

Alternative 1 construction activities would contribute to an exceedance of the one-hour ambient NO_2 standard, which would result in a significant air quality impact under NEPA and CEQA.

Mitigation Measures. Implementation of measures MM AQ-2.1 through MM AQ-2.5 would reduce criteria pollutant emissions and localized ambient impacts from Alternative 1 construction equipment. The most concentrated amount of mitigated NO_x emissions that would occur within an area as a result of Alternative 1 would be from unloading surcharge at the Eelgrass Habitat Area, at 221 pounds per day. This emission rate is about 12 percent of the TraPac project unmitigated rate. Applying this factor of 12 percent to the NO_2 impact estimated for the

unmitigated TraPac project would result in a mitigated one-hour NO_2 impact estimation of 93 $\mu g/m^3$ for Alternative 1. Adding this to the background NO_2 value of 263 $\mu g/m^3$ would produce a total unmitigated impact of 356 $\mu g/m^3$, which would exceed the significance criterion of 338 $\mu g/m^3$. As a result, implementation of all feasible measures would not mitigate NO_x emissions to below the SCAQMD NO_2 ambient 1-hour threshold.

Residual Impact. Emissions of NO_x from Alternative 1 construction activities would produce significant and unavoidable ambient NO_2 impacts under CEQA and NEPA.

Impact AQ-4: Alternative 1 would not create objectionable odors at the nearest sensitive receptor.

Construction of Alternative 1 would increase air pollutants due to the combustion of diesel fuel. Some individuals might find diesel combustion emissions to be objectionable in nature, although quantifying the odorous impacts of these emissions to the public is difficult. The mobile and intermittent nature of most project emission sources would help to adequately disperse combustive emissions from Alternative 1.

Exposure to the atmosphere of dredge material from construction of the CDF at Berths 243-245 and the new land area at the Northwest Slip could produce objectionable odors from the decomposition of organic matter. The 0.25 mile distance between these proposed landfill areas and the nearest residents in San Pedro and South Wilmington would be far enough to allow for adequate dispersion of these emissions to below objectionable odor levels. Since Alternative 1 would construct much smaller landfills at the Berths 243-245 CDF and Northwest Slip compared to those constructed at the Berths 100-109 area, no substantial odor impacts are expected from this activity. Therefore, the potential for project construction to create objectionable odors is low.

Impact Determination

Construction of Alternative 1 would not create objectionable odors at the nearest sensitive receptor. Therefore impacts would be less than significant under NEPA and CEQA.

Mitigation Measures. Under Alternative 1, no potentially significant adverse impacts would occur; therefore, no mitigation measures are required.

Residual Impacts. No mitigation measures for implementation of Alternative 1 are required. Therefore, no residual impacts would occur.

Impact AQ-5: Alternative 1 would not expose the public to substantial concentrations of TACs.

Alternative 1 construction equipment would emit TACs that would impact public health. The main form of TACs from project construction would occur as diesel particulate matter (DPM)

emitted from diesel-powered on- and off-road equipment. Consistent with the discussion presented in Impact AQ-3, the operation of mobile and intermittent sources of emissions from Alternative 1 over a large area within and outside the Port would minimize the ambient impact of proposed TACs within the project region.

A health risk assessment and dispersion modeling to estimate ambient impacts of the TraPac project construction and operational emissions of TACs in regard to significance criterion AQ-5 was performed for the *TraPac FEIS/FEIR*. This analysis evaluated emissions that (1) would exceed those estimated for Alternative 1 and (2) would occur within a more confined area (within and adjacent to the TraPac Terminal). As a result, this container terminal project would produce more concentrated ambient impacts compared to activities of Alternative 1 of the Proposed Action. To estimate ambient health impacts from Alternative 1 that are needed to compare to significance criterion AQ-5, this SEIS/SEIR analysis multiplied the ratio of construction emissions from Alternative 1 and operational emissions from the TraPac project to the results of the HRA performed for the TraPac project, as presented in Appendices D2, D3, and D4 of the *TraPac FEIS/FEIR*. This approach provides a conservative estimate of Alternative 1 ambient impacts due to the reasons mentioned above. The following are descriptions of ambient health impacts estimated for Alternative 1:

Cancer Risk

The analysis of TraPac project cancer risks is based upon 70-year annual average DPM emission rates of proposed construction and operational sources. Review of Figure D3-12 in Appendix D of the *TraPac FEIS/FEIR* shows that the maximum cancer risk produced by the unmitigated TraPac project to any receptor type would be about 270 per million (270×10^{-6}), which would occur to residential receptors within southwest Wilmington. This impact would exceed the significance criterion of 10 per million (10×10^{-6}). The overwhelming majority of this impact would occur from TraPac project sources that operate inside the breakwater and adjacent to the TraPac terminal area (as presented in Table D3-7 of Appendix D4 of the *TraPac FEIS/FEIR*), which is similar to the locations of Alternative 1 construction sources. The combined 70-year annual average DPM emissions for the unmitigated TraPac project sources is about 14.8 tons (see Table D4-PP-22 in Appendix D4 of the *TraPac FEIS/FEIR*). The 70-year annual average unmitigated DPM emissions for all Alternative 1 sources (both within and outside the Port breakwater) would be 0.14 tons per year (9.5 tons divided by 70 years). This DPM emission rate is about 1.0 percent of the DPM emission rate used to estimate unmitigated cancer risks from the TraPac project. Applying this factor of 1.0 percent to the maximum unmitigated cancer risk estimated for the TraPac project would result in a maximum unmitigated cancer risk estimation for Alternative 1 of about 2.7 per million (2.7×10^{-6}), which is below the significance criterion of

10 per million (10×10^{-6}). As a result, unmitigated cancer risks produced from Alternative 1 to all receptor types would be less than significant.

Chronic Non-Cancer Effects

The analysis of the TraPac project chronic non-cancer effects is based upon the amount of peak annual DPM emissions generated from proposed construction and operational sources. Peak annual unmitigated DPM emissions from the TraPac project that would occur within the Port area would be 62.2 tons (Table H5-A1.27 in Appendix D2 of the *TraPac FEIS/FEIR*). The TraPac project HRA determined that unmitigated chronic non-cancer effects to all receptor types from the TraPac project would not exceed the hazard index significance criterion of 1.0. Alternative 1 would generate a maximum annual unmitigated DPM emission rate of 8.9 tons in year 2009. This DPM emission rate is about 14 percent of the DPM emission rate used to estimate chronic non-cancer impacts from the unmitigated TraPac project. Since Alternative 1 would produce substantially lower annual DPM emissions compared to the DPM emissions that were used to estimate chronic non-cancer effects from the TraPac project, Alternative 1 would produce less than significant chronic non-cancer effects to all receptor types.

Acute Non-Cancer Effects

The analysis of the TraPac project acute non-cancer effects is based largely upon peak daily VOC and DPM emissions generated by proposed operational sources. Peak daily unmitigated VOC/DPM emissions from the TraPac project that would occur within the Port area would be 412/336 pounds per day (Table D2.1-PP(2010)-37 in Appendix D2 of the *TraPac FEIS/FEIR*). The TraPac project HRA determined that the maximum unmitigated acute non-cancer impact at any receptor type from the TraPac project sources would have a hazard index value of 4.57, which would exceed the significance criterion of 1.0. Surcharge loading at the Southwest Slip would produce the most concentrated amount of unmitigated peak daily VOC/DPM emissions within an area of Alternative 1, at 41/16 pounds. These combined VOC/DPM emissions are about 8 percent of the combined VOC/DPM emissions that were used to estimate acute non-cancer effects from the TraPac project. Applying this factor of 8 percent to the maximum acute non-cancer impact estimated for the TraPac project would result in a maximum unmitigated acute non-cancer hazard index impact for Alternative 1 of about 0.35, which would not exceed the significance criterion of 1.0. Therefore, unmitigated Alternative 1 would produce less than significant acute non-cancer effects.

Particulate Morbidity/Mortality

Health Risk Assessments are not diagnostic studies; they are an estimate if current or future exposures will result in health risks to a broad population. Alternatively, epidemiological studies

look at past exposure and try to link that exposure, often in a population, to a disease. Mortality is a measure of the number of deaths in a population, scaled to the size of that population, per unit time. Morbidity refers to the number of individuals who have contracted a disease during a given time period (the incidence rate) or the number who currently have that disease (the prevalence rate), scaled to the size of the population.

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 [PM10]) 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 Action would emit DPM during project construction.

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 (CARB, 2006a and CARB, 2006b). 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.

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 ozone) (AQMD, 2007; CARB, 2006a; and CARB, 2006b). Nevertheless, various studies have been published over the past 10 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.

Quantifying Morbidity and Mortality

As discussed above, The *TraPac FEIS/FEIR* performed an HRA and dispersion modeling to estimate the ambient impact of TraPac project construction and operational emissions of TACs in regard to significance criterion AQ-5. This analysis evaluated emissions that (1) would exceed those estimated for Alternative 1 and (2) would occur within a more confined area (within and adjacent to the TraPac Terminal). As a result, the TraPac container terminal project would produce more concentrated ambient impacts compared to Alternative 1 activities.

A Morbidity/Mortality analysis was also completed for the TraPac project. The analysis used concentration-response (C-R) functions to determine morbidity and mortality impacts, consistent with CARB's approach. C-R functions 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. Using C-R functions, 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 analysis determined that the increase in incidence of long-term mortality corresponding to this change in PM_{10} concentration was calculated to be 0.0073 cases per year prior to mitigation and including both construction and operational emissions. Because Alternative 1 would result in less PM emissions as compared to the TraPac project, Alternative 1 is expected to result in less than 0.0073 cases per year.

Impact Determination

Construction activities from Alternative 1 would not expose the public or sensitive receptors to substantial concentrations of TACs. Impacts would be less than significant under NEPA and CEQA.

Mitigation Measures. Under Alternative 1, no potentially significant adverse impacts would occur; therefore, no mitigation measures are required.

Residual Impacts. No mitigation measures for implementation of Alternative 1 are required. Therefore, no residual impacts would occur.

Impact AQ-6: Alternative 1 would produce GHG emissions that exceed CEQA thresholds.

Climate change, as it relates to man-made GHG emissions, is by nature a global impact. The issue of global climate change is, therefore, a cumulative impact. Nevertheless, for the purposes of this SEIS/SEIR, the LAHD has opted to address GHG emissions as a project-level impact in this chapter. Section 6.0 of this SEIS/SEIR for further discussion of this cumulative 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. Table 3.2-11 summarizes the annual unmitigated GHG emissions produced from the construction of Alternative 1.

Table 3.2-11. Annual GHG Emissions from Alternative 1 Construction

Project Year/Scenario	Annual Emissions (Metric Tons)			
	CO_2	CH_4	N_2O	CO_2e
2009 – Unmitigated Alternative 1	22,064	2.78	0.21	22,188
2010 – Unmitigated Alternative 1	1,408	0.22	0.02	1,417
2009 – Mitigated Alternative 1	20,456	2.28	0.18	20,560
2010 – Mitigated Alternative 1	1,049	0.09	0.01	1,054
2004 – CEQA/NEPA Baseline/Channel Deepening Project	13,778	1.23	0.11	13,827

Impact Determination

As the data in Table 3.2-11 show, annual CO_2e emissions produced from Alternative 1 would exceed the CEQA Baseline levels in 2009 and would remain below these levels in 2010. As a result, these GHG emission increases in 2009 are considered to be a significant impact under CEQA.

The annual CO_2e emissions produced from the construction of Alternative 1 would exceed the NEPA Baseline levels in 2009 and would remain below these levels in 2010. Because no NEPA significance threshold has been established, no determination of significance has been made for this impact.

Mitigation Measures

Measures that reduce electricity consumption or fossil fuel usage from project emission sources would reduce proposed GHG emissions. Implementation of MM AQ-2.1, MM AQ-2.3, and MM AQ-2.6 would reduce GHG emissions by electrifying dredging equipment, reducing idling and incorporating emissions savings technology such as hybrid drives and specific fuel economy standards. However, mitigation measures would not reduce all GHG emissions.

Residual Impact

Table 3.2-11 summarizes the annual mitigated GHG emissions produced from the construction of Alternative 1. These data show that electrification of dredging equipment would reduce GHG emissions from Alternative 1 construction activities. However, GHG emissions from Alternative 1 construction activities in 2009 would remain significant and unavoidable under CEQA.

3.2.6.2 Alternative 2: Environmental Enhancement and Ocean Disposal

Alternative 2, Environmental Enhancement and Ocean Disposal, consists of placing dredge material at the following locations: CSWH Expansion Area, Eelgrass Habitat Area, Anchorage Road Soil Storage Site (ARSSS), and LA-2. No new land area would be created as result of this alternative.

Implementation of Alternative 2 would result in the same type and extent of development at the CSWH Expansion Area and the Eelgrass Habitat Area disposal locations as described for Alternative 1. Alternative 2 would also result in the same disposal activities at LA-2, although more sediment would be disposed of under Alternative 2, which would result in a longer duration of construction activities. Construction schedules are included in Appendix F of this SEIS/SEIR.

Impact AQ-1: Alternative 2 would not conflict with or obstruct implementation of the applicable air quality plans.

As presented in Table 3.2-7, construction activities associated with Alternative 2 would produce nonattainment pollutants in the form of combustive and fugitive dust (PM_{10}/$PM_{2.5}$) emissions. The 2007 AQMP proposes emission reduction measures that are designed to bring the SCAB into attainment of the state and national ambient air quality standards. The attainment strategies in this plan include mobile source control measures and clean fuel programs that are enforced at the state and federal level on engine manufacturers and petroleum refiners and retailers. As a result, Alternative 2 construction equipment 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 SCAB. Some of the PM_{10} emission reduction strategies in the 2007 AQMP rely on the control of fugitive dust sources, such as construction sites. The SCAQMD has adopted Rule 403 (Fugitive Dust) for this purpose. The construction contractor would comply with Rule 403 by implementing one or more BACMs identified in the Rule during proposed earth-moving activities that emit fugitive dust, such as those identified in Mitigation Measure AQ-2.5. Therefore, compliance with these requirements would ensure that Alternative 2 would not conflict with or obstruct implementation of the applicable air quality plans

Impact Determination

Construction equipment associated with Alternative 2 would comply with the mobile source control measures and clean fuel programs requirements of the AQMP and the SCAQMD rules and regulations. Therefore, consistency with these assumptions would ensure that Alternative 2 would not conflict with or obstruct implementation of this plan. Impacts would be less than significant under NEPA and CEQA.

Mitigation Measures. Under Alternative 2, no potentially significant adverse impacts would occur; therefore, no mitigation measures are required.

Residual Impacts. No mitigation measures for implementation of Alternative 2 are required. Therefore, no residual impacts would occur.

Impact AQ-2: Alternative 2 construction activities would produce emissions that would exceed SCAQMD emission significance thresholds.

Table 3.2-12 presents estimates of daily unmitigated emissions that would occur from each construction activity associated with Alternative 2, as well as the peak daily emissions produced by Alternative 2. Peak daily emissions from Alternative 2 would occur from (1) quarry stone placement for dike construction at the Eelgrass Habitat Area and (2) loading, transporting, and unloading surcharge material at the CSWH site. Emissions from Alternative 2 are compared to the baseline emissions to determine significance. These data show that unmitigated NO_x emissions from most of the proposed activities would exceed the daily SCAQMD NO_x threshold of 100 pounds. Table 3.2-12 shows that the net change in unmitigated construction emissions between the Alternative 2 and baseline peak average daily activities would exceed the SCAQMD daily thresholds for NO_x. All other resulting emissions between the two scenarios would not exceed a SCAQMD daily emission threshold.

Table 3.2-12. Unmitigated Daily Emissions from Construction Activities for Alternative 2

Alternative/Project Year	Emissions (pounds per day) (1)					
	VOC	CO	NOx	SOx	PM10	PM2.5
CSWH Expansion						
Dike Construction Quarry Run Placement	33	239	1,019	1	28	26
Fine Grain Dredging and Transport – Hydraulic	7	42	173	0	5	5
Coarse Grain Dredging and Transport – Clamshell	33	125	388	1	12	11
Unload Surcharge Material	22	80	243	0	8	7
Eelgrass Habitat Area						
Dike Construction Quarry Run Placement	33	239	1,019	1	28	26
Dike Construction Armor Stone Placement	33	239	1,019	1	28	26
Coarse Grain Dredging and Transport - Clamshell	33	125	388	1	12	11
Unload Surcharge Material	25	94	277	0	9	8
Anchorage Road						
Contaminated Sediment Dredging and Transport	42	154	476	0	15	14
LA-2						
Fine Grain Dredging and Transport to LA-2 – Clamshell	56	336	1,304	1	36	34
SW Slip Surcharge						
Surcharge Loading at SW Slip	41	146	424	0	16	14
Transport of Surcharge Material	0	3	11	0	0	0
Alternative 2 Peak Daily Emissions – Unmitigated (2)	97	468	1,698	1	52	48
2004 CEQA/NEPA Baseline Peak Daily Emissions	(68)	(383)	(1,556)	(99)	(47)	(43)
Net Alternative 2 Peak Daily Unmitigated Emissions (3)	29	85	142	(98)	5	4

Alternative/Project Year	EMISSIONS (POUNDS PER DAY) (1)					
	VOC	CO	NOx	SOx	PM10	PM2.5
Alternative 2 Peak Daily Emissions – Mitigated (2)	50	442	1,245	1	34	32
Net Alternative 2 Peak Daily Mitigated Emissions (3)	(18)	59	(311)	(98)	(12)	(11)
SCAQMD Daily Significance Thresholds	75	550	100	150	150	55

Notes: (1) Bolded data represent significant emissions from an activity that would exceed the SCAQMD daily thresholds.
(2) Peak daily emissions of all pollutants would occur from the following simultaneous activities: (a) quarry stone placement for dike construction at the Eelgrass Habitat Area and (b) loading, transporting, and unloading surcharge material at the CSWH site.
(3) Equal to Alternative 2 peak daily emissions minus 2004 CEQA Baseline peak daily emissions.

Impact Determination

The data in Table 3.2-12 show that Alternative 2 construction activities would produce lower peak daily emissions compared to those estimated for Alternative 1 and presented in Table 3.2-10. Construction activities from Alternative 2 would produce emissions that would exceed the SCAQMD daily threshold for NO_x. As a result, Alternative 2 would produce significant levels of NO_x emissions under NEPA and CEQA.

Mitigation Measures. Implementation of measures MM AQ-2.1 through MM AQ-2.5 would reduce criteria pollutant emissions from Alternative 2 construction equipment. Although application of measure MM AQ-2.6 is uncertain, it would further reduce emissions from proposed construction activities.

Residual Impact. Implementation of measures MM AQ-2.1 through MM AQ-2.5 would reduce peak daily emissions of NO_x from construction of Alternative 2 to below the Emissions from Alternative 2 construction activities would produce significant levels of NO_x emissions under NEPA and CEQA. Impacts would be significant and unavoidable.

Table 3.2-10 shows that the net change in mitigated peak daily emissions between Alternative 2 construction activities and the CEQA/NEPA Baseline activities would remain below all SCAQMD daily emission thresholds. However, individual construction activities would produce mitigated emissions that would exceed the SCAQMD daily threshold for NO_x. As a result, Alternative 2 would produce significant levels of NO_x emissions under NEPA and CEQA.

Impact AQ-3: Emissions from Alternative 2 would substantially contribute to an existing or projected air quality standard violation.

Emission sources from Alternative 2 construction activities would operate within an area of the Port that extends from the Southwest Slip to the CSWH Expansion Site, or a distance of about three miles. Additionally, some tugboat sources would operate between the Port and Santa Catalina Island and between the Port and the LA-2 disposal site, both of which are located several miles outside the Port. The dispersion of these emissions over such a large area and the

mobile and intermittent nature of most emission sources would minimize the ambient impact of proposed air pollutants within or in proximity to the Port.

A larger percentage of the total emission from Alternative 2 would occur outside of the Port compared to Alternative 1, as dredged material destined for the Northwest Slip instead would be transported to the LA-2 offshore disposal site. Therefore, Alternative 2 would produce lower ambient pollutant impacts within the Port area compared to Alternative 1.

The following are descriptions of ambient pollutant impacts estimated for Alternative 2, based upon the same methods used to evaluate Impact AQ-3 for Alternative 1:

1. **CO impacts** – Peak daily CO emissions from the unmitigated TraPac construction project were estimated to be 443 pounds. The TraPac project analysis determined that unmitigated project construction activities would produce 1-hour and 8-hour CO ambient impacts of 1,086 and 305 $\mu g/m^3$, respectively. Adding these to 1-hour and 8-hour CO background values (6,629 and 5,371 $\mu g/m^3$, respectively) produced total project CO impacts of 7,715 and 5,676 $\mu g/m^3$, respectively. These impacts would not exceed the 1-hour and 8-hour CO significance criteria of 23,000 and 10,000 $\mu g/m^3$. The most concentrated amount of unmitigated CO emissions that would occur within an area from Alternative 2 would occur from surcharge loading at the Southwest Slip, at 146 pounds per day. This emission rate is about 33 percent of the TraPac project rate. Applying this factor of 33 percent to the CO impacts estimated for the TraPac project would result in unmitigated 1-hour and 8-hour CO impacts for Alternative 2 of 357 and 100 $\mu g/m^3$, respectively. Adding these impacts to the CO background values would produce total unmitigated project impacts of 6,986 and 5,471 $\mu g/m^3$, respectively, which would remain below the CO ambient significance criteria. As a result, Alternative 2 would produce less than significant unmitigated impacts to ambient CO levels.

2. **PM_{10} impacts** – Peak daily unmitigated construction emissions of PM_{10} from the TraPac project would be 424 pounds. The TraPac project analysis estimated that the unmitigated project construction would produce a maximum 24-hour PM_{10} ambient impact of 110 $\mu g/m^3$, which would exceed the SCAQMD significance criterion of 10.4 $\mu g/m^3$. The most concentrated amount of unmitigated PM_{10} emissions that would occur within an area from Alternative 2 would occur from surcharge loading at the Southwest Slip, at 16 pounds per day (See Table 3.2-12). This emission rate is about 4 percent of the TraPac project rate. Applying this factor of 4 percent to the PM_{10} impact estimated for the TraPac project would result in an unmitigated 24-hour PM_{10} impact estimation for Alternative 2 of 4.1 $\mu g/m^3$. Since this impact concentration is below the threshold of significance, ambient PM_{10} impacts from Alternative 2 would be less than significant.

3. **$PM_{2.5}$ impacts** – Peak daily unmitigated construction emissions of $PM_{2.5}$ from the TraPac project would be 161 pounds. The TraPac project analysis estimated that the unmitigated project construction would produce a 24-hour $PM_{2.5}$ ambient impact of 35 $\mu g/m^3$, which would exceed the SCAQMD significance criterion of 10.4 $\mu g/m^3$. The most concentrated amount of unmitigated $PM_{2.5}$ emissions that would occur within an area from Alternative 2 would occur from surcharge loading at the Southwest Slip, at 14 pounds per day (See Table 3.2-12). This emission rate is about 9 percent of the TraPac project rate. Applying this factor of 9 percent to the $PM_{2.5}$ impact estimated for the TraPac project would result in an unmitigated 24-hour $PM_{2.5}$ impact estimation for Alternative 2 of 3.1 $\mu g/m^3$. Since this impact concentration is below the threshold of significance, ambient $PM_{2.5}$ impacts from Alternative 2 would be less than significant.

4. **NO_2 impacts** – Peak daily unmitigated construction emissions of NO_x from the TraPac project would be 1,845 pounds. The TraPac project analysis estimated that the unmitigated project construction would produce a 1-hour NO_2 ambient impact of 776 $\mu g/m^3$, which in combination with the background value of 263 $\mu g/m^3$, would produce a total project impact of 1,039 $\mu g/m^3$, which would exceed the significance criterion of 338 $\mu g/m^3$. The most concentrated amount of unmitigated NO_x emissions that would occur within an area from Alternative 2 would occur from surcharge loading at the Southwest Slip, at 424 pounds per day, as activities the generate higher daily NO_x emissions mainly occur from tugs in transit within or outside the Port (See Table 3.2-12). This emission rate is about 23 percent of the TraPac project rate. Applying this factor of 23 percent to the NO_2 impact estimated for the TraPac project would result in an unmitigated ambient one-hour NO_2 impact estimation for Alternative 2 of 178 $\mu g/m^3$. Adding this to the background NO_2 value of 263 $\mu g/m^3$ would produce a total unmitigated project impact of 441 $\mu g/m^3$, which would exceed the significance criterion of 338 $\mu g/m^3$. As a result, unmitigated construction from Alternative 2 would produce significant impacts to ambient NO_2 levels.

Impact Determination

Alternative 2 construction activities would contribute to an exceedance of the one-hour ambient NO_2 standard, which would result in a significant air quality impact under NEPA and CEQA.

Mitigation Measures. Implementation of measures MM AQ-2.1 through MM AQ-2.5 would reduce emissions of NO_x from Alternative 2 construction equipment. The most concentrated amount of mitigated NO_x emissions that would occur within an area from Alternative 2 would occur from unloading surcharge at the Eelgrass Habitat Area, at 221 pounds per day. This emission rate is about 12 percent of the TraPac project unmitigated rate. Applying this factor of

12 percent to the NO_2 impact estimated for the unmitigated TraPac project would result in a mitigated one-hour NO_2 impact estimation for Alternative 2 of 93 $\mu g/m^3$. Adding this to the background NO_2 value of 263 $\mu g/m^3$ would produce a total unmitigated project impact of 356 $\mu g/m^3$, which would exceed the significance criterion of 338 $\mu g/m^3$. As a result, implementation of all feasible measures would not mitigate NO_x emissions to below the SCAQMD ambient 1-hour NO_2 threshold.

Residual Impact. Emissions of NO_x from Alternative 2 construction activities would produce significant and unavoidable ambient NO_2 impacts under CEQA and NEPA.

Impact AQ-4: Alternative 2 would not create objectionable odors at the nearest sensitive receptor.

Construction of Alternative 1 would increase air pollutants due to the combustion of diesel fuel. Some individuals may sense that emissions from combustion of diesel fuel by construction equipment associated with Alternative 2 construction activities are odorous and objectionable in nature. Due to the intermittent and mobile nature of these emission sources and the substantial distance between them and the nearest residents in Wilmington and San Pedro, atmospheric dispersion would reduce the ambient concentration of Alternative 2 emissions to low noticeable odor levels at any locality.

Impact Determination

Construction of Alternative 2 would not create objectionable odors at the nearest sensitive receptor. Therefore, impacts would be less than significant under NEPA and CEQA.

Mitigation Measures. Under Alternative 2, no potentially significant adverse impacts would occur. Therefore, no mitigation measures are required.

Residual Impacts. No mitigation measures for implementation of Alternative 2 are required. Therefore, no residual impacts would occur.

Impact AQ-5: Alternative 2 would not expose the public to substantial concentrations of TACs.

Alternative 2 construction equipment would emit TACs that would impact public health. The main form of TACs from project construction would occur as DPM emitted from diesel-powered on- and off-road equipment. Consistent with the discussion presented in Impact AQ-3, the operation of mobile and intermittent sources of emissions from Alternative 2 over a large area within and outside the Port would minimize the ambient impact of proposed TACs within the project region.

The following are descriptions of ambient health impacts estimated for Alternative 2, based upon the same methods used to evaluate Impact AQ-5 for Alternative 1:

Cancer Risk

The analysis of TraPac project cancer risks is based upon 70-year annual average DPM emission rates of proposed construction and operational sources. Review of Figure D3-12 in Appendix D of the *TraPac FEIS/FEIR* shows that the maximum cancer risk produced by the unmitigated TraPac project to any receptor type would be about 270 per million (270×10^{-6}), which would occur to residential receptors within southwest Wilmington. This impact would exceed the significance criterion of 10 per million (10×10^{-6}). The overwhelming majority of this impact would occur from TraPac project sources that operate inside the breakwater and adjacent to the TraPac terminal area (As presented in Table D3-7 of Appendix D4 of the *TraPac FEIS/FEIR*), which is similar to the locations Alternative 2 construction sources. The combined 70-year annual average DPM emissions for these mitigated TraPac project sources is about 14.8 tons (See Table D4-PP-22 in Appendix D4 of the *TraPac FEIS/FEIR*). The 70-year annual average unmitigated DPM emissions for all Alternative 2 sources (both within and outside the Port breakwater) would be 0.11 tons per year (7.8 tons divided by 70 years). This DPM emission rate is about 0.8 percent of the DPM emission rate used to estimate cancer risks from the TraPac project. Applying this factor of 0.8 percent to the unmitigated maximum cancer risk estimated for the TraPac project would result in a maximum unmitigated cancer risk estimation for Alternative 2 of about 2.0 per million (2.0×10^{-6}), which is below the significance criterion of 10 per million (10×10^{-6}). As a result, unmitigated cancer risks produced from Alternative 2 to all receptor types would be less than significant.

Chronic Non-Cancer Effects

The analysis of the TraPac project chronic non-cancer effects is based upon the amount of peak annual DPM emissions generated from proposed construction and operational sources. Peak annual unmitigated DPM emissions from the TraPac project that would occur within the Port area would be 62.2 tons (Table H5-A1.27 in Appendix D2 of the *TraPac FEIS/FEIR*). The TraPac project HRA determined that unmitigated chronic non-cancer effects to all receptor types from the TraPac project would not exceed the hazard index significance criterion of 1.0. Alternative 2 would generate a maximum annual unmitigated DPM emission rate of 7.8 tons in year 2009. This DPM emission rate is about 13 percent of the DPM emission rate used to estimate chronic non-cancer impacts from the unmitigated TraPac project. Since Alternative 2 would produce substantially lower annual DPM emissions compared to the DPM emissions that were used to estimate chronic non-cancer effects from the TraPac project, Alternative 2 would produce less than significant chronic non-cancer effects to all receptor types.

Acute Non-Cancer Effects

The analysis of the TraPac project acute non-cancer effects is based largely upon peak daily VOC and DPM emissions generated by proposed operational sources. Peak daily mitigated VOC/DPM emissions from the TraPac project that would occur within the Port area would be 412/336 pounds per day (Table D2.1-PP(2010)-37 in Appendix D2 of the *TraPac FEIS/FEIR*). The TraPac project HRA determined that the maximum unmitigated acute non-cancer impact at any receptor type from the TraPac project sources would have a hazard index value of 4.57, which would exceed the significance criterion of 1.0. Surcharge loading at the Southwest Slip would produce the most concentrated amount of unmitigated peak daily VOC/DPM emissions within an area of Alternative 2, at 41/16 pounds. These combined VOC/DPM emissions are about 8 percent of the combined VOC/DPM emissions that were used to estimate acute non-cancer effects from the TraPac project. Applying this factor of 8 percent to the maximum acute non-cancer impact estimated for the TraPac project would result in a maximum unmitigated acute non-cancer hazard index impact for Alternative 2 of about 0.35, which would not exceed the significance criterion of 1.0. Therefore, unmitigated Alternative 2 would produce less than significant acute non-cancer effects.

Particulate Morbidity/Mortality

Since Alternative 2 would result in less PM emissions as compared to the TraPac project, Alternative 2 is expected to result in less than 0.0073 cases of long-term mortality per year prior to mitigation.

Impact Determination

Construction activities from Alternative 2 would not expose the public or sensitive receptors to substantial concentrations of TACs. Impacts would be less than significant under NEPA and CEQA.

Mitigation Measures. Under Alternative 2, no potentially significant adverse impacts would occur; therefore, no mitigation measures are required.

Residual Impacts. No mitigation measures for implementation of Alternative 2 are required. Therefore, no residual impacts would occur.

Impact AQ-6: Alternative 2 would produce GHG emissions that exceed CEQA thresholds.

As discussed above for Alternative 1, for the purposes of this SEIS/SEIR, the LAHD has opted to address GHG emissions as a project-level impact, although an appreciable impact on global climate change would only occur when GHG emissions from a project combine with GHG emissions from other man-made activities on a global scale. Table 3.2-13 summarizes the annual GHG emissions produced from the construction of Alternative 2.

Table 3.2-13. Unmitigated Annual GHG Emissions from Alternative 2 Construction

Project Year	Annual Emissions (Metric Tons)			
	CO_2	CH_4	N_2O	CO_2e
2009 – Unmitigated Alternative 2	17,921	2.19	0.17	18,019
2010 – Unmitigated Alternative 2	2,078	0	0	2,091
2009 – Mitigated Alternative 2	16,891	1.86	0.15	16,976
2010 – Mitigated Alternative 2	1,049	0.09	0.01	1,054
2004 CEQA Baseline GHGs	13,778	1.23	0.11	13,827

Impact Determination

As the data in Table 3.2-13 show, annual CO_2e emissions produced from Alternative 2 would exceed the CEQA Baseline levels in 2009. As a result, these GHG emission increases in 2009 are considered to be a significant impact under CEQA.

The annual CO_2e emissions produced from the construction of Alternative 2 would exceed the NEPA Baseline levels in 2009. Because no NEPA significance threshold has been established, no determination of significance has been made for this impact.

Mitigation Measures. Measures that reduce electricity consumption or fossil fuel usage from Alternative 2 emission sources would reduce proposed GHG emissions. Implementation of MM AQ-2.1, MM AQ-2.3, and MM AQ-2.6 would reduce GHG emissions by electrifying dredging equipment, reducing idling and incorporating emissions savings technology such as hybrid drives and specific fuel economy standards. However, mitigation measures would not reduce all GHG emissions.

Residual Impacts. Table 3.2-13 summarizes the annual mitigated GHG emissions produced from the construction of Alternative 2. These data show that electrification of dredging equipment would reduce GHG emissions from Alternative 2 construction activities. However, GHG emissions from Alternative 2 construction activities in 2009 would remain significant and unavoidable under CEQA.

3.2.6.3 Alternative 3: No Action Alternative

Under the No Action Alternative, no construction activities related to the Proposed Action would occur. No new landfills or new shallow water areas would be created. Since all approved disposal sites have been completed, no further dredging would take place and the Channel Deepening Project would not be completed. Existing environmental conditions at the Proposed Action disposal sites would continue to exist. Approximately 1.025 mcy of material within the federally-authorized channel and 0.675 mcy of berth dredging would remain to be dredged and disposed. In addition the 0.815 mcy of surcharge on the Southwest Slip Area would remain to be removed and disposed. Additionally, the 0.08 mcy of contaminated dredge material would remain within the Main Channel of the Port.

Impact AQ-1: Alternative 3 would not conflict with or obstruct implementation of the applicable AQMP.

Alternative 3 would not result in any new dredge or disposal activities beyond currently approved levels. Therefore, Alternative 3 would not conflict with or obstruct implementation of the applicable AQMP.

Impact Determination

Alternative 3 would not conflict with or obstruct implementation of the applicable AQMP. No impacts would occur.

Mitigation Measures. Under Alternative 3, no potentially significant adverse impacts would occur; therefore, no mitigation measures are required.

Residual Impacts. Alternative 3 would produce a significant and unavoidable impact.

Impact AQ-2: Alternative 3 would not produce emissions that exceed a SCAQMD emission significance threshold.

Alternative 3 would not result any new dredge or disposal activities beyond currently approved levels. Therefore, Alternative 3 would not produce emissions that exceed SCAQMD thresholds.

Impact Determination

Alternative 3 would not produce emissions that exceed a SCAQMD emission significance threshold. No impacts would occur.

Mitigation Measures. Under Alternative 3, no potentially significant adverse impacts would occur; therefore, no mitigation measures are required.

Residual Impacts. No mitigation measures for implementation of Alternative 3 are required. Therefore, no residual impacts would occur.

Impact AQ-3: Alternative 3 would not substantially contribute to an existing or projected air quality standard violation.

Alternative 3 would not result in any new dredge or disposal activities beyond currently approved levels. Therefore, implementation of this alternative would not substantially contribute to an existing or projected air quality standard violation.

Impact Determination

Alternative 3 would not substantially contribute to an existing or projected air quality standard violation. No impacts would occur.

Mitigation Measures. Under Alternative 3, no potentially significant adverse impacts would occur; therefore, no mitigation measures are required.

Residual Impacts. No mitigation measures for implementation of Alternative 3 are required. Therefore, no residual impacts would occur.

Impact AQ-4: Alternative 3 would not create objectionable odors that affect a substantial number of people.

Alternative 3 would not result in any new dredge or disposal activities beyond currently approved levels. Therefore, implementation of this alternative would not create objectionable odors that affect a substantial number of people.

Impact Determination

Alternative 3 would not create objectionable odors that affect a substantial number of people. No impacts would occur.

Mitigation Measures. Under Alternative 3, no potentially significant adverse impacts would occur; therefore, no mitigation measures are required.

Residual Impacts. No mitigation measures for implementation of Alternative 3 are required. Therefore, no residual impacts would occur.

Impact AQ-5: Alternative 3 would not expose the public to substantial concentrations of TACs.

Alternative 3 would not result in any new dredge or disposal activities beyond currently approved levels. Therefore, implementation of this alternative would not expose the public to substantial concentrations of TACs.

Impact Determination

Alternative 3 would not expose the public to substantial concentrations of TACs. No impacts would occur.

Mitigation Measures. Under Alternative 3, no potentially significant adverse impacts would occur; therefore, no mitigation measures are required.

Residual Impacts. No mitigation measures for implementation of Alternative 3 are required. Therefore, no residual impacts would occur.

Impact AQ-6: Alternative 3 would not produce GHG emissions that exceed CEQA thresholds.

Alternative 3 would not result in any new dredge or disposal activities. Therefore, implementation of this alternative would not produce any GHG emissions.

Impact Determination

Alternative 3 would not increase GHG emissions above CEQA/NEPA Baseline levels. No impacts would occur.

Mitigation Measures. Under Alternative 3, no potentially significant adverse impacts would occur; therefore, no mitigation measures are required.

Residual Impacts. No mitigation measures for implementation of Alternative 3 are required. Therefore, no residual impacts would occur.

3.2.7 Impact Summary

This section summarizes the conclusions of the air quality impact analysis presented above in Section 3.2.6. Table 3.2-14 lists each air quality impact identified for the alternatives of the Proposed Action along with the significance of each impact.

Table 3.2-14 Air Quality Impact Summary

Impact	Alternative 1	Alternative 2	Alternative 3
AQ-1. Would not conflict with or obstruct implementation of the applicable air quality plans.	LTS	LTS	NI
AQ-2. Construction activities would produce emissions that would exceed SCAQMD emission significance thresholds.	S&U	S&U	NI
AQ-3. Emissions would substantially contribute to an existing or projected air quality standard violation.	S&U	S&U	NI
AQ-4. Would not create objectionable odors that affect a substantial number of people.	LTS	LTS	NI
AQ-5. Would not expose the public to substantial concentrations of TACs.	LTS	LTS	NI
AQ-6*. Would not produce GHG emissions that exceed CEQA thresholds.	S&U	S&U	NI

S&U = Significant and Unavoidable SM = Significant but Mitigated
LTS = Less than Significant NI = No Impact
* Only applies to CEQA.

Construction activities associated with Alternative 1 and Alternative 2 would produce significant levels of mitigated daily NO_x emissions, would produce significant impacts to ambient NO_2 levels, and would produce significant levels of GHG emissions. Under Alternative 3, no construction activities would occur, therefore no impacts to air quality would occur.

3.2.8 Mitigation Measures

The following mitigation measures are recommended to reduce potentially significant air quality impacts that may occur from construction of the Proposed Action.

MM AQ-2.1: Fleet Modernization for Construction Equipment. Construction equipment shall adhere to the following requirements:

1. Construction equipment shall incorporate, where feasible, emissions savings technology such as hybrid drives and specific fuel economy standards.
2. Idling shall be restricted to a maximum of 5 minutes when not in use.
3. The following emission standards shall be met:
    i. All off-road diesel-powered construction equipment greater than 50 horsepower (hp) shall meet Tier-2 nonroad emission standards, at a minimum.
    ii. All construction equipment shall be outfitted with Best Available Control Technology (BACT) devices certified by CARB.
    iii. Any emissions-control device used by the Contractor shall achieve emissions reductions no less than what could be achieved by a Level 2 or Level 3 diesel emissions control strategy for a similar-sized engine as defined by CARB regulations.
    iv. A copy of each unit's certified Tier specification, BACT documentation and each unit's CARB or SCAQMD operating permit, shall be provided at the time of mobilization of each applicable unit of equipment.

The above "Tier Specifications" measures shall be met, unless one of the following circumstances exists and the contractor is able to provide proof that any of these circumstances exists:

i. A piece of specialized equipment is unavailable in a controlled form within the State of California, including through a leasing agreement.

ii. A contractor has applied for necessary incentive funds to put controls on a piece of uncontrolled equipment planned for use on the project, but the application process is not yet approved, or the application has been approved, but funds are not yet available.

iii. A contractor has ordered a control device for a piece of equipment planned for use on the project, or the contractor has ordered a new piece of controlled equipment to replace the uncontrolled equipment, but that order has not been completed by the manufacturer or dealer. In addition, for this exemption to apply, the contractor must attempt to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the project has the controlled equipment available for lease.

Use of equipment with cleaner Tier 2 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, depending upon the pollutant and equipment horsepower category. Although all new equipment sold by 2006 would have to comply with the Tier 2 standards, these requirements do not apply to older units in the existing equipment fleet. Therefore, this mitigation measure would force an earlier turnover of the existing construction equipment to lower-emitting models. The mitigated air quality also evaluated implementation of ARB Level 3 PM control devices on all construction equipment, which would reduce DPM emissions by 85 percent from Tier 2 standard levels.

MM AQ-2.2: Fleet Modernization for On-Road Trucks. On-road heavy-duty trucks with a gross vehicle weight rating (GVWR) of 19,500 pounds or greater shall comply with USEPA 2004 on-road emission standards for PM10 and NOx (0.10 Gm/bhp-hr PM10 and 2.0 Gm/bhp-hr NOx). In addition, all on-road trucks shall be outfitted with BACT devices certified by CARB. Any emissions-control device used by the Contractor shall achieve emissions reductions no less than what could be achieved by a Level 3 diesel emissions control strategy for a similar-sized engine as defined by CARB regulations.

A copy of each unit's certified, USEPA rating, BACT documentation, and each unit's CARB or SCAQMD operating permit, shall be provided at the time of mobilization of each applicable unit of equipment.

The above "USEPA Standards" measures shall be met, unless one of the following circumstances exists and the contractor is able to provide proof that any of these circumstances exists:

i. A piece of specialized equipment is unavailable in a controlled form within the State of California, including through a leasing agreement.
ii. A contractor has applied for necessary incentive funds to put controls on a piece of uncontrolled equipment planned for use on the project, but the application process is not yet approved, or the application has been approved, but funds are not yet available.
iii. A contractor has ordered a control device for a piece of equipment planned for use on the project, or the contractor has ordered a new piece of controlled equipment to replace the uncontrolled equipment, but that order has not been completed by the manufacturer or dealer. In addition, for this exemption to apply, the contractor must attempt to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the project has the controlled equipment available for lease.

The mitigated air quality assumed that all project on-road heavy-duty trucks with a GVWR of 19,500 pounds or greater (1) would comply with USEPA 2004 on-road emission standards and (2) would implement ARB Level 3 PM control devices, which would reduce DPM emissions by 85 percent from 2004 standard levels.

MM AQ-2.3: Electrify Dredge Equipment. All dredging equipment shall be electric where available. The mitigated air quality assumed that the main hoist and generator engines on proposed clamshell barges that (1) dredge, (2) remove surcharge from the Southwest Slip, and (3) unload surcharge at the Northwest Slip would replace diesel power with electrical grid power (the hydraulic dredge main engines would be electrified under the unmitigated scenario). Since there are currently no hydraulic or clamshell dredge barges that are completely electric, the mitigated analysis assumes that it is infeasible to electrify all auxiliary diesel-powered equipment on these barges, such as those used for anchor winches and deck generators. Additionally, due to the inaccessibility of the CSWH and Eelgrass sites, clamshell dredges that operate in this location would be unable to connect to the electrical grid.

MM AQ-2.4: Harbor Craft Used In Construction. Harbor craft with a category 1 or 2 marine engine shall meet U.S. EPA Tier 2 marine engine emission standards. The mitigated air quality assumed that all proposed tug boats would comply with the Tier 2 category 1 marine engine emission standards.

MM AQ-2.5: Fugitive Dust Control. 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.

The following fugitive dust reduction measures, at a minimum, shall be included in this plan:

- SCAQMD's Best Available Control Technology (BACT) measures shall be followed on all projects. They are outlined in Table 1 in Rule 403. Large construction projects (on a property which contains 50 or more disturbed acres) shall also follow the BACT measures in Tables 2 and 3 of Rule 403.
- Active grading sites shall be watered four times per day.
- Contractors shall apply approved non-toxic chemical soil stabilizers to all inactive construction areas or replace groundcover in disturbed areas.
- Contractors shall provide temporary wind fencing around sites being graded or cleared.
- Trucks hauling dirt, sand, or gravel shall be covered or shall maintain at least 2 feet of freeboard in accordance with Section 23114 of the California Vehicle Code. ("Spilling Loads on Highways").
- Construction contractors shall install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off tires of vehicles and any equipment leaving the construction site.
- The grading contractor shall suspend all soil disturbance activities when winds exceed 25 miles per hour (mph) or when visible dust plumes emanate from a site; disturbed areas shall be stabilized if construction is delayed.
- Open storage piles (greater than 3 feet tall and a total surface area of 150 square feet) shall be covered with a plastic tarp or chemical dust suppressant.
- Stabilize the materials while loading, unloading and transporting to reduce fugitive dust emissions.
- Belly-dump truck seals shall be checked regularly to remove trapped rocks to prevent possible spillage.
- Comply with track-out regulations and provide water while loading and unloading to reduce visible dust plumes.
- Waste materials shall be hauled off-site immediately.

The calculation of fugitive dust (PM_{10}) 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.

MM AQ-2.6: Additional Best Management Practices (BMPs). The following types of measures are required on construction equipment (including on-road trucks):

1. Use of diesel oxidation catalysts and catalyzed diesel particulate traps.
2. Maintain equipment according to manufacturers' specifications .
3. Restrict idling of construction equipment to a maximum of 5 minutes when not in use.
4. Install high-pressure fuel injectors on construction equipment vehicles.

LAHD shall implement a process by which to select additional BMPs to further reduce air emissions during construction. 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.

3.2.9 Significant Unavoidable Adverse Impacts

Construction activities associated with Alternative 1 and Alternative 2 would produce significant levels of mitigated NO_x emissions and would produce significant impacts to ambient NO_2 levels despite implementation of MM AQ-2.1 through MM AQ-2.5. Construction activities associated with Alternative 1 and Alternative 2 also would produce significant levels of GHG emissions. Therefore, implementation of either Alternative 1 or Alternative 2 would result in significant and unavoidable impacts with regard to Impacts AQ-2, AQ-3, and AQ-6.

3.2.10 Mitigation Monitoring Plan

Mitigation and monitoring requirements for Impacts AQ-2, AQ-3, and AQ-6 estimated for Alternative 1 and Alternative 2 are provided in Table 3.2-15.

Table 3.2-15 Mitigation Monitoring Plan – Air Quality

Resource	Description of Impact	Environmental Commitment/Mitigation	Start Date or Event	Responsible Party	Duration	Frequency	Level of Significance after Mitigation
Air Quality	AQ-2. Construction activities would produce emissions that would exceed SCAQMD daily NOx emission significance threshold.	MM AQ-2.1: Fleet Modernization for Construction Equipment. Construction equipment shall adhere to the following requirements: 1. Construction equipment shall incorporate, where feasible, emissions savings technology such as hybrid drives and specific fuel economy standards. 2. Idling shall be restricted to a maximum of 5 minutes when not in use. 3. The following emission standards shall be met: i. All off-road diesel-powered construction equipment greater than 50 horsepower (hp) shall meet Tier-2 nonroad emission standards, at a minimum. ii. All construction equipment shall be outfitted with Best Available Control Technology (BACT) devices certified by CARB. iii. Any emissions-control device used by the Contractor shall achieve emissions reductions no less than what could be achieved by a Level 2 or Level 3 diesel emissions control strategy for a similar-sized engine as defined by CARB regulations. iv. A copy of each unit's certified Tier specification, BACT documentation and each unit's CARB or SCAQMD operating permit, shall be provided at the time of mobilization of each applicable unit of equipment. The above "Tier Specifications" measures shall be met, unless one of the following circumstances exists and the contractor is able to provide proof that any of these circumstances exists:	Onset of Construction	POLA	Duration of construction.	Throughout construction as necessary.	NOx emissions would remain significant after mitigation

Resource	Description of Impact	Environmental Commitment/Mitigation	Start Date or Event	Responsible Party	Duration	Frequency	Level of Significance after Mitigation
		i. A piece of specialized equipment is unavailable in a controlled form within the State of California, including through a leasing agreement. ii. A contractor has applied for necessary incentive funds to put controls on a piece of uncontrolled equipment planned for use on the project, but the application process is not yet approved, or the application has been approved, but funds are not yet available. iii. A contractor has ordered a control device for a piece of equipment planned for use on the project, or the contractor has ordered a new piece of controlled equipment to replace the uncontrolled equipment, but that order has not been completed by the manufacturer or dealer. In addition, for this exemption to apply, the contractor must attempt to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the project has the controlled equipment available for lease. Use of equipment with cleaner Tier 2 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, depending upon the pollutant and equipment horsepower category. Although all new equipment sold by 2006 would have to comply with the Tier 2 standards, these requirements do not apply to older units in the existing equipment fleet. Therefore, this mitigation measure would force an earlier turnover of the existing construction equipment to lower-emitting models. The mitigated air					

Resource	Description of Impact	Environmental Commitment/Mitigation	Start Date or Event	Responsible Party	Duration	Frequency	Level of Significance after Mitigation
		quality also evaluated implementation of ARB Level 3 PM control devices on all construction equipment, which would reduce DPM emissions by 85 percent from Tier 2 standard levels. MM AQ-2.2: Fleet Modernization for On-Road Trucks. On-road heavy-duty trucks with a gross vehicle weight rating (GVWR) of 19,500 pounds or greater shall comply with USEPA 2004 on-road emission standards for PM10 and NOx (0.10 Gm/bhp-hr PM10 and 2.0 Gm/bhp-hr NOx). In addition, all on-road trucks shall be outfitted with BACT devices certified by CARB. Any emissions-control device used by the Contractor shall achieve emissions reductions no less than what could be achieved by a Level 3 diesel emissions control strategy for a similar-sized engine as defined by CARB regulations. A copy of each unit's certified, USEPA rating, BACT documentation, and each unit's CARB or SCAQMD operating permit, shall be provided at the time of mobilization of each applicable unit of equipment. The above "USEPA Standards" measures shall be met, unless one of the following circumstances exists and the contractor is able to provide proof that any of these circumstances exists: i. A piece of specialized equipment is unavailable in a controlled form within the State of California, including through a leasing agreement. ii. A contractor has applied for necessary incentive funds to put controls on a piece of uncontrolled equipment planned for use on					

Resource	Description of Impact	Environmental Commitment/Mitigation	Start Date or Event	Responsible Party	Duration	Frequency	Level of Significance after Mitigation
		the project, but the application process is not yet approved, or the application has been approved, but funds are not yet available. iii. A contractor has ordered a control device for a piece of equipment planned for use on the project, or the contractor has ordered a new piece of controlled equipment to replace the uncontrolled equipment, but that order has not been completed by the manufacturer or dealer. In addition, for this exemption to apply, the contractor must attempt to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the project has the controlled equipment available for lease. The mitigated air quality assumed that all project on-road heavy-duty trucks with a GVWR of 19,500 pounds or greater (1) would comply with USEPA 2004 on-road emission standards and (2) would implement ARB Level 3 PM control devices, which would reduce DPM emissions by 85 percent from 2004 standard levels. MM AQ-2.3: Electrify Dredge Equipment. All dredging equipment shall be electric where available. The mitigated air quality assumed that the main hoist and generator engines on proposed clamshell barges that (1) dredge, (2) remove surcharge from the Southwest Slip, and (3) unload surcharge at the Northwest Slip would replace diesel power with electrical grid power (the hydraulic dredge main engines would be electrified under the unmitigated scenario). Since there are currently no hydraulic or clamshell dredge barges that are completely electric, the mitigated analysis					

Resource	Description of Impact	Environmental Commitment/Mitigation	Start Date or Event	Responsible Party	Duration	Frequency	Level of Significance after Mitigation
		assumes that it is infeasible to electrify all auxiliary diesel-powered equipment on these barges, such as those used for anchor winches and deck generators. Additionally, due to the inaccessibility of the CSWH and Eelgrass sites, clamshell dredges that operate in this location would be unable to connect to the electrical grid. MM AQ-2.4: Harbor Craft Used In Construction. Harbor craft with a category 1 or 2 marine engine shall meet U.S. EPA Tier 2 marine engine emission standards. The mitigated air quality assumed that all proposed tug boats would comply with the Tier 2 category 1 marine engine emission standards. MM AQ-2.5: Fugitive Dust Control. 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. The following fugitive dust reduction measures, at a minimum, shall be included in this plan: - SCAQMD's Best Available Control Technology (BACT) measures shall be followed on all projects. They are outlined in Table 1 in Rule 403. Large construction projects (on a property					

Resource	Description of Impact	Environmental Commitment/Mitigation	Start Date or Event	Responsible Party	Duration	Frequency	Level of Significance after Mitigation
		which contains 50 or more disturbed acres) shall also follow the BACT measures in Tables 2 and 3 of Rule 403. - Active grading sites shall be watered four times per day. - Contractors shall apply approved non-toxic chemical soil stabilizers to all inactive construction areas or replace groundcover in disturbed areas. - Contractors shall provide temporary wind fencing around sites being graded or cleared. - Trucks hauling dirt, sand, or gravel shall be covered or shall maintain at least 2 feet of freeboard in accordance with Section 23114 of the California Vehicle Code. ("Spilling Loads on Highways"). - Construction contractors shall install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off tires of vehicles and any equipment leaving the construction site. - The grading contractor shall suspend all soil disturbance activities when winds exceed 25 miles per hour (mph) or when visible dust plumes emanate from a site; disturbed areas shall be stabilized if construction is delayed. - Open storage piles (greater than 3 feet tall and a total surface area of 150 square feet) shall be covered with a plastic tarp or chemical dust suppressant. - Stabilize the materials while loading, unloading and transporting to reduce fugitive dust emissions. - Belly-dump truck seals shall be checked regularly to remove trapped rocks to prevent possible spillage. - Comply with track-out regulations and provide water while loading and unloading to reduce					

Resource	Description of Impact	Environmental Commitment/Mitigation	Start Date or Event	Responsible Party	Duration	Frequency	Level of Significance after Mitigation
		visible dust plumes. - Waste materials shall be hauled off-site immediately. The calculation of fugitive dust (PM10) 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. MM AQ-2.6: Additional Best Management Practices (BMPs). The following types of measures are required on construction equipment (including on-road trucks): 5. Use of diesel oxidation catalysts and catalyzed diesel particulate traps. 6. Maintain equipment according to manufacturers' specifications . 7. Restrict idling of construction equipment to a maximum of 5 minutes when not in use. 8. Install high-pressure fuel injectors on construction equipment vehicles. LAHD shall implement a process by which to select additional BMPs to further reduce air emissions during construction. 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.					

Resource	Description of Impact	Environmental Commitment/Mitigation	Start Date or Event	Responsible Party	Duration	Frequency	Level of Significance after Mitigation
	AQ-3. Emissions of NOx would substantially contribute to an existing or projected air quality standard violation.	MM AQ-2.1: Fleet Modernization for Construction Equipment. MM AQ-2.2: Fleet Modernization for On-Road Trucks. MM AQ-2.3: Electrify Dredge Equipment. MM AQ-2.4: Harbor Craft Used In Construction MM AQ-2.5: Fugitive Dust Control.	Same as above.	Same as above.	Same as above.	Same as above.	NO2 ambient impacts would remain significant after mitigation
	AQ-7. Annual CO2e emissions would increase from the CEQA Baseline levels of zero.	MM AQ-2.1: Fleet Modernization for Construction Equipment. MM AQ-2.3: Electrify Dredge Equipment. MM AQ-2.5: Fugitive Dust Control. MM AQ-2.6: Additional Best Management Practices (BMPs).	Same as above.	Same as above.	Same as above.	Same as above.	GHG emissions would remain significant after mitigation