5.4 AIR QUALITY

This section focuses on potential short-term air quality impacts associated with project construction activities and studies long-term local and regional air quality impacts associated with the project operation. Mitigation is recommended to avoid or lessen the significance of impacts.

Information in this section is based primarily on the *CEQA Air Quality Handbook* prepared by the South Coast Air Quality Management District (SCAQMD), April 1993 (as revised through November 1993); Air Quality Data (California Air Resources Board [CARB] 2001 through 2005); the *SCAQMD Final Air Quality Management Plan* (August 2003); and the *Traffic Impact Analysis* (April 2006), prepared by Meyer, Mohaddes and Associates; refer to Appendix 15.4, *Air Quality Data*, for the assumptions used in this analysis.

5.4.1 REGIONAL SETTING

SOUTH COAST AIR BASIN

Geography

The City of Long Beach (City) is located in the South Coast Air Basin (Basin), a 10,743-square-mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino and San Jacinto Mountains to the north and east. The Basin includes all of Orange County and the nondesert portions of Los Angeles, Riverside and San Bernardino Counties, in addition to the San Gorgonio Pass area of Riverside County; refer to Exhibit 5.4-1, *California Air Basins*.

The extent and severity of the air pollution problem in the Basin is a function of the area's natural physical characteristics (weather and topography), as well as man-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall and topography all affect the accumulation and/or dispersion of air pollutants throughout the Basin.

Climate

The general region lies in the semipermanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. The climate consists of a semiarid environment with mild winters, warm summers, moderate temperatures and comfortable humidity. Precipitation is limited to a few winter storms. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms or Santa Ana winds.

The average annual temperature varies little throughout the Basin, averaging 75 degrees Fahrenheit (°F). However, with a less-pronounced oceanic influence, the eastern inland portions of the Basin show greater variability in annual minimum and maximum temperatures. All portions of the Basin have had recorded temperatures over 100°F in recent years. January is usually the coldest month at all locations, while July and August are usually the hottest months.

SHORELINE GATEWAY PROJECT
ENVIRONMENTAL IMPACT REPORT

California Air Basins

09/06 • JN 10-104514

Exhibit 5.4-1

Although the Basin has a semi-arid climate, the air near the surface is moist because of the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the Basin by offshore winds, the ocean effect is dominant. Periods with heavy fog are frequent, and low stratus clouds, occasionally referred to as "high fog," are a characteristic climate feature. Annual average relative humidity is 70 percent at the coast and 57 percent in the eastern part of the Basin. Precipitation in the Basin is typically 9 to 14 inches annually and is rarely in the form of snow or hail due to typically warm weather. The frequency and amount of rainfall is greater in the coastal areas of the Basin.

The height of the inversion is important in determining pollutant concentration. When the inversion is approximately 2,500 feet above sea level, the sea breezes carry the pollutants inland to escape over the mountain slopes or through the passes. At a height of 1,200 feet, the terrain prevents the pollutants from entering the upper atmosphere, resulting in a settlement in the foothill communities. Below 1,200 feet, the inversion puts a tight lid on pollutants, concentrating them in a shallow layer over the entire coastal basin. Usually, inversions are lower before sunrise than during the day. Mixing heights for inversions are lower in the summer and more persistent, being partly responsible for the high levels of ozone observed during summer months in the Basin. Smog in southern California is generally the result of these temperature inversions combining with coastal day winds and local mountains to contain the pollutants for long periods of time, allowing them to form secondary pollutants by reacting with sunlight. The Basin has a limited ability to disperse these pollutants due to typically low wind speeds.

The area in which the project is located offers clear skies and sunshine, but it is still susceptible to air inversions. This traps a layer of stagnant air near the ground where it is further loaded with pollutants. These inversions cause haziness, which is caused by moisture, suspended dust and a variety of chemical aerosols emitted by trucks, automobiles, furnaces and other sources.

5.4.2 REGULATORY FRAMEWORK

Regulatory oversight for air quality in the Basin rests with the South Coast Air Quality Management District (SCAQMD) at the regional level, the California Air Resources Board (CARB) at the State level and the U.S. Environmental Protection Agency (EPA) Region IX office at the Federal level.

FEDERAL

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) is responsible for implementing the Federal Clean Air Act (FCAA), which was first enacted in 1955 and amended numerous times after. The FCAA established Federal air quality standards known as the National Ambient Air Quality Standards (NAAQS). These standards identify levels of air quality for "criteria" pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect the public health and welfare. The criteria pollutants are ozone

(O_3), carbon monoxide (CO), nitrogen dioxide (NO_2, which is a form of nitrogen oxides [NO_x]), sulfur dioxide (SO_2, which is a form of sulfur oxides [SO_x]), particulate matter less than 10 and 2.5 microns in diameter (PM_{10} and $PM_{2.5}$, respectively) and lead (Pb); refer to Table 5.4-1, *National and California Ambient Air Quality Standards*.

EPA designates areas within the nation as either attainment or nonattainment for each criteria pollutant based on whether the NAAQS have been achieved. An area is designated as nonattainment for a pollutant if air quality data show that the NAAQS for the pollutant was violated at least once during the previous three calendar years. Exceedances affected by highly irregular or infrequent events are not considered violations of a Federal standard, and are not used as a basis for designating areas as nonattainment. The Basin is designated as a Federal nonattainment area for O_3, CO, PM_{10} and $PM_{2.5}$. Ozone is designated as severe for the 8-hour average while PM_{10} is designated as serious nonattainment. $PM_{2.5}$ and CO is simply nonattainment. The Basin has technically achieved attainment with CO levels all below the Federal standard, but is still in the process of being redesignated by the EPA. The air Basin is also designated as an attainment area for NO_2, SO_2 and Pb; refer to Table 5.4-1 for Federal attainment status.

The FCAA also specifies future dates for achieving compliance with the NAAQS and mandates that states develop State Implementation Plans (SIPs) to manage the attainment, maintenance and enforcement of the NAAQS. SIPs provide detailed descriptions of the programs a state will use to carry out its responsibilities under the FCAA. SIPs are collections of the regulations used by a state to reduce air pollution. A SIP shows how a state would meet the NAAQS by its attainment dates. The FCAA requires that EPA approve each SIP.

STATE

California Air Resources Board

The California Air Resources Board (CARB) administers the air quality policy in California. The California Ambient Air Quality Standards (CAAQS) were established in 1969 pursuant to the Mulford-Carrell Act. These standards, included with the NAAQS in Table 5.4-1, are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, CAAQS have been established for visibility reducing particulates, hydrogen sulfide and sulfates. The CCAA, which was approved in 1988, requires that each local air district prepare and maintain an Air Quality Management Plan (AQMP) to achieve compliance with CAAQS. These AQMP's also serve as the basis for preparation of the SIP for the State of California.

Like the EPA, CARB also designates areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data show that a state standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a state standard, and

Table 5.4-1
National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California[1]		Federal[2]	
		Standard[3]	Attainment Status	Standards[4]	Attainment Status
Ozone (O_3)	1 Hour	0.09 ppm (180 μg/m³)	**Extreme Nonattainment**	NA[5]	NA[5]
	8 Hours	0.07 ppm (137 μg/m³)	Unclassified	0.08 ppm (157 μg/m³)	**Severe Nonattainment**
Particulate Matter (PM_{10})	24 Hours	50 μg/m³	**Nonattainment**	150 μg/m³	**Serious Nonattainment**
	Annual Arithmetic Mean	20 μg/m³	**Nonattainment**	50 μg/m³	**Serious Nonattainment**
Fine Particulate Matter ($PM_{2.5}$)	24 Hours	No Separate State Standard		65 μg/m³	**Nonattainment**
	Annual Arithmetic Mean	12 μg/m³	**Nonattainment**	15 μg/m³	**Nonattainment**
Carbon Monoxide (CO)	8 Hours	9.0 ppm (10 mg/m³)	Attainment	9 ppm (10 mg/m³)	**Nonattainment6[6]**
	1 Hour	20 ppm (23 mg/m³)	Attainment	35 ppm (40 mg/m³)	**Nonattainment6[6]**
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	N/A	NA	0.053 ppm (100 μg/m³)	Attainment
	1 Hour	0.25 ppm (470 μg/m³)	Attainment	N/A	NA
LEAD (PB)	30 days average	1.5 μg/m³	Attainment	N/A	NA
	Calendar Quarter	N/A	NA	1.5 μg/m³	Attainment
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	N/A	NA	0.030 ppm (80 μg/m³)	Attainment
	24 Hours	0.04 ppm (105 μg/m³)	Attainment	0.14 ppm (365 μg/m³)	Attainment
	3 Hours	N/A	NA	N/A	Attainment
	1 Hour	0.25 ppm (655 μg/m³)	Attainment	N/A	NA
Visibility-Reducing Particles	8 Hours (10 a.m. to 6 p.m., PST)	Extinction coefficient = 0.23 km@<70% RH	Unclassified	**No Federal Standards**	
Sulfates	24 Hour	25 μg/m3	Attainment		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m3)	Unclassified		

μg/m³ = micrograms per cubic meter; ppm = parts per million; km = kilometer(s); RH = relative humidity; PST = Pacific Standard Time; N/A = Not Applicable.

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter-PM_{10} and visibility-reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations. In 1990, CARB identified vinyl chloride as a toxic air contaminant, but determined that there was not sufficient available scientific evidence to support the identification of a threshold exposure level. This action allows the implementation of health-protective control measures at levels below the 0.010 ppm ambient concentration specified in the 1978 standard.
2. National standards (other than ozone, particulate matter and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. EPA also may designate an area as *attainment/unclassifiable*, if: (1) it has monitored air quality data that show that the area has not violated the ozone standard over a three-year period; or (2) there is not enough information to determine the air quality in the area. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over the three years, are equal to or less than the standard. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
3. Concentration is expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
5. The Federal 1-hour ozone standard was revoked on June 15, 2005.
6. Technically, the Basin is in attainment for CO, however, has not be designated by EPA.

Source: California Air Resource Control Board and U.S. Environmental Protection Agency, 2005.

are not used as a basis for designating areas as nonattainment. Under the CCAA, the Basin is designated as a nonattainment area for O_3, PM_{10} and $PM_{2.5}$. The Basin is designated as an attainment area for CO, NO_2, SO_2 and Pb; refer to Table 5.4-1. Similar to the FCAA, all areas designated as nonattainment under the CCAA are required to prepare plans showing how the area would meet the CAAQS by its attainment dates. The AQMP is the plan for improving air quality in the region.

South Coast Air Quality Management District

The proposed project is located in the South Coast Air Basin, which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAQMD has jurisdiction of 10,743 square miles, which includes counties of Orange, Riverside, San Bernardino, the non-desert portions of Los Angeles, and the portions of the Salton Sea Air Basin and Mojave Desert Air Basin. The SCAQMD is one of 35 air quality management districts that have prepared AQMPs to accomplish a five-percent annual reduction in emissions. The most recent AQMP was adopted in 2003.

The 2003 AQMP proposes policies and measures to achieve Federal and State standards for improved air quality in the Basin and those portions of the Salton Sea Air Basin (formerly named the Southeast Desert Air Basin) that are under SCAQMD jurisdiction. The AQMP requires emissions-reducing activities, control technology for existing sources; control programs for area sources and indirect sources; a SCAQMD permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions; transportation control measures; and demonstration of compliance with the CARB's established reporting periods of compliance with air quality goals. The 2003 AQMP is consistent with and builds upon the approaches taken in the 1997 AQMP and the 1999 Amendments to the Ozone SIP for the Basin for the attainment of the Federal ozone air quality standard. However, the 2003 AQMP points to the urgent need for additional emission reductions (beyond those incorporated in the 1997/99 Plan) to offset increased emission estimates from mobile sources and to meet all Federal criteria pollutant standards within the time frames allowed under the FCAA.

In addition to the AQMP and its rules and regulations, the SCAQMD published the *CEQA Air Quality Handbook* (Handbook). The SCAQMD Handbook provides guidance to assist local government agencies and consultants in developing the environmental documents required by CEQA. With the help of the Handbook, local land use planners and other consultants are able to analyze and document how proposed and existing projects affect air quality and should be able to fulfill the requirements of the CEQA review process. The SCAQMD is in the process of developing an *Air Quality Analysis Guidance Handbook* to replace the current Handbook approved by the SCAQMD Governing Board in 1993.

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino and Imperial Counties and serves as a forum for regional issues relating to transportation the economy, community development and the environment. SCAG serves as the Federally designated metropolitan planning organization (MPO) for the southern

California region and is the largest MPO in the United States. With respect to air quality planning, SCAG has prepared the Regional Comprehensive Plan and Guide (RCPG) for the region, which includes Growth Management and Regional Mobility chapters that form the basis for the land use and transportation control portions of the AQMP. SCAG is responsible under the FCAA for determining conformity of projects, plans and programs with the SCAQMD AQMP. As indicated in the SCAQMD Handbook, there are two main indicators of consistency:

- The project would not increase the frequency or severity of existing air quality violations, or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP; and
- The project would not exceed the AQMP's assumptions for 2020 or increments based on the year of project buildout and phase.

5.4.3 LOCAL AMBIENT AIR QUALITY

AIR QUALITY MONITORING STATIONS

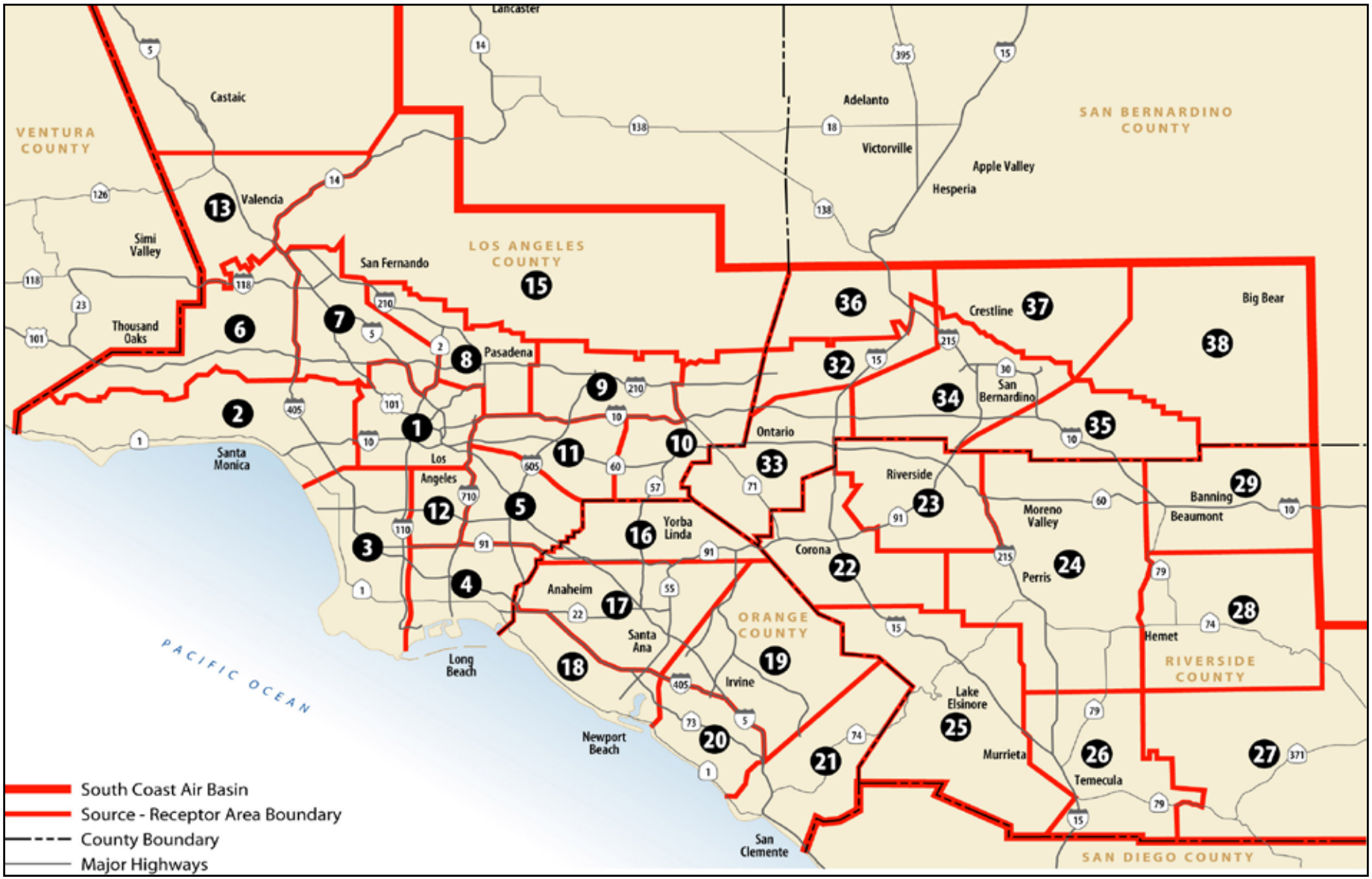
The SCAQMD monitors air quality at 37 monitoring stations throughout the Basin. Each monitoring station is located within a Source Receptor Area (SRA). The communities within an SRA are expected to have similar climatology and ambient air pollutant concentrations. The proposed project is in the City of Long Beach, which is located in SRA 4; refer to Exhibit 5.4-2, *Source Receptor Map*. The monitoring stations usually measure pollutant concentrations ten feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations.

POLLUTANTS MEASURED

The following air quality information briefly describes the various types of pollutants monitored at the North Long Beach Monitoring Station. This local monitoring station is located nearest to the project site. Air quality data from 2001 through 2005 is provided in Table 5.4-2, *Local Air Quality Levels*.

Carbon Monoxide. Carbon monoxide (CO) is an odorless, colorless toxic gas that is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions.

Carbon monoxide replaces oxygen in the body's red blood cells. Individuals with a deficient blood supply to the heart, patients with diseases involving heart and blood vessels, fetuses (unborn babies) and patients with chronic hypoxemia (oxygen deficiency), as seen in high altitudes are most susceptible to the adverse effects of CO exposure. People with heart disease are also more susceptible to developing chest pains when exposed to low levels of carbon monoxide. Exposure to high levels of carbon monoxide can slow reflexes and cause drowsiness, and result in death in confined spaces at very high concentrations.



Not to Scale

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ENVIRONMENTAL IMPACT REPORT

Source Receptor Map

Exhibit 5.4-2

Table 5.4-2
Local Air Quality Levels

Pollutant	Primary Standard		Year	Maximum[1, 2] Concentration	Number of Days State/Federal Std. Exceeded
	California	Federal			
Carbon Monoxide (CO)	9.0 ppm for 8 hours	9 ppm for 8 hours	2001 2002 2003 2004 2005	4.74 ppm 4.56 4.66 3.36 3.51	0/0 0/0 0/0 0/0 0/0
Ozone (O_3) (1-Hour)	0.09 ppm for 1 hour	NA	2001 2002 2003 2004 2005	0.09 ppm 0.08 0.09 0.09 0.09	0/NA 0/NA 1/NA 0/NA 0/NA
Ozone (O_3) (8-Hour)	0.07ppm for 8 hours	0.08ppm for 8 hours	2001 2002 2003 2004 2005	0.07 ppm 0.07 0.07 0.07 0.07	NM/0 NM/0 NM/0 NM/0 NM/0
Nitrogen Dioxide (NO_2)	0.25 ppm for 1 hour	0.053 ppm annual average	2001 2002 2003 2004 2005	0.11 ppm 0.10 0.12 0.08 0.08	0/NA 0/NA 0/NA 0/NA 0/NA
Sulfur Dioxide (SO_2)	0.25 ppm for 1 hour	0.14 ppm for 24 hours or 0.03 ppm annual arithmetic mean	2001 2002 2003 2004 2005	0.01 ppm 0.01 0.01 0.01 0.01	0/0 0/0 0/0 0/0 0/0
Particulate Matter (PM_{10}) [3,4]	50 µg/m^3 for 24 hours	150 µg/m^3 for 24 hours	2001 2002 2003 2004 2005	91.0 µg/m^3 74.0 63.0 72.0 NM	10/0 5/0 4/0 4/0 NM/NM
Fine Particulate Matter ($PM_{2.5}$) [4]	No Separate State Standard	65 µg/m^3 for 24 hours	2001 2002 2003 2004 2005	72.9 µg/m^3 62.7 115.2 66.6 53.8	NM/0 NM/0 NM/3 NM/1 NM/0

ppm = parts per million
µg/m^3 = micrograms per cubic meter
NM = Not Measured
PM_{10} = particulate matter 10 microns in diameter or less
$PM_{2.5}$ = particulate matter 2.5 microns in diameter or less
NA = Not Applicable

Notes:
1. Maximum concentration is measured over the same period as the California Standard.
2. Measurements taken at the North Long Beach Monitoring Station located at 3648 N. Long Beach Boulevard, Long Beach, California.
3. PM_{10} exceedances are based on state thresholds established prior to amendments adopted on June 20, 2002.
4. PM_{10} and $PM_{2.5}$ exceedances are derived from the number of samples exceeded, not days.

Source: California Air Resources Board, *ADAM Air Quality Data Statistics*, http://www.arb.ca.gov/adam/welcome.html

State and Federal standards were not exceeded between 2001 and 2005 at the North Long Beach Monitoring Station.

Ozone. Ozone occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. The troposphere extends approximately 10 miles above ground level, where it meets the second layer, the stratosphere. The stratospheric (the "good" ozone layer) extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays.

"Bad" ozone is a photochemical pollutant, and needs volatile organic compounds (VOCs), NO_x, and sunlight to form; therefore, VOCs and NO_x are ozone precursors. VOCs and NO_x are emitted from various sources throughout the City. To reduce ozone concentrations, it is necessary to control the emissions of these ozone precursors. Significant ozone formation generally requires an adequate amount of precursors in the atmosphere and a period of several hours in a stable atmosphere with strong sunlight. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

While ozone in the upper atmosphere (stratosphere) protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone (in the troposphere) can adversely affect the human respiratory system and other tissues. Ozone is a strong irritant that can constrict the airways, forcing the respiratory system to work hard to deliver oxygen. Individuals exercising outdoors, children and people with pre-existing lung disease such as asthma and chronic pulmonary lung disease are considered to be the most susceptible to the health effects of ozone. Short-term exposure (lasting for a few hours) to ozone at levels typically observed in southern California can result in aggravated respiratory diseases such as emphysema, bronchitis and asthma, shortness of breath, increased susceptibility to infections, inflammation of the lung tissue, increased fatigue as well as chest pain, dry throat, headache and nausea.

The 1-hour O_3 levels ranged from 0.09 parts per million (ppm) to 0.08 ppm from 2001 to 2005 at the North Long Beach Monitoring Station. The State ozone standard is 0.09 parts per million (ppm), averaged over one hour, and was exceeded once between 2000 and 2005. The Federal Standard for O_3 was revoked as of June 5, 2005 and therefore does not apply. The 8-hour O_3 levels between 2001 and 2005 averaged 0.07 ppm at the North Long Beach Monitoring Station. The State 8-hour standard for O_3 is 0.07, and was recently approved by CARB on April 28, 2005. The exceedences for the State standards have not yet been provided by CARB. The Federal standard for O_3 is 0.12 ppm, averaged over one hour, and was not exceeded between 2001 and 2005.

Nitrogen Dioxide. Nitrogen oxides (NO_x) are a family of highly reactive gases that are a primary precursor to the formation of ground-level ozone, and react in the atmosphere to form acid rain. NO_2 (often used interchangeably with NO_x) is a reddish-brown gas that can cause breathing difficulties at high levels. Peak readings of NO_2 occur in areas that have a high concentration of combustion sources (e.g., motor vehicle engines, power plants, refineries and other industrial operations).

NO_2 can irritate and damage the lungs, and lower resistance to respiratory infections such as influenza. The health effects of short-term exposure are still unclear. However, continued or frequent exposure to NO_2 concentrations that are typically much higher than those normally found in the ambient air, may increase acute respiratory illnesses in children and increase the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may aggravate eyes and mucus membranes and cause pulmonary dysfunction.

From 2001 through 2005, there were no exceedances of the State standard of 0.25 ppm over one hour at the North Long Beach Monitoring Station. For NO_2, the Basin is designated as being in attainment under both State and Federal standards.

Particulate Matter. Particulate matter pollution consists of very small liquid and solid particles floating in the air, and is a mixture of materials that can include smoke, soot, dust, salt, acids and metals. Particulate matter also forms when gases emitted from motor vehicles and industrial sources undergo chemical reactions in the atmosphere. Some particles are large or dark enough to be seen as soot or smoke; others are so small that they can be detected only with an electron microscope. PM_{10} particles are less than or equal to 10 microns in aerodynamic diameter; $PM_{2.5}$ particles are less than or equal to 2.5 microns in aerodynamic diameter, and are a subset (portion) of PM_{10}.

In the western United States, there are sources of PM_{10} in both urban and rural areas. PM_{10} and $PM_{2.5}$ are emitted from stationary and mobile sources, including diesel trucks and other motor vehicles, power plants, industrial processing, wood-burning stoves and fireplaces, wildfires, dust from roads, construction, landfills, agriculture and fugitive windblown dust.

PM_{10} and $PM_{2.5}$ particles are small enough to be inhaled into, and lodge in, the deepest parts of the lung. Health problems begin as the body reacts to these foreign particles. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, coughing, bronchitis and respiratory illnesses in children. Recent mortality studies have shown a statistically significant direct association between mortality and daily concentrations of particulate matter in the air. Non-health-related effects include reduced visibility and soiling of buildings.

The State standard for PM_{10} is 50 micrograms per cubic meter ($\mu g/m^3$) averaged over 24 hours; this standard was exceeded 33 days at the North Long Beach Monitoring Station between 2001 and 2004. Measurements were not recorded for 2005. The Federal standard for PM_{10} is 150 $\mu g/m^3$ averaged over 24 hours; this standard was not exceeded between 2001 and 2004.

On January 5, 2005, the EPA published a Final Rule in the Federal Register that designates the Basin as a nonattainment area for Federal $PM_{2.5}$ standards. On June 20, 2002, CARB adopted amendments for statewide annual ambient particulate matter air quality standards. These standards were revised/established due to increasing concerns by CARB that previous standards were inadequate, as almost everyone in California is exposed to levels at or above the current State standards during some parts of the year, and the statewide potential for significant health

impacts associated with particulate matter exposure was determined to be large and wide-ranging. For $PM_{2.5}$, the Federal standard is 65 $\mu g/m^3$ over 24 hours. There is no separate State standard for $PM_{2.5}$. At the North Long Beach Monitoring Station, there were four exceedances between 2001 and 2005.

Sulfur Dioxide. Sulfur dioxide (SO_2) is a colorless, irritating gas with a rotten egg smell; it is formed primarily by the combustion of sulfur-containing fossil fuels. Sulfur dioxide is often used interchangeably with sulfur oxides (SO_X) and lead (Pb). Exposure of a few minutes to low levels of SO_2 can result in airway constriction in some asthmatics. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO_2. Sulfur dioxide levels in all areas of the Basin do not exceed Federal or State standards, and the Basin is designated as in attainment for both State and Federal SO_2 standards.

SENSITIVE RECEPTORS

Sensitive populations are more susceptible to the effects of air pollution than is the general population. Sensitive populations (sensitive receptors) that are in proximity to localized sources of toxics and CO are of particular concern. Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The following types of people are most likely to be adversely affected by air pollution, as identified by CARB: children under 14, elderly over 65, athletes and people with cardiovascular and chronic respiratory diseases. Locations that may contain a high concentration of these sensitive population groups are called sensitive receptors and include residential areas, hospitals, day-care facilities, elder-care facilities, elementary schools and parks.

Existing sensitive receptors located in the project vicinity include multi-family residential homes. Located south of the proposed project are the Villa Riviera, the International Tower, the Long Beach Tower, Harbor Place and the Aqua building (west of Linden), which are all high-rise residential uses. Directly west of and adjacent to the project site is the Artaban building, another residential use. North of Medio Street and east of Lime Avenue are lower density multi-family residential uses. North of the project site between Lime Avenue and the alley are also lower density multi-family residential uses. West of the alley and east of Atlantic Ave are hotel uses. Office and hotel uses are located west of Atlantic Avenue. There are also multi-family residential uses east of Alamitos, north of the Shell gas station, on the corner of Alamitos Avenue and Ocean Boulevard.

In addition to the residential homes directly adjacent to the proposed project, other sensitive receptors such as schools and hospitals are located within the vicinity. The Benjamin Franklin, Charles Lindbergh and Herbert Hoover middle schools and the Montessori School are all located less than a mile away from the project. Hospitals within the area are the Long Beach Memorial Medical Center and the St. Mary Medical Center.

5.4.4 SIGNIFICANCE THRESHOLD CRITERIA

CEQA SIGNIFICANCE CRITERIA

Appendix G of the *CEQA Guidelines* includes questions relating to air quality impacts. Accordingly, a project may create a significant environmental impact if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; and/or
- Create objectionable odors affecting a substantial number of people; refer to Section 10.0, *Effects Found Not To Be Significant*.

SCAQMD THRESHOLDS

Under CEQA, the SCAQMD is an expert commenting agency on air quality and related matters within its jurisdiction or impacting its jurisdiction. Under the FCAA, the SCAQMD has adopted Federal attainment plans for ozone and PM_{10}. The SCAQMD reviews projects to ensure that they would not:

- Cause or contribute to any new violation of any air quality standard;
- Increase the frequency or severity of any existing violation of any air quality standard;
- Delay timely attainment of any air quality standard or any required interim emission reductions or other milestones of any Federal attainment plan; or
- Exceed the growth assumptions utilized in preparing the AQMP.

The SCAQMD Handbook provides significance thresholds for both construction and operation of projects within its jurisdictional boundaries. Exceedance of the SCAQMD thresholds could result in a potentially significant impact; however, although the SCAQMD recommends that these thresholds be used by lead agencies in making a determination of significance, ultimately the lead agency determines the thresholds of significance for impacts, pursuant to Section 15064(B) of the *CEQA Guidelines*. If the project proposes development in excess of the established thresholds, as outlined in Table 5.4-3, *SCAQMD Air Emission Thresholds,* a

significant air quality impact may occur and additional analysis is warranted to fully assess the significance of impacts.

Table 5.4-3
SCAQMD Air Emissions Thresholds

Phase	Pollutant (lbs/day)				
	ROG	NO_X	CO	SO_X	PM_{10}
Construction	75	100	550	150	150
Operational	55	55	550	150	150
ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_X = sulfur oxides; PM_{10} = particulate matter; up to 10 microns.					
Source: SCAQMD, *CEQA Air Quality Handbook*, November 1993.					

In addition, the significance of localized project impacts depends on whether ambient CO levels in the vicinity of the project are above or below State and Federal CO standards. If the project causes an exceedance of either the State one-hour or eight-hour CO concentrations, the project would be considered to have a significant local impact. If ambient levels already exceed a State or Federal standard, then project emissions would be considered significant if they increase one-hour CO concentrations by 1.0 ppm or more, or eight-hour CO concentrations by 0.45 ppm or more; refer to Table 5.4-4, *Federal and State Carbon Monoxide Standards*.

Table 5.4-4
Federal and State Carbon Monoxide Standards

Jurisdiction	Averaging Time	Carbon Monoxide (CO) Standard (parts per million)
Federal	1 Hour	35
	8 Hours	9
State	1 Hour	20
	8 Hours	9
Source: California Air Resources Board.		

5.4.5 IMPACTS AND MITIGATION MEASURES

SHORT-TERM (CONSTRUCTION) AIR EMISSIONS

- **SHORT-TERM CONSTRUCTION ACTIVITIES ASSOCIATED WITH THE PROPOSED PROJECT COULD RESULT IN SIGNIFICANT AIR POLLUTANT EMISSIONS IMPACTS.**

Level of Significance Prior to Mitigation: Potentially Significant Impact.

Impact Analysis: Short-term air quality impacts are predicted to occur during grading and construction operations associated with implementation of the proposed project. Temporary air emissions would result from the following activities:

- Particulate (fugitive dust) emissions from grading and demolition; and
- Exhaust emissions from the construction equipment and the motor vehicles of the construction crew.

The proposed project is anticipated to begin construction in 2006 and would occur over approximately 34 months, ending in 2009. There are currently five structures on-site with approximately 50,000 square feet of commercial, office and residential land uses. The proposed project includes the construction of a mixed-use development involving a 22-story residential tower, a 15- to 19-story building and a 10-story building. The proposed buildings would be situated over a two-story podium of residential, retail and live/work units, resulting in a maximum height of 24-, 21- and 12-stories. The project would result in 358 residential units including live/work spaces, townhomes, apartments and associated amenities. Grading activities would include the excavation and transport of approximately 140,000 cubic yards of soil and other materials to the Puente Landfill in Whittier, California.

Fugitive Dust Emissions

Fugitive dust from grading and construction is expected to be short-term and would cease following completion of the proposed project improvements. Additionally, most of this material is inert silicates and are less harmful to health than the complex organic particulates released from combustion sources. Dust generated by such activities usually becomes more of a local nuisance than a serious health problem. Of particular health concern is the amount of PM_{10} generated as a part of fugitive dust emissions. Implementation of the recommended mitigation regarding dust control techniques (e.g., daily watering), limitations on construction hours and adherence to SCAQMD Rules 402 and 403 (which require watering of inactive and perimeter areas, track out requirements, etc.) would reduce impacts of PM_{10} fugitive dust. As indicated in Table 5.4-5, *Construction Air Emissions*, impacts associated with PM_{10} are anticipated to be below the SCAQMD threshold, and therefore would be less than significant.

ROG Emissions

The application of asphalt and surface coatings creates ROG emissions, which are O_3 precursors. In accordance with the methodology prescribed by the SCAQMD, the ROG emissions associated with paving have been quantified with the URBEMIS2002 model; refer to Table 5.4-5. With implementation of Regulation XI (Rule 1113 – Architectural Coating), ROG emissions would be less than significant.

Construction Equipment and Worker Vehicle Exhaust

Exhaust emissions from construction activities include emissions associated with the transport of machinery and supplies to and from the project site, emissions produced on-site as the equipment is used and emissions from trucks transporting materials

to/from the site. The proposed project improvements would require the export of 140,000 cubic yards of soil. Emitted pollutants would include CO, ROG, NO_X, SO_X and PM_{10}.

Table 5.4-5
Construction Air Emissions

Emissions Source	Pollutant (lbs/day)[1]				
	ROG	NO_X	CO	PM_{10}	SO_X
Year 1 (Grading, Excavation, Demolition, and Construction of Structures)					
Unmitigated Construction Emissions	41.94	348.14	317.86	200.49	1.32
Mitigated Emissions[2]	41.94	348.14	317.86	40.67	1.32
SCAQMD Threshold	*75*	*100*	*550*	*150*	*150*
Threshold Exceeded?	**No**	**Yes**	**No**	**No**	**No**
Year 2 (Construction of Structures)					
Unmitigated Construction Emissions	28.80	187.98	235.84	7.71	0.0
Mitigated Emissions[2]	28.80	187.98	235.84	7.71	0.0
SCAQMD Threshold	*75*	*100*	*550*	*150*	*150*
Threshold Exceeded?	**No**	**Yes**	**No**	**No**	**No**
Year 3 (Construction of Structures and Paving Activities)					
Unmitigated Construction Emissions	34.25	218.07	281.39	8.39	0.0
Mitigated Emissions[2]	34.25	218.07	281.39	8.39	0.0
SCAQMD Threshold	*75*	*100*	*550*	*150*	*150*
Threshold Exceeded?	**No**	**Yes**	**No**	**No**	**No**

ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_X = sulfur oxides; PM_{10} = particulate matter; up to 10 microns

1 Calculations include emissions from numerous sources, including grading, construction worker trips, stationary equipment, diesel mobile equipment and asphalt off-gassing.

2 Refer to Appendix 15.4, *Air Quality Data*, for assumptions used in this analysis, including quantified emissions reduction by standard mitigation measures practices. Mitigation includes applying soil stabilizers to inactive areas, replacing groundcover in disturbed areas quickly, watering exposed surfaces twice daily and covering stockpiles with a tarpaulin.

Source: Emissions were calculated using the URBEMIS2002 Computer Model, as recommended by the SCAQMD.

Standard SCAQMD regulations would be adhered to such as maintaining all construction equipment in proper tune, shutting down equipment when not in use for extended periods of time and implementing SCAQMD Rule 403. However, construction equipment exhaust would cause an exceedance of the SCAQMD's NO_x thresholds, resulting in a significant impact.

Odors

Potential sources that may emit odors during construction activities include the use of architectural coatings and solvents. SCAQMD Rule 1113 limits the amount of volatile organic compounds from architectural coatings and solvents. Construction activities or materials would not create objectionable odors with compliance with SCAQMD rules. Therefore, impacts would be less than significant and no mitigation would be required.

Total Daily Construction Emissions

In accordance with SCAQMD guidelines, URBEMIS2002 was utilized to model construction emissions for ROG, NO_X, CO, SO_X and PM_{10}. Since construction would occur for 34 months, it has been assumed that the greatest emissions would be generated within the first stages of development (site grading activities).

As illustrated in Table 5.4-5, construction emissions associated with the proposed improvements would exceed SCAQMD thresholds for NO_X, resulting in a significant impact. The URBMIS2002 model allows the user to input mitigation measures such as limiting speeds for construction equipment on-site, watering the construction area to limit fugitive dust and applying soil stabilizers to the project area. Mitigation measures within the URBEMIS2002 model allow for certain reduction credits and result in a decrease of pollutant emissions. Reduction credits based upon studies developed by CARB, the SCAQMD and other air quality management districts throughout California were programmed within the URBEMIS2002 model. With implementation of recommended mitigation measures, a reduction in PM_{10} emissions would occur. However, the recommended mitigation measures would not provide a reduction to NO_x, which would therefore result in an exceedance of the SCAQMD threshold. The proposed project would be required to comply with all mitigation measures, which specify compliance with SCAQMD rules and regulations, as well as proper consultation with the City prior to grading activities. However, it is concluded that NO_x emissions would exceed the SCAQMD thresholds, thus, resulting in a significant and unavoidable impact.

Mitigation Measures:

AQ-1 Prior to approval of the project plans and specifications, the Public Works Director, or his designee, shall confirm that the plans and specifications stipulate that, in compliance with SCAQMD Rule 403, excessive fugitive dust emissions shall be controlled by regular watering or other dust preventive measures, as specified in the SCAQMD Rules and Regulations. In addition, SCAQMD Rule 402 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off-site. Implementation of the following measures would reduce short-term fugitive dust impacts on nearby sensitive receptors:

- All active portions of the construction site shall be watered to prevent excessive amounts of dust;
- On-site vehicles' speed shall be limited to 15 miles per hour (mph);
- All on-site roads shall be paved as soon as feasible or watered periodically or chemically stabilized;
- All material excavated or graded shall be sufficiently watered to prevent excessive amounts of dust; watering, with complete coverage, shall occur at least twice daily, preferably in the late morning and after work is done for the day;

- If dust is visibly generated that travels beyond the site boundaries, clearing, grading, earth moving or excavation activities that are generating dust shall cease during periods of high winds (i.e., greater than 25 mph averaged over one hour) or during Stage 1 or Stage 2 episodes; and

- All material transported off-site shall be either sufficiently watered or securely covered to prevent excessive amounts of dust.

AQ-2 Prior to approval of the project plans and specifications, the Public Works Director, shall confirm that the plans and specifications stipulate that, in compliance with SCAQMD Rule 403, ozone precursor emissions from construction equipment vehicles shall be controlled by maintaining equipment engines in good condition and in proper tune per manufacturer's specifications, to the satisfaction of the Resident Engineer. The City inspector shall be responsible for ensuring that contractors comply with this measure during construction.

AQ-3 Prior to issuance of grading permits or approval of grading plans, the City shall include in the construction contract standard specifications, a written list of instructions to be carried out by the construction manager specifying measures to minimize emissions by heavy equipment for approval by the Public Works Director. Measures shall include provisions for proper maintenance of equipment engines, measures to avoid equipment idling more than two minutes and avoidance of unnecessary delay of traffic on off-site access roads by heavy equipment blocking traffic.

AQ-4 In compliance with SCAQMD Rule 1113, ROG emissions from architectural coatings shall be reduced by using precoated/ natural-colored building materials, water-based or low-ROG coating and using coating transfer or spray equipment with high transfer efficiency.

AQ-5 Prior to the issuance of grading permits, the contractor shall include the following measures on construction plans, to the satisfaction of the Public Works Director, or his designee:

- The General Contractor shall organize construction activities so as not to interfere significantly with peak hour traffic and minimize obstruction of through traffic lanes adjacent to the site; if necessary, a flag person shall be retained to maintain safety adjacent to existing roadways;

- The General Contractor shall utilize electric- or diesel-powered stationary equipment in lieu of gasoline powered engines where feasible; and

- The General Contractor shall state in construction grading plans that work crews would shut off equipment when not in use.

Level of Significance After Mitigation: Significant and Unavoidable Impact for NO_x emissions.

LONG-TERM (OPERATIONAL) AIR EMISSIONS

- **DEVELOPMENT ASSOCIATED WITH THE PROPOSED PROJECT COULD RESULT IN SIGNIFICANT AIR EMISSIONS IMPACTS.**

Level of Significance Prior to Mitigation: Potentially Significant Impact.

Impact Analysis:

Mobile Source Air Emissions

Mobile sources emissions would be generated from vehicle trips produced by residents and employees, and patrons of the commercial land uses. An estimated 3,080 daily vehicle trips would be generated by the proposed project.

Area Source Emissions

Pollutant emissions associated with energy demand (i.e., electricity generation and natural gas consumption) are classified by the SCAQMD as regional stationary source emissions. Criteria pollutant area source emissions would be generated by increased concentration of electrical energy and natural gas with the development of the proposed project. Electric power generating plants are distributed throughout the Basin and western United States. Electricity is considered an area source since it is produced at various locations within, as well as outside of the Basin. Since it is not possible to isolate where electricity is produced, these emissions are conservatively considered to occur within the Basin and are regional in nature. The primary use of natural gas by the proposed land uses would be for combustion to produce space heating, water heating, other miscellaneous heating, or air conditioning, consumer products and landscaping.

<u>Diesel Fired – Back Up Generators</u>

The proposed project would also include the use of a 1000-kilowatt (1,341 horsepower), 277/480 Volt, three phase, four wire Emergency Diesel Generator with skid mounted day tank (fuel capacity of eight hours). Automatic transfer switches would be provided to supply emergency power through step-down transformers to emergency lighting, fire/life safety system, elevator and fire pump. Unless a blackout occurs, this generator will be operated for a maximum of one hour per month for routine testing and maintenance purposes. The Applicant will be required to obtain a permit to construct and a permit to operate these standby generators under SCAQMD Rules 201, 202 and 203. Under New Source Review (NSR), the generator will be required to meet Best Available Control Technology (BACT) requirements to minimize emissions of CO, ROG, NO_x, and PM_{10}. BACT standards for diesel-fired emergency generators specify a maximum allowable emissions rate of 8.5 grams of carbon monoxide per horsepower-hour (hp-hr), 1.0 gram of ROG per hp-hr, 6.9 grams of NO_x per hp-hr, and 0.38 gram of PM_{10} per hp-hr. Sulfur dioxide emissions will be minor since the sulfur content of the diesel fuel will be limited to

0.05 percent by weight under SCAQMD Rule 431.2 (Sulfur Content of Liquid Fuels). Emergency equipment, however, is exempt from modeling and offset requirements (Rule 1304) and does not require a health risk assessment (Rule 1401).

In addition to applying for a permit to construct from the SCAQMD, it would be necessary to apply for a *Special Application for Temporary Emergency Authorization To Operate Electric Backup Generator(s) During Involuntary Power Service Interruptions Permit*.[1] Therefore, impacts associated with the operation of diesel-powered generators are anticipated to be less than significant.

Total Regional Emissions

Based on the existing land uses, the site currently results in emissions of 6.47 lbs/day of ROG; 3.74 lbs/day of NO_X; 22.20 lbs/day of CO; 4.32 lbs/day of PM_{10} and 0.02 lbs/day of NO_X. As shown in Table 5.4-6, *Operational Air Emissions*, the operational emissions from the proposed project result in a total of 39.15 lbs/day of ROG; 16.90 lbs/day of NO_X; 156.20 lbs/day of CO; 28.68 lbs/day of PM_{10}; 0.19 lbs/day of SO_x upon project buildout. Note, that even if the existing emissions were not discounted, the proposed project would not exceed the SCAQMD thresholds of significance. Thus, since the proposed project would not result in significant operational impacts, no additional mitigation measures were programmed in the URBEMIS 2002 model.

Table 5.4-6
Operational Air Emissions

Emission Source	Emissions (pounds/day)[1]				
	ROG	NO_X	CO	PM_{10}	SO_X
Existing Emissions					
Unmitigated Emissions					
Area Source Emissions	4.57	0.69	0.38	0.00	0.38
Mobile Source Emissions	1.90	3.05	21.82	4.31	0.02
Total Emissions	**6.47**	**3.74**	**22.20**	**4.32**	**0.02**
Proposed Project Emissions					
Unmitigated Emissions					
Area Source Emissions	23.93	2.84	2.82	0.01	0.00
Mobile Source Emissions	15.22	14.06	153.38	28.67	0.19
Total Emissions	**39.15**	**16.90**	**156.20**	**28.68**	**0.19**
Net Increase over Existing Emissions	**32.68**	**13.16**	**134.0**	**24.36**	**0.17**
SCAQMD Thresholds	55	55	550	150	150
Thresholds Exceeded?	**No**	**No**	**No**	**No**	**No**

ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_X = sulfur oxides; PM_{10} = particulate matter; up to 10 microns.

1. Refer to the worksheets in Appendix 15.4, *Air Quality Data*, for detailed assumptions.

[1] South Coast Air Quality Management District, http://www.aqmd.gov/permit/ em_back_up_gen.html, November 29, 2004.

Localized Emissions

Project traffic, during the operational phase of the project, would have the potential to create local area impacts. Carbon monoxide is a primary pollutant and, unlike ozone, is directly emitted from a variety of sources. For this reason, CO concentrations are usually indicative of the local air quality generated by a roadway network and are used as an indicator of its impacts upon the local air quality. Comparisons of levels with State and Federal CO standards indicate the severity of the existing concentrations for receptors in the Project area.

An impact is potentially significant if a project produces emissions levels that exceed the State or Federal AAQS, refer to Table 5.4-4, *Federal and State Carbon Monoxide Standards*. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere; adherence to AAQS is typically demonstrated through an analysis of localized CO concentrations. Areas of vehicle congestion have the potential to create "pockets" of CO called "hot spots." These pockets have the potential to exceed the State 1-hour standard of 20.0 ppm and/or the 8-hour standard of 9.0 ppm. Note that Federal levels are based on 1- and 8-hour standards of 35.0 and 9.0 ppm, respectively.

To identify CO hotspots, the SCAQMD criterion recommends performing a CO hotspot analysis when a project increases the volume-to-capacity (V/C) ratio (also called the intersection capacity utilization) by 0.02 (2 percent) for any intersection with an existing level of service (LOS) D or worse. A CO hotspot analysis is also required if an existing intersection has a LOS C and worsens to an LOS D with implementation of a proposed project. Because traffic congestion is highest at intersections where vehicles queue and are subject to reduced speeds, these hot spots are typically produced at intersection locations. A higher LOS would result in greater risk for a CO hotspot. Typically, LOS at an intersection producing a hot spot is at LOS D or worse during the peak hour.

Table 5.4-7, *Carbon Monoxide Levels at Surrounding Intersections*, indicates the anticipated CO levels within the area. The maximum 1-hour CO concentration is 7.2 ppm for the Pine Avenue/Ocean Boulevard intersection. The CO levels are well below the State and Federal standards of 20 ppm and 35 ppm respectively. Additionally, the maximum 8-hour CO concentration is 5.0 ppm for same intersection. The measured concentrations are well below the State and Federal standard of 9 ppm. Therefore, the proposed project will not result in adverse CO emissions, and impacts in this regard will be less than significant.

Carbon Monoxide Within Subterranean Parking Areas

Subterranean parking would potentially result in an increase of vehicles operating in a cold start mode. If the catalytic converter of a vehicle is not already warm from previous operation, the car is said to be in a "cold start" mode. A typical cold start would occur after the vehicle is parked in excess of eight hours overnight where the dewpoint could rise and lower the temperature. During a cold start, the catalytic converter is too cold for the chemical reaction that converts pollutants (e.g. carbon monoxide, hydrocarbons and nitrogen oxides) to water vapor, nitrogen and carbon dioxide. More technically, the rate of the chemical reaction is too slow at low

temperatures to control the emissions. Thus, the emissions from the tailpipe are the same as the uncontrolled emissions from the engine during a cold start.[2]

Table 5.4-7
Carbon Monoxide Levels at Surrounding Intersections

Intersections	1-hour CO (ppm) [1]		8-hour CO (ppm) [1]	
	1-hour Standard[2]	Future Plus Project	8-hour Standard[3]	Future Plus Project
Magnolia Avenue/6th Street	20 ppm	6.5	9 ppm	4.6
Pacific Avenue/Broadway	20 ppm	6.6	9 ppm	4.6
Pacific Avenue/Ocean Boulevard	20 ppm	6.4	9 ppm	4.5
Pine Avenue/Broadway	20 ppm	6.6	9 ppm	4.6
Pine Avenue/Ocean Boulevard	20 ppm	7.2	9 ppm	5.0
Elm Avenue/Broadway	20 ppm	6.5	9 ppm	4.6
Lime Avenue/Broadway	20 ppm	7.0	9 ppm	4.9
Lime Avenue/7th Street	20 ppm	6.5	9 ppm	4.6
Alamitos Avenue/7th Street	20 ppm	6.9	9 ppm	4.8
Alamitos Avenue/Broadway	20 ppm	6.6	9 ppm	4.6
Alamitos/Shoreline Avenue/Ocean Boulevard	20 ppm	7.0	9 ppm	4.9
Orange Avenue/Ocean Boulevard	20 ppm	7.0	9 ppm	4.9

1. As measured at a distance of 10 feet from the corner of the intersection predicting the highest value. Presented 1-hour CO concentrations include a background concentration of 6.0 ppm.
2. The State 1-hour standard is 20 ppm. The Federal standard is 35 ppm. The most stringent standard is reflected.
3. The State 8-hour and Federal 8-hour standard is 9 ppm.

Using CALINE4, the CO levels within the parking structure were modeled; refer to Table 5.4-8, Carbon *Monoxide Levels Within the Parking Structure*. Based on the project Traffic Impact Analysis, the project would generate 148 trips during the AM peak hour. This number was utilized to determine that number of cars that could potentially occupy the structure. As shown in Table 5.4-8, the CO levels within the parking structure would be similar to the surrounding intersections at 6.3 ppm, which is well below the State 1-hour standard for CO. The proposed project would also include the use of a garage exhaust ventilation system. Per the International Mechanical Code (Section 403.5 [Public Garages]), mechanical ventilation systems are required to operate automatically upon detection of a concentration or carbon monoxide of 25 ppm by approved detection devices. The 25 ppm trigger is the maximum allowable concentration for continuous exposure in any eight hour period according to the American Conference of Governmental Industrial Hygienists.[3] Carbon monoxide concentrations within the parking garage would also be below the State's one-hour standard.

[2] http:www4.ncsu.edu/~frey/emissions/drivingtips.html, May 10, 2006.

[3] Vulcain Inc, http://www.vulcaininc.com/uploadedFiles/Datasheets/Parking_Structures_Guidelines_EN.pdf, May 11, 2006.

According to site plans, there are currently four exhaust exterior vents located on each side of the parking garage. The vents would direct CO emissions onto the surrounding sidewalks. However, since CO levels would be below standards within the structure, it is anticipated that hotspots would not result from vehicles within the parking structure. This would result in a less than significant impact.

Table 5.4-8
Carbon Monoxide Levels Within the Parking Structure

Area	1-hour CO (ppm) [1]		8-hour CO (ppm) [1]	
	1-hour Standard[2]	Future Plus Project	8-hour Standard[3]	Future Plus Project
Parking Structure	20 ppm	6.3	9 ppm	4.4

1. As measured within the parking structure area predicting the highest value. Presented 1-hour CO concentrations include a background concentration of 6.0 ppm.
2. The State 1-hour standard is 20 ppm. The Federal standard is 35 ppm. The most stringent standard is reflected.
3. The State 8-hour and Federal 8-hour standard is 9 ppm.

Mitigation Measures:

AQ-6 The project applicant shall comply with SCAQMD Regulations and apply for a *Special Application for Temporary Emergency Authorization To Operate Electric Backup Generator(s) During Involuntary Power Service Interruptions Permit* prior to installation and operation of the proposed emergency back up generators.

AQ-7 Prior to the issuance of building permits, the applicant shall demonstrate to the City of Long Beach Planning and Building Department that all residential and non-residential buildings meets the California Title 24 Energy Efficiency standards for water heating, space heating and cooling, to the extent feasible.

AQ-8 Prior to the issuance of building permits, the applicant shall demonstrate to the City of Long Beach Planning and Building Department that all fixtures used for lighting of exterior common areas are regulated by automatic devices to turn off lights when they are not needed.

Level of Significance After Mitigation: Less Than Significant Impact.

CONSISTENCY WITH REGIONAL PLANS

- **DEVELOPMENT ASSOCIATED WITH THE PROPOSED PROJECT WOULD BE CONSISTENT WITH REGIONAL PLANS.**

Level of Significance Prior to Mitigation: Less Than Significant Impact.

Impact Analysis: As noted under the Significance Criteria discussion, a potentially significant impact on air quality would occur if a project would conflict with or obstruct implementation of the applicable AQMP. Although the project would represent an incremental negative impact on air quality in the Basin, of primary concern is that project-related impacts have been properly anticipated in the regional air quality planning process and reduced whenever feasible. Therefore, it is necessary to assess the project's consistency with the AQMP.

According to the SCAQMD Handbook, the purpose of the consistency finding is to determine whether a project is inconsistent with the assumptions and objectives of the regional air quality plans, and thus whether it would interfere with the region's ability to comply with Federal and State air quality standards. If a project is inconsistent, local governments need to consider project modifications or inclusion of mitigation to eliminate the inconsistency. Consistency with the AQMP implies that a project is consistent with the goals, objectives and assumptions in the respective plan to achieve the Federal and State air quality standards.

Per the SCAQMD Handbook, there are two main indicators of a project's consistency with the AQMP:

- Whether the project would increase the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP; and

- Whether the project would exceed the AQMP's assumptions for 2020 or yearly increments, based on the year of project buildout and phase.

As indicated in the *Long-Term Operational Impacts* discussion, the proposed project would not result in exceedances of SCAQMD thresholds for criteria pollutants and therefore satisfies the first criteria for consistency with the AQMP. Additionally, implementation of the proposed project would not result in the formation of CO hotspots from the increase of LOS at study intersections.

A project is also consistent with the AQMP if it is consistent with the population, housing and employment assumptions, which were used in the development of the AQMP. The 2003 AQMP, the most recent AQMP adopted by the SCAQMD, incorporates in part local city general plans and SCAG's Regional Transportation Plan socioeconomic forecast projections of regional population, housing and employment growth.

The project site is currently developed with multi-family residential, retail, restaurant, office and parking uses on several parcels. The proposed project would not require any General Plan amendments. The project area is part of the Central Long Beach Redevelopment Project Area. Originally adopted on September 21, 1993, the Central Long Beach Redevelopment Project Area encompasses approximately 2,618 acres of land generally located south of the I-405 freeway, north of downtown, east of the I-710 freeway and west of Redondo Boulevard. The primary objective of the Central Redevelopment Plan is to re-direct and concentrate commercial facilities in

significant centers and along major arterial corridors, while accommodating residential needs and preserving and rehabilitating existing neighborhoods.

Development of the proposed project would be consistent with the goals and policies of the Redevelopment Plan and relevant strategic planning documents. Project implementation would contribute to long-range development goals identified by the City and Redevelopment Agency.

According to the SCAG growth projections, the City of Long Beach would have a population of 518,627 in Year 2015. Development of 358 (net increase of 295 units) dwelling units on the project site would cause a direct increase in the City's population. Using the California State Department of Finance average household size of 2.913 persons,[4] the 358 dwelling units of the proposed project would generate an average resident population of 1,043 persons (358 units x 2.913 person/unit = 1,043 persons). The increase in population is considered minimal, as it would represent 0.2 percent of the City's projected 2015 population.

Since the project would be consistent with the City's General Plan and SCAG population growth forecasts, the project would be consistent with the latest AQMP. Therefore, impacts are anticipated to be less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Not applicable.

5.4.6 CUMULATIVE IMPACTS

- **DEVELOPMENT ASSOCIATED WITH THE PROPOSED PROJECT AND RELATED CUMULATIVE PROJECTS WOULD RESULT IN SIGNIFICANT AIR QUALITY IMPACTS.**

Level of Significance Prior to Mitigation: Potentially Significant Impact.

Impact Analysis:

Cumulative Construction Emissions

Of the 38 projects that have been identified within the proposed project study area, there are a number of related projects that have not been built or are currently under construction. Since the Applicant has no control over the timing or sequencing of the related projects, any quantitative analysis to ascertain the daily construction emissions that assumes multiple, concurrent construction would be speculative.

With respect to the project's construction-period air quality emissions and cumulative Basin-wide conditions, the SCAQMD has developed strategies to reduce criteria pollutant emissions outlined in the AQMP pursuant to Federal Clean Air Act mandates. As such, the proposed project would comply with SCAQMD Rule 403

[4] California State Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State 2001-2005, with 2000 Benchmark*. Sacramento, California, May 2005.

requirements, and implement all feasible mitigation measures. In addition, the proposed project would comply with adopted AQMP emissions control measures. Per SCAQMD rules and mandates as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements (i.e., Rule 403 compliance, the implementation of all feasible mitigation measures, and compliance with adopted AQMP emissions control measures) would also be imposed on construction projects Basin-wide, which would include each of the related projects mentioned above.

Although compliance with SCAQMD rules and regulations would reduce construction related impacts, the project related construction emissions have been concluded to be significant and unavoidable. Thus, it can be reasonable inferred that the project related construction activities, in combination with those from other projects in the area would deteriorate the local air quality and lead to cumulative construction related impact. Therefore, even with the implementation of Mitigation Measures AQ-1 through AQ-5, a significant and unavoidable cumulative construction air quality impact would result.

Cumulative Operational Emissions

Implementation of the proposed project would result in an increase in emissions, which would contribute to region-wide emissions on a cumulative basis. Although the project would not result in exceedances of criteria pollutants for long-term operational impacts and would be consistent with the City's *General Plan* and the Redevelopment Plan, implementation of the project in combination with other developments within the City would result in an increase in criteria pollutants. As the Basin is in Non-attainment for CO, O_3 and PM_{10}, the projects contribution to region-wide emissions would result in a significant cumulative air quality impact. Although the implementation of mitigation measures AQ-6 through AQ-8 would lessen the projects contribution to the regional pollutant burden, the project's cumulative operational air quality impacts are concluded to be significant and unavoidable.

Mitigation Measures: Refer to mitigation measures AQ-1 through AQ-8. No additional mitigation measures are recommended.

Level of Significance After Mitigation: Significant and Unavoidable Impact.

5.4.7 SIGNIFICANT UNAVOIDABLE IMPACTS

Despite compliance with mitigation measures, NO_x emissions during construction would remain above SCAQMD thresholds. Cumulative construction impacts related to regional emissions would be significant and unavoidable, as well as cumulative regional operational impacts.

If the City of Long Beach approves the Shoreline Gateway Project, the City shall be required to adopt findings in accordance with Section 15091 of the *CEQA Guidelines* and prepare a Statement of Overriding Considerations in accordance with Section 15093 of the *CEQA Guidelines*.