4.6 AIR QUALITY

This section focuses on potential short-term air quality impacts associated with Project construction activity, in addition to long-term local and regional air quality impacts associated with the Project operation. Mitigation is recommended to reduce the significance of impacts.

Information in this section is based primarily on the *CEQA 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] 2000 through 2004); the *SCAQMD Final Air Quality Management Plan* (August 2003), prepared by RBF Consulting; and the *Dana Point Harbor Revitalization Project Traffic and Parking Analysis* (September 2005), prepared by RBF Consulting. Refer to Appendix J (Air Quality Data) for the assumptions used in this analysis.

4.6.1 EXISTING CONDITIONS

4.6.1.1 SOUTH COAST AIR BASIN

GEOGRAPHY

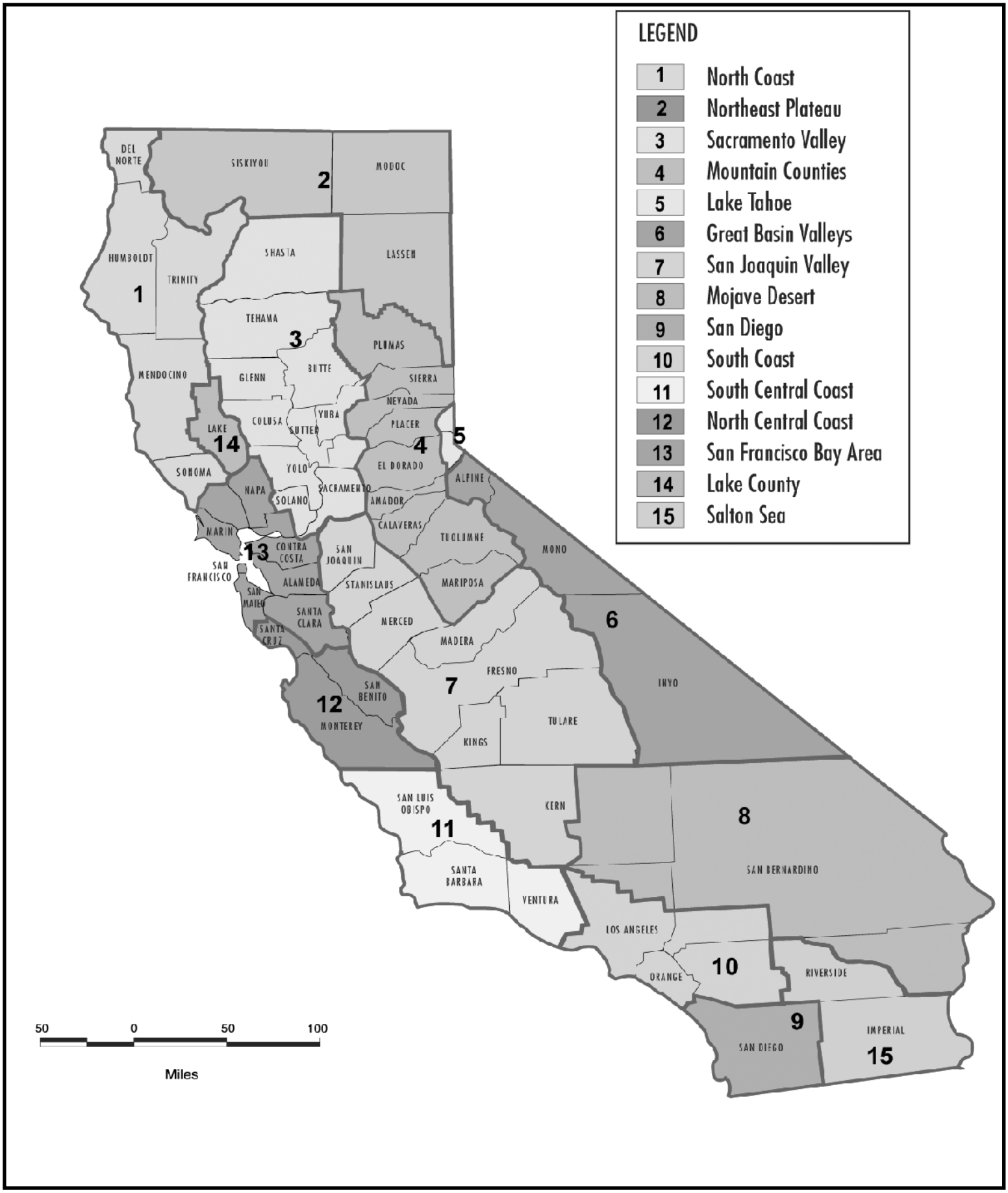
The City of Dana Point (City) is located in the South Coast Air Basin, a 6,600-square-mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Basin includes all of Orange County and the nondesert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area of Riverside County; refer to Exhibit 4.6-1 (California Air Basins). The Basin's terrain and geographical location – a coastal plain with connecting broad valleys and low hills – determine its distinctive climate.

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 is characterized as Mediterranean – 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



Source: California Air Resources Boards (CARB), Feburary 2003.

CALFORNIA AIR BASINS

DANA POINT HARBOR REVITALIZATION PROJECT
PROGRAM ENVIRONMENTAL IMPACT REPORT

EXHIBIT 4.6-1

RBF CONSULTING PLANNING ■ DESIGN ■ CONSTRUCTION

over 100°F in recent years. January is usually the coldest month at all locations, while July and August are usually the hottest months.

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.

4.6.1.2 APPLICABLE REGULATIONS

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.

U.S. ENVIRONMENTAL PROTECTION AGENCY

The principal air quality regulatory mechanism on the Federal level is the Federal Clean Air Act (FCAA) and, in particular, the 1990 amendments to the FCAA and the National Ambient Air Quality Standards (NAAQS) that it establishes. 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 4.6-1 (National and California Ambient Air Quality Standards). The EPA also has regulatory and enforcement jurisdiction over emission sources beyond State waters (outer continental shelf), and those that are under the exclusive authority of the Federal government, such as aircraft, locomotives, and interstate trucking.

CALIFORNIA AIR RESOURCES BOARD

The California Air Resources Board (CARB), a department of the California Environmental Protection Agency (CalEPA), oversees air quality planning and control throughout California. Its responsibility lies with ensuring implementation of the 1989 amendments to the California Clean Air Act (CCAA), responding to the FCAA requirements and regulating emissions from motor vehicles sold in California. It also sets fuel specifications to further reduce vehicular emissions.

The amendments to the CCAA establish California Ambient Air Quality Standards (CAAQS), and a legal mandate to achieve these standards by the earliest practicable date. These standards apply to the same criteria pollutants as the FCAA, and also include sulfate, visibility, hydrogen sulfide, and vinyl chloride; refer to Table 4.6-1.

4.6.1.3 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)

The SCAQMD is one out of 35 air quality management districts that have prepared Air Quality Management Plans (AQMPs) to accomplish a five-percent annual reduction in emissions. The most recent AQMP was adopted in 2003. This AQMP relies on a multilevel partnership of governmental agencies at the Federal, State, regional, and local level. 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 2003 AQMP also addresses several State and Federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2003 AQMP is consistent with and builds upon the approaches taken in the 1997 AQMP and the 1999 Amendments to the Ozone State Implementation Plan (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.

Table 4.6-1
NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standard[1]	Federal Standard[2]	
		Concentration[3]	Primary [3, 4]	Secondary [3, 5]
Ozone (O_3)	1 Hour	0.09 ppm (180 μg/m^3)	NA[6]	NA[6]
	8 Hours	0.07 ppm	0.08 ppm (157 μg/m^3)	0.08 ppm (157 μg/m^3)
Particulate Matter (PM_{10})	24 Hours	50 μg/m^3	150 μg/m^3	150 μg/m^3
	Annual Arithmetic Mean	20 μg/m^3	50 μg/m^3	50 μg/m^3
Fine Particulate Matter ($PM_{2.5}$)	24 Hours	No Separate State Standard	65 μg/m^3	65 μg/m^3
	Annual Arithmetic Mean	12 μg/m^3	15 μg/m^3	15 μg/m^3
Carbon Monoxide (CO)	8 Hours	9.0 ppm (10 mg/m^3)	9 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)	35 ppm (40 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	N/A	0.053 ppm (100 μg/m^3)	0.053 ppm (100 μg/m^3)
	1 Hour	0.25 ppm (470 μg/m^3)	N/A	N/A
Lead (Pb)	30 days average	1.5 μg/m^3	N/A	N/A
	Calendar Quarter	N/A	1.5 μg/m^3	1.5 μg/m^3
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	N/A	0.030 ppm (80 μg/m^3)	N/A
	24 Hours	0.04 ppm (105 μg/m^3)	0.14 ppm (365 μg/m^3)	N/A
	3 Hours	N/A	N/A	0.5 ppm (1300 μg/m^3)
	1 Hour	0.25 ppm (655 μg/m^3)	N/A	N/A
Visibility-Reducing Particles	8 Hours (10 a.m. to 6 p.m., PST)	Extinction coefficient = 0.23 km@<70% RH	No Federal Standards	
Sulfates	24 Hour	25 μg/m3		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m3)		

μg/m^3 = 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, the California Air Resources Board (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 parts per million (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. Contact the EPA for further clarification and current Federal policies.

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 degrees centigrade (°C) and a reference pressure of 760 millimeters (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 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

6 The Federal 1-hour Standard was revoked on June 5, 2005.

Source: California Air Resource Control Board, December 2003.

SCAG is responsible under the FCAA for determining conformity of projects, plans, and programs with the SCAQMD AQMP. As indicated in the SCAQMD *CEQA Air Quality Handbook*, there are two main indicators of consistency:

- The project will 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 will not exceed the AQMP's assumptions for 2020 or increments based on the year of project buildout and phase.

4.6.1.4 STATE AIR TOXICS PROGRAM

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern in southern California. There are hundreds of different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle engine exhaust. Public exposure to TACs can result from emissions from normal operations, as well as accidental releases of hazardous materials during upset spill conditions. Human health effects of TACs include cancer, birth defects, neurological damage, and death.

California regulates TACs through its air toxics program, mandated in Chapter 3.5 (Toxic Air Contaminants) of the Health and Safety Code (H&SC Section 39660 et. seq.) and Part 6 (Air Toxics "Hot Spots" Information and Assessment) (H&SC Section 44300 et. seq.). The CARB, working in conjunction with the State Office of Environmental Health Hazard Assessment (OEHHA), identifies TACs. Air toxic control measures may then be adopted to reduce ambient concentrations of the identified TAC to below a specific threshold (based on its effects on health) or to the lowest concentration achievable through use of best available control technology for toxics (T-BACT). The program is administered by the CARB. Air quality control agencies, including the SCAQMD, must incorporate air toxic control measures into their regulatory programs or adopt equally stringent control measures as rules within six months of adoption by CARB.

The Air Toxics "Hot Spots" Information and Assessment Act, codified in the H&SC, requires operators of specified facilities in the SCAQMD to submit to the SCAQMD comprehensive emissions inventory plans and reports by specified dates (H&SC Section 39660 et. seq. and Section 44300 et. seq.). The SCAQMD reviews the reports and then places the facilities into high-, intermediate-, and low-priority categories, based on the potency, toxicity, quantity, and volume of hazardous emissions and on the proximity of potential sensitive receptors[1] to the facility. Facilities designated as high-priority (Category A) must prepare a health risk assessment (HRA). If the HRA finds a significant risk, the surrounding population must be notified. The emissions inventory data are to be updated every two years.

[1] Sensitive receptors are certain populations that are more susceptible to the effects of air pollution than the general population.

The CARB in 1998 identified diesel engine particulate matter as a TAC. Mobile sources (including trucks, buses, automobiles, trains, ships, and farm equipment) are by far the predominant source of diesel emissions. Studies show that diesel particulate matter concentrations are much higher near heavily traveled highways and intersections. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Many of these toxic compounds adhere to the particulates, and because diesel particles are very small, they penetrate deeply into the lungs. Diesel engine particulate matter is a human carcinogen; the cancer risk from exposure to diesel exhaust may be much higher than the risk associated with any other toxic air pollutant routinely measured in the region.

Before California listed particulate matter from diesel engine exhaust as a TAC, it had already adopted various regulations that will reduce diesel emissions. These regulations include new standards for diesel engine fuel; exhaust emission standards for new diesel trucks, buses, autos, and utility equipment; and inspection and maintenance requirements for health duty vehicles. Since listing diesel exhaust as a TAC, the CARB has been evaluating what additional regulatory action is needed to reduce public exposure. The CARB does not anticipate banning diesel fuel or engines; however, it may consider additional requirements for diesel fuel and engines, as well as other measures to reduce public exposure.

4.6.1.5 BASIN ATTAINMENT STATUS

The Basin has been designated as in attainment for nitrogen oxides (NO_x) and sulfur oxides (SO_x) for both State and Federal Standards. The Basin is designated non-attainment for ozone (O_3) and particulate matter (PM_{10} and $PM_{2.5}$) under both Federal and State standards. The Basin is designated as non-attainment for carbon monoxide (CO) under just the Federal standard; refer to Table 4.6-2 (South Coast Air Basin Ambient Air Quality Classification).

Table 4.6-2
SOUTH COAST AIR BASIN AMBIENT AIR QUALITY CLASSIFICATIONS

Pollutant	State	Federal
Ozone (O_3) (1 hour standard)	Non-Attainment/Severe	NA[1]
Ozone (O_3) (8 hour standard)	Unclassified	Severe 17 Non-Attainment
Particulate Matter <10 microns (PM_{10})	Serious Non-Attainment	Serious Non-Attainment
Particulate Matter <2.5 microns ($PM_{2.5}$)	Non-Attainment	Non-Attainment
Carbon Monoxide (CO)	Attainment	Non-Attainment
Nitrogen Oxides (NO_x)	Attainment	Attainment
Sulfur Oxides (SO_x)	Attainment	Attainment

Source: California Air Resources Board, http://www.arb.ca.gov/desig/adm/adm.htm, February 7, 2006.
1. The Federal 1-hour standard was revoked on June 5, 2005.

4.6.1.6 LOCAL AMBIENT AIR QUALITY

AIR QUALITY MONITORING STATIONS

The CARB monitors ambient air quality at approximately 250 air quality monitoring stations across the state. 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. In the Basin, ambient air pollutant concentrations are measured at 36 air quality monitoring stations, operated by the SCAQMD.

POLLUTANTS MEASURED

The following air quality information briefly describes the various types of pollutants monitored at the Costa Mesa Monitoring Station and the Mission Viejo Monitoring Station. These local monitoring stations are located nearest to the Project site. The data collected at these stations are considered to represent the air quality experienced on site. Air quality data from 2000 through 2004 is provided in Table 4.6-3 (Local Air Quality Levels).

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 South Coast Air Basin. 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. Many respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to high ozone levels. Ozone also damages natural ecosystems (such as forests and foothill plant communities), agricultural crops, and some man-made materials (such as rubber, paint and plastics). Societal costs from ozone damage include increased healthcare costs, the loss of human and animal life, accelerated replacement of industrial equipment, and reduced crop yields.

The Basin is designated as a nonattainment area for State and Federal O_3 standards. The O_3 levels at the Mission Viejo Monitoring Station ranged between 0.09 ppm and 0.12 ppm. The State ozone standard is 0.09 parts per million (ppm), averaged over one hour, and was exceeded 17 days between 2000 and 2004. The Federal standard for O_3 is 0.12 ppm, averaged over one hour, and was not exceeded between 2000 and 2004.

Table 4.6-3
LOCAL AIR QUALITY LEVELS

Pollutant	California Standard	Federal Primary Standard	Year	Maximum[1] Concentration	Days (Samples) State/Federal[1] Std. Exceeded
Ozone (1-hour)	0.09 ppm for 1 hour	NA	2000[2] 2001[2] 2002[2] 2003[2] 2004[2]	0.10 ppm 0.10 0.09 0.11 0.12	1/NA 1/NA 0/NA 4/NA 11/NA
Ozone[4] (8-hour)	0.07 ppm for 8 hours	0.08 ppm for 8 hours	2000[2] 2001[2] 2002[2] 2003[2] 2004[2]	0.09 ppm 0.07 0.07 0.08 0.09	NA/2 NA/2 NA/1 NA/8 NA/4
Carbon Monoxide (8-hour)	9.0 ppm for 8 hour	9.0 ppm for 8 hour	2000[2] 2001[2] 2002[2] 2003[2] 2004[2]	3.13ppm 2.36 1.88 1.64 1.49	0/0 0/0 0/0 0/0 0/0
Nitrogen Dioxide (1-hour)	0.25 ppm for 1 hour	0.053 ppm annual average	2000[3] 2001[3] 2002[3] 2003[3] 2004[3]	0.11 ppm 0.08 0.11 0.11 0.10	0/NA 0/NA 0/NA 0/NA 0/NA
PM_{10}	50 µg/m^3 for 24 hours	150 µg/m^3 for 24 hours	2000[2] 2001[2] 2002[2] 2003[2] 2004[2]	98.0 µg/m 60.0 80.0 63.0 46.0	2/0 3/0 5/0 0/0 0/0
$PM_{2.5}$	65 µg/m^3 for 24 hours	65 µg/m^3 for 24 hours	2000[2] 2001[2] 2002[2] 2003[2] 2004[2]	57.6µg/m 53.4 58.5 50.6 49.4	NA /0 NA /1 NA /0 NA /3 NA /0

ppm = parts per million
µg/m^3 = micrograms per cubic meter
NA = not applicable, due to the absence of an applicable threshold
PM_{10} = particulate matter 10 microns in diameter or less
$PM_{2.5}$ = particulate matter 2.5 microns in diameter or less

1 Maximum concentration is measured over the same period as the California Standard.
2 Measurement taken at the Mission Viejo Monitoring Station located at 26081 Via Pera, Mission Viejo, California 92691.
3 Measurements taken at the Costa Mesa Monitoring Station located at 2850 Mesa Verde Drive East, Costa Mesa, California 92626.
4 The 8-hour standards were not established until April 28, 2005; therefore no state exceedences were recorded.

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

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% of all CO emissions. At high concentrations, CO can reduce the oxygen-carrying capacity of the blood and cause headaches, dizziness, unconsciousness, and death. State and Federal standards were not exceeded in between 2000 and 2004 at the Mission Viejo Monitoring Station. For CO, the Basin is designated as a non-attainment area under Federal standards, and an attainment area under State standards.

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_x 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_x 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. The entire Basin is designated as an attainment area for State and Federal NO_2 standards.

From 2000 through 2004 at the Costa Mesa Monitoring Station, there were no exceedances of the State standard of 0.25 ppm over 1 hour. For NO_x, the Basin is designated as 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 (mg/m^3) averaged over 24 hours; this standard was exceeded 10 days at the Mission Viejo Station between 2000 and 2004. The Federal standard for PM_{10} is 150 mg/m^3 averaged over 24 hours.

For $PM_{2.5}$, the State and Federal standard is 65 $\mu g/m^3$ over 24 hours. At the Mission Viejo station, there were 4 exceedances in 2004.

Sulfur Dioxide and Lead. 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. Lead is a metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. Sulfur dioxide is often used interchangeably with sulfur oxides (SO_X) and lead (Pb).

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. Because ambient concentrations of lead have decreased in the Basin, the SCAQMD no longer monitors the presence of lead in ambient air.

Toxic Air Contaminants. According to Section 39655 of the California H&SC, a TAC is "an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health." In addition, 189 substances that have been listed as Federal hazardous air pollutants (HAPs), pursuant to Section 7412 of Title 42 of the United States Code, are TACs under the State's air toxics program, pursuant to Section 39657 (b) of the H&SC.

TACs can cause various cancers, depending on the particular chemicals, their type, and the duration of exposure. Additionally, some TACs may cause other health effects over the short or long term. The ten TACs posing the greatest health risk in California are acetaldehyde, benzene, 1-3 butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchlorethylene, and diesel particulate matter.

Hydrocarbons: Reactive Organic Gases (ROGs) and Volatile Organic Compound (VOCs). Hydrocarbons are organic gases that are formed solely of hydrogen and carbon. There are several subsets of organic gases, including reactive organic gases (ROGs) and volatile organic compounds (VOCs). ROGs comprise all hydrocarbons except those exempted by the CARB; therefore, ROGs are a set of organic gases based on State rules and regulations. VOCs are similar to ROGs in that they are all organic gases, but Federal law exempts some ROGs. VOCs are therefore a set of organic gases based on Federal rules and regulations. Both ROGs and VOCs are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels. The major sources of hydrocarbons are combustion engine exhaust, oil refineries, and oil-fueled power plants; other common sources are petroleum fuels, solvents, dry cleaning solutions, and paint (via evaporation).

The health effects of hydrocarbons result from the formation of ozone and its related health effects. High levels of hydrocarbons in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons are considered TACs (“air toxics”). There are no separate health standards for VOCs, although some VOCs are also toxic; an example is benzene, which is both a VOC and a carcinogen.

4.6.1.7 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. Land uses considered sensitive receptors are residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. Because of the recreational nature of the Harbor, the Project site is considered a sensitive receptor. Table 4.6-4 (Sensitive Receptors) lists the sensitive receptors near or within the Project site.

Table 4.6-4
SENSITIVE RECEPTORS NEAR OR WITHIN PROJECT SITE

Sensitive Receptor	Name	Distance from Project Site (miles)	Direction from Project Site
Residential	(Not applicable)	0.4 – 1.0	North
Schools	Youth and Group Facility*		
	Ocean Institute*		
	R. H. Dana Elementary School	0.4	West
	Dana Hills High School	1.0	North
Parks	Lantern Bay County Park	0.1	North
	Heritage Park	0.1	North
	Harbor Point Park	0.2	West
	Headlands Conservation Park	0.25	West
	Hilltop Park and Greenbelt Linkages	0.25	West
	Del Obispo Park	0.3	East
	Crystal Knoll Cove Park	0.3	North
	La Plaza Park	0.3	North
	Shipwreck Park	0.35	North
	Sea View Park	0.35	North
	Strand Vista Park	0.5	West
	Salt Creek Beach Park	0.7	Northwest
	Sea Terrace Community Park	0.8	Northwest
	Community Gardens Park	0.8	North
	Stonehill/Selva Park	0.8	North
	Beach Park	0.8	East

* Indicates sensitive receptor located within the Project site.
Source: Yahoo, www.mapquest.com, July 21, 2005.

4.6.1.8 EXISTING EMISSIONS IN PROJECT AREA

HARBORWIDE EMISSIONS

Mobile Source Emissions

Mobile sources are emissions from motor vehicles, including tailpipe and evaporative emissions. Depending upon the pollutant being discussed, the potential air quality impact may be of either regional or local concern. For example, ROGs, NO_X, and PM_{10} are all pollutants of regional concern (NO_X and ROG react with sunlight to form

O_3 [photochemical smog], and PM_{10} is readily transported by wind currents). However, CO tends to be a localized pollutant, dispersing rapidly at the source.

Existing vehicle emissions have been estimated using the URBEMIS2002 computer model to establish an existing baseline and identify the percent increase of Project-related emissions. This model predicts ROGs, CO, NO_X, and PM_{10} emissions from motor vehicle traffic associated with the existing land uses (recreational, commercial/retail, and sporting and commercial boating). This model estimates vehicular traffic emissions that are generated from trips to and from these combined uses. Table 4.6-5 (Existing Harborwide Operational Air Emissions) provides the results of the URBEMIS model. Existing unmitigated mobile source emissions are as follows: 157.94 pounds per day (lbs/day) of ROGs; 142.66lbs/day of NO_X; 1,364.06 lbs/day of CO; and 106.67 lbs/day of PM_{10}.

Table 4.6-5
EXISTING HARBORWIDE OPERATIONAL AIR EMISSIONS

Emission Source	Unmitigated Emissions (lbs/day)			
	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO_X)	Carbon Monoxide (CO)	Particulate Matter (≤10 microns (PM_{10})
Mobile Source Emissions	157.94	142.66	1,364.06	106.67
Area Source Emissions	4.7	39.1	44.5	0.11
Total Emissions	162.60	181.75	1,408.56	106.78
Refer to the worksheets in Appendix D (Air Quality Data) for detailed assumptions.				
Source: Modeling performed utilizing the URBEMIS2002.				

Area Source Emissions

Area source emissions are stationary source emissions generated by the demand for electrical energy and natural gas consumption. Area source emissions from existing facilities are as follows: 4.7 lbs/day of ROGs; 39.1 lbs/day of NO_X; 44.5 lbs/day of CO; and 0.11 lbs/day of PM_{10}.

Total Operational Emissions

As indicated in Table 4.6-5, combined area source and mobile emissions (unmitigated) from existing facilities at the Harbor total 162.60 lbs/day of ROGs; 181.75 lbs/day of NO_X; 1,408.56 lbs/day of CO; and 106.78 lbs/day of PM_{10}.

COMMERCIAL CORE EMISSIONS

Emissions for the existing Commercial Core, which will include all land uses within Planning Areas 1 and 2, have also been quantified using the URBEMIS2002 model, shown in Table 4.6-6 (Existing Commercial Core Operational Air Emissions) below. The current emissions will result from mobile and area source emissions, as described in the above discussion of Harborwide conditions. Total area source and mobile source emissions (unmitigated) for the Commercial Core are as follows:

57.34 lbs/day of ROGs; 65.01 lbs/day of NO_X; 592.43 lbs/day of CO; and 44.94 lbs/day of PM_{10}.

Table 4.6-6
EXISTING COMMERCIAL CORE OPERATIONAL AIR EMISSIONS

Emission Source	Unmitigated Emissions (pounds/day)			
	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO_X)	Carbon Monoxide (CO)	Particulate Matter ($\leq$10 microns) (PM_{10})
Mobile Source Emissions	56.18	61.01	583.63	44.91
Area Source Emissions	1.16	4.0	8.8	0.03
Total Emissions	57.34	65.01	592.43	44.94
Refer to the worksheets in Appendix D (Air Quality Data) for detailed assumptions.				
Source: Modeling performed utilizing the URBEMIS2002.				

4.6.2 METHODOLOGY

The following models and guidelines are used as tools to create the analytical basis for the impact analysis. The tools are discussed below.

4.6.2.1 SCAQMD CEQA AIR QUALITY HANDBOOK

The *SCAQMD CEQA Handbook* (*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 the *Air Quality Analysis Guidance Handbook* to replace the CEQA Air Quality Handbook approved by the AQMD Governing Board in 1993. Therefore, in addition to the *Handbook*, the analysis for this Project utilized the most recent information provided by the SCAQMD website as well as consulting with the air district.

Per the *Handbook,* short-term (construction) and long-term (operational) emissions from both mobile and stationary sources resulting from the proposed Project were analyzed and compared to the air district's standards for criteria pollutants.

4.6.2.2 URBEMIS 2002

Emissions were estimated using the approach included in the URBEMIS model combined with emission factors developed by the CARB and the SCAQMD. The URBEMIS model is used to calculate construction and operational emissions associated with land development projects and includes EPA, SCAQMD, and CARB emission factors embedded within it. URBEMIS was developed under the guidance of several California air districts and is available from the SCAQMD's website.
URBEMIS 2002 operational emissions are comprised of two separate sources, area sources (i.e., emissions from space heating, landscape maintenance) and mobile

sources. These emissions are calculated for the build out period and take into account future fleet mixes and emission controls.

URBEMIS 2002 was developed to provide meaningful analysis of both short and long term impacts, and to encourage Mitigation Measures during project planning. Discrete URBEMIS 2002 analysis is limited to annual periods. URBEMIS 2002 uses a simplified set of emission factors to estimate impacts separately for predetermined construction periods and for operational periods as independent events and does not factor in: small discrete periods of project overlap, incremental periods smaller than one year, individual build out rates for each particular element of construction, schedule utilization of individual pieces of equipment, pro-ration for occupancy rate, retrofit technology over the life of equipment, pollutant reactivity or pollutant transport.

Where site specific or project specific data was available, URBEMIS 2002 factors were modified to fit with the information. Where little or no information was available for a project, default values were selected. For the cumulative analysis, air emissions that occur in the Basin were utilized.

4.6.2.3 CALINE-4 AIR QUALITY MODEL

CALINE-4 is an offsite consequence model used in conjunction with traffic related information. This program allows microscale CO concentrations to be estimated along each roadway corridor or near intersections. This model is designed to identify localized concentrations of carbon monoxide, often termed “hot spots”. The *Handbook* requires that a CO hotspot analysis be performed if the results of the traffic study show a reduction in level of service to “E” or “F” or worsen an existing level of service “C” or “D”. A Hotspot analysis provides an estimate of localized concentration (i.e., micrograms per cubic meter) of CO related to mobile sources. This model is used for cumulative traffic related impacts.

4.6.3 SIGNIFICANCE CRITERIA

4.6.3.1 CEQA GUIDELINES

Appendix G of the *CEQA Guidelines* (as amended July 22, 2003) includes questions relating to air quality impacts. Accordingly, a project may create a significant environmental impact if it will:

- Conflict with or obstruct implementation of the applicable air quality plan; refer to Impact Statement 4.6-2 (Long-Term Operational Emissions);
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation; refer to Impact Statement 4.6-2 (Long-Term [Operational] Emissions);
- 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); refer to Impact Statements 4.6-

1 (Short-Term [Construction] Air Emissions) and 4.6-2 (Long- Term [Operational] Emissions);

- Expose sensitive receptors to substantial pollutant concentrations; refer to Impact Statement 4.6-2 (Long-Term [Operational] Emissions); and/or

- Creation of objectionable odors affecting a substantial number of people; refer to Section 7 (Effects Found Not To Be Significant).

4.6.3.2 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 will 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; or

- Delay timely attainment of any air quality standard or any required interim emission reductions or other milestones of any Federal attainment plan.

The *SCAQMD CEQA 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, ultimately the lead agency determines the thresholds of significance for impacts.[2] If the project proposes development in excess of the established thresholds, as illustrated in Table 4.6-7 (SCAQMD Air Emission Thresholds), a significant air quality impact may occur and additional analysis is warranted to fully assess the significance of impacts.

Table 4.6-7
SCAQMD AIR EMISSIONS THRESHOLDS

Phase	Pollutant (lbs/day)			
	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO_X)	Carbon Monoxide (CO)	Particulate Matter (≤10 microns) (PM_{10})
Construction	75	100	550	150
Operational	55	55	550	150

Source: SCAQMD *CEQA Handbook,* Page 6-1, April 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 will be considered to have a significant local

[2] SCAQMD, *AQMD Air Quality Analysis Guidance Handbook*, Page 6-1, April 1993.

impact. If ambient levels already exceed a state or Federal standard, then project emissions will 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 4.6-8 (Federal and State Carbon Monoxide Standards).

Table 4.6-8
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.

4.6.4 PROJECT IMPACTS

4.6.4.1 SHORT-TERM (CONSTRUCTION) AIR EMISSIONS

4.6-1 *Temporary construction-related dust and vehicle emissions will occur during site preparation and Project construction. Despite implementation of Mitigation Measures (MM) and Project Design Features (PDFs), such as limitations on construction hours and adherence to SCAQMD Rules 402 and 403 (which require watering of inactive and perimeter areas, track-out requirements, etc.) impacts, although minimized, will not be at less than significant levels. As illustrated within the analysis, under Table 4.6-9, Mitigation Measures will reduce PM_{10} emissions from 16.05 pounds per day(lbs/day) to 4.14 lbs/day. NO_x emissions will not be reduced to less than significant levels. Construction emissions are predicted to exceed SCAQMD thresholds for NO_X, resulting in a significant and unavoidable impact.*

HARBORWIDE

Short-term air quality impacts are predicted to occur during grading and construction operations associated with the implementation of the proposed Harborwide improvements. Short-term air quality analysis considers cumulative construction emissions of the activities associated with each improvement within the Project areas. Temporary air emissions will result from the following activities:

- Particulate (fugitive dust) emissions from the proposed grading for the parking lot and building construction; and

- Exhaust emissions from the construction equipment, the motor vehicles of the construction crew, the use of off-site areas for boat storage and employee parking, and traffic delays in accessing parking lots.

Potential odors could arise from the diesel construction equipment used on-site, as well as from architectural coatings and asphalt off-gassing. Potential odors

generated during construction operations will be temporary and are not considered to be an impact. Emissions produced during grading and construction activities are short-term, as they will exist only during construction.

Fugitive Dust Emissions

Construction activities are a source of fugitive dust (PM_{10}) emissions that may have a substantial, temporary impact on local air quality. In addition, fugitive dust may be a nuisance to those living and working in the Project vicinity. Fugitive dust emissions are associated with land clearing, ground excavation, cut-and-fill operations, and truck travel on unpaved roadways (including demolition as well as construction activities). Dust emissions also vary substantially from day to day, depending on the level of activity, the specific operations, and weather conditions.

Fugitive dust from grading and construction is expected to be short-term and will cease following completion of the Harborwide 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 (larger than 10 microns) 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. As previously discussed, PM_{10} poses a serious health hazard, alone or in combination with other pollutants. Implementation of MM 4.6-1 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.), will reduce impacts of PM_{10} fugitive dust. As shown in Table 4.6-9 (Harborwide Construction Air Emissions), impacts associated with PM_{10} are anticipated to be below the SCAQMD threshold, and therefore will 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 4.6-8 (Harborwide Construction Emissions). In addition, the proposed Project shall implement MM 4.6-4 which states that all architectural coatings for proposed Project structures will comply with SCAQMD Regulation XI, Rule 1113 – Architectural Coating, which specifies painting practices and regulates the ROG content of paint. ROG emissions will be a less than significant impact.

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 Harborwide improvements will require the export of 15,000 cubic yards of soil. Emitted pollutants will include CO, ROGs, NO_X, and PM_{10}.

Although emissions from motor vehicles will be fairly minor, construction equipment exhaust will cause an exceedance of the SCAQMD's NO_x thresholds, leading to a significant impact.

Table 4.6-9
HARBORWIDE CONSTRUCTION AIR EMISSIONS

Emissions Source	Pollutant (lbs/day)[1]			
	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO_X)	Carbon Monoxide (CO)	Particulate Matter (≤10 microns) (PM_{10})
Year 1				
Unmitigated Construction Emissions	11.87	69.37	101.00	16.05
Mitigated Emissions[2]	11.87	69.37	101.00	4.14
SCAQMD Threshold	*75*	*100*	*550*	*150*
Threshold Exceeded?	No	No	No	No
Year 2				
Unmitigated Construction Emissions	18.81	110.82	161.92	4.14
Mitigated Emissions[2]	18.81	110.82	161.92	4.14
SCAQMD Threshold	*75*	*100*	*550*	*150*
Threshold Exceeded?	No	Yes	No	No

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 D (Air Quality Data) for assumptions used in this analysis, including quantified emissions reduction by Standard Conditions of Approval (SCAs). 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.

Total Daily Construction Emissions

Harborwide improvements are those within Planning Areas 3 to 12. They will include the development and/or reconstruction of the Harbor Patrol facility, the Youth and Group facility, the yacht clubs, the Beach House restaurant, and construction of a new hotel. The construction of the Harborwide improvements is expected to begin in 2012, after the development of the Commercial Core, and will be completed prior to 2030. Individual projects will be implemented as funding is identified for each. As part of the Project Design Features (PDFs) 4.6-3, the project will be phased to minimize the size of area being impacted by construction.

In accordance with SCAQMD guidelines, URBEMIS2002 was utilized to model construction emissions for ROGs, NO_X, CO, and PM_{10}. Since construction could span up to 18 years and the URBEMIS2002 model is limited to a five-year span, it has been assumed that the greatest emissions will be generated within the first stages of development, during site grading and demolition activities. Table 4.6-9 outlines the greatest amount of daily ROGs, NO_x, CO, and PM_{10} emissions from construction of the Harborwide improvements.

As illustrated in Table 4.6-9, construction emissions associated with the Harborwide improvements will 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 stabilizer to the Project area. Mitigation measures inputted within the URBEMIS2002 model allow for certain reduction credits and result in a decrease of pollutant emissions. Reduction credits are based upon studies developed by CARB, the SCAQMD and other air quality management districts throughout California and were programmed within the URBEMIS2002 model. As illustrated in Table 4.6-9, the Mitigation Measures provide a reduction in PM_{10} emissions. The applied Mitigation Measures will not provide reductions to pollutants such as NO_x, which will therefore result in an exceedance of the SCAQMD threshold. The proposed Project shall comply with MM 4.6-1 through 4.6-5, which specifies compliance with SCAQMD rules and regulations. The Mitigation Measures listed below also require a construction management plan to minimize impacts to the Project vicinity. However, it is anticipated that NO_x emissions will exceed the SCAQMD thresholds and therefore, this will result in a significant and unavoidable impact.

COMMERCIAL CORE

Similar to the construction impacts associated with the Harborwide improvements, air quality impacts are predicted to occur during grading and construction operations for improvements in the Commercial Core. The construction-related impacts include:

- Particulate (fugitive dust) emissions from the clearing and grading activities for the remodel/construction of new restaurants and retail shops, the resurfacing of parking lots, and the construction of the boat storage facility; and

- Exhaust emissions from construction equipment, the motor vehicles of the construction crew, the use of off-site areas for boat storage, and employee parking and traffic delays in accessing parking lots.

Odors from the use of diesel construction equipment are likely, as well as odors from architectural coatings and asphalt off gassing. Potential odors generated during construction operations will be temporary and are not considered to be an impact. Emissions produced during grading and construction activities are short-term, as they will exist only during construction.

Fugitive Dust Emissions

Fugitive dust from grading and construction is expected to be short-term and will cease following Commercial Core completion. As previously discussed, PM_{10} poses a serious health hazard, alone or in combination with other pollutants. With implementation of Mitigation Measures (MM) 4.6-1, which specifies adherence to SCAQMD Rule 402 and 403 (which require watering of inactive and perimeter areas, track out requirements, etc.), will reduce impacts from PM_{10} fugitive dust. Other standard Mitigation Measures as listed in MM 4.6-2 through 4.6-5, require obtaining the proper permits from the County prior to performing any grading activities. The Project shall include for example a construction contract specifying instructions to be

carried out by the construction manager with all measures to minimize emissions by heavy equipment. With the incorporation of Mitigation Measures, impacts regarding fugitive dust are anticipated to 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 Commercial Core project will require the export of approximately 15,000 cubic yards of soil. Emitted pollutants will include CO, ROG, NO_X, and PM_{10}.

Although emissions from motor vehicles will be fairly minor, construction equipment exhaust will cause an exceedance of the SCAQMD's NO_x thresholds, leading to a significant impact.

Total Daily Construction Emissions

Construction of the proposed Commercial Core Project components will occur within Planning Areas 1 and 2. The construction of the Commercial Core is expected to begin in 2006. The total grading for the Project is estimated to be approximately 100,000 cubic yards. Construction-related air impacts in the Commercial Core are anticipated to occur over an approximate 36-month-long schedule. Refer to Section 3 (Project Description) for a detailed discussion of project phasing.

Table 4.6-10 (Commercial Core Construction Air Emissions) outlines the daily Commercial Core-related ROGs, NO_x, CO, and PM_{10} emissions from site grading and construction equipment. Exhaust emissions during Project construction will vary from day to day, as construction activity levels will change. Construction of the Commercial Core will occur in three separate phases, which will minimize the amount of surface disruption and therefore minimize air emissions. The greatest amount of emissions will occur during demolition of buildings and grading activities.

As illustrated in Table 4.6-10, construction emissions associated with the Commercial Core exceed SCAQMD thresholds for NO_X resulting in a significant impact. The Mitigation Measures incorporated for the Harborwide Project will also apply to the construction of the Commercial Core. Similar to the Harborwide construction impacts, the construction of the Commercial Core will result in the exceedance of SCAQMD standards for NO_x emissions and therefore result in significant and unavoidable impacts.

Asbestos-Containing Material

Some existing structures (such as Boater Service Building 1 and the County's Operations and Maintenance Yard) will be demolished before grading and construction on the Project site will occur. Due to the age of these structures and the materials used at the time of construction, it is anticipated that several of these on-site structures have asbestos-containing materials (ACMs). Demolition of these structures requires permits from the SCAQMD. As specified in MM 4.6-9, the Project shall comply with SCAQMD Rule 1403, Asbestos Emissions From Demolition/

Renovation Activities. SCAQMD Rule 1403, Asbestos Emissions From Demolition/ Renovation Activities provides instructions on the process of handling asbestos during the demolition process[3]. Within ten days prior to the demolition of any structures with ACMs, the contractor must obtain a demolition permit from the SCAQMD. Compliance with the SCAQMD Rule 1403 is considered by the SCAQMD to reduce the emissions to a less than significant level.

Table 4.6-10
COMMERCIAL CORE CONSTRUCTION AIR EMISSIONS

Emissions Source	Pollutant (pounds/day)[1]			
	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO_X)	Carbon Monoxide (CO)	Particulate Matter (≤10 microns) (PM_{10})
Year 1				
Unmitigated Construction Emissions	25.45	167.53	208.88	87.05
Mitigated Emissions[2]	25.45	167.53	208.88	18.99
SCAQMD Threshold	*75*	*100*	*550*	*150*
Threshold Exceeded?	No	Yes	No	No
Year 2				
Unmitigated Construction Emissions	36.37	227.76	303.54	8.91
Mitigated Emissions[2]	36.37	227.76	303.54	8.91
SCAQMD Threshold	*75*	*100*	*550*	*150*
Threshold Exceeded?	No	Yes	No	No

[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 D (Air Quality Data) for assumptions used in this analysis, including quantified emissions reduction by Standard Conditions of Approval (SCAs). 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.

OFF-SITE AREAS

SCWD Parcel. Because the SCWD parcel will be used for boat storage and there will be no construction activities, there will be no short-term impacts and no significant air quality impacts are anticipated.

Selva Parking Lot. The Selva Parking Lot will be used as overflow parking and boat storage, and no construction activities will take place. Thus, no significant air quality impacts are anticipated.

[3] South Coast Air Quality Management District (SCAQMD), *Rule 1403 - Asbestos Emissions from Demolition/Renovation Activities*, Adopted October 6, 1989, Amended April 8, 1994.

4.6.4.2 LONG-TERM (OPERATIONAL) AIR EMISSIONS

4.6-2 *The proposed Project will add an overall increase in the local and regional pollutant load. However, the increase in operational air emissions as a result of the proposed Project will not exceed SCAQMD thresholds. Although impacts are not anticipated to exceed SCAQMD thresholds, Mitigation Measures (MM) and Project Design Features (PDFs) are included in the Project. Mitigation Measures and PDFs will support the reduction of any long-term operational impacts. Impacts are anticipated to be less than significant.*

HARBORWIDE

Mobile Source Emissions

Harborwide operations are analyzed for Planning Areas 1 through 12 in 2030. Mobile sources emissions will be generated from the vehicle trips generated by the uses proposed within the Project area. An estimated 4,980 total vehicle trips will be generated from the proposed Harborwide expansion (Commercial Core, Harbor Patrol Facility, Youth and Group Facility, Dana West Yacht Club facilities, restaurant, the Lighthouse, and the hotel expansion).

Area Source Emissions

Area source emissions will be generated by increased concentration of electrical energy and natural gas with the development of the proposed Project. This assumption is based on the supposition that those power plants supplying electricity to the site are utilizing fossil fuels. Electric power generating plants are distributed throughout the Basin and western United States, and their emissions contribute to the total regional pollutant burden. The primary use of natural gas by the proposed land uses will be for combustion to produce space heating, water heating, other miscellaneous heating, or air conditioning, consumer products and landscaping.

Total Operational Emissions

In order to illustrate the proposed Project's impacts to ambient air quality at full buildout, modeling was conducted to show the difference in pollutant emissions from the existing Harbor configuration to the proposed Project. The results of the modeling are presented in Table 4.6-11 (Harborwide Operational Air Emissions in 2030). As shown in Table 4.6-11, with the implementation of the proposed Project, area source emissions would decrease for NO_x, CO, and PM_{10}. The proposed Project introduces different land use designations in the Harbor, which is calculated in the URBEMIS 2002 model to generate less area source emissions. However, the change in land use also generates greater mobile source emissions compared to the existing Harbor Configuration. The Harborwide operational emissions (including development of the Commercial Core) results in a total of 29.13 lbs/day of ROG; 4.63 lbs/day of NO_X; 100.86 lbs/day of CO; and 50.76 lbs/day of PM_{10} of unmitigated emissions. The Harborwide improvements do not exceed SCAQMD thresholds, and therefore, impacts will be less than significant.

As previously mentioned, the URBEMIS2002 model allows the user to input Mitigation Measures or project features within the model. The input of mitigation and project features results in a reduction of emissions based on reduction credits determined by the CARB and various air quality districts. However, the inputs into URBEMIS2002 are fairly limited, and not all Project Design Features or Mitigation Measures incorporated into the Project were programmed into URBEMIS 2002. As indicated in Table 4.6-11, the mitigation programmed into the model did not result in significant changes to the overall emissions from the Project.

Table 4.6-11
HARBORWIDE OPERATIONAL AIR EMISSIONS IN 2030

Emission Source	Unmitigated Emissions (pounds/day)[1]				Mitigated Emissions (pounds/day)[1,2]			
	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO_X)	Carbon Monoxide (CO)	Particulate Matter (≤10 microns) (PM_{10})	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO_X)	Carbon Monoxide (CO)	Particulate Matter (≤10 microns) (PM_{10})
Area Source Emissions[3]	18.56	- 4.97	- 2.93	- 0.01	18.56	4.97	2.93	0.01
Mobile Source Emissions	10.57	9.6	103.79	50.77	8.64	7.71	83.37	41.17
Harborwide Emissions[4]	29.13	4.63	100.86	50.76	27.2	2.74	80.44	41.16
SCAQMD Thresholds	55	55	550	150	55	55	550	150
Thresholds Exceeded?	No	No	No	No	No	No	No	No

1 Refer to the worksheets in Appendix D, Air Quality Data, for detailed assumptions.
2 Mitigation includes north/south orientation of buildings to the extent feasible; provision of sidewalks, pedestrian paths, and shade trees; and provision of a mixture of uses (refer to Project Design Features [PDFs]).
3 Area source emissions decrease in the Future Year 2030 due to the difference in land use associated with the proposed Project. The Project decreases the amount of natural gas consumed on site, however, increase in mobile source emissions.
4 Harborwide emissions include the emissions associated with development of the Commercial Core.

Source: Modeling performed utilizing the URBEMIS2002.

Although the anticipated emissions from the proposed Project will not result in exceedances of SCAQMD thresholds, the Project include PDFs that promote a reduction in long-term air emissions from the Project. For example, PDF 4.6-1 shall require the use of energy conservation measures such as installing energy-efficient street lighting. PDF 4.6-2 will require that dust collection systems are used to reduce the amount of particulate matter released in the atmosphere. PDF 4.6-3 requires that a Transportation Management Plan is implemented to reduce the amount of vehicle trips in the area. Additionally, Mitigation Measures such as MM4.6-6 will require the Project to comply with Title 24 of the California Code of Regulations established by the California Energy Commission. All recommended Mitigation Measures and Project Design Features will help reduce long-term air quality impacts, and therefore is anticipated to be less than significant.

Marine-Related Emissions

Boats and ships, which range in size and application from small recreational runabouts to large ocean-going vessels, are significant contributors to air pollution in many of our nation's cities and ports. Although marine diesel engines being produced today must meet relatively modest emission requirements, they continue to emit large amounts of nitrogen oxides (NO_x) and particulate matter (PM), both of which contribute to serious public health problems.

In addition to the increased vehicle trips generated, the proposed Project will alter the location, number, and size of boat slips. The exact types of vessels that will occupy the Harbor will vary over time. In general, outboard and personal watercraft have typically used simple two-stroke technology, which contribute about 12 percent by volume of hydrocarbon (HC). EPA emission standards for outboard and personal watercraft engines (EPA 420-F-96-012) call for manufacturers to meet increasingly stringent HC levels over a nine-year phase-in period that started in 1998. By 2006, all engines produced will have 75 percent lower HC emissions. The gradually decreasing emission standard allows manufacturers to determine the best approach for achieving the targeted reductions over time by allowing them to phase in the types of control technologies in the most sensible way, while minimizing the cost impact on the consumer.[4] Because the reduction of HC emissions depends on sales of these newer technology engines, EPA expects to achieve this reduction in HC emissions from marine engines by the year 2025. EPA expects a 50 percent reduction to occur by the year 2020.[5]

Because the Harbor is currently built out, the dry stacked-boat facilities will likely not add a substantial amount of boater capacity to the Harbor, due to the anticipated reconfiguration of boat slips. As indicated in the Project Description (Section 3.0), the proposed project may result in a loss of approximately 505 total slips within the Harbor pending the results of more detailed design and engineering studies. This reduction in available slips will also lead to a reduced amount of emissions from boating activity. However, larger commercial ships may also increase as a result of the reconfiguration of slips within the Harbor. Any reconfiguration of boat slips in the west or east basin will be subject to further environmental review. Additionally, due to the reduction in HC emissions anticipated due to increasing technological improvements, impacts in this regard will be less than significant.

Planning Area 11 contains a fueling dock that includes 10 pumps for gasoline, diesel, and premixed fuel. The fuel dock was renovated in 2000, including replacing pump nozzles and dispensers and securing the underground storage tanks. If the fuel dock were relocated, it will be subject to the rules and regulations of and will require a permit transfer from the SCAQMD. Specifically, the fuel dock will be subject to SCAQMD Rule 461, Gasoline Transfer and Dispensing. Compliance with SCAQMD Rule 461 and approval of the permit transfer will ensure there will be no significant air emission impacts associated with the fuel dock.

[4] United States Environmental Protection Agency, Office of Transportation and Air Quality, *Reducing Air Pollution from Nonroad Engines*, November 2000.

[5] United States Environmental Protection Agency, *National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating*, November 2001.

Localized CO Emissions

Local air quality is a major concern along roadways. 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 the project produces emissions levels that exceed the State or Federal AAQS (refer to Table 4.6-8). 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 will 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 4.6-12 (Future Year 2030 Traffic Level of Service [LOS]) indicates the V/C ratio and LOS for intersections that could potentially lead to CO hotspots. As shown in Table 4.6-12, only one intersection, Del Obispo and Stonehill Drive, during weekday operation will require CO modeling. Additionally, the intersections listed in Table 4.6-12 show either no change or improvements in LOS.

Table 4.6-12
FUTURE YEAR 2030 LEVEL OF SERVICE (LOS)

Intersection	Forecast Year 2030			
	Without Project		With Project	
	AM Peak Hour (VC-LOS)	PM Peak Hour (VC-LOS)	AM Peak Hour (VC-LOS)	PM Peak Hour (VC-LOS)
Weekday				
Del Obispo Street/Stonehill Drive	0.831 – D	0.850 – D	0.836 – D	0.858 – D
Del Obispo Street/Pacific Coast Highway	0.826 – D	1.019 – F	0.645 – B	0.857 – D
Camino Capistrano/Stonehill Drive	0.734 – C	0.885 – D	0.738 – C	0.885 – D
Weekend				
Del Obispo Street/Pacific Coast Highway	0.957 – E	0.867 – D	0.825 – D	0.764 – C
Camino Capistrano/Stonehill Drive	1.093 – F	1.066 – F	1.093 – F	1.066 – F

Boldface type indicates intersection that require CO hotspot modeling, per the *SCAQMD Guidelines*.

Table 4.6-13 (Year 2030 Harborwide Carbon Monoxide Concentrations) indicates the results from the CO modeling analysis. The analysis provides a worst-case scenario. Intersection turning movements are based on data supplied by the Project Traffic and Parking Analysis. Because the p.m. peak hour results in higher volume-to-capacity ratio (i.e., worse LOS) during the p.m. peak hour was used in the modeling process. Year 2030 projections are modeled using the existing lane configurations and do not include the improvements discussed in the traffic analysis. The projected traffic volumes were then modeled using the CALINE4 dispersion model. The resultant values were then added to an ambient concentration. For the purposes of this analysis, the ambient concentrations are taken as the most recent five-year average from the nearest monitoring station. The most recent measurements at the Mission Viejo Monitoring Station, which is the closest air monitoring station to the Project site, have not exceeded the State or Federal Standards for CO. Future ambient concentrations will be far lower than present levels, based upon expected trends and advancing technologies.[6] Additionally, because the Project site is located off the Pacific Ocean, the breeze patterns will likely disperse any pockets of CO.

The maximum Year 2030 1-hour weekday CO concentration combined with the Harborwide project is 4.3 ppm for the Del Obispo Street/Stonehill Drive intersection. The CO levels are well below the State and Federal standards of 20 ppm and 35 ppm respectively. Additionally, the maximum Year 2030 weekday 8-hour CO concentration combined with the proposed Harborwide improvements is 3.0 ppm for the Del Obispo Street/Stonehill Drive. The measured concentrations are well below the State and Federal standard of 9 ppm. Therefore, the proposed Harborwide improvements will not result in adverse CO emissions, and impacts in this regard will be less than significant.

Table 4.6-13
YEAR 2030 HARBORWIDE CARBON MONOXIDE CONCENTRATION

Intersection	Carbon Monoxide (parts per million)			
	1-Hour CO		8-Hour CO	
	1-Hour Standard[1]	Future + Harborwide	8-Hour Standard[2]	Future + Harborwide
Weekday				
Del Obispo Street/Stonehill Drive	20	4.3	9	3.0

Carbon monoxide was 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 3.9 ppm. Eight-hour concentrations are based on a persistence of 0.7 of the 1-hour concentration.

[1] The State 1-hour standard is 20 ppm; the Federal standard is 35 ppm. The most stringent standard is reflected in the table.
[2] Both the State 8-hour and Federal 8-hour standard is 9 ppm.

[6] Air & Waste Management Association, http://www.awma.org/journal/pdfs/2002/9/Eisinger.pdf, September 11, 2005.

COMMERCIAL CORE

Commercial Core Mobile Source Emissions

Buildout of the Commercial Core is anticipated to be completed by 2012. Mobile source emissions will be generated from the trips generated by the land uses within the Project area. The majority of activities will be concentrated in Planning Areas 1 and 2 and are not anticipated to substantially increase boating activities. An estimated 4,406 total vehicle trips will be generated from the Project's proposed retail, restaurants, yacht brokerage, lighthouse museum, and retail and boater service building proposed for the Commercial Core.

Commercial Core Area Source Emissions

Area source emissions will be generated due to the demand for electrical energy and natural gas consumption. The primary use of natural gas by the proposed Commercial Core will be for combustion to consumer products and landscaping.

Commercial Core Total Operational Emissions

As shown in Table 4.6-14 (Year 2012 Commercial Core Operational Air Emissions), the Commercial Core operational emissions (unmitigated) will result in a total of 39.29 lbs/day of ROGs; 40.72 lbs/day of NO_X; 375.93 lbs/day of CO; and 46.07 lbs/day of PM_{10}. Emissions as a result of the proposed Commercial Core improvements would not exceed the SCAQMD thresholds of significance. The Commercial Core will be required to comply with the Mitigation Measures and Project Design Features mentioned for the Harborwide Project that reduce air quality emissions. Therefore, impacts will be less than significant.

Table 4.6-14
YEAR 2012 COMMERCIAL CORE OPERATIONAL AIR EMISSIONS

Emission Source	Unmitigated Emissions (pounds/day)[1]				Mitigated Emissions (pounds/day)[1,2]			
	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO_X)	Carbon Monoxide (CO)	Particulate Matter (≤10 microns) (PM_{10})	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO_X)	Carbon Monoxide (CO)	Particulate Matter (≤10 microns) (PM_{10})
Area Source Emissions	2.16	0.45	1.62	0.0	2.16	0.45	1.62	0.0
Mobile Source Emissions	37.13	40.27	374.31	46.07	20.27	18.08	167.22	21.57
Commercial Core Emissions	39.29	40.72	375.93	46.07	22.43	18.53	168.84	21.57
SCAQMD Thresholds[2]	55	55	550	150	55	55	550	150
Thresholds Exceeded?	No	No	No	No	No	No	No	No

1 Refer to the worksheets in Appendix D (Air Quality Data) for detailed assumptions.
2 Mitigation includes orientation of buildings north/south to the extent feasible; provision of sidewalks, pedestrian paths, and shade trees; and provision of a mixture of uses (refer to Project Design Features [PDFs]).

Source: Modeling was performed utilizing the URBEMIS2002.

Commercial Core Localized CO Emissions

Long-term impacts associated with the development of the Commercial Core were also analyzed using the SCAQMD CO hot spot analysis criteria for intersections with a LOS D or worse. The anticipated buildout of the Commercial Core is 2012, which is the year used for carbon monoxide modeling. As shown in Table 4.6-15 (Forecast Year 2012 Level of Service [LOS]), the only intersections of concern regarding CO hotpots will be the Puerto Place/Dana Point Harbor Drive intersections for weekend conditions and the Del Obispo Street/Pacific Coast Highway during weekday conditions.

Table 4.6-15
FUTURE YEAR 2012 LEVEL OF SERVICE (LOS)

Intersection	Future Year 2012			
	Without Project		With Project	
	AM Peak Hour (VC-LOS)	PM Peak Hour (VC-LOS)	AM Peak Hour (VC-LOS)	PM Peak Hour (VC-LOS)
Weekday				
Del Obispo Street/Pacific Coast Highway	0.700 – C	0.863 – D	0.706 – C	0.882 – D
Weekend				
Puerto Place/Dana Point Harbor Drive	NA – C	NA – C	NA – C	NA – E
VC = volume-to-capacity ratio; LOS = (traffic) level of service				
Boldface type indicates intersections that require CO hotspot modeling, per the *SCAQMD Guidelines*.				

The CO hotspot analysis was conducted using the same methodology used for the Harborwide improvements. Table 4.6-16 (Year 2012 Commercial Core CO Concentrations) indicates the maximum Year 2012 1-hour weekday CO concentration combined with the proposed Commercial Core is 5.2 ppm for the Del Obispo Street/Pacific Coast intersection. The maximum 1-hour weekend CO concentration combined with the proposed Commercial Core for the Puerto Place/Dana Point Harbor Drive intersection is 5.1 ppm. The CO levels are well below the State and Federal standards of 20 ppm and 35 ppm respectively. Additionally, the maximum weekday 8-hour CO concentration combined with the proposed Commercial Core is 3.6 ppm for the Del Obispo Street/Pacific Coast Highway and 3.6 as well for the Puerto Place/Dana Point Harbor Drive intersections for weekend conditions and the Del Obispo Street/Pacific Coast intersection during the weekend. The measured concentrations are well below the State and Federal standard of 9 ppm. Therefore, the proposed Commercial Core project will not result in adverse CO concentrations. Therefore, impacts will be less than significant.

OFF-SITE AREAS

SCWD Parcel. Since the SCWD parcel will be used only temporarily for boat storage, no significant long-term air quality impacts are anticipated.

Selva Parking Lot. Since the Selva Parking Lot will be used only temporarily for overflow parking, no significant long-term air quality impacts are anticipated.

Table 4.6-16
YEAR 2012 COMMERCIAL CORE CARBON MONOXIDE CONCENTRATIONS

Intersection	Carbon Monoxide (parts per million)			
	1-Hour		8-Hour	
	1-Hour Standard[1]	Future + Commercial Core	8-Hour Standard[2]	Future + Commercial Core
Weekday				
Del Obispo Street/Pacific Coast Hwy	20	5.2	9	3.6
Weekend				
Puerto Place/Dana Point Harbor Drive	20	5.1	9	3.6

Carbon monoxide was 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 3.9 ppm. Eight-hour concentrations are based on a persistence of 0.7 of the 1-hour concentration.

[1] The State 1-hour standard is 20 ppm; the Federal standard is 35 ppm. The most stringent standard is reflected in the table.
[2] Both the State 8-hour and Federal 8-hour standard is 9 ppm.

4.6.4.3 CONSISTENCY WITH REGIONAL PLANS

4.5-3 *The proposed Project is consistent with the County General Plan since the land uses would not change within the Harbor. Project Design Features (PDFs) and Mitigation Measures (MM) such as the use of energy saving lighting, shuttle services to off-site remote parking, and water taxis will be implemented to reduce operational impacts. Therefore, the proposed Project will be consistent with the AQMP and impacts will be less than significant.*

HARBORWIDE

As noted under the Significance Criteria discussion, a potentially significant impact on air quality would occur if the project would conflict with or obstruct the implementation of the applicable air quality plan. 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 Air Quality Management Plan (AQMP).

According to the South Coast Air Quality Management District CEQA Air Quality 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 the project is inconsistent, local governments need to consider project modifications or inclusion of mitigation to eliminate the inconsistency. Note that, even if a project is found consistent, it could still have a significant impact on air quality under CEQA. Consistency with the AQMP means 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 CEQA Air Quality 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 2010 or yearly increments, based on the year of project buildout and phase.

As indicated in Section 4.6.4.7, Long-Term (Operational) Impacts, the proposed Project would not result in exceedances of SCAQMD thresholds for criteria pollutants. Additionally, implementation of the proposed Project would not result in the formation of CO hotspots from the increase of LOS at study intersections. Mitigation Measures as well as Project Design Features such as the use of energy saving lighting, shuttle services to off-site remote parking, and water taxis will be implemented to reduce operational impacts. Additionally, the proposed Project would not alter the existing land use designation of the Harbor. Therefore, per the SCAQMD CEQA Handbook, the proposed Project would be consistent with the SCAQMD AQMP, resulting in a less than significant impact.

COMMERCIAL CORE

The development of the Commercial Core is considered an element of the Harborwide improvements, and therefore will also be consistent with the AQMP goals, objectives, and assumptions to achieve the Federal and State air quality standards. According to the analysis of long-term impacts, emissions related to the operation of the Commercial Core will not exceed SCAQMD thresholds of significance.

OFF-SITE AREAS

SCWD Parcel. The temporary use of the SCWD parcel lot will not conflict with AQMP goals and objectives and will not have impacts in this regard.

Selva Parking Lot. The temporary use of the Selva Parking lot will not conflict with AQMP goals and objectives and will not have impacts in this regard.

4.6.5 CUMULATIVE IMPACTS

4.6-4 *The proposed Project, in combination with other cumulative projects, will increase air emissions within the surrounding areas, thereby decreasing ambient air quality. The contribution of the proposed Project has been compared to emissions from anticipated projects within the area. The proposed Project will contribute to less than 25 percent of the anticipated emissions at full buildout. Additional Mitigation Measures are not necessary. Cumulative impacts resulting from the proposed Project will be less than significant.*

The SCAQMD classifies cumulative impacts as direct and indirect project emissions. Impacts of local pollutants are cumulatively significant when modeling shows that the

combined emissions from the Project and other existing and planned projects will exceed air quality standards.

In addition to the proposed Project, approximately 3 other projects have been identified within the Project area Doheny State Beach Preliminary General Plan, Dana Point town Center Plan, and the Dana Point Headlands Project were determined as having the potential to interact with the proposed Project to the extent that a cumulative effect may occur. Cumulative projects are located within a one-mile radius of the proposed Project boundary. A one-mile radius was used because no specific guidance is given on screening distance for criteria pollutants; however, a one-mile radius is recommended for screening HAP emissions and most odor sources.

The annual short- and long-term emissions associated with the proposed Project and cumulative projects indicated in Section 4.0 (Impact Analysis and Mitigation), will depend on the internal phasing of each project. Adherence to SCAQMD rules and regulations will alleviate potential impacts related to cumulative conditions. Emission reduction technology, strategies, and plans are constantly being developed.

According to the analysis, using a worst-case scenario, the Project will account for approximately 12 percent of ROG emissions, 16 percent NO_x emissions, 19 percent of CO emissions, and 17 percent of PM_{10}; refer to 4.6-17 (Cumulative Air Emission Totals – One-Mile Radius). The Project will not have a cumulatively significant and unavoidable impact because the project operational emissions are less than of 25 percent of the cumulative emissions total.

Table 4.6-17
CUMULATIVE AIR EMISSION TOTALS – ONE-MILE RADIUS

Emission Sources	ROGs (tons/yr)	NO_X (tons/yr)	CO (tons/yr)	PM_{10} (tons/yr)
AREA SOURCE EMISSIONS				
Cumulative Projects	3.18	2.22	2.97	0.01
Project Emissions	0.28	0.08	0.18	0.00
VEHICULAR SOURCE EMISSIONS				
Cumulative Projects	10.19	8.89	94.16	40.16
Project Emissions	1.94	2.03	19.7	7.52
Total Cumulative Emissions	13.36	11.10	97.13	40.17
Total Project Emissions	2.22	2.11	19.88	7.52
Cumulative Plus Project Emissions	17.85	13.03	105.84	43.57
Project as Percentage of Cumulative Emissions	12	16	19	17

ROG = reactive organic gases NO_X = nitrogen oxides CO = carbon monoxide PM_{10} = particulate matter $\leq$ 10 microns

Refer to Section 4.0 (Impact Analysis and Mitigation) for a complete listing of cumulative projects.

4.6.6 PROJECT DESIGN FEATURES

The proposed Project includes features that reduce or eliminate potential impacts to environmental resources. The following Project Design Features (PDFs) are specified to be implemented.

PDF 4.6-1 To reduce long-term operation emissions from area sources (by implementing energy conservation measures and by reducing motor vehicle emissions) the following measure shall be implemented:

- Install energy-efficient street lighting on the site; and
- Landscape with native or drought-resistant species to reduce water consumption and provide passive solar benefits, where feasible.

PDF 4.6-2 The design of the dry stack-boat storage buildings includes covered areas for boat maintenance, where dust collection systems will be used to reduce the amount of particulates released into the atmosphere.

PDF 4.6-3 Reduction of vehicle trips is achieved by implementing the Transportation Management Plan, including:

- Shuttle service to off-site (remote) parking areas;
- Shuttle service to regional visitor attractions and for hotel guests;
- Seasonal water taxi service;
- Visitor boat slips and dingy docks located near restaurants and retail areas; and
- Phased construction of the Revitalization Plan Improvements will minimize the size of areas subject to disruption from construction activities.

4.6.7 STANDARD CONDITIONS OF APPROVAL

The proposed Project will not require any Standard Conditions of Approval to reduce impacts regarding air quality.

4.6.8 MITIGATION MEASURES

4.6.8.1 HARBORWIDE

SHORT-TERM (CONSTRUCTION) EMISSIONS

MM 4.6-1 Prior to approval of the Project plans and specifications, the Chief Engineer or Director, DPHD, or his designee, in consultation with the Manager, RDMD/Environmental Planning, 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 South Coast Air Quality Management Districts 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 will 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.

MM 4.6-2 Prior to approval of the Project plans and specifications, the Chief Engineer or Director, DPHD, or his designee, in consultation with the Manager, RDMD/Environmental Planning, 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 County inspector will be responsible for ensuring that contractors comply with this measure during construction.

MM 4.6-3 Prior to issuance of grading permits, the County 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 Manager, RDMD/Subdivision and Grading, in consultation with the Manager, RDMD/Environmental Planning. 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.

MM 4.6-4 In compliance with SCAQMD Rule 1113, ROG emissions from architectural coatings will 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.

MM 4.6-5 Prior to the issuance of grading permits, the contractor shall include the following measures on construction plans, to the satisfaction of the Chief Engineer and the DPHD, or his designee, in consultation with the Manager, RDMD/Environmental Planning:

- 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 provide ridesharing and transit incentives for the construction crew, such as free bus passes and preferred carpool parking;
- 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 will shut off equipment when not in use.

LONG-TERM (OPERATIONAL) EMISSIONS

MM 4.6-6 In order to reduce operational energy usage and reduce energy production air emissions, the Project is required to comply with Title 24 of the California Code of Regulations established by the California Energy Commission regarding energy conservations standards.

MM 4.6-7 Prior to project plan approval, plans shall be submitted to the satisfaction of the Chief Engineer, DPHD, or his designee, in consultation with the Manager, DPHD/Environmental Planning, indicating the use of Transportation Management Plan (TMP) such as preferential parking for vanpooling/carpooling, subsidy for transit pass or vanpooling/carpooling, flextime work schedule, and bike racks shall be incorporated into the design of the Harbor. A TMP plan shall be prepared and reviewed for implementation prior to issuance of Building Permits.

CONSISTENCY WITH REGIONAL PLAN IMPACTS

No mitigation is required.

CUMULATIVE IMPACTS

No mitigation is required.

4.6.8.2 COMMERCIAL CORE

SHORT-TERM (CONSTRUCTION) EMISSIONS

MM 4.6-8 Refer to Mitigation Measures 4.6-1 through 4.6-5.

MM 4.6-9 Should asbestos be determined to be present within the existing structures of the Commercial Core, the Project shall comply with SCAQMD Rule 1403, Asbestos Emissions From Demolition/ Renovation Activities, during the demolition process.

LONG-TERM (OPERATIONAL) EMISSIONS

Refer to Mitigation Measures 4.6-6 through 4.6-7.

CONSISTENCY WITH REGIONAL PLAN IMPACTS

No mitigation is required.

CUMULATIVE IMPACTS

No mitigation is required.

4.6.8.3 OFF-SITE AREAS

No mitigation is required.

4.6.9 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Despite implementation of Project Design Features (PDFs) and Mitigation Measures, the proposed Project will result in significant and unavoidable impacts regarding construction emissions (NO_X emissions).