Air Quality Assessment For:

ONTARIO GATEWAY SPECIFIC PLAN

CITY OF ONTARIO

Prepared For:

LILBURN CORPORATION

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1.0 Existing Air Quality

1.1 Project Description

The Ontario Gateway Specific Plan project site encompasses approximately 43.3-acres. The project site is bounded by I-10 to the north and Haven Avenue to the west. The Union Pacific railroad is located to the south. The project is located in the City of Ontario. The vicinity map is presented in Exhibit 1. The project site is currently occupied by a industrial/storage facility with an approximate 200,000 square foot metal industrial building, and approximately 9,600 square feet of office space which is situated on the southern portion of the project site. The land on the northern one-third of the project site is vacant.

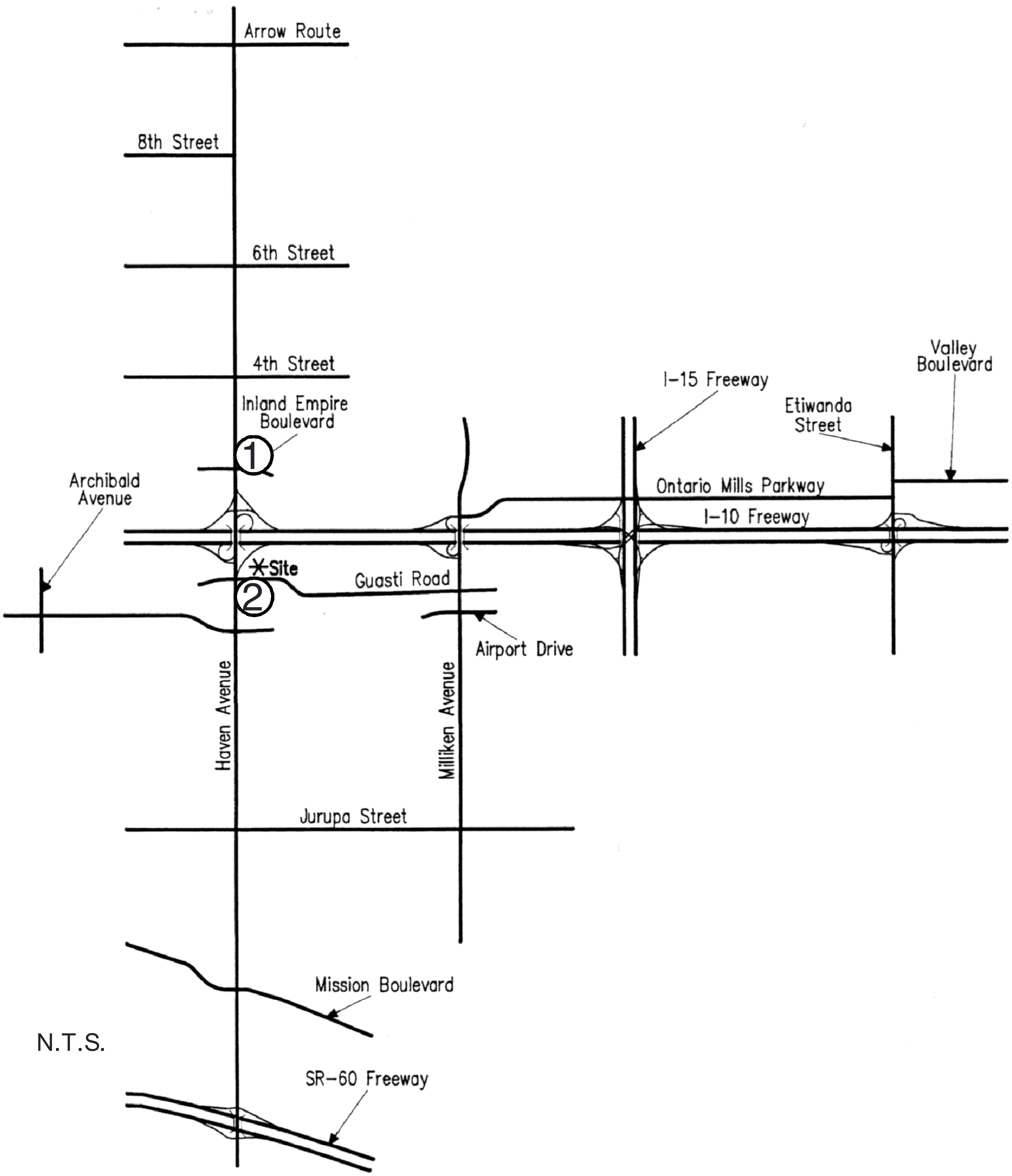
The project proposes the development of a 400-room hotel, a 200-bed hospital, 250,000 square feet of office, 75,000 square feet of medical office, and 80,000 square feet of auto dealership. A conceptual site plan is presented in Exhibit 2.

This report will analyze the potential air quality impacts associated with this project. Regional air quality impacts from construction and operation of the proposed project are analyzed. Local air quality impacts for project generated traffic are also examined. Mitigation measures to reduce air quality impacts are identified.

1.2 Local, State, and Federal Air Quality Agencies

The proposed project is located in the South Coast Air Basin (SCAB). The SCAB is comprised of parts of Los Angeles, Riverside and San Bernardino counties and all of Orange County. The basin is bounded on the west by the Pacific Ocean and surrounded on the other sides by mountains. To the north lie the San Gabriel mountains, to the north and east the San Bernardino Mountains, to the southeast the San Jacinto Mountains and to the south the Santa Ana Mountains. The basin forms a low plain and the mountains channel and confine air flow which trap air pollutants.

The primary agencies responsible for regulations to improve air quality in the SCAB are the South Coast Air Quality Management District (SCAQMD) and the California Air Resources Board (CARB). The Southern California Association of Governments (SCAG) is an important partner to the SCAQMD, as it is the designated metropolitan planning authority for the area and produces estimates of anticipated future growth and vehicular travel in the basin which are used for air quality planning. The SCAQMD sets and enforces regulations for non-vehicular sources of air pollution in the basin and works with SCAG to develop and implement Transportation Control Measures (TCM). TCM measures are intended to reduce and improve vehicular travel and associated pollutant emissions.



① **CALINE4 Modeling Receptor Locations**

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Exhibit 1

Vicinity Map

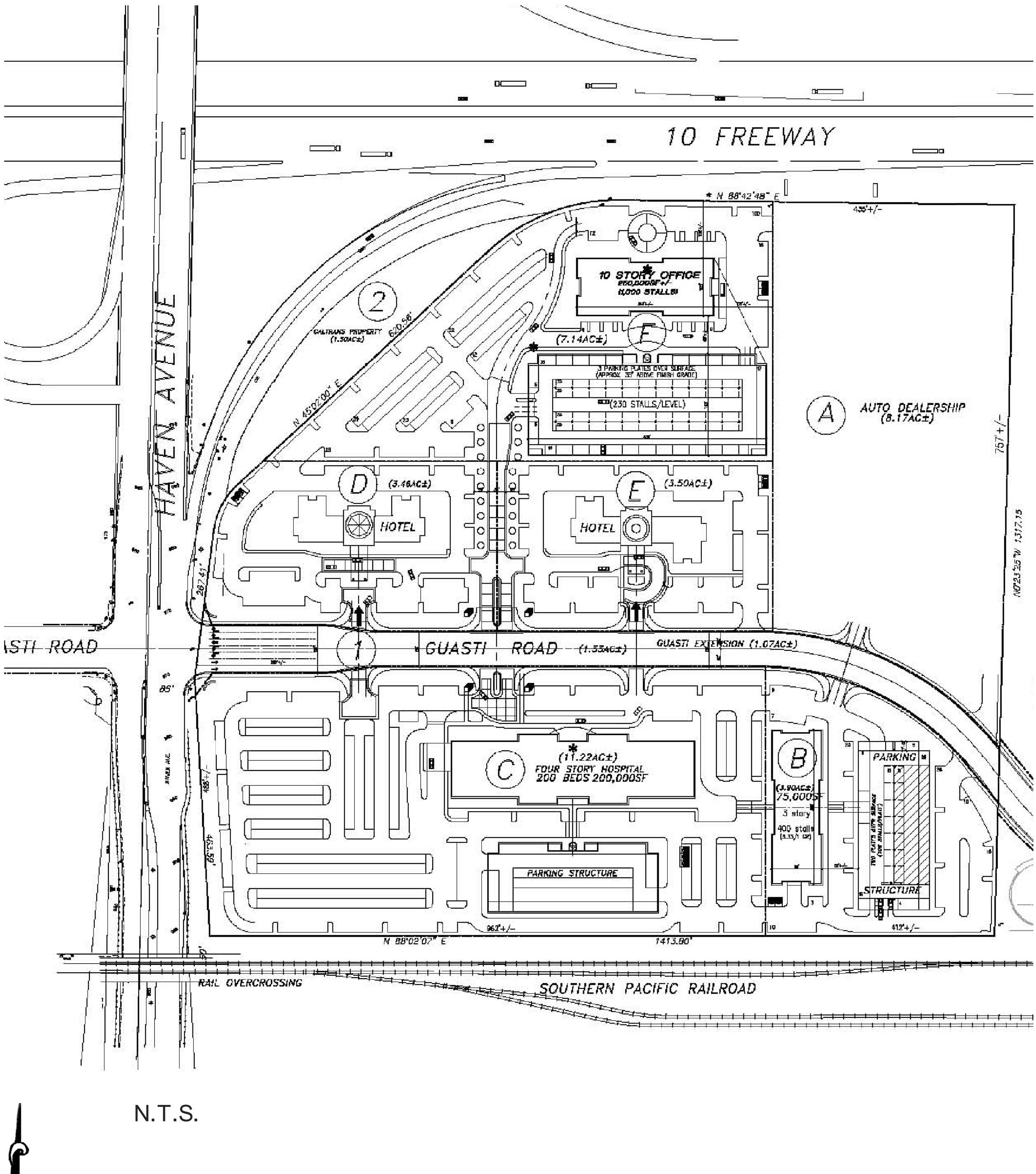

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Exhibit 2

Site Plan

CARB was established in 1967 by the California Legislature to attain and maintain healthy air quality, conduct research into the causes and solutions to air pollution, and systematically attack the serious problem caused by motor vehicles, which are the major causes of air pollution in the State. CARB sets and enforces emission standards for motor vehicles, fuels, and consumer products. It sets the health based California Ambient Air Quality Standards (CAAQS) and monitors air quality levels throughout the state. The board identifies and sets control measures for toxic air contaminants. The board also performs air quality related research, provides compliance assistance for businesses, and produces education and outreach programs and materials. CARB provides assistance for local air quality districts, such as SCAQMD.

The U.S. Environmental Protection Agency (U.S. EPA) is the primary federal agency for regulating air quality. The EPA implements the provisions of the Federal Clean Air Act (FCAA). This Act establishes national ambient air quality standards (NAAQS) that are applicable nationwide. The EPA designates areas with pollutant concentrations that do not meet the NAAQS as non-attainment areas for each criteria pollutant. States are required by the FCAA to prepare State Implementation Plans (SIP) for designated non-attainment areas. The SIP is required to demonstrate how the areas will attain the NAAQS by the prescribed deadlines and what measures will be required to attain the standards. The EPA also oversees implementation of the prescribed measures. Areas that achieve the NAAQS after a non-attainment designation are redesignated as maintenance areas and must have approved Maintenance Plans to ensure continued attainment of the NAAQS.

The CCAA required all air pollution control districts in the state to prepare a plan prior to December 31, 1994 to reduce pollutant concentrations exceeding the CAAQS and ultimately achieve the CAAQS. The districts are required to review and revise these plans every three years. The SCAQMD satisfies this requirement through the publication of an Air Quality Management Plan (AQMP). The AQMP is developed by SCAQMD and SCAG in coordination with local governments and the private sector. The AQMP is incorporated into the SIP by CARB to satisfy the FCAA requirements discussed above. The AQMP is discussed further in Section 1.5.

1.3 Criteria Pollutants and Standards

Under the Federal Clean Air Act (FCAA), the U.S. EPA has established National Ambient Air Quality Standards (NAAQS) for six major pollutants; ozone (O_3), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. These six air pollutants are often referred to as the criteria pollutants. The NAAQS are two tiered: primary, to protect public health, and secondary, to prevent degradation to the environment (i.e., impairment of visibility, damage to vegetation and property).

Under the California Clean Air Act (CCAA), the California Air Resources Board have established California Ambient Air Quality Standards (CAAQS) to protect the health and welfare of Californians. State standards have been established for the six criteria pollutants as well as four additional pollutants; visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride.

Table 1 presents the state and national ambient air quality standards. A brief explanation of each pollutant and their health effects is presented follows.

Table 1
Ambient Air Quality Standards

Pollutant	Averaging Time	State Standards[1,3]	Federal Standards[2]	
			Primary[3,5]	Secondary[3,6]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	--	--
	8 Hour	0.070 ppm (137 µg/m^3)	0.08 ppm (157 µg/m^3)	Same as Primary
Respirable Particulate Matter (PM_{10})[8]	24 Hour	50 µg/m^3	--	Same as Primary
	AAM[6]	20 µg/m^3	50 µg/m^3	Same as Primary
Fine Particulate Matter ($PM_{2.5}$)[8]	24 Hour	--	35 µg/m^3	Same as Primary
	AAM[6]	12 µg/m^3	15 µg/m^3	Same as Primary
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	None
	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	None
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	--	--
Nitrogen Dioxide (NO_2)	AAM[6]	--	0.053 ppm (100 µg/m^3)	Same as Primary
	1 Hour	0.25 ppm (470 µg/m^3)	--	--
Sulfur Dioxide (SO_2)	AAM[6]	--	0.030 ppm (80 µg/m^3)	--
	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)	--
	3 Hour	--	--	0.5 ppm (1,300 µg/m^3)
	1 Hour	0.25 ppm (655 µg/m^3)	--	--
Lead[7]	30 day Avg.	1.5 µg/m^3	--	--
	Calendar Quarter	--	1.5 µg/m^3	Same as Primary
Visibility Reducing Particles	8 hour	Extinction coefficient of 0.23 per km -- visibility ≥ 10 miles (0.07 per km -- ≥30 miles for Lake Tahoe)	**No Federal Standards**	
Sulfates	24 Hour	25 µg/m^3		
Hydorgen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)		
Vinyl Chloride[7]	24 Hour	0.01 ppm (26 µg/m^3)		

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, PM_{10}, $PM_{2.5}$, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded.
2. National standards (other than ozone, $PM_{10,}$ $PM_{2.5}$,, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24 hour standard is attained when the expected number of days per calender year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. 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 U.S. EPA for further clarification and current federal policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25˚ C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25˚ C and a reference pressure of 760 torr; 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. Annual Arithmetic Mean
7. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
8. On September 21, 2006 EPA published a final rule revoking the annual 150 µg/m^3 PM_{10} standard and lowering the 24-hour $PM_{2.5}$ standard from 65 µg/m^3. Attainment designations are to be issued in December, 2009 with attainment plans due April, 2010.

-- No Standard

1.3.1 Ozone (O_3)

Ozone is a secondary pollutant; it is not directly emitted. Ozone is the result of chemical reactions between volatile organic compounds (VOC) (also referred to as reactive organic gasses (ROG)) and nitrogen oxides (NO_x), which occur only in the presence of bright sunlight. Sunlight and hot weather cause ground-level ozone to form in the air. As a result, it is known as a summertime air pollutant. Ground-level ozone is the primary constituent of smog. Because ozone is formed in the atmosphere, high concentrations can occur in areas well away from sources of its constituent pollutants.

People with lung disease, children, older adults, and people who are active can be affected when ozone levels are unhealthy. Numerous scientific studies have linked ground-level ozone exposure to a variety of problems, including:

- lung irritation that can cause inflammation much like a sunburn;
- wheezing, coughing, pain when taking a deep breathe, and breathing difficulties during exercise or outdoor activities;
- permanent lung damage to those with repeated exposure to ozone pollution; and
- aggravated asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses like pneumonia and bronchitis.

Ground-level ozone can have detrimental effects on plants and ecosystems. These effects include:

- interfering with the ability of sensitive plants to produce and store food, making them more susceptible to certain diseases, insects, other pollutants, competition and harsh weather;
- damaging the leaves of trees and other plants, negatively impacting the appearance of urban vegetation, national parks, and recreation areas; and
- reducing crop yields and forest growth, potentially impacting species diversity in ecosystems.

1.3.2 Particulate Matter (PM_{10} & $PM_{2.5}$)

Particulate matter includes both aerosols and solid particles of a wide range of size and composition. Of particular concern are those particles smaller than 10 microns in size (PM_{10}) and smaller than or equal to 2.5 microns ($PM_{2.5}$). The size of the particulate matter is referenced to the aerodynamic diameter of the particulate. Smaller particulates are of greater concern because they can penetrate deeper into the lungs than large particles.

The principal health effect of airborne particulate matter is on the respiratory system. Short term exposures to high $PM_{2.5}$ levels are associated with premature mortality and increased hospital admissions and emergency room visits. Long term exposures to high $PM_{2.5}$ levels are associated with premature mortality and development of chronic respiratory disease. Short-term exposure to high PM_{10} levels are associated with hospital admissions for cardiopulmonary diseases, increased respiratory symptoms and possible premature mortality. The EPA has concluded that available evidence does not suggest an association between long-term exposure to PM_{10} at current ambient levels and health effects.

$PM_{2.5}$ is directly emitted in combustion exhaust and formed from atmospheric reactions between of various gaseous pollutants including nitrogen oxides (NO_x), sulfur oxides (SO_x), and volatile organic compounds (VOC). PM_{10} is generally emitted directly as a result of mechanical processes that crush or grind larger particles or the re suspension of dusts most typically through construction activities and vehicular travels. $PM_{2.5}$ can remain suspended in the atmosphere for days and weeks and can be transported long distances. PM_{10} generally settle out of the atmosphere rapidly and are not readily transported over large distances.

1.3.3 Carbon Monoxide (CO)

Carbon monoxide is a colorless and odorless gas, which in the urban environment, is associated primarily with the incomplete combustion of fossil fuels in motor vehicles. Carbon monoxide combines with hemoglobin in the bloodstream and reduces the amount of oxygen that can be circulated through the body. High carbon monoxide concentrations can lead to headaches, aggravation of cardiovascular disease, and impairment of central nervous system functions. Carbon monoxide concentrations can vary greatly over comparatively short distances. Relatively high concentrations are typically found near crowded intersections, along heavily used roadways carrying slow-moving traffic, and at or near ground level. Even under the most severe meteorological and traffic conditions, high concentrations of carbon monoxide are limited to locations within a relatively short distance (i.e., up to 600 feet or 185 meters) of heavily traveled roadways. Overall carbon monoxide emissions are decreasing as a result of the Federal Motor Vehicle Control Program, which has mandated increasingly lower emission levels for vehicles manufactured since 1973.

1.3.4 Nitrogen Dioxide (NO_2)

Nitrogen gas, normally relatively inert (unreactive), comprises about 80% of the air. At high temperatures (i.e., in the combustion process) and under certain other conditions it can combine with oxygen, forming several different gaseous compounds collectively called nitrogen oxides (NO_x). Nitric oxide (NO) and nitrogen dioxide (NO_2) are the two most important compounds. Nitric oxide is converted to nitrogen dioxide in the atmosphere. Nitrogen dioxide (NO_2) is a red-brown pungent gas. Motor vehicle emissions are the main source of NO_x in urban areas.

Nitrogen dioxide is toxic to various animals as well as to humans. Its toxicity relates to its ability to form nitric acid with water in the eye, lung, mucus membrane and skin. In animals, long-term exposure to nitrogen oxides increases susceptibility to respiratory infections lowering their resistance to such diseases as pneumonia and influenza. Laboratory studies show susceptible humans, such as asthmatics, exposed to high concentrations of NO_2 can suffer lung irritation and potentially, lung damage. Epidemiological studies have also shown associations between NO_2 concentrations and daily mortality from respiratory and cardiovascular causes and with hospital admissions for respiratory conditions.

NO_x is a combination of primarily NO and NO_2. While the NAAQS only addresses NO_2, NO and the total group of nitrogen oxides is of concern. NO and NO_2 are both precursors in the formation of ozone and secondary particulate matter as discussed in Sections 1.3.1 and 1.3.2. Because of this and that NO emissions largely convert to NO_2, NO_x emissions are typically examined when assessing potential air quality impacts.

1.3.5 Sulfur Dioxide (SO_2)

Sulfur oxides (SO_x) constitute a class of compounds of which sulfur dioxide (SO_2) and sulfur trioxide (SO_3) are of greatest importance. Ninety-five percent of pollution related SO_x emissions are in the form of SO_2. SO_x emissions are typically examined when assessing potential air quality impacts of SO_2. Combustion of fossil fuels for generation of electric power is the primary contributor of SO_x emissions. Industrial processes, such as nonferrous metal smelting, also contribute to SO_x emissions. SO_x is also formed during combustion of motor fuels. However, most of the sulfur has been removed from fuels greatly reducing SO_x emissions from vehicles.

SO_2 combines easily with water vapor, forming aerosols of sulfurous acid (H_2SO_3), a colorless, mildly corrosive liquid. This liquid may then combine with oxygen in the air, forming the even more irritating and corrosive sulfuric acid (H_2SO_4). Peak levels of SO_2 in the air can cause temporary breathing difficulty for people with asthma who are active outdoors. Longer-term exposures to high levels of SO_2 gas and particles cause respiratory illness and aggravate existing heart disease. SO_2 reacts with other chemicals in the air to form tiny sulfate particles which are measured as $PM_{2.5}$. The heath effects of $PM_{2.5}$ are discussed in Section 1.3.2.

1.3.6 Lead (Pb)

Lead is a stable compound, which persists and accumulates both in the environment and in animals. In humans, it affects the blood-forming or hematopoletic, the nervous, and the renal systems. In addition, lead has been shown to affect the normal functions of the reproductive, endocrine, hepatic, cardiovascular, immunological, and gastrointestinal systems, although there is significant individual variability in response to lead exposure. Since 1975, lead emissions have been in decline due in part to the introduction of catalyst-equipped vehicles, and decline in production of leaded gasoline. In general, an analysis of lead is limited to projects that emit significant quantities of the pollutant (i.e. lead smelters) and are not applied to transportation projects.

1.3.7 Visibility Reducing Particulates

Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt. The Statewide standard is intended to limit the frequency and severity of visibility impairment due to regional haze. A separate standard for visibility-reducing particles that is applicable only in the Lake Tahoe Air Basin is based on reduction in scenic quality.

1.3.8 Sulfates(SO_4^{2-})

Sulfates are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and / or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to sulfur dioxide (SO_2) during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features.

The ARB's sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and, due to fact that they are usually acidic, can harm ecosystems and damage materials and property.

1.3.9 Hydrogen Sulfide (H_2S)

Hydrogen sulfide (H_2S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. It can also be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation. Breathing H_2S at levels above the standard will result in exposure to a very disagreeable odor. In 1984, an ARB committee concluded that the ambient standard for H_2S is adequate to protect public health and to significantly reduce odor annoyance.

1.3.10 Vinyl Chloride (Chloroethene)

Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents.

Short-term exposure to high levels of vinyl chloride in air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure to vinyl chloride through inhalation and oral exposure causes in liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation. Vinyl chloride exposure has been shown to increase the risk of angiosarcoma, a rare form of liver cancer in humans.

1.4 South Coast Air Basin Air Quality Attainment Designations

Based on monitored air pollutant concentrations, the U.S. EPA and CARB designate areas relative to their status in attaining the NAAQS and CAAQS respectively. Table 2 lists the current attainment designations for the SCAB. For the Federal standards, the required attainment date is also shown. The Unclassified designation indicates that the air quality data for the area does not support a designation of attainment or nonattainment.

Table 2
Designations of Criteria Pollutants for the SCAB

Pollutant	Federal	State
Ozone (O_3)	Severe-17 Nonattainment (2021)	Nonattainment
Respirable Particulate Matter (PM_{10})	Serious Nonattainment (2006)	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment (2015)	Nonattainment
Carbon Monoxide (CO)	Serious Nonattainment (2000)	Attainment
Nitrogen Dioxide (NO_2)	Attainment/Maintenance (1995)	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Lead	Attainment	Attainment
Visibility Reducing Particles	n/a	Unclassified
Sulfates	n/a	Unclassified
Hydrogen Sulfide	n/a	Attainment
Vinyl Chloride	n/a	Attainment

Table 2 shows that the U.S. EPA has designated SCAB as Severe-17 non-attainment for ozone, serious non-attainment for PM_{10} and CO, non-attainment for $PM_{2.5}$, and attainment/maintenance for NO_2. The basin has been designated by the state as non-attainment for ozone, PM_{10}, and $PM_{2.5}$. For the federal designations, the qualifiers, Severe-17 and Serious, affect the required attainment dates as the federal regulations have different requirements for areas that exceed the standards by greater amounts at the time of attainment/non-attainment designation.

The SCAB is designated as in attainment of the Federal SO_2 and lead NAAQS as well as the state CO, NO_2, SO_2, lead, hydrogen sulfide, and vinyl chloride CAAQS.

In July 1997, U.S. EPA issued a new Ozone NAAQS of 0.08 ppm using an 8-hour averaging time. Implementation of this standard was delayed by several lawsuits. Attainment/non-attainment designations for the new 8-hour ozone standard were issued on April 15, 2004 and became effective on June 15, 2005. The SCAB was designated severe-17 non-attainment, which requires attainment of the Federal Standard by June 15, 2021. As a part of the designation, the EPA announced that the 1-hour ozone standard would be revoked in June of 2005. Thus, the 8-hour ozone standard attainment deadline of 2021 supercedes and replaces the previous 1-hour ozone standard attainment deadline of 2010.

The SCAQMD is requesting that U.S. EPA change the nonattainment status of the 8 hour ozone standard to extreme. This will allow the use of undefined reductions (i.e. “black box”) based on the anticipated development of new control technologies or improvement of existing technologies in the attainment plan. Further, the extreme classification could extend the attainment date by three years to 2024.

On April 28, 2005 CARB adopted an 8-hour ozone standard of 0.070 ppm. The California Office of Administrative Law approved the rulemaking and filed it with the Secretary of State on April 17, 2006. The standard became effective on May 17, 2006. California has retained the 1-hour concentration standard of 0.09 ppm. To be redesignated as attainment by the state the basin will need to achieve both the 1-hour and 8-hour Ozone standards.

The SCAB was designated as moderate non-attainment of the PM_{10} standards when the designations were initially made in 1990 with a required attainment date of 1994. In 1993, the basin was redesignated as serious non-attainment with a required attainment date of 2006 because it was apparent that the basin could not meet the PM_{10} standard by the 1994 deadline. At this time Basin has met the PM_{10} standards at all monitoring stations except the western Riverside where the annual PM_{10} standard has not been met. However, on September 21, 2006, the U.S. EPA announced that it was revoking the annual PM_{10} standard as research had indicated that there were no considerable health effects associated with long-term exposure to PM_{10}. With this change the basin is technically in attainment of the federal PM_{10} standards although the redesignation process has not yet begun.

In July 1997, U.S. EPA issued NAAQS for fine particulate matter ($PM_{2.5}$). The $PM_{2.5}$ standards include an annual standard set at 15 micrograms per cubic meter ($\mu g/m^3$), based on the three-year average of annual mean $PM_{2.5}$ concentrations and a 24-hour standard of 65 $\mu g/m^3$, based on the three-year average of the 98th percentile of 24-hour concentrations. Implementation of these standards was delayed by several lawsuits. On January 5, 2005, EPA took final action to designate attainment and nonattainment areas under the NAAQS for $PM_{2.5}$ effective April 5, 2005. The SCAB was designated as non-attainment with an attainment required as soon as possible but no later than 2010. EPA may grant attainment date extensions of up to five years in areas with more severe $PM_{2.5}$ problems and where emissions control measures are not available or feasible. It is likely that the SCAB will need this additional time to attain the standard

Note that, although there is now a $PM_{2.5}$ standard, adequate tools are not currently available to perform a detailed assessment of $PM_{2.5}$ emissions and impacts at the project level. Analysis of $PM_{2.5}$ impacts is complex because it is both directly emitted from sources, like CO, and formed in the atmosphere from reactions of other pollutants, like ozone. Further, there are no good sources for the significance thresholds for $PM_{2.5}$ emissions at this time. Until tools and methodologies are developed to assess the impacts of projects on $PM_{2.5}$ concentrations, the analysis of PM_{10} will need to be used as an indicator of potential $PM_{2.5}$ impacts.

On September 21, 2006, the U.S. EPA announced that the 24-hour $PM_{2.5}$ standard was lowered to 35 $\mu g/m^3$. Attainment/non-attainment designations for the revised $PM_{2.5}$ standard will be made by December of 2009 with an attainment date of April 2015 although an extension of up to five years could be granted by the U.S. EPA.

The Federal attainment deadline for CO was to be December 31, 2000 however the basin was granted an extension. The SCAB has not had any violations of the federal CO standards since 2003. Therefore, the SCAB has met the criteria for CO attainment. The SCAQMD formally requested the U.S. EPA to redesignate the Basin as attainment for CO. However, U.S. EPA has yet to take action on this redesignation request. The SCAB is still formally designated as a non-attainment area for CO until U.S. EPA redesignates it as an attainment area.

The federal annual NO_2 standard was met for the first time in 1992 and has not been exceeded since. The SCAB was redesignated as attainment for NO_2 in 1998. The basin will remain a maintenance/attainment area until 2018, assuming the NO_2 standard is not exceeded.

Table 2 shows that SCAB is designated as in attainment of the SO_2 and lead NAAQS as well as the state CO, NO_2, SO_2, lead, hydrogen sulfide, and vinyl chloride CAAQS. Generally, these pollutants are not considered a concern in the SCAB.

1.5 Air Quality Management Plan (AQMP)

As, discussed above the FCAA requires plans to demonstrate attainment of the NAAQS for which an area is designated as nonattainment. Further, the CCAA requires SCAQMD to revise its plan to reduce pollutant concentrations exceeding the CAAQS every three years. In the SCAB, SCAQMD and SCAG, in coordination with local governments and the private sector, develop the Air Quality Management Plan (AQMP) for the air basin to satisfy these requirements. The AQMP is the most important air management document for the basin because it provides the blueprint for meeting state and federal ambient air quality standards.

The l997 AQMP is the current Federally approved applicable air plan for Ozone. The successor 2003 AQMP was adopted locally on August 1, 2003, by the governing board of the SCAQMD. CARB adopted the plan as part of the California State Implementation Plan on October 23, 2003. The EPA adopted the mobile source emission budgets from the plan on March 25, 2004. The PM_{10} attainment plan from the 2003 AQMP received final approval on November 14, 2005 with an effective date of December 14, 2005. The EPA has not approved the ozone or CO attainment plans of the 2003 AQMP to date. For federal purposes, the 1997 AQMP with the 1999 amendments is the currently applicable ozone attainment plan. The CO attainment plan in the 1997 AQMP was approved by the EPA but only on an interim basis through 1998. Therefore, the basin does not have a federally approved CO attainment plan.

The overall control strategy for the 2003 AQMP is to meet applicable state and federal requirements and to demonstrate attainment with ambient air quality standards. The 2003 AQMP contains short- and long-term measures. These measures are included in Appendix IV-B of the AQMP.

Short-term measures propose the application of available technologies and management practices between 2005 and the year 2010. The 2003 AQMP includes 24 short-term control measures for stationary and mobile sources that are expected to be implemented within the next several years. The stationary source measures in the 2003 AQMP include measures from the 1997 AQMP and 1999 Amendment to the Ozone SIP with eleven additional new control measures. In addition, a new transportation conformity budget backstop measure is included in the 2003 AQMP.

One long-term measure for stationary sources is included in the 2003 AQMP. This control measure seeks to achieve additional VOC reductions from stationary sources. The long-term measure is made up of Tier I and Tier II components. Tier I long-term measure has an adoption date between 2005 and 2007 and implementation date between 2007 and 2009 for Tier I. Tier II has an adoption date between 2006 and 2008 and implementation date between 2008 and 2010.

To ultimately achieve ambient air quality standards, additional emission reductions will be necessary beyond the implementation of short-term measures. Long-term measures rely on the advancement of technologies and control methods that can reasonably be expected to occur between 2005 and 2010. Additional stationary source control measures are included in Appendix IV-B of the AQMP, Proposed 2003 State and Federal Strategy for the California SIP. Contingency measures are also included in Appendix IV-Section 2 of the 2003 AQMP.

The SCAQMD has published a Draft 2007 AQMP in response to the new federal $PM_{2.5}$ and 8-hour ozone standards. The plan focuses on control of Sulfur Oxides (SO_x), directly emitted $PM_{2.5}$, and nitrogen oxides (NO_x) to achieve the $PM_{2.5}$ standard. Achieving the 8-hour ozone standard builds upon the $PM_{2.5}$ attainment strategy with additional VOC reductions. Control measures proposed by the District for sources under their jurisdiction include facility modernization, energy efficiency and conservation, good management practices, market incentives/compliance flexibility, area source programs, emission growth management and mobile source programs. CARB has only developed an overview of possible control strategies for sources controlled by CARB (i.e. on-road and off-road motor vehicles and consumer products) and the District has recommended several measures for CARB to consider. The AQMP states that significant additional emission reductions are required from sources under state and federal jurisdictions to meet the standards. A final draft of the AQMP is expected to be published in January 2007 with projected adoption by the SCAQMD board in April 2007 and by CARB in May 2007. The plan is to be submitted to the U.S. EPA by June 2007.

1.6 Climate

The climate in and around the project area, as with all of Southern California, is controlled largely by the strength and position of the subtropical high pressure cell over the Pacific Ocean. It maintains moderate temperatures and comfortable humidity, and limits precipitation to a few storms during the winter "wet" season. Temperatures are normally mild, excepting the summer months, which commonly bring substantially higher temperatures. In all portions of the basin, temperatures well above 100 degrees F. have been recorded in recent years. The annual average temperature in the basin is approximately 62 degrees Fahrenheit.

Winds in the project area are usually driven by the dominant land/sea breeze circulation system. Regional wind patterns are dominated by daytime onshore sea breezes. At night the wind generally slows and reverses direction traveling towards the sea. Wind direction will be altered by local canyons, with wind tending to flow parallel to the canyons. During the transition period from one wind pattern to the other, the dominant wind direction rotates into the south and causes a minor wind direction maximum from the south. The frequency of calm winds (less than 2 miles per hour) is less than 10 percent. Therefore, there is little stagnation in the project vicinity, especially during busy daytime traffic hours.

Southern California frequently has temperature inversions which inhibit the dispersion of pollutants. Inversions may be either ground based or elevated. Ground based inversions, sometimes referred to as radiation inversions, are most severe during clear, cold, early winter mornings. Under conditions of a ground-based inversion, very little mixing or turbulence occurs, and high concentrations of primary pollutants may occur local to major roadways. Elevated inversions can be generated by a variety of meteorological phenomena. Elevated inversions act as a lid or upper boundary and restrict vertical mixing. Below the elevated inversion, dispersion is not restricted. Mixing heights for elevated inversions are lower in the summer and more persistent. This low summer inversion puts a lid over the South Coast Air Basin (SCAB) and is responsible for the high levels of ozone observed during summer months in the air basin.

1.7 Monitored Air Quality

Air quality at any site is dependent on the regional air quality and local pollutant sources. Regional air quality is determined by the release of pollutants throughout the air basin. Estimates for the SCAB have been made for existing emissions ("2003 Air Quality Management Plan", August 1, 2003). The data indicate that mobile sources are the major source of regional emissions. Motor vehicles (i.e., on-road mobile sources) account for approximately 45 percent of volatile organic compounds (VOC), 63 percent of nitrogen oxide (NOx) emissions, and approximately 76 percent of carbon monoxide (CO) emissions.

Air quality data for this area is collected at the Ontario-Arrow Highway monitoring station. The data collected at this station is considered representative of the air quality experienced in the vicinity of the project. The air pollutants measured at the Ontario-Arrow Highway station include ozone, $PM_{2.5}$, PM_{10}, nitrogen dioxide (NO_2) and sulfur dioxide (SO_2). Carbon monoxide (CO) data were collected at the San Bernardino-4th Street station. The air quality monitored data from 2003 to 2005 for all of these pollutants are shown in Table 3. Table 3 also presents the Federal and State air quality standards.

Table 3
Air Quality Levels Measured at Ontario/San Bernardino Monitoring Stations

Pollutant	California Standard	National Standard	Year	% Meas.[1]	Max. Level	Days State Standard Exceeded[2]	Days National Standard Exceeded[2]
Ozone	0.09 ppm for 1 hr.	0.12 ppm[4] for 1 hr.	2005	98	0.150	49	9
			2004	94	0.149	48	7
			2003	87	0.176	65	26
Ozone	0.070 ppm for 8 hr.	0.08 ppm for 8 hr.	2005	98	0.128	n/a	23
			2004	94	0.123	n/a	29
			2003	87	0.148	n/a	43
Particulates PM_{10} (24 Hour)	50 $\mu g/m^3$ for 24 hr.	150 $\mu g/m^3$ for 24 hr.	2005	98	108	27/166	0
			2004	100	106	25/148	0
			2003	89	101	26/--	0
Particulates PM_{10} (Annual)	20 $\mu g/m^3$ AAM[3]	50 $\mu g/m^3$[5] AAM[5]	2005	98	51	Yes	Yes
			2004	100	48	Yes	No
			2003	89	48	Yes	No
Particulates $PM_{2.5}$ (24 Hour)	None	65 $\mu g/m^3$ for 24 hr.	2005	--	96.8	n/a	1
			2004	--	71.4	n/a	1
			2003	--	98.1	n/a	1
Particulates $PM_{2.5}$ (Annual)	12 $\mu g/m^3$ AAM[5]	15$\mu g/m^3$ AAM[5]	2005	--	18.9	Yes	Yes
			2004	--	19.9	Yes	Yes
			2003	--	22.1	Yes	Yes
NO_2 (1-Hour)	0.25 ppm for 1 hour	None	2005	98	0.101	0	n/a
			2004	73	0.104	0	n/a
			2003	96	0.117	0	n/a
SO_2	0.04 ppm for 24 hours	0.14 ppm for 24 hours	2005	99	0.004	0	0
			2004	94	0.003	0	0
			2003	95	0.004	0	0
CO	20 ppm for 1 hour	35 ppm for 1 hour	2005	96	3.8	0	0
			2004	96	4.5	0	0
			2003	97	5.1	0	0
CO	9.0 ppm for 8 hour	9 ppm for 8 hour	2005	96	2.5	0	0
			2004	96	3.2	0	0
			2003	97	4.5	0	0

1. Percent of year where high pollutant levels were expected that measurements were made
2. For annual averaging times a yes or no response is given if the annual average concentration exceeded the applicable standard. For the PM_{10} 24 hour standard, daily monitoring is not performed. The first number shown in Days State Standard Exceeded column is the actual number of days measured that State standard was exceeded. The second number shows the number of days the standard would be expected to be exceeded if measurements were taken every day.
3. Annual Arithmetic Mean
4. With the implementation of the federal 8-hour ozone standard, the 1-hour standard was revoked as of June 15, 2005. The previous standard is provided for informational purposes.
5. On September 21, 2006 U.S. EPA announced that it was revoking the annual average PM_{10} standard and lowering the 24-hour $PM_{2.5}$ standard to 35 $\mu g/m^3$. The previous standards are presented as the new standards are not fully implemented at this time.

-- Data Not Reported
n/a – no applicable standard
Source: CARB Air Quality Data Statistics web site www.arb.ca.gov/adam/ accessed 11/15/06

The Ontario monitoring data presented in Table 3 show that ozone is the air pollutant of primary concern in the project area. The state 1-hour ozone standard was exceeded 49 days in 2005, 48 days in 2004, and 65 days in 2003. The federal 1-hour standard was exceeded 9 days in 2005, 7 days in 2004, 26 days in 2003. The federal 8-hour standard was exceeded 23 days in 2005, 29 days in 2004, and 43 days in 2003. The data from the last three years do show a downward trend towards fewer days of exceedance in the state and federal ozone standards.

Ozone is a secondary pollutant; it is not directly emitted. Ozone is the result of chemical reactions between other pollutants, most importantly volatile organic compounds (VOC) and nitrogen oxides (NO_x), which occur only in the presence of bright sunlight. Pollutants emitted from upwind cities react during transport downwind to produce the oxidant concentrations experienced in the area. Many areas of the SCAQMD contribute to the ozone levels experienced at the monitoring station, with the more significant areas being those directly upwind.

Particulate matter (PM_{10} and $PM_{2.5}$) is another air pollutant of primary concern in the area. The state standards for PM_{10} have been exceeded between 148 and 166 days over the last two years. The federal standard for PM10 was not exceeded. The annual average PM_{10} concentrations have exceeded the state standards for the past three years. The federal standard for $PM_{2.5}$ was exceeded 3 days between 2003 and 2005. Both the state and federal $PM_{2.5}$ standards were exceeded in the last three years. There does not appear to be a trend toward fewer days of exceedances or maximum levels for both PM_{10} and $PM_{2.5}$. Particulate levels in the area are due to natural sources, grading operations and motor vehicles.

According to the EPA, some people are much more sensitive than others to breathing fine particles (PM_{10} and $PM_{2.5}$). People with influenza, chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death due to breathing these fine particles. People with bronchitis can expect aggravated symptoms from breathing in fine particles. Children may experience decline in lung function due to breathing in PM10 and $PM_{2.5}$. Other groups considered sensitive are smokers and people who cannot breathe well through their noses. Exercising athletes are also considered sensitive, because many breathe through their mouths.

Carbon monoxide (CO) is another important pollutant that is due mainly to motor vehicles. Currently, CO levels in the project region are in compliance with the state and federal 1-hour and 8-hour standards. High levels of CO commonly occur near major roadways and freeways. CO may potentially be a continual problem in the future for areas next to freeways and other major roadways.

The monitored data shown in Table 1 show that other than ozone, PM_{10} and $PM_{2.5}$ exceedances as mentioned above, no state or federal standards were exceeded for the remaining criteria pollutants.

1.8 Local Air Quality

Local air quality is a major concern along roadways. Carbon monoxide is a primary pollutant. Unlike ozone, carbon monoxide is directly emitted from a variety of sources. The most notable source of carbon monoxide is motor vehicles. For this reason, carbon monoxide concentrations are usually indicative of the local air quality generated by a roadway network and are used to assess its impacts on the local air quality. Comparisons of levels with state and federal carbon monoxide standards indicate the severity of the existing concentrations for receptors in the project area. The Federal and State standards for carbon monoxide are presented in Table 4.

Table 4
Federal and State Carbon Monoxide Standards

	Averaging Time	Standard
Federal	1 hour	35 ppm
	8 hours	9 ppm
State	1 hour	20 ppm
	8 hours	9 ppm

1.8.1 Existing CO Modeling Results

Carbon monoxide levels in the project vicinity due to nearby roadways were assessed with the CALINE4 computer model. CALINE4 is a fourth generation line source air quality model developed by the California Department of Transportation ("CALINE4," Report No. FHWA/CA/TL-84/15, June 1989). The precise methodology used in modeling air quality with the CALINE4 computer model is discussed in more detail in Section 3.2.1 (Local Air Quality Impacts.) The remainder of this section discusses the resulting existing carbon monoxide levels in comparison to the State and Federal carbon monoxide standards.

The peak hour traffic data were provided by Kunzman Associates, Inc., September 20, 2006. The P.M. peak hour traffic volumes were utilized for the modeling. The level of service reported for the peak hour in the traffic study was used to determine the average vehicle travel speed in the vicinity of the intersection. Composite vehicular emission factors were derived from EMFAC2002. EMFAC2002 is a computer program published by CARB that calculates on-road vehicle emissions.

Existing CO concentrations were modeled using CALINE4 for two intersections in the vicinity of the project. The worst-case intersections which have the highest traffic or the greatest change due to the project were selected. These intersections are Haven Avenue and Inland Empire Boulevard and Haven Boulevard and Guasti Road. Receptors were located at each of the four corners, approximately 10 feet from edge of the roadway. The highest concentrations for each intersection are reported below. The intersection locations are shown in Exhibit 1.

The existing background CO concentrations were obtained from the San Bernardino monitoring station. Projected background concentrations available from the SCAQMD are for years 1999, 2000, 2010, 2015, and 2020. The 2005 CO background levels were interpolated from the 2000 and 2010 data and were used as the existing background CO for this analysis. The estimated existing CO background levels 4.2 ppm for 1-hour and 3.4 ppm for 8-hour. Therefore, 4.2 ppm is added to the worst-case meteorological 1-hour projections, and 3.4 ppm to the 8-hour projections, to account for the background CO levels from sources not included in the modeling. The modeling results of the existing CO levels are presented in Table 5.

Table 5
Existing Carbon Monoxide Concentrations (ppm)

Intersection		Modeled Concentrations 1-hour	8-hour
1	Haven Ave. and Inland Empire Blvd.	9.2	7.6
2	Haven Ave. and Guasti Road	8.4	6.9
	State Standard:	**20 ppm**	**9 ppm**
	No. of Exceedances	0	0

NOTE: The CO concentrations include background concentrations of 4.2 ppm for 1-hour levels, and 3.4 ppm for 8-hour levels.

Table 5 presents the modeling results for the existing CO concentrations. The existing CO concentrations are estimated to range between 8.4 and 9.2 ppm for 1-hour and 6.6 and 7.6 ppm for 8-hour at the receptor locations. The data indicate that the existing CO concentrations in the vicinity of the project site comply with the 1-hour and 8-hour state and federal standards. Note that the bulk of the existing CO concentrations is the background concentrations of 4.2 ppm for the 1-hour averaging time and 3.8 ppm for the 8-hour averaging time.

2.0 Potential Air Quality Impacts

Air quality impacts are usually divided into short term and long term. Short-term impacts are usually the result of construction or grading operations. Long-term impacts are associated with the built out condition of the proposed project.

2.1 Thresholds of Significance

2.1.1 Regional Air Quality

In their "1993 CEQA Air Quality Handbook", the SCAQMD has established significance thresholds to assess the regional impact of project related air pollutant emissions. Table 6 presents these significance thresholds. There are separate thresholds for short-term construction and long-term operational emissions. A project with daily emission rates below these thresholds are considered to have a less than significant effect on regional air quality throughout the South Coast Air Basin. It should be noted the thresholds recommended by the SCAQMD are very low and subject to controversy. It is up to the individual jurisdictions to determine if the SCAQMD thresholds are appropriate for projects in their city.

Table 6
SCAQMD Regional Pollutant Emission Thresholds of Significance

	Pollutant Emissions (lbs/day)					
	CO	**ROG**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**SO_x**
Construction	*550*	*75*	*100*	*150*	*55*	*150*
Operation	*550*	*55*	*55*	*150*	*55*	*150*

2.1.2 Local Air Quality

To assess local air quality impacts, the significance thresholds are relative to the State Ambient Air Quality Standards. Because the area is in attainment of the CO state standards exceedances of these standards, 20 ppm for 1-hour Carbon Monoxide (CO) concentration levels, and 9 ppm for 8-hour CO concentration levels, result in a significant local air quality impact. If the CO concentration levels with the project are under the standards, then there is no significant impact. If future CO concentrations with the project are above these levels, then the project will have a significant local air quality impact.

2.2 Short Term Impacts

2.2.1 Construction Air Pollutant Emissions

Temporary impacts will result from project construction activities. Air pollutants will be emitted by construction equipment and fugitive dust will be generated during on site grading of the site. Peak construction air pollutant emissions typically occur during demolition of any existing structures and/or grading of the project site. Air pollutant emissions during each of these activities were calculated and are presented below.

Calculations of emissions during construction of the buildings proposed by the project would be speculative at this point. It is not known if all of the project components would be constructed at one time or the amount of equipment that would be required at any one time. The primary sources of emissions would be combustion engine powered equipment, delivery trucks, and worker vehicle trips. Activity with more than approximately eight pieces of heavy equipment active during a day and more than five material delivery trucks would result in an exceedance of the NO_x significance threshold. If all of the buildings proposed by the project were under construction at the same time, it is likely that NO_x emissions would exceed the significance thresholds but unlikely that the emissions of other pollutants would exceed the thresholds.

Two activities that generate considerable emissions other than NO_x include the off-gas emissions of Reactive Organic Compounds (ROG) from architectural coatings (painting) and off-gas emissions from asphalt paving. Emissions during these activities are discussed below.

Construction Emission Factors

Construction activities for large development projects are estimated by the U.S. Environmental Protection Agency (according to the 1993 CEQA Handbook, emission factor for disturbed soil is 26.4 pounds of PM_{10} per day per acre, or 0.40 tons of PM_{10} per month per acre). The PM_{10} emission factor used in the calculations for demolition is from the 1993 CEQA Handbook. The emission factor for demolition debris is 0.00042 pounds of PM_{10} per cubic feet of demolished building. If water or other soil stabilizers are used to control dust as required by SCAQMD Rule 403, the emissions can be reduced by 50 percent. The PM_{10} calculations include the 50% reduction from watering.

On-Road vehicle emission factors used in the calculations are from CARB's EMFAC2002 model which calculates emissions from on-road vehicles. The specific emission factors used were generated by SCAQMD and posted on their CEQA Handbook website (http://www.aqmd.gov/ceqa/hdbk.html). The emission factors provided are composite emission factors in terms of pounds of pollutants per mile traveled for three vehicle categories, passenger vehicles, delivery trucks, and heavy trucks.

Emission calculations for off-road equipment are based on emission factors provided by the California Air Resource Board (ARB) from their Off-Road Mobile Source Model provided on the SCAQMD CEQA Handbook website. The emission factors represent a composite emission factor for each off-road construction equipment category in units of pounds of emissions per hour.

Painting emissions are estimated to be 0.0185 pounds of ROG per square foot painted and asphalt paving emissions are estimated to be 2.62 pounds of ROG per acre paved. These emission factors are from the URBEMIS2002 model published by SCAQMD.

$PM_{2.5}$ emissions were calculated using the methodology presented in SCAQMD's "Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5 Significance Thresholds" (October 2006). The PM_{10} emissions were calculated using the above methodologies and then multiplying the PM_{10} emissions by the applicable $PM_{2.5}$ fraction derived from emission source, using PM profiles in the California Emission Inventory Data and Reporting System (CEIDRS) developed by CARB shown in Table 7 below.

Table 7
$PM_{2.5}$ Fraction of PM_{10} Used to Calculate Construction $PM_{2.5}$ Emissions

Source	PM2.5/PM10 Fraction
Passenger Vehicles	0.928
Delivery Trucks	0.964
Heavy Trucks	0.920
Off-Road Equipment	0.920
Fugitive Dust	0.208
Demolition	0.208

In 1998 the California Air Resources Board (ARB) identified particulate matter from diesel-fueled engines (Diesel Particulate Matter or DPM) as a Toxic Air Contaminant (TAC). The majority of the heavy construction equipment utilized during construction will be diesel fueled and emit DPM. Impacts from toxic substances are related to cumulative exposure and are assessed over a 70-year period. Cancer risk is expressed as the maximum number of new cases of cancer projected to occur in a population of one million people due to exposure to the cancer-causing substance over a 70-year lifetime (California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Guide to Health Risk Assessment.) While construction of the project is projected to occur over a 1 year period, grading, when the peak diesel exhaust emissions would occur, is expected to take approximately six months. Because of the relatively short duration of construction compared to a 70 year lifespan, diesel emissions resulting from the construction of the project are not expected to result in a significant impact.

Emissions During Demolition

The project comprises approximately 43.3 acres. Currently, the approximately 18.9 of the site is vacant land, while approximately 24.4 acres of the site is paved and is used as an industrial storage and distribution facility. An approximately 200,000 square foot metal industrial building is situated on the southern portion of the site. The existing industrial building will be demolished as a part of the project. This building has a total floor area 200,000 square feet. Based on an estimated average building height of 20 feet, the total building volume is estimated to be approximate 4,000,000 cubic feet.

The building is projected to generate approximately, 22,200 cubic yards of debris. Removal of the existing paving is projected to generate approximately 23,900 cubic yards of debris. The demolition of the building and existing paving is expected to create approximately 46,100 cubic yards of demolition debris that will be hauled off site. If the demolition material were removed from the site by trucks with a 14 CY capacity at a rate of 100 trucks per day, the demolition debris would be removed in 33 days.

The heavy equipment required to perform the demolition would include (2) excavators, (2) backhoes with hoe ram, (2) front loaders, and (2) water trucks including a street sweeper. It is estimated that there will be 20 worker vehicles traveling to and from the site each day and the average trip length for each worker vehicle is 20 miles. Using the estimates presented above the peak construction emissions for the project were calculated and presented in Table 8. The data used to calculate the emissions are shown in the appendix.

Table 8
Worst Case Air Pollutant Emissions During Demolition

	Pollutant Emissions (lbs/day)				
Source	**CO**	**ROG**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**
On-Road Vehicle	5.6	0.7	2.9	0.5	0.4
Heavy Duty Trucks	27.6	6.1	178.2	3.2	3.0
Ground Disturbance	0.0	0.0	0.0	323.4	67.3
Demolition	0.0	0.0	0.0	50.9	10.6
Construction Equipment	58.0	7.3	45.8	1.7	1.6
Total Emissions	**91.2**	**14.1**	**226.9**	**379.7**	**82.8**
SCQAMD Thresholds	*550*	*75*	*100*	*150*	*55*

Table 8 shows that emissions during demolition activities would exceed the SCAQMD thresholds, specifically for NO_x, PM_{10} and $PM_{2.5}$. Therefore, the demolition activities would result in a significant short-term air quality impact including health effects from pollutant exposure discussed in Section 1.3. Mitigation is presented in Section 3.1. Table 8 shows that the majority of the NO_x emissions are due to heavy construction equipment and haul trucks, while the majority of the PM_{10} and $PM_{2.5}$ emissions are due to ground disturbance.

Emissions During Grading

The project site comprises a total of approximately 43.3 acres. It was assumed the entire site will be graded at the same time

Using the estimates presented above, the peak air pollutant emissions during grading were calculated and presented in Table 9. These emissions represent the highest level of emissions during construction of the proposed project. A worksheet showing the specific data used to calculate the grading emissions is presented in the appendix.

Applying the above factors to the 43.3 acre site to be graded results in a peak daily emission estimate of 571 pounds per day of PM_{10} (0.29 tons per day). For the proposed project, 0.29 tons per day of PM_{10} is not substantial when compared with the total average annual of 416 tons per day (832,000 pounds per day) of particulate matter currently released in the whole South Coast Air Basin (SCAB). According to the SCAQMD's CEQA Handbook, PM_{10} emissions greater than 150 pounds per day should be considered significant. The PM_{10} emissions generated by the project are projected to be greater than this threshold, and therefore, are considered to be significant.

It should be noted that the impact due to grading is very localized. Additionally, this material is inert silicates, rather than the complex organic particulate matter released from combustion sources which are more harmful to health. In some cases, grading may be near existing development. Care should be taken to minimize the generation of dust. Common practice for minimizing dust generation is watering before and during grading. Without watering, PM_{10} emission generation would be double the amount mentioned previously.

Heavy-duty equipment emissions are difficult to quantify because of day to day variability in construction activities and equipment used. Typical emission rates for construction equipment were obtained from the SCAQMD Air Quality Handbook. Heavy equipment estimated to be used in the grading includes (4) scrapers, (4) dozers, and (2) water trucks, all operating 8 hours per day.

Using the estimates presented above, the peak air pollutant emissions during grading were calculated and presented in Table 9. These emissions represent the highest level of emissions during construction of the proposed project. A worksheet showing the specific data used to calculate the grading emissions is presented in the appendix.

Table 9
Worst Case Grading Emissions (Pounds/day)

	Pollutant Emissions (lbs/day)				
Activity	**CO**	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**
On-Road Vehicle	5.6	0.7	2.9	0.5	0.4
Ground Disturbance	0.0	0.0	0.0	541.2	112.6
Construction Equipment	247.4	31.2	214.2	9.4	0.3
Total Emissions	**253.0**	**31.9**	**217.1**	**581.4**	**119.6**
SCQAMD Thresholds	550	75	100	150	55

NOTE: Underline data indicate exceedances.

Table 9 shows that emissions during grading of proposed project would exceed the SCAQMD thresholds, specifically for NO_x, PM_{10}, and $PM_{2.5}$. Therefore, grading of the proposed project would result in a significant short-term air quality impact including health effects from pollutant exposure discussed in Section 1.3. Mitigation is presented in Section 3.1. Table 9 shows that the majority of the NO_x emissions are due to heavy construction equipment, while the majority of the PM_{10} and $PM_{2.5}$ emissions are due to ground disturbance.

Emissions During Asphalt Paving

Approximately 24.3 acres of the project site is projected to be paved with asphalt. It is likely that the entire project site will not be paved at one time but will be paved in phases as the different buildings are constructed. It was assumed that a maximum of one tenth of the total paved area would be paved on any one day. This would require 50 asphalt trucks to deliver materials. It was assumed that the asphalt trucks would have a one-way trip length of 15 miles.

The heavy equipment required to perform the asphalt paving would include (3) graders, (3) pavers, (3) paving equipment, (4) rollers and (2) water trucks including a street sweeper. It is estimated that there will be 20 worker vehicles traveling to and from the site each day and the average trip length for each worker vehicle is 20 miles. Using the estimates presented above the peak construction emissions for the project were calculated and presented in Table 10. The data used to calculate the emissions are shown in the appendix.

Table 10
Worst Case Air Pollutant Emissions During Asphalt Paving

Source	Pollutant Emissions (lbs/day)				
	CO	ROG	NO_x	PM_{10}	$PM_{2.5}$
On-Road Vehicle	5.6	0.7	2.9	0.5	0.4
Heavy Duty Trucks	8.3	1.8	53.5	1.0	0.9
Asphalt Off-Gas	0.0	6.4	0.0	0.0	0.0
Construction Equipment	159.9	19.4	120.2	4.4	0.2
Total Emissions	**173.8**	**28.3**	**176.5**	**5.9**	**1.5**
SCQAMD Thresholds	*550*	*75*	*100*	*150*	*55*

Table 10 shows that emissions during asphalt paving activities would exceed the SCAQMD NO_x threshold$_5$. Therefore, the asphalt paving activities would result in a significant short-term air quality impact including health effects from pollutant exposure discussed in Section 1.3. Mitigation is presented in Section 3.1. Table 10 shows that the majority of the NO_x emissions are due to heavy construction equipment and haul trucks.

Architectural Coating (Painting) Emissions

Paints release Reactive Organic Compounds (ROG) as they are applied and as they dry. ROG emissions are estimated based on the area being painted. The SCAQMD CEQA Handbook estimates that, for commercial uses, the amount of area to be painted is estimated to be two times the floor area. The project proposes the development of 625,000 square feet of floor space which results in an estimate of 1,250,000 square feet of painted area. This results in an estimate of 23,125 pounds of ROG emissions from painting of the project. To remain below the 75 pounds per day significance threshold, painting would need to be limited to 4,054 square feet per day and at this rate painting would occur for 309 days. Limiting the painting activity to this level is economically infeasible. Therefore, ROG emissions for painting will exceed the significance threshold of 75 pounds per day, and, emissions from this activity will result in a significant impact including its contribution to the formation of ozone which has potential human health implications (discussed in Section 1.3). Mitigation measures are recommended in Section 3.1.

Localized Significance Thresholds

SCAQMD has developed a methodology to assess the localized impacts of emissions from within a project site (SCAQMD, Draft Localized Significance Threshold Methodology, June 19, 2003). SCAQMD recommends, but does not require, comparing projects to localized significance thresholds (LSTs). The LST's were developed to analyze the significance of potential local air quality impacts of projects and provides screening tables for smaller projects, in which emissions may be less than the mass daily emission thresholds analyzed above. The SCAQMD also recommends project-specific air quality modeling for larger projects. Because of the proposed project's size, the screening tables provided by SCAQMD are not applicable. However, given the size and location of the project, it is expected that dispersion analysis would confirm that the project will have a significant short-term localized impact for NO_2, PM_{10}, and $PM_{2.5}$. Therefore, the proposed project will have a significant impact on local air quality during construction.

2.3 Long Term Impacts

2.3.1 Local Air Quality

Because the project will introduce changes in traffic on the roadways serving the project, a detailed analysis of carbon monoxide concentrations at sensitive areas in the project vicinity was conducted.

Methodology

Carbon monoxide (CO) is the pollutant of major concern along roadways because the most notable source of carbon monoxide is motor vehicles. For this reason carbon monoxide concentrations are usually indicative of the local air quality generated by a roadway network, and are used as an indicator of its impacts on local air quality. Local air quality impacts can be assessed by comparing future carbon monoxide levels with State and Federal carbon monoxide standards moreover by comparing future CO concentrations with and without the project. The Federal and State standards for carbon monoxide were presented earlier in Table 2.

Carbon monoxide concentrations with the project were forecasted with the CALINE4 computer model. CALINE4 is a fourth generation line source air quality model developed by the California Department of Transportation ("CALINE4," Report No. FHWA/CA/TL-84/15, June 1989). The purpose of the model is to forecast air quality impacts near transportation facilities in what is known as the microscale region. The microscale region encompasses the region of a few thousand feet around the pollutant source. Given source strength, meteorology, site geometry, and site characteristics, the model can reliably predict pollutant concentrations.

Worst case meteorology was assessed. Specifically, a late afternoon winter period with a ground based inversion was considered. For worst case meteorological conditions, a wind speed of 0.5 meter per second (1 mph) and a stability class G was utilized for a 1 hour averaging time. Stability class G is the worst case scenario for the most turbulent atmospheric conditions. The higher stability class promotes dispersion of pollutants. A worst case wind direction for each site was determined by the CALINE4 Model. A sigma theta of 10 degrees was also used and represents the fluctuation of wind direction. A high sigma theta number would represent a very changeable wind direction. The temperature used for worst case was 40 degrees Fahrenheit. The temperature affects the dispersion pattern and emission rates of the motor vehicles. The temperature represents the January mean minimum temperature as reported by Caltrans. The wind speed, stability class, sigma theta, and temperature data used for the modeling are those recommended in the "Development of Worst Case Meteorology Criteria," (California Department of Transportation, June 1989). A mixing height of 1,000 meters was used as recommended in the CALINE4 Manual. A surface roughness of the ground in the area, 100 centimeters, was utilized and is based on the CALINE4 Manual. It should be noted that the results are also dependent on the speeds of the vehicles utilized in the model. Composite emission factors utilized with the CALINE4 computer model were derived from EMFAC2002 prepared by ARB.

The peak hour traffic data for opening year 2008 and buildout year 2030 were taken from the traffic study prepared by Kunzman Associates, dated September 20, 2006. The P.M. peak hour traffic volumes was utilized for the modeling. The level of service reported for the peak hour in the traffic study was used to determine the average vehicle travel speed in the vicinity of the intersection. Composite vehicular emission factors were derived from EMFAC2002.

EMFAC2002 is a computer program published by CARB that calculates on-road vehicle emissions.

Background concentrations are added to the modeling results to account for emissions from sources not included in the modeling. The projected background CO concentrations were obtained from the SCAQMD website (www.aqmd.gov/ceqa/hdbk.html) accessed in October 2006. Projected background concentrations are available for years 1999, 2000, 2010 and 2020. The nearest available CO background data for the project area is the San Bernardino monitoring station. The background CO levels for 2008 were linearly interpolated using these available data. The 2008 CO background levels are projected to be 3.8 ppm for 1-hour and 3.1 ppm for 8-hour. The 2020 CO background levels are projected to be 3.6 ppm for 1-hour and 2.9 ppm for 8-hour. The 2030 background CO concentrations are projected to be the same as year 2020.

The peak hour volumes and the level-of-service data at the critical intersections were used in the CALINE4 computer modeling. The level-of-service (LOS) data are important in the CALINE4 computer modeling in that they determine the speeds and the emission factors. The lower the speeds, the higher the emission factors, hence, the higher the CO results. The p.m. peak hour traffic is utilized in the CALINE4 computer modeling as a worst case scenario.

Eight hour carbon monoxide levels were projected using Caltrans methodology described in their "Air Quality Technical Analysis Notes." The method essentially uses a persistence factor which is multiplied times the 1 hour emission projections. The projected 8 hour ambient concentration is then added to the product. The persistence factor can be estimated using the 10 highest non-overlapping ratio of 8-hour to 1-hour from the last three years of carbon monoxide monitoring data. For the project area, a persistence factor of 0.84 was estimated. The data and results of the CALINE4 modeling are also provided in the appendix. (The CALINE4 CO emission results shown in the appendix do not include the ambient background CO levels.)

Generally, the 1-hour CO level is considered the peak maximum CO level since it is the highest CO measured for an hour. According to the Caltrans Air Quality Technical Analysis Notes, changes in meteorology and traffic over time disperse the CO concentration levels and cause it to be less severe. Therefore, it is highly unlikely that the 1-hour CO levels would persist for a full eight hours. As a result, a 1-hour CO level is generally considered to be the peak level and is usually higher than an 8-hour CO level.

Two key intersections in the vicinity of the project were selected for CALINE4 analysis. The worst case intersections which have the highest traffic or the greatest change due to the project were selected. These intersections are Haven Avenue at Inland Empire Boulevard and Haven Avenue at Guasti Road. For each intersection, a receptor was located at each of the four corners approximately 10 feet from edge of the road. The highest concentrations from each intersection are reported below. The receptor locations were shown previously in Exhibit 1.

The traffic study prepared for the project presents LOS conditions with the project for two scenarios. The first scenario includes no changes to the existing intersection configurations. The second scenario includes all funded roadway improvements as well as mitigation measures to achieve a LOS of D or better. These improvements and mitigation would improve the LOS at the Haven Avenue at Inland Empire Boulevard from E to D for both the 2008 and 2030 analysis years. The improvements and mitigation would improve the LOS at the Haven Avenue at Gausti

Road intersection from F to D for the 2030 analysis year. CO concentrations were modeled for both conditions and are presented below.

Modeling Results

The results of the CALINE4 CO modeling are summarized in Table 11 and Table 12. Table 11 presents the modeled 1-hour average CO concentrations and Table 12presents the modeled 8-hour CO concentrations. As discussed above, future with project concentrations are presented for conditions with and without expected intersection improvements which result in a LOS of D or better and lower air quality concentrations. The pollutant levels are expressed in parts per million (ppm) for each receptor. The carbon monoxide levels reported are composites of the background levels of carbon monoxide coming into the area plus those generated by the local roadways.

Table 11
Modeled 1-Hour Carbon Monoxide Concentrations (ppm)

Intersection	Existing	Opening Year - 2008 No Project	Opening Year - 2008 With Project[1]	Opening Year - 2008 With Project[2]	Horizon Year - 2030 No Project	Horizon Year - 2030 With Project[1]	Horizon Year - 2030 With Project[2]
1. Haven Ave. at Inland Empire Blvd.	9.2	7.7	8.2	7.2	4.5	4.6	4.3
2. Haven Ave. at Guasti Rd.	8.4	7.1	8.2	7.4	4.4	4.7	4.4
State Standard	**20 ppm**	**20 ppm**	**20 ppm**	**20 ppm**	**20 ppm**	**20 ppm**	**20 ppm**
No. of Exceedances	0	0	0	0	0	0	0

1. Without Improvements.
2. With funded improvements and project traffic mitigation.
The CO concentrations presented above include background concentrations of 4.2 ppm for existing conditions, 3.8 ppm for 2008 conditions, and 3.6 ppm for 2030 conditions.

The results in Table 11 show that the 1-hour CO concentration levels with and without the project are projected to comply with the state standard of 20 ppm in both 2008 and 2030. Because concentrations with the project will not exceed the standard, the project will not result in a significant air quality impact. The table shows that at Haven Avenue at Inland Empire Boulevard, the conditions with the project and the roadway improvements result in CO concentrations slightly lower than no project conditions. Around Haven Avenue at Guasti Road CO concentrations are projected to increase slightly with the project and roadway improvements compared to no project conditions in 2008 but in 2030 there is no difference in the two scenarios.

Table 11 shows that for all scenarios, CO concentrations in the future years are projected to be lower than existing conditions, and that concentrations in 2030 are projected to be lower than 2008 conditions. This occurs despite traffic volumes increasing in the future because emissions from future vehicle fleets are predicted by the EMFAC2002 program to be lower in the future. More newer vehicles, complying with increasingly stringent emission regulations, will be on the road in the future. The projected decrease in pollutant emissions offsets the projected increase in traffic volumes.

Table 12
Modeled 8-Hour Carbon Monoxide Concentrations (ppm)

Intersection	Existing	Opening Year - 2008 No Project	Opening Year - 2008 With Project[1]	Opening Year - 2008 With Project[2]	Horizon Year - 2030 No Project	Horizon Year - 2030 With Project[1]	Horizon Year - 2030 With Project[2]
1. Haven Ave. at Inland Empire Blvd.	7.6	6.4	6.8	5.9	3.7	3.7	3.5
2. Haven Ave. at Guasti Rd.	6.9	5.9	6.8	6.1	3.6	3.8	3.5
State Standard	**9 ppm**	**9 ppm**	**9 ppm**	**9 ppm**	**9 ppm**	**9 ppm**	**9 ppm**
No. of Exceedances	0	0	0	0	0	0	0

1. Without Improvements.
2. With funded improvements and project traffic mitigation.
The CO concentrations presented above include background concentrations of 3.4 ppm for existing conditions, 3.1 ppm for 2008 conditions, and 2.9 ppm for 2030 conditions.

The results in Table 12 show that the 8-hour CO concentration levels with and without the project are projected to comply with the state standard of 9 ppm for both 2008 and 2030. Because concentrations with the project will not exceed the standard, the project will not result in a significant air quality impact. The results for the 8-hour CO concentrations are similar to the 1-hour concentrations. Concentrations with the project and road improvements are projected to be lower than no project conditions except for the 2008 scenario at the Haven Avenue at Guasti Road intersection where a slight increase is projected. Future 8-hour CO concentrations are projected

2.3.2 Regional Air Quality

The primary source of regional emissions generated by the proposed project will be from motor vehicles. Other on-site emissions will be generated from the combustion of natural gas for space heating. Emissions will also be generated by the use of natural gas and oil for the generation of electricity off-site.

The data used to estimate the on-site combustion of natural gas, and off-site electrical usage are based on the proposed land uses in terms of square footages, and emission factors taken from the 1993 CEQA Handbook. The analysis presented in this report is consistent with the SCAQMD's "CEQA Handbook."

Emission factors from EMFAC2002 published by the SCAQMD on their CEQA Handbook web site (http://www.aqmd.gov/ceqa/hdbk.html) were used to estimate vehicular emissions. EMFAC2002 is a computer program generated by the California Air Resources Board that calculates emission rates for vehicles. The average trip lengths were calculated to be 10 miles for the project area. This is a composite trip length derived from data contained in the 1993 SCAQMD CEQA Air Quality Handbook (Page 9-24). The average daily trips generated by the project were taken from the traffic study prepared by Kunzman Associates dated September 20, 2006. The proposed project is projected to generate 12,384 daily trips which equates to 123,840 daily vehicle miles traveled.

$PM_{2.5}$ emissions were calculated using the methodology presented in SCAQMD's "Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5 Significance Thresholds" (October 2006). The PM_{10} emissions were calculated using the above methodologies and then multiplying the PM_{10} emissions by the applicable $PM_{2.5}$ fraction derived from emission source, using PM profiles in the California Emission Inventory Data and Reporting System (CEIDRS) developed by CARB shown in Table 13 below.

Table 13
$PM_{2.5}$ Fraction of PM_{10} Used to Calculate Operation $PM_{2.5}$ Emissions

Source	PM2.5/PM10 Fraction
Passenger Vehicles	0.928
Delivery Trucks	0.964
Natural Gas Combustion	0.990
Electrical Generation	0.990

Pollutant emissions resulting from the uses within the project area for opening year (2008) and buildout year (2030) are presented in Table 14. A worksheet showing the detailed data used to calculate these emissions is presented in the appendix.

Table 14
Total Project Emissions

	Pollutant Emissions (lbs/day)					
Source	**CO**	**ROG**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**SO_x**
Opening year 2008						
Vehicular Trips	1,512.4	172.7	426.1	14.1	13.3	1.4
Natural Gas Consumption	1.4	0.4	8.1	0.0	0.0	0.0
Electrical Generation	3.8	0.2	21.9	0.8	0.8	2.3
Project Emissions in 2008:	**1,517.5**	**173.2**	**456.0**	**14.9**	**14.1**	**3.7**
Buildout year 2030						
Vehicular Trips	443.0	65.2	101.3	12.3	11.5	1.4
Natural Gas Consumption	1.4	0.4	8.1	0.0	0.0	0.0
Electrical Generation	3.8	0.2	21.9	0.8	0.8	2.3
Project Emissions in 2030:	**448.1**	**65.7**	**131.3**	**13.0**	**12.2**	**3.7**
SCAQMD Thresholds	*550*	*55*	*55*	*150*	*55*	*150*

Underline data indicate exceedances.

Table 14 shows that the total project emissions are above the SCAQMD thresholds, specifically for CO, ROG and NO_x. The project emissions are projected to be greater in 2008 when compared to 2030. This is primarily due to the anticipated decrease in the future emission rates for vehicular sources as projected by the EMFAC2002 program. Since the project emissions are above the significance thresholds, the project will result in significant regional air quality impacts including health effects from pollutant exposure discussed in Section 1.3. Long-term mitigation measures are recommended in Section 3.0.

2.4 Compliance with Air Quality Planning

The following sections deal with the major air planning requirements for this project. Specifically, consistency of the project with the AQMP is addressed. As discussed below, consistency with the AQMP is a requirement of the California Environmental Quality Act (CEQA).

2.4.1 Consistency with AQMP

An EIR must discuss any inconsistencies between the proposed project and applicable GPs and regional plans (California Environmental Quality Act (CEQA) guidelines (Section 15125)). Regional plans that apply to the proposed project include the South Coast Air Quality Management Plan (AQMP). In this regard, this section will discuss any inconsistencies between the proposed project with the AQMP.

The purpose of the consistency discussion is to set forth the issues regarding consistency with the assumptions and objectives of the AQMP and discuss whether the project would interfere with the region's ability to comply with federal and state air quality standards. If the decision-makers determine that the project is inconsistent, the lead agency may consider project modifications or inclusion of mitigation to eliminate the inconsistency.

The SCAQMD's CEQA Handbook states that "New or amended GP Elements (including land use zoning and density amendments), Specific Plans, and significant projects must be analyzed for consistency with the AQMP." Strict consistency with all aspects of the plan is usually not required. A proposed project should be considered to be consistent with the plan if it furthers one or more policies and does not obstruct other policies. The Handbook identifies two key indicators of consistency:

(1) Whether the project will result in an increase in 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 (except as provided for CO in Section 9.4 for relocating CO hot spots).

(2) Whether the project will exceed the assumptions in the AQMP in 2010 or increments based on the year of project buildout and phase.

Both of these criteria are evaluated in the following sections.

Criterion 1 - Increase in the Frequency or Severity of Violations?

Based on the air quality modeling analysis contained in this report, it is expected that there will be short-term construction impacts due to the project. While emissions will be generated in excess of SCAQMD's threshold criteria, it is unlikely that short-term construction activities will increase the frequency or severity of existing air quality violations due to required compliance with SCAQMD Rules and Regulations.

The proposed project will increase regional emissions, and will increase regional emissions by an amount greater than the SCAQMD thresholds for CO, ROG and NOx (Refer to Section 2.3.2). The project will increase local CO emissions. The 2008 CO concentrations, for both with and without project scenarios, are projected to exceed the state and federal 8-hour CO standards.

Also, the 2030 CO levels will increase slightly with project, but will not be in excess of the state and federal CO standards. However, with the LOS improvements, the CO due to the project in 2008 and 2030 will generate a smaller increase or be lower when compared to no project (refer to Section 2.3.1). Because the project with LOS improvements will be lower than no project and thus is not projected to impact the local air quality, the project is found to be consistent with the AQMP for the first criterion.

Criterion 2 - Exceed Assumptions in the AQMP?

Consistency with the AQMP assumptions is determined by performing an analysis of the project with the assumptions in the AQMP. Thus, the emphasis of this criterion is to insure that the analyses conducted for the project are based on the same forecasts as the AQMP. The Regional Comprehensive Plan and Guide (RCP&G) consists of three sections: Core Chapters, Ancillary Chapters, and Bridge Chapters. The Growth Management, Regional Mobility, Air Quality, Water Quality, and Hazardous Waste Management chapters constitute the Core Chapters of the document. These chapters currently respond directly to federal and state requirements placed on SCAG. Local governments are required to use these as the basis of their plans for purposes of consistency with applicable regional plans under CEQA.

Since the SCAG forecasts are not detailed, the test for consistency of this project is not specific. The traffic modeling upon which much of the air quality assessment is based on are the 2005 San Bernardino County Congestion Management Program and ITE Trip Generation, 7th Edition. The AQMP assumptions are based upon projections from local general plans. Projects that are consistent with the local general plan are consistent with the AQMP assumptions. The project is included in the traffic volumes forecast for opening year 2008 and buildout year 2030. It appears that the growth forecasts for the proposed project are consistent with the SCAG growth forecasts. The forecasts made for the project EIR seem to be based on the same demographics as the AQMP, and therefore, the second criterion is met for consistency with the AQMP.

2.5 Air Quality Impacts on the Project

In April of 2005, CARB published “Air Quality and Land Use Handbook: A Community Health Perspective.” This guidance document provides guidance for siting of sensitive land uses near sources of toxic air contaminants (TAC) such as refineries, chrome plating facilities, dry cleaners and gasoline dispensing facilities. Sensitive land uses are those where persons most susceptible to poor air quality, children, elderly, and those with pre-existing serious health problems affected by air quality, would be likely to spend time. These uses include residences, hospitals, nursing homes, daycare centers, and schools and schoolyards. Typically, concentrations of TAC are not great enough to result in health effects over short periods. The primary effect of TAC is increased cancer risk due to exposure over many years.

The most significant toxic air contaminant in the South Coast Air Basin is Diesel Particulate Matter (DPM). CARB research has determined that DPM contributes approximately 70% of the total cancer risk from TAC in the state and the Multiple Air Toxics Exposure Study II (MATES-II) study performed by the SCAQMD estimated that the average basin wide potential cancer risk is approximately 1,400 excess cancers per million due to TAC exposure. The risk solely from DPM was about 1,000 excess cancers per million, or 71 percent of the average cancer risk from all air toxics in the SCAB.

The CARB Handbook recommends that sensitive uses not be located within 500 feet of a freeway with an average daily traffic volume of 100,000 or greater. The CARB document notes that "These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues." The project is located next to a major freeway, I-10 which is used by a substantial number of diesel trucks. However, the sensitive use proposed by the project, the hospital, is proposed to be located more than 1,000 feet from the freeway. At this distance, DPM concentrations will be very near background levels experienced well away from the freeway. Therefore, at it's proposed location, the hospital would not experience DPM concentrations much greater than those even further away from the freeway and the health risks would be equal.

The SCAQMD has developed a web site that allows a location based search for public information about SCAQMD regulated facilities (that is, facilities that are required to have a permit to operate equipment that releases pollutants into the air). It is called the Facility Information Detail (FIND) website (http://www.aqmd.gov/webappl/fim/default.htm). The website was used to examine one-quarter mile area around the proposed hospital for facilities that emit TACs. Several gas station/fueling facilities, an office building with a diesel emergency generator and boiler, and a commercial printing/letterpress company were found in the search.

There were several gas stations/fueling facilities located within one-quarter mile of the site. The closest was located approximately 900 feet from the hospital. The CARB Handbook recommends sensitive uses be located more than 300 feet from gas stations/fueling facilities. The proposed hospital would be located more than three times the recommended distance and therefore would not be significantly impacted by the gas stations/fueling facilities.

An office building with a a diesel powered emergency generator and a boiler is located approximately 1,100 feet to the west of the proposed hospital. The generator is only operated during power emergencies and the boiler would not be expected to generate substantial TAC emissions. Therefore, the proposed hospital would not be expected to be significantly impacted by this facility.

The commercial printing/letterpress company is located approximately 750 feet to the east of the proposed hospital. The FIND website shows that in 2002 the facility reported emissions of Ammonia, Benzene, Formaldehyde, Naphthalene and total PAH (Polycyclic Aromatic Hydrocarbons) which are TACs. However, the facility's emissions of these substances is relatively low, and given the distance between the facility and the proposed hospital, concentration of the TACs at the proposed hospital would be expected to be minor. Therefore, the proposed hospital would not be significantly impacted by emissions from this facility.

3.0 Mitigation Measures

3.1 Short-Term Impacts

3.1.1 Particulate Emission (PM-10) Control

AQ-1: Comply with SCAQMD Rule 402 and 403. During construction of the proposed project, the property owner/developer and its contractors shall be required to comply with regional rules, which will assist in reducing short-term air pollutant emissions. SCAQMD Rule 403 requires that fugitive dust be controlled with the best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. Two options are presented in Rule 403; monitoring of particulate concentrations or active control. Monitoring involves a sampling network around the project with no additional control measures unless specified concentrations are exceeded. The active control option does not require any monitoring, but requires that a list of measures be implemented starting with the first day of construction.

Rule 403 requires that "No person conducting active operations without utilizing the applicable best available control measures included in Table 1 of this Rule to minimize Fugitive dust emissions from each fugitive dust source type within the active operation." The measures from Table 1 of Rule 403 are presented below as Table 15. The applicable measures presented in Table 15 are required to be implemented by Rule 403.

Rule 403 requires that "Large Projects" implement additional measures. A Large Project is defined as "any active operations on property which contains 50 or more acres of disturbed surface area; or any earth-moving operation with a daily earth-moving or throughput volume of 3,850 cubic meters (5,000 cubic yards) for more than three times during the most recent 365 day period. Grading of the project will be considered a Large Project under Rule 403. Therefore, the project will be required to implement the applicable actions specified in Table 2 of the Rule. Table 2 from Rule 403 is presented below as Table 16.

As a Large Operation, the project will also be required to:

- Submit a fully executed Large Operation Notification (SCAQMD Form 403N) to the SCAQMD Executive Officer within 7 days of qualifying as a large operation;
- Include, as part of the notification, the name(s), address(es), and phone number(s) of the person(s) responsible for the submittal, and a description of the operation(s), including a map depicting the location of the site;
- Maintain daily records to document the specific dust control actions taken, maintain such records for a period of not less than three years; and make such records available to the Executive Officer upon request.
- Install and maintain project signage with project contact signage that meets the minimum standards of the Rule 403 Implementation Handbook, prior to initiating any earthmoving activities.
- Identify a dust control supervisor that is employed by or contracted with the property owner or developer, is on the site or available on-site within 30 minutes

during working hours, has the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule requirements, and has completed the AQMD Fugitive Dust Control Class and has been issued a valid Certificate of Completion for the class

- Notify the SCAQMD Executive Officer in writing within 30 days after the site no longer qualifies as a large operation

Rule 403 also requires that the construction activities "shall not cause or allow PM10 levels exceed 50 micrograms per cubic meter when determined by simultaneous sampling, as the difference between upwind and down wind sample." Large Projects that cannot meet this performance standard are required to implement the applicable actions specified in Table 3 of Rule 403. Table 3 from Rule 403 is presented below as Table 17. Rather than perform monitoring to determine conformance with the performance standard, which will not reduce PM10 emissions, the project shall implement all applicable measures presented in Table 17 (Rule 403 Table 3) regardless of conformance with the Rule 403 performance standard. This potentially results in a higher reduction of particulate emissions than if these measures were implemented only after being determined to be required by monitoring.

Further, Rule 403 requires that that the project shall not "allow track-out to extend 25 feet or more in cumulative length from the point of origin from an active operation." All track-out from an active operation is required to be removed at the conclusion of each workday or evening shift. Any active operation with a disturbed surface area of five or more acres, or with a daily import or export of 100 cubic yards or more of bulk materials must utilize at least one of the measures listed in Table 18 at each vehicle egress from the site to a paved public road.

Table 15
Required Best Available Control Measures (Rule 403 Table 1)

Source Category	Control Measure	Guidance
Backfilling		
01-1	Stabilize backfill material when not actively handling; and	• Mix backfill soil with water prior to moving • Dedicate water truck or high capacity hose to backfilling equipment • Empty loader bucket slowly so that no dust plumes are generated • Minimize drop height from loader bucket
01-2	Stabilize backfill material during handling; and	
01-3	Stabilize soil at completion of activity.	
Clearing and Grubbing		
02-1	Maintain stability of soil through pre-watering of site prior to clearing and grubbing; and	• Maintain live perennial vegetation where possible • Apply water in sufficient quantity to prevent generation of dust plumes
02-2	Stabilize soil during clearing and grubbing activities; and	
02-3	Stabilize soil immediately after clearing and grubbing activities.	
Clearing Forms		
03-1	Use water spray to clear forms; or	• Use of high pressure air to clear forms may cause exceedance of Rule requirements
03-2	Use sweeping and water spray to clear forms; or	
03-3	Use vacuum system to clear forms.	
Crushing		
04-1	Stabilize surface soils prior to operation of support equipment; and	• Follow permit conditions for crushing equipment • Pre-water material prior to loading into crusher • Monitor crusher emissions opacity • Apply water to crushed material to prevent dust plumes
04-2	Stabilize material after crushing.	
Cut and Fill		
05-1	Pre-water soils prior to cut and fill activities; and	• For large sites, pre-water with sprinklers or water trucks and allow time for penetration • Use water trucks/pulls to water soils to depth of cut prior to subsequent cuts
05-2	Stabilize soil during and after cut and fill activities.	
Demolition – Mechanical/Manual		
06-1	Stabilize wind erodible surfaces to reduce dust; and	• Apply water in sufficient quantities to prevent the generation of visible dust plumes
06-2	Stabilize surface soil where support equipment and vehicles will operate; and	
06-3	Stabilize loose soil and demolition debris; and	
06-4	Comply with AQMD Rule 1403.	
Disturbed Soil		
07-1	Stabilize disturbed soil throughout the construction site; and	• Limit vehicular traffic and disturbances on soils where possible • If interior block walls are planned, install as early as possible • Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes
07-02	Stabilize disturbed soil between structures	

Table 15 (Continued)
Required Best Available Control Measures (Rule 403 Table 1)

Source Category / Control Measure		Guidance
Earth-Moving Activities		
08-1	Pre-apply water to depth of proposed cuts; and	• Grade each project phase separately, timed to coincide with construction phase
08-2	Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction; and	• Upwind fencing can prevent material movement on site
08-3	Stabilize soils once earth-moving activities are complete.	• Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes
Importing/Exporting of Bulk Materials		
09-1	Stabilize material while loading to reduce fugitive dust emissions; and	• Use tarps or other suitable enclosures on haul trucks
09-2	Maintain at least six inches of freeboard on haul vehicles; and	• Check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage
09-3	Stabilize material while transporting to reduce fugitive dust emissions; and	• Comply with track-out prevention/mitigation requirements
09-4	Stabilize material while unloading to reduce fugitive dust emissions; and	• Provide water while loading and unloading to reduce visible dust plumes
09-5	Comply with Vehicle Code Section 23114.	
Landscaping		
10-1	Stabilize soils, materials, slopes	• Apply water to materials to stabilize Maintain materials in a crusted condition
		• Maintain effective cover over materials
		• Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes
		• Hydroseed prior to rain season
Road Shoulder Maintenance		
11-1	Apply water to unpaved shoulders prior to clearing; and	• Installation of curbing and/or paving of road shoulders can reduce recurring maintenance costs
11-2	Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance.	• Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs
Screening		
12-1	Pre-water material prior to screening; and	• Dedicate water truck or high capacity hose to screening operation
12-2	Limit fugitive dust emissions to opacity and plume length standards; and	• Drop material through the screen slowly and minimize drop height
12-3	Stabilize material immediately after screening.	• Install wind barrier with a porosity of no more than 50% upwind of screen to the height of the drop point

Table 15 (Continued)
Required Best Available Control Measures (Rule 403 Table 1)

Source Category	Control Measure	Guidance
Staging Areas		
13-1	Stabilize staging areas during use; and	• Limit size of staging area • Limit vehicle speeds to 15 miles per hour • Limit number and size of staging area entrances/exists
13-2	Stabilize staging area soils at project completion.	
Stockpiles/ Bulk Material Handling		
14-1	Stabilize stockpiled materials.	• Add or remove material from the downwind portion of the storage pile • Maintain storage piles to avoid steep sides or faces
14-2	Stockpiles within 100 yards of off-site occupied buildings must not be greater than eight feet in height; or must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage.	
Traffic Areas for Construction Activities		
15-1	Stabilize all off-road traffic and parking areas; and	• Apply gravel/paving to all haul routes as soon as possible to all future roadway areas • Barriers can be used to ensure vehicles are only used on established parking areas/haul routes
15-2	Stabilize all haul routes; and	
15-3	Direct construction traffic over established haul routes.	
Trenching		
16-1	Stabilize surface soils where trencher or excavator and support equipment will operate; and	• Pre-watering of soils prior to trenching is an effective preventive measure. • For deep trenching activities, pre-trench to 18 inches soak soils via the pre-trench and resuming trenching • Washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment
16.2	Stabilize soils at the completion of trenching activities.	
Truck Loading		
17-1	Pre-water material prior to loading; and	• Empty loader bucket such that no visible dust plumes are created • Ensure that the loader bucket is close to the truck to minimize drop height while loading
17.2	Ensure that freeboard exceeds six inches (CVC 23114)	
Turf Overseeding		
18-1	Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards; and	• Haul waste material immediately off-site
18-2	Cover haul vehicles prior to exiting the site.	

Table 15 (Continued)
Required Best Available Control Measures (Rule 403 Table 1)

Source Category	Control Measure	Guidance
Unpaved Roads/Parking Lots		
19-1	Stabilize soils to meet the applicable performance standards; and	• Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements
19-2	Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.	
Vacant Land		
20-1	In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking and/or access by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees or other effective control measures.	

Table 16
Dust Control Measures for Large Operations (Rule 403 Table 2)

Fugitive Dust Source Category	Control Actions
Earth-moving (except construction cutting and filling areas, and mining operations)	
(1a)	Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations each subsequent four-hour period of active operations; OR
(1a-1)	For any earth-moving which is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.
Earth-moving: Construction fill areas:	
(1b)	Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. For areas which have an optimum moisture content for compaction of less than 12 percent, as determined by ASTM Method 1557 or other equivalent method approved by the Executive Officer and the California Air Resources Board and the U.S. EPA, complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four-hour period of active operations.
Earth-moving: Construction cut areas and mining operations:	
(1c)	Conduct watering as necessary to prevent visible emissions from extending more than 100 feet beyond the active cut or mining area unless the area is inaccessible to watering vehicles due to slope conditions or other safety factors.
Disturbed surface areas (except completed grading areas)	
(2a/b)	Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind driven fugitive dust must have an application of water at least twice per day to at least 80 percent of the unstabilized area.
Disturbed surface areas: Completed grading areas	
(2c)	Apply chemical stabilizers within five working days of grading completion; OR
(2d)	Take actions (3a) or (3c) specified for inactive disturbed surface areas.

Table 16 (Continued)
Dust Control Measures for Large Operations (Rule 403 Table 2)

Fugitive Dust Source Category	Control Actions
Inactive disturbed surface areas	
(3a)	Apply water to at least 80 percent of all inactive disturbed surface areas on a daily basis when there is evidence of wind driven fugitive dust, excluding any areas which are inaccessible to watering vehicles due to excessive slope or other safety conditions; OR
(3b)	Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR
(3c)	Establish a vegetative ground cover within 21 days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter; OR
(3d)	Utilize any combination of control actions (3a), (3b), and (3c) such that, in total, these actions apply to all inactive disturbed surface areas.
Unpaved Roads	
(4a)	Water all roads used for any vehicular traffic at least once per every two hours of active operations [3 times per normal 8 hour work day]; OR
(4b)	Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour; OR
(4c)	Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface.
Open storage piles	
(5a)	Apply chemical stabilizers; OR
(5b)	Apply water to at least 80 percent of the surface area of all open storage piles on a daily basis when there is evidence of wind driven fugitive dust; OR
(5c)	Install temporary coverings; OR
(5d)	Install a three-sided enclosure with walls with no more than 50 percent porosity which extend, at a minimum, to the top of the pile. This option may only be used at aggregate-related plants or at cement manufacturing facilities.
All Categories	
(6a)	Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 2 may be used.

Table 17
Contingency Control Measures for Large Operations (Rule 403 Table 3)

Fugitive Dust Source Category	Control Actions
Earth-moving	
(1A)	Cease all active operations; OR
(2A)	Apply water to soil not more than 15 minutes prior to moving such soil.
Disturbed surface areas	
(0B)	On the last day of active operations prior to a weekend, holiday, or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; OR
(1B)	Apply chemical stabilizers prior to wind event; OR
(2B)	Apply water to all unstabilized disturbed areas 3 times per day. If there is any evidence of wind driven fugitive dust, watering frequency is increased to a minimum of four times per day; OR
(3B)	Take the actions specified in Table 2, Item (3c); OR
(4B)	Utilize any combination of control actions (1B), (2B), and (3B) such that, in total, these actions apply to all disturbed surface areas.
Unpaved Roads	
(1C)	Apply chemical stabilizers prior to wind event; OR
(2C)	Apply water twice per hour during active operation; OR
(3C)	Stop all vehicular traffic.
Open Storage Piles	
(1D)	Apply water twice per hour; OR
(2D)	Install temporary coverings.
Paved Road Track-Out	
(1E)	Cover all haul vehicles; OR
(2E)	Comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.
All Categories	
(1F)	Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 3 may be used.

Table 18
Track Out Control Options

(A)	Install a pad consisting of washed gravel (minimum-size: one inch) maintained in a clean condition to a depth of at least six inches and extending at least 20 feet wide and 50 feet long.
(B)	Pave the surface extending at least 100 feet and a width of at least 20 feet wide.
(C)	Utilize a wheel shaker/wheel spreading device consisting of raised dividers (rails, pipe, or grates) at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle under carriages before vehicles exit the site.
(D)	Install and utilize a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the site.
(E)	Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified items (A) through (D) above.

In addition to the measures presented above, a requirement to pave haul roads at the project was considered to further reduce emissions. However, such a requirement would be extraordinarily expensive and wasteful given that haul roads are temporary facilities. The cost of paving haul roads at the project site would be high, estimated at $660,000 per mile. The cost to remove the paved haul road and remove the waste asphalt would be approximately $140,000 per mile, bringing the total cost of paving haul roads at the project site to $800,000 per mile.

Furthermore, the location of haul roads could change daily in large grading operations. A requirement to pave haul roads would result in a continuous paving operation as the locations of haul roads change. Air emissions would result from the paving of haul roads, and additional emissions would result from the removal of the paving materials. Air emissions would also result from the delivery of paving materials for haul roads to the project site. In addition, waste asphalt materials from paved haul roads would need to be removed from the project site, resulting in higher emissions and the disposal of waste asphalt in significant quantities. As such, the purported environmental benefits associated with dust control from road paving would be offset by the negative environmental and economic impacts paving haul roads. Therefore, this potential mitigation measure for construction is considered infeasible.

3.1.2 Construction Equipment Emission Control

While Measure AQ-1 above addresses particulate emissions from construction activities, other pollutants generated by construction equipment will also exceed SCAQMD thresholds. The generation of these emissions is almost entirely due to engine combustion in construction equipment, haul trucks, and employee commuting. The measure below addresses these emissions.

<u>AQ-2: Reduce construction equipment emissions by implementing the following measures.</u> The following measures should be implemented. They should be included in grading and improvement plans specifications for implementation by contractors. Some additional gains in particulate emission control will also be realized from the implementation of these measures.

- Use low emission mobile construction equipment. The property owner/developer shall comply with CARB requirements for heavy construction equipment.
- Maintain construction equipment engines by keeping them tuned.

- Use low sulfur fuel for stationary construction equipment. This is required by SCAQMD Rules 431.1 and 431.2.
- Utilize existing power sources (i.e., power poles) when available. This measure would minimize the use of higher polluting gas or diesel generators.
- Configure construction parking to minimize traffic interference.
- Minimize obstruction of through-traffic lanes. Construction should be planned so that lane closures on existing streets are kept to a minimum.
- Schedule construction operations affecting traffic for off-peak hours to the best extent when possible.
- Develop a traffic plan to minimize traffic flow interference from construction activities (the plan may include advance public notice of routing, use of public transportation and satellite parking areas with a shuttle service.)

Table 8 shows that debris haul trucks are the primary source of NO_x emissions during demolition. To reduce total NO_x emissions to below the significance threshold haul truck emissions would need to be reduced to 28.8% of the projected emissions. The only practical way to do this would be limit haul trucks to 29 daily trips assumed. This would more than triple the duration of the demolition phase to approximately 115 days which has been determined to be infeasible. Even with the reduction in NOx emissions, PM_{10} and $PM_{2.5}$ emissions would exceed the thresholds and demolition would still result in significant unavoidable impact.

Several types of advanced emission control technologies were considered but are currently not commercially available such as the use of aqueous diesel fuel. Aqueous diesel fuel reduces NOx formation by reducing combustion temperatures, resulting in lower NOx emissions. According to the SCAQMD, the current availability of this fuel technology is limited, and it may not be available for use for the project. In addition, with exhaust gas recirculation diesel engines, a small amount of hot exhaust gas is routed through a cooler and mixed with fresh air entering the engine. The exhaust gas helps reduce the temperature during combustion, which lowers the formation of thermal NOx. Exhaust gas recirculation technology is in the development phase, and has not been fully commercialized. To the extent that the advanced emissions control technologies become reasonably commercially available, or are required by CARB from grading contractors, then such advanced emissions control technologies will be used.

Furthermore, a requirement to install diesel particulate filters on construction equipment used at the project was considered to further reduce emissions. However, the availability of construction equipment retrofitted with diesel particulate filters is limited. This is a result of operational problems in diesel engines equipped with these filters. Therefore, this potential mitigation measure for construction is considered infeasible.

3.1.3 Architectural Coating Emissions Control

The following measure will limit ROG emissions from painting activities to the greatest extent feasible.

<u>AQ-3 ROG Control Measures</u>: The following measures should be incorporated into project construction to the greatest extent feasible:

- Minimize the amount of paint used by using pre-coated, pre-colored and naturally colored building materials; and

- Use high transfer efficiency painting methods such as HVLP (High Volume Low Pressure) sprayers and brushes/rollers where possible.

3.2 Long-Term Impacts

3.2.1 Local Air Quality Impacts

The future carbon monoxide (CO) emissions with project (with LOS improvement) are projected to generate a smaller increase or be lower than future no project, and therefore, the local CO impacts due to the project are not considered to be significant. Therefore, the project will not result in a significant local air quality impacts. No mitigation is necessary.

3.2.2 Regional Emissions

CO, ROG and NOx emissions associated with the operation of the project were shown to exceed the threshold of significance. Mitigation is required.

The most significant reductions in regional and local air pollutant emissions are attainable through programs which reduce the vehicular travel associated with the project. Support and compliance with the AQMP for the basin is the most important measure to achieve this goal. The AQMP includes improvement of mass transit facilities and implementation of vehicular usage reduction programs. Additionally, energy conservation measures are included.

TDM Measures

1. <u>Provide adequate ingress and egress at all entrances to public facilities to minimize vehicle idling at curbsides.</u> Presumably, this measure would improve traffic flow into and out of the parking lot. The air quality benefits are incalculable because more specific data is required.

2. <u>Provide dedicated turn lanes as appropriate and provide roadway improvements at heavily congested roadways.</u> Again, the areas where this measure would be applicable are the intersections in and near the project area, such as Haven Avenue, Guasti Road and other roadways within the project site. Presumably, these measures would improve traffic flow. Emissions would drop as a result of the higher traffic speeds, but to an unknown extent.

Energy Efficient Measures

3. <u>Improve thermal integrity of the buildings and reduce thermal load with automated time clocks or occupant sensors.</u> Reducing the need to heat or cool structures by improving thermal integrity will result in a reduced expenditure of energy and a reduction in pollutant emissions. The air quality benefit depends upon the extent of the reduction of energy expenditure which is unknown in this case. The air quality benefit is also unknown, therefore.

4. <u>Install energy efficient street lighting.</u> Implementation of this measure is not feasible because of varying definitions of the phrase "energy efficient."

5. Capture waste heat and reemploy it in nonresidential buildings. This measure is applicable to the commercial buildings in the project.

6. Landscape with native drought-resistant species to reduce water consumption and to provide passive solar benefits. The connection between reducing water consumption and improving air quality is non-existent in the context of this analysis. A measure designed to reduce water consumption has no place in an air quality mitigation package. The assertion that such vegetation would provide "passive solar benefits" is false because drought resistant vegetation lacks both the height and the fullness to shade the building structures. No air quality benefit will occur as a result of the implementation of this measure.

7. Provide lighter color roofing and road materials and tree planning programs to comply with the AQMP Miscellaneous Sources MSC-01 measure. This measure reduces the need for cooling energy in the summer.

8. Synchronize traffic signals. The areas where this measure would be applicable are roadway intersections within the project area. This measure would be more effective if the roadways beyond the project limits are synchronized as well. The air quality benefits are incalculable because more specific data is required.

9. Introduce window glazing, wall insulation, and efficient ventilation methods. The construction of buildings with features that minimize energy use is already required by the Uniform Building Code.

4.0 Unavoidable Significant Impacts

4.1 Short-Term Impacts

The analysis indicates that project emissions from construction activities will exceed the SCAQMD’s Thresholds of Significance for ROG, NO_x, PM_{10}, and $PM_{2.5}$. Mitigation will reduce emissions, but not to the point that they will fall under the SCAQMD’s thresholds. Therefore, construction emissions will exceed the SCAQMD thresholds even after mitigation, and short-term construction air quality impacts will be significant.

4.2 Long-Term Impacts

The analysis indicates that operational project emissions will exceed the SCAQMD’s Thresholds of Significance for CO, ROG and NO_x. Mitigation will reduce emissions, but not to the point that they will fall under the SCAQMD’s thresholds. Therefore, operational emissions of CO, ROG and NO_X will exceed the SCAQMD thresholds even after mitigation, and long-term regional air quality impacts will be significant.

APPENDIX

Construction Emissions Calculation Worksheets

• MESTRE GREVE ASSOCITES CONSTRUCTION EMISSIONS WORKSHEET •

v. 10.05

Project: Ontario Gateway/Bates Specific Plan
Case Demolition
Year: 2007

1. ON-ROAD VEHICLE

Emission Factor Source: EMFAC2002 Worst-Case By SCAQMD

Daily Vehicle Trips To Site:	*20*	% Passenger Vehicles:		75%	
Average Trip Length :	*20*	% Delivery Trucks:		25%	
Daily Vehicle Miles Traveled :	400				
	CO	ROG	NOx	PM10	PM2.5
Vehicluar Emissions (lbs./day)	5.59	0.68	2.91	0.45	0.42
Emission Factors (lb/mi)					
Passenger Vehicle	0.012820	0.001383	0.001361	0.001361	0.001263
Delivery Trucks	0.017455	0.002608	0.024978	0.000440	0.000424

2. HEAVY DUTY TRUCK

Emission Factor Source: EMFAC2002 Worst-Case By SCAQMD

Number Daily Truck Round Trips:	*100*				
Average One Way Trip Length:	*25*				
Daily Vehicle Miles Traveled :	*5000*				
	CO	ROG	NOx	PM10	PM2.5
Truck Emissions (lbs./dy)	27.60	6.13	178.17	3.22	2.96
Emission Factors (lb/mi)	0.005520	0.001227	0.035635	0.000644	0.000593

3. GROUND DISTURBANCE

Project Size (acres):	*24.5*	
Max Day % Worked:	*100%*	
Max Daily (acres):	24.5	
Emission Factor	PM 10	PM2.5
(lbs/day/acre):	26.40	5.49
Watering Reduction:	50%	50%
Daily Emissions		
(tons/day):	0.16	0.03
(pounds/day):	323.4	67.3

Emission Factor Source: PM10 - Page 9-3 of 1993 CEQA Handbook, PM2.5 - 0.208 times PM10 per CEIDARS.

4. DEMOLITION

Bldg. Vol. (ft^3)	*4,000,000*	
Duration (Days)	*33*	
Emission Facto	PM10	PM2.5
(lbs/ft^3):	0.00042	0.00009
Total Emissions		
(Tons)	0.84	0.17
(lbs)	1,680	349
Daily Emissions		
(tons/day)	0.03	0.01
(lbs/day)	51	11

Emission Factor Source: PM10 - Page A9-104 (Table A9-10) of 1993 CEQA Handbook, PM2.5 - 0.208 times PM10 per CEIDARS

5 EMISSIONS FROM CONSTRUCITON EQUIPMENT

Emission Factor Source: URBEMIS2002

Hours/Day of Activity: *8*

Daily Emissions (lbs./day)

ID	Type	No.	CO	ROG	NOx	PM10	PM2.5
6	Excavators	*2*	31.28	3.68	21.34	0.58	0.53
21	Tractors/Loaders/Backhoes	*4*	19.28	2.60	19.88	0.88	0.81
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
	Water Truck	*2*	7.43	1.04	4.63	0.26	0.24
		8	CO	ROG	NOx	PM10	PM2.5
Equipment Emissions (lbs./day)			57.993	7.321	45.846	1.724	1.586

TOTAL DEMOLITION EMISSIONS

	CO	ROG	NOx	PM10	PM2.5
Total Emissions (lbs./day)	**91.2**	**14.1**	**226.9**	**379.7**	**82.8**

• MESTRE GREVE ASSOCITES CONSTRUCTION EMISSIONS WORKSHEET •

v. 10.05

Project: Ontario Gateway/Bates Specific Plan
Case Grading
Year: 2007

1. ON-ROAD VEHICLE EMISSIONS

Emission Factor Source: EMFAC2002 Worst-Case By SCAQMD

Daily Vehicle Trips To Site:	20	% Passenger Vehicles:		75%	
Average Trip Length :	20	% Delivery Trucks:		25%	
Daily Vehicle Miles Traveled :	400				
	CO	ROG	NOx	PM10	PM2.5
Vehiclular Emissions (lbs./day)	5.59	0.68	2.91	0.45	0.42
Emission Factors (lb/mi)					
Passenger Vehicle	0.012820	0.001383	0.001361	0.001361	0.001263
Delivery Trucks	0.017455	0.002608	0.024978	0.000440	0.000424

2. HEAVY DUTY TRUCK EMISSIONS

Emission Factor Source: EMFAC2002 Worst-Case By SCAQMD

Number Daily Truck Round Trips:	0				
Average One Way Trip Length:	25				
Daily Vehicle Miles Traveled :	0				
	CO	ROG	NOx	PM10	PM2.5
Truck Emissions (lbs./dy)	0.00	0.00	0.00	0.00	0.00
Emission Factors (lb/mi)	0.005520	0.001227	0.035635	0.000644	0.000593

3. GROUND DISTURBANCE PARTICULATE EMISSIONS

Project Size (in acres):	43.3	
Percent Worked in maximum day	100%	
Maximum daily acres disturbed	43.3	
Emission Factor	PM10	PM2.5
Emissions (in lbs/day/acre):	26.40	5.49
Watering Reduction:	50%	50%
Daily Emissions		
(tons/day):	0.29	0.06
(pounds/day):	571.6	118.9

Emission Factor Source: PM10 - Page 9-3 of 1993 CEQA Handbook, PM2.5 - 0.208 times PM10 per CEIDARS.

4. EMISSIONS FROM CONSTRUCITON EQUIPMENT

Emission Factor Source: URBEMIS2002

Hours/Day of Activity: 8

ID	Type	No.	CO	ROG	NOx	PM10	PM2.5
				Daily Emissions (lbs./day)			
17	Scrapers	4	123.84	14.56	91.16	3.80	0.00
15	Rubber-Tired Dozers	4	108.44	14.64	111.80	5.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
	Water Truck	2	7.43	1.04	4.63	0.26	0.00
	TOTAL:	10	CO	ROG	NOx	PM10	PM2.5
Equipment Emissions (lbs./day)			247.436	31.219	214.217	9.356	0.268

TOTAL ONTARIO GATEWAY/BATES SPECIFIC PLAN EMISSIONS

	CO	ROG	NOx	PM10	PM2.5
Total Emissions (lbs./day)	**253.0**	**31.9**	**217.1**	**581.4**	**119.6**

• MESTRE GREVE ASSOCITES CONSTRUCTION EMISSIONS WORKSHEET •

v. 10.05

Project: Ontario Gateway/Bates Specific Plan
Case Paving
Year: 2007

1. ON-ROAD VEHICLE EMISSIONS

Emission Factor Source: EMFAC2002 Worst-Case By SCAQMD

Daily Vehicle Trips To Site:	20	% Passenger Vehicles:		75%	
Average Trip Length :	20	% Delivery Trucks:		25%	
Daily Vehicle Miles Traveled :	400				
	CO	ROG	NOx	PM10	PM2.5
Vehicluar Emissions (lbs./day)	5.59	0.68	2.91	0.45	0.42
Emission Factors (lb/mi)					
Passenger Vehicle	0.012820	0.001383	0.001361	0.001361	0.001263
Delivery Trucks	0.017455	0.002608	0.024978	0.000440	0.000424

2. HEAVY DUTY TRUCK EMISSIONS

Emission Factor Source: EMFAC2002 Worst-Case By SCAQMD

Number Daily Truck Round Trips:	50				
Average One Way Trip Length:	15				
Daily Vehicle Miles Traveled :	1500				
	CO	ROG	NOx	PM10	PM2.5
Truck Emissions (lbs./dy)	8.28	1.84	53.45	0.97	0.89
Emission Factors (lb/mi)	0.005520	0.001227	0.035635	0.000644	0.000593

3. ASPHALT OFF-GAS EMISSIONS

Total Area Paved	24.3
No. of Days of Paving	10
Maximum daily acres Paved	2.4
Emission Factor	ROG
Emissions (in lbs/acre):	2.62
Daily Emissions	
(tons/day):	0.00
(pounds/day):	6.4

Emission Factor Source: PM10 - Page 9-3 of 1993 CEQA Handbook, PM2.5 - 0.208 times PM10 per CEIDARS.

4. EMISSIONS FROM CONSTRUCITON EQUIPMENT

Emission Factor Source: URBEMIS2002

Hours/Day of Activity: 8

ID	Type	No.	CO	ROG	NOx	PM10	PM2.5
			Daily Emissions (lbs./day)				
7	Graders	3	44.94	5.28	32.43	1.23	0.00
11	Pavers	3	34.86	4.11	24.36	0.78	0.00
12	Paving Equipment	3	22.98	3.12	23.70	1.05	0.00
13	Rollers	6	44.04	5.16	30.78	0.96	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
		0	0.00	0.00	0.00	0.00	0.00
	Water Truck	2	7.43	1.04	4.63	0.26	0.00
	TOTAL:	17	CO	ROG	NOx	PM10	PM2.5
Equipment Emissions (lbs./day)			159.917	19.405	120.180	4.448	0.151

TOTAL ONTARIO GATEWAY/BATES SPECIFIC PLAN EMISSIONS

	CO	ROG	NOx	PM10	PM2.5
Total Emissions (lbs./day)	**173.8**	**28.3**	**176.5**	**5.9**	**1.5**

Operational Emissions Calculation Worksheets

• MESTRE GREVE ASSOCIATES PROJECT EMISSIONS WORKSHEET •

v. 10.05

Project: *Bates S.P.*
Study Year: *2008* *(Opening year)*
County: *OC*

1. VEHICULAR EMISSIONS

Emission Factor Source: EMFAC2002 Worst-Case By SCAQMD

Number of Trips= *12,384* % Passenger Vehicle = *90.0%*
Avg. Trip Length = *10.0* % Delivery Trucks = *10.0%*
VMT = *123,840*

	CO	ROG	NOx	PM10	PM2.5	SOx
Factors (lb/mi)						
Passenger Vehicle	0.011798	0.001277	0.001245	0.000080	0.000075	0.000009
Delivery Trucks	0.015942	0.002450	0.023199	0.000419	0.000404	0.000033
Emissions (Lb/Dy)	1,512.4	172.7	426.1	14.1	13.3	1.4

2. ON SITE EMISSIONS DUE TO NATURAL GAS COMBUSTION

Source: SCAQMD CEQA Handbook

Unit Type	Gas ft³/DU/Mo.	DU	Gas ft³/day	
Single Fam.	6665	*0*	0	
Mult. Fam. <=4	4105	*0*	0	
Mult. Fam. >=5	3918	*0*	0	
	ft³/ft²/Mo.	ft²	*0*	*Subtotal for Residential*
Hospital	2	*60,000*	3,934	
Office/Retail	2.9	*405,000*	38,508	
Hotel/Motel	4.8	*160,000*	25,180	
	ft³/Customer/Mo.	Customers/Mo.	*67,623*	*Subtotal for Retail/Commercial*
Industrial	2936.6	*0*	0	
			0	*Subtotal for Industrial*
			67,623	**Total Gas Usage/Day**

	CO	ROG	NOx	PM10	PM2.5	SOx
Factor (lbs/10^6 ft³)	20.0	5.3	0.7	0.2	0.2	0.0
Emissions (Lb/Dy)	1.4	0.4	8.1	0.0	0.0	0.0

3. ON SITE EMISSIONS DUE TO CONSUMER PRODUCT USAGE

Emission Factor Source: URBEMIS2002

Number of Residents: **0**

	CO	ROG	NOx	PM10	PM2.5	SOx
Factor (lbs/resident)	0.0000	0.0171	0.0000	0.0000	0.0000	0.0000
Emissions (Lb/Dy)	0.0	0.0	0.0	0.0	0.0	0.0

4. OFF SITE EMISSIONS DUE ELECTRICAL GENERATION

Source: April 1993 CEQA Hand Handbook

Unit Type	SCE KWH/Unit/Yr	LADWP KWH/Unit/Yr	DU	Electrical Use (KWH/Day)	(SCE Usage Rate)
Residential	6081	5172	*0*	0	
	KWH/ft²/Yr.	KWH/ft²/Yr.	ft²		
Commercial	8.8	17.1		0	
Restaurant	47.3	47.6	*0*	0	
Office/Retail	11.8	15.3	*405,000*	13,093	
Food Store	51.4	55.2	*0*	0	
Warehouse	3.4	5.3	*0*	0	
Elementary School	6.3	5.5	*0*	0	
College	11.6	11.5	*0*	0	
Hospital	17.9	25.5	*60,000*	2,942	
Hotel/Motel	6.8	13.1	*160,000*	2,981	
Miscellaneous	8.8	12.2	*0*	0	
				19,016	**Total KWH/Day**

	CO	ROG	NOx	PM10	PM2.5	SOx
Factor (lbs/MWH)	0.20	0.01	1.15	0.04	0.04	0.12
Emis. (Lb/Dy)	3.8	0.2	21.9	0.8	0.8	2.3

**TOTAL PROJECT EMISSIONS **

	CO	ROG	NOx	PM10	PM2.5	SOx
lbs/day	1,517.5	173.2	456.0	14.9	14.1	3.7
Ton/day	0.76	0.09	0.23	0.01	0.01	0.00
2020 SCAB (Tons/Day)	1,920	544	504	315	--	73
Percent Regional	0.040%	0.016%	0.045%	0.002%	--	0.003%

• MESTRE GREVE ASSOCIATES PROJECT EMISSIONS WORKSHEET •

v. 10.05

Project: *Bates S.P.*
Study Year: *2025* *(Post 2025)*
County: *OC*

1. VEHICULAR EMISSIONS

Emission Factor Source: EMFAC2002 Worst-Case By SCAQMD

Number of Trips= *12,384*   % Passenger Vehicle = *90.0%*
Avg. Trip Length = *10.0*   % Delivery Trucks = *10.0%*
VMT = *123,840*

	CO	ROG	NOx	PM10	PM2.5	SOx
Factors (lb/mi)						
Passenger Vehicle	0.003404	0.000454	0.000325	0.000085	0.000079	0.000009
Delivery Trucks	0.005134	0.001176	0.005258	0.000224	0.000216	0.000035
Emissions (Lb/Dy)	443.0	65.2	101.3	12.3	11.5	1.4

2. ON SITE EMISSIONS DUE TO NATURAL GAS COMBUSTION

Source: SCAQMD CEQA Handbook

Unit Type	Gas ft³/DU/Mo.	DU	Gas ft³/day	
Single Fam.	6665	*0*	0	
Mult. Fam. <=4	4105	*0*	0	
Mult. Fam. >=5	3918	*0*	0	
	ft³/ft²/Mo.	ft²	*0*	*Subtotal for Residential*
Hospital	2	*60,000*	3,934	
Office/Retail	2.9	*405,000*	38,508	
Hotel/Motel	4.8	*160,000*	25,180	
	ft³/Customer/Mo.	Customers/Mo.	*67,623*	*Subtotal for Retail/Commercial*
Industrial	2936.6	*0*	0	
			0	*Subtotal for Industrial*
			67,623	**Total Gas Usage/Day**

	CO	ROG	NOx	PM10	PM2.5	SOx
Factor (lbs/10^6 ft³)	20.0	5.3	0.7	0.2	0.2	0.0
Emissions (Lb/Dy)	1.4	0.4	8.1	0.0	0.0	0.0

3. ON SITE EMISSIONS DUE TO CONSUMER PRODUCT USAGE

Emission Factor Source: URBEMIS2002

Number of Residents: **0**

	CO	ROG	NOx	PM10	PM2.5	SOx
Factor (lbs/resident)	0.0000	0.0171	0.0000	0.0000	0.0000	0.0000
Emissions (Lb/Dy)	0.0	0.0	0.0	0.0	0.0	0.0

4. OFF SITE EMISSIONS DUE ELECTRICAL GENERATION

Source: April 1993 CEQA Hand Handbook

Unit Type	SCE KWH/Unit/Yr	LADWP KWH/Unit/Yr	DU	Electrical Use (KWH/Day)	(SCE Usage Rate)
Residential	6081	5172	*0*	0	
	KWH/ft²/Yr.	KWH/ft²/Yr.	ft²		
Commercial	8.8	17.1		0	
Restaurant	47.3	47.6	*0*	0	
Office/Retail	11.8	15.3	*405,000*	13,093	
Food Store	51.4	55.2	*0*	0	
Warehouse	3.4	5.3	*0*	0	
Elementary School	6.3	5.5	*0*	0	
College	11.6	11.5	*0*	0	
Hospital	17.9	25.5	*60,000*	2,942	
Hotel/Motel	6.8	13.1	*160,000*	2,981	
Miscellaneous	8.8	12.2	*0*	0	
				19,016	**Total KWH/Day**

	CO	ROG	NOx	PM10	PM2.5	SOx
Factor (lbs/MWH)	0.20	0.01	1.15	0.04	0.04	0.12
Emis. (Lb/Dy)	3.8	0.2	21.9	0.8	0.8	2.3

***TOTAL PROJECT EMISSIONS ***

	CO	ROG	NOx	PM10	PM2.5	SOx
lbs/day	448.1	65.7	131.3	13.0	12.2	3.7
Ton/day	0.22	0.03	0.07	0.01	0.01	0.00
2020 SCAB (Tons/Day)	1,920	544	504	315	--	73
Percent Regional	0.012%	0.006%	0.013%	0.002%	--	0.003%

CALINE4 Modeling Data

```
CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: Bates Specific Plan - Existing (2005)
               RUN: Hour 1          (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide

   I.  SITE VARIABLES
          U=    .5 M/S             Z0= 100. CM            ALT=     0. (M)
        BRG= WORST CASE            VD=    .0 CM/S
       CLAS=     7 (G)             VS=    .0 CM/S
       MIXH= 1000. M              AMB=    .0 PPM
      SIGTH=   10. DEGREES       TEMP=  4.7 DEGREE (C)

  II.  LINK VARIABLES
       LINK      *  LINK COORDINATES (M)   *               EF     H     W
    DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*-------------------------*------------------------------
 A. Haven        *     0  2865     0  1170 *  AG   4561  10.5     .0  36.0
 B. Haven        *     0  1170     0   689 *  AG   5834  10.5     .0  40.0
 C. Inland Empir *   549   835   183  1170 *  AG   1326  10.5     .0  32.0
 D. Inland Empir *   183  1170     0  1170 *  AG   1326  10.5     .0  32.0
 E. Inland Empir *     0  1170  -274  1170 *  AG   1523  10.5     .0  29.0
 F. Inland Empir *  -274  1170  -732   981 *  AG   1523  10.5     .0  29.0
 G. Haven        *     0   689     0    27 *  AG   5816  8.7      .0  40.0
 H. Haven        *     0    27     0 -1463 *  AG   5715  8.7      .0  40.0
 I. Guasti       *  2195   366   500    27 *  AG    266  8.7      .0  25.0
 J. Guasti       *   500    27     0    27 *  AG    266  8.7      .0  25.0
 K. Guasti       *     0    27  -128    27 *  AG    805  8.7      .0  25.0

 III.  RECEPTOR LOCATIONS
             *    COORDINATES (M)
   RECEPTOR  *    X       Y      Z
 ------------*---------------------
 1. Recpt 1  *    -23   1151   1.8
 2. Recpt 2  *     21   1153   1.8
 3. Recpt 3  *    -21   1189   1.8
 4. Recpt 4  *     23   1187   1.8
 5. Recpt 5  *    -23     12   1.8
 6. Recpt 6  *     23     11   1.8
 7. Recpt 7  *    -23     43   1.8
 8. Recpt 8  *     23     43   1.8

  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )
             *       * PRED  *                 CONC/LINK
            *  BRG  * CONC  *                   (PPM)
  RECEPTOR   * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
-------------*-------*-------*----------------------------------------
 1. Recpt 1  *  173. *   4.5 *   .0  3.9   .0   .0   .0   .0   .4   .2
 2. Recpt 2  *  187. *   5.0 *   .0  4.4   .0   .0   .0   .0   .4   .2
 3. Recpt 3  *  173. *   5.2 *   .1  3.9   .0   .0   .6   .0   .3   .2
 4. Recpt 4  *  187. *   4.8 *   .0  3.7   .0   .6   .0   .0   .3   .2
 5. Recpt 5  *    7. *   4.2 *   .2   .2   .0   .0   .0   .0  3.2   .0
 6. Recpt 6  *  353. *   3.9 *   .2   .2   .0   .0   .0   .0  3.2   .0
 7. Recpt 7  *    7. *   4.0 *   .2   .2   .0   .0   .0   .0  3.4   .0
 8. Recpt 8  *  353. *   4.0 *   .2   .2   .0   .0   .0   .0  3.4   .0

             *    CONC/LINK
             *      (PPM)
  RECEPTOR   *   I    J    K
 ------------*---------------
 1. Recpt 1  *   .0   .0   .0
 2. Recpt 2  *   .0   .0   .0
 3. Recpt 3  *   .0   .0   .0
 4. Recpt 4  *   .0   .0   .0
 5. Recpt 5  *   .0   .0   .3
 6. Recpt 6  *   .0   .1   .0
 7. Recpt 7  *   .0   .0   .0
 8. Recpt 8  *   .0   .0   .0


CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1
```

```
              JOB: Bates Specific Plan - 2008 no project
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide

   I.  SITE VARIABLES
          U=    .5 M/S             Z0= 100. CM           ALT=     0. (M)
        BRG= WORST CASE            VD=    .0 CM/S
       CLAS=     7 (G)             VS=    .0 CM/S
       MIXH= 1000. M              AMB=    .0 PPM
      SIGTH=   10. DEGREES       TEMP=  4.7 DEGREE (C)

  II.  LINK VARIABLES
LINK      *  LINK COORDINATES (M)   *              EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ---------------*-------------------------*------------------------------
 A. Haven        *     0  2865     0  1170 *  AG   4752   8.0     .0  36.0
 B. Haven        *     0  1170     0   689 *  AG   6062   8.0     .0  40.0
 C. Inland Empir *   549   835   183  1170 *  AG   1440   8.0     .0  32.0
 D. Inland Empir *   183  1170     0  1170 *  AG   1440   8.0     .0  32.0
 E. Inland Empir *     0  1170  -274  1170 *  AG   1676   8.0     .0  29.0
 F. Inland Empir *  -274  1170  -732   981 *  AG   1676   8.0     .0  29.0
 G. Haven        *     0   689     0    27 *  AG   6254   6.6     .0  40.0
 H. Haven        *     0    27     0 -1463 *  AG   5980   6.6     .0  40.0
 I. Guasti       *  2195   366   500    27 *  AG    111   6.6     .0  25.0
 J. Guasti       *   500    27     0    27 *  AG    111   6.6     .0  25.0
 K. Guasti       *     0    27  -128    27 *  AG    903   6.6     .0  25.0

 III.  RECEPTOR LOCATIONS
            *    COORDINATES (M)
   RECEPTOR  *    X      Y      Z
 ------------*---------------------
 1. Recpt 1  *    -23   1151   1.8
 2. Recpt 2  *     21   1153   1.8
 3. Recpt 3  *    -21   1189   1.8
 4. Recpt 4  *     23   1187   1.8
 5. Recpt 5  *    -23     12   1.8
 6. Recpt 6  *     23     11   1.8
 7. Recpt 7  *    -23     43   1.8
 8. Recpt 8  *     23     43   1.8

  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )
    *        * PRED   *                 CONC/LINK
             *  BRG   * CONC  *                    (PPM)
  RECEPTOR   * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
-------------*-------*-------*----------------------------------------
 1. Recpt 1  *  173. *   3.5 *   .0  3.1   .0   .0   .0   .0   .3   .2
 2. Recpt 2  *  187. *   3.9 *   .0  3.5   .0   .0   .0   .0   .3   .2
 3. Recpt 3  *  173. *   4.1 *   .1  3.0   .0   .0   .5   .0   .3   .2
 4. Recpt 4  *  187. *   3.8 *   .0  2.9   .0   .5   .0   .0   .3   .2
 5. Recpt 5  *    7. *   3.3 *   .2   .2   .0   .0   .0   .0  2.6   .0
 6. Recpt 6  *  353. *   3.1 *   .2   .2   .0   .0   .0   .0  2.6   .0
 7. Recpt 7  *    7. *   3.2 *   .2   .2   .0   .0   .0   .0  2.7   .0
 8. Recpt 8  *  353. *   3.2 *   .2   .2   .0   .0   .0   .0  2.7   .0

             *    CONC/LINK
             *      (PPM)
  RECEPTOR   *   I    J    K
 ------------*---------------
 1. Recpt 1  *   .0   .0   .0
 2. Recpt 2  *   .0   .0   .0
 3. Recpt 3  *   .0   .0   .0
 4. Recpt 4  *   .0   .0   .0
 5. Recpt 5  *   .0   .0   .3
 6. Recpt 6  *   .0   .0   .0
 7. Recpt 7  *   .0   .0   .0
 8. Recpt 8  *   .0   .0   .0
```

```
CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                     JUNE 1989 VERSION
                     PAGE   1

               JOB: Bates Specific Plan - 2008  with project
               RUN: Hour 1          (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide

   I.  SITE VARIABLES
         U=    .5 M/S             Z0= 100. CM           ALT=     0. (M)
       BRG= WORST CASE            VD=   .0 CM/S
      CLAS=     7 (G)             VS=   .0 CM/S
      MIXH= 1000. M              AMB=   .0 PPM
     SIGTH=   10. DEGREES       TEMP=  4.7 DEGREE (C)

II.  LINK VARIABLES

      LINK      *  LINK COORDINATES (M)   *              EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ---------------*-------------------------*------------------------------
 A. Haven       *     0  2865     0  1170 *  AG   4913   8.0     .0  36.0
 B. Haven       *     0  1170     0   689 *  AG   6298   8.0     .0  40.0
 C. Inland Empir *   549   835   183  1170 *  AG   1449   8.0     .0  32.0
 D. Inland Empir *   183  1170     0  1170 *  AG   1449   8.0     .0  32.0
 E. Inland Empir *     0  1170  -274  1170 *  AG   1742   8.0     .0  29.0
 F. Inland Empir *  -274  1170  -732   981 *  AG   1742   8.0     .0  29.0
 G. Haven       *     0   689     0    27 *  AG   7087   8.0     .0  40.0
 H. Haven       *     0    27     0 -1463 *  AG   6284   8.0     .0  40.0
 I. Guasti      *  2195   366   500    27 *  AG   1263   8.0     .0  25.0
 J. Guasti      *   500    27     0    27 *  AG   1263   8.0     .0  25.0
 K. Guasti      *     0    27  -128    27 *  AG    918   8.0     .0  25.0

 III.  RECEPTOR LOCATIONS
             *    COORDINATES (M)
   RECEPTOR  *    X      Y      Z
 ------------*---------------------
 1. Recpt 1  *    -23   1151   1.8
 2. Recpt 2  *     21   1153   1.8
 3. Recpt 3  *    -21   1189   1.8
 4. Recpt 4  *     23   1187   1.8
 5. Recpt 5  *    -23     12   1.8
 6. Recpt 6  *     23     11   1.8
 7. Recpt 7  *    -23     43   1.8
 8. Recpt 8  *     23     43   1.8

  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )
             *       * PRED  *                CONC/LINK
             *  BRG  * CONC  *                  (PPM)
  RECEPTOR   * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
-------------*-------*-------*----------------------------------------
 1. Recpt 1  *  173. *   3.8 *   .0  3.2   .0   .0   .0   .0   .4   .2
 2. Recpt 2  *  187. *   4.2 *   .0  3.6   .0   .0   .0   .0   .4   .2
 3. Recpt 3  *  173. *   4.4 *   .1  3.1   .0   .0   .6   .0   .3   .2
 4. Recpt 4  *  187. *   4.0 *   .0  3.0   .0   .5   .0   .0   .4   .2
 5. Recpt 5  *    7. *   4.3 *   .2   .2   .0   .0   .0   .0  3.4   .0
 6. Recpt 6  *  353. *   4.4 *   .2   .2   .0   .0   .0   .0  3.4   .0
 7. Recpt 7  *    7. *   4.1 *   .2   .2   .0   .0   .0   .0  3.7   .0
 8. Recpt 8  *  353. *   4.1 *   .2   .2   .0   .0   .0   .0  3.7   .0

             *    CONC/LINK
             *      (PPM)
  RECEPTOR   *   I    J    K
 ------------*---------------
 1. Recpt 1  *   .0   .0   .0
 2. Recpt 2  *   .0   .0   .0
 3. Recpt 3  *   .0   .0   .0
 4. Recpt 4  *   .0   .0   .0
 5. Recpt 5  *   .0   .0   .3
 6. Recpt 6  *   .0   .4   .0
 7. Recpt 7  *   .0   .0   .0
 8. Recpt 8  *   .0   .0   .0
```

```
CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: Bates Specific Plan - 2008  with project w/improvement
               RUN: Hour 1           (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide

   I.  SITE VARIABLES
          U=    .5 M/S             Z0= 100. CM           ALT=     0. (M)
        BRG= WORST CASE            VD=    .0 CM/S
       CLAS=     7 (G)             VS=    .0 CM/S
       MIXH= 1000. M              AMB=    .0 PPM
      SIGTH=   10. DEGREES       TEMP=  4.7 DEGREE (C)

II.  LINK VARIABLES
       LINK      *  LINK COORDINATES (M)   *              EF     H     W
    DESCRIPTION  *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*-------------------------*------------------------------
 A. Haven        *     0  2865     0  1170 *  AG   4913   6.6     .0  36.0
 B. Haven        *     0  1170     0   689 *  AG   6298   6.6     .0  40.0
 C. Inland Empir *   549   835   183  1170 *  AG   1449   6.6     .0  32.0
 D. Inland Empir *   183  1170     0  1170 *  AG   1449   6.6     .0  32.0
 E. Inland Empir *     0  1170  -274  1170 *  AG   1742   6.6     .0  29.0
 F. Inland Empir *  -274  1170  -732   981 *  AG   1742   6.6     .0  29.0
 G. Haven        *     0   689     0    27 *  AG   7087   6.6     .0  40.0
 H. Haven        *     0    27     0 -1463 *  AG   6284   6.6     .0  40.0
 I. Guasti       *  2195   366   500    27 *  AG   1263   6.6     .0  25.0
 J. Guasti       *   500    27     0    27 *  AG   1263   6.6     .0  25.0
 K. Guasti       *     0    27  -128    27 *  AG    918   6.6     .0  25.0

 III.  RECEPTOR LOCATIONS
             *    COORDINATES (M)
   RECEPTOR  *     X       Y      Z
 ------------*---------------------
 1. Recpt 1  *    -23    1151   1.8
 2. Recpt 2  *     21    1153   1.8
 3. Recpt 3  *    -21    1189   1.8
 4. Recpt 4  *     23    1187   1.8
 5. Recpt 5  *    -23      12   1.8
 6. Recpt 6  *     23      11   1.8
 7. Recpt 7  *    -23      43   1.8
 8. Recpt 8  *     23      43   1.8

  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )
             *       * PRED  *               CONC/LINK
             *  BRG  * CONC  *                 (PPM)
  RECEPTOR   * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
-------------*-------*-------*----------------------------------------
 1. Recpt 1  *  173. *   3.1 *  .0  2.6   .0   .0   .0   .0   .3   .2
 2. Recpt 2  *  187. *   3.4 *  .0  2.9   .0   .0   .0   .0   .3   .2
 3. Recpt 3  *  173. *   3.6 *  .0  2.6   .0   .0   .5   .0   .3   .2
 4. Recpt 4  *  187. *   3.3 *  .0  2.4   .0   .4   .0   .0   .3   .2
 5. Recpt 5  *    7. *   3.5 *  .1   .2   .0   .0   .0   .0  2.8   .0
 6. Recpt 6  *  353. *   3.6 *  .1   .2   .0   .0   .0   .0  2.8   .0
 7. Recpt 7  *    7. *   3.4 *  .2   .2   .0   .0   .0   .0  3.0   .0
 8. Recpt 8  *  353. *   3.4 *  .2   .2   .0   .0   .0   .0  3.0   .0

             *    CONC/LINK
             *      (PPM)
  RECEPTOR   *   I    J    K
 ------------*---------------
 1. Recpt 1  *   .0   .0   .0
 2. Recpt 2  *   .0   .0   .0
 3. Recpt 3  *   .0   .0   .0
 4. Recpt 4  *   .0   .0   .0
 5. Recpt 5  *   .0   .0   .3
 6. Recpt 6  *   .0   .4   .0
 7. Recpt 7  *   .0   .0   .0
 8. Recpt 8  *   .0   .0   .0
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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: Bates Specific Plan - 2030 with project
               RUN: Hour 1           (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide

   I.  SITE VARIABLES
          U=    .5 M/S             Z0= 100. CM            ALT=     0. (M)
        BRG= WORST CASE            VD=    .0 CM/S
       CLAS=     7 (G)             VS=    .0 CM/S
       MIXH= 1000. M              AMB=    .0 PPM
      SIGTH=   10. DEGREES       TEMP=  4.7 DEGREE (C)

  II.  LINK VARIABLES
       LINK       *  LINK COORDINATES (M)   *                 EF     H     W
    DESCRIPTION   *   X1     Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 -----------------*-------------------------*------------------------------
 A. Haven         *     0  2865     0  1170 *  AG   5244   1.6     .0  36.0
 B. Haven         *     0  1170     0   689 *  AG   7018   1.6     .0  40.0
 C. Inland Empir *   549   835   183  1170 *  AG   2555   1.6     .0  32.0
 D. Inland Empir *   183  1170     0  1170 *  AG   2555   1.6     .0  32.0
 E. Inland Empir *     0  1170  -274  1170 *  AG   3203   1.6     .0  29.0
 F. Inland Empir *  -274  1170  -732   981 *  AG   3203   1.6     .0  29.0
 G. Haven         *     0   689     0    27 *  AG   9096   1.6     .0  40.0
 H. Haven         *     0    27     0 -1463 *  AG   8308   1.6     .0  40.0
 I. Guasti        *  2195   366   500    27 *  AG   1070   1.6     .0  25.0
 J. Guasti        *   500    27     0    27 *  AG   1070   1.6     .0  25.0
 K. Guasti        *     0    27  -128    27 *  AG   1604   1.6     .0  25.0

 III.  RECEPTOR LOCATIONS
             *    COORDINATES (M)
   RECEPTOR  *     X       Y      Z
 ------------*---------------------
 1. Recpt 1  *    -23   1151   1.8
 2. Recpt 2  *     21   1153   1.8
 3. Recpt 3  *    -21   1189   1.8
 4. Recpt 4  *     23   1187   1.8
 5. Recpt 5  *    -23     12   1.8
 6. Recpt 6  *     23     11   1.8
 7. Recpt 7  *    -23     43   1.8
 8. Recpt 8  *     23     43   1.8

  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )
             *       * PRED  *               CONC/LINK
             *  BRG  * CONC  *                 (PPM)
  RECEPTOR   * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
-------------*-------*-------*----------------------------------------
 1. Recpt 1  *  173. *    .8 *   .0   .7   .0   .0   .0   .0   .0   .0
 2. Recpt 2  *  187. *    .9 *   .0   .8   .0   .0   .0   .0   .0   .0
 3. Recpt 3  *  174. *   1.0 *   .0   .7   .0   .0   .2   .0   .0   .0
 4. Recpt 4  *  187. *   1.0 *   .0   .6   .0   .2   .0   .0   .0   .0
 5. Recpt 5  *    7. *   1.1 *   .0   .0   .0   .0   .0   .0   .8   .0
 6. Recpt 6  *  352. *   1.0 *   .0   .0   .0   .0   .0   .0   .8   .0
 7. Recpt 7  *    8. *   1.0 *   .0   .0   .0   .0   .0   .0   .9   .0
 8. Recpt 8  *  352. *   1.0 *   .0   .0   .0   .0   .0   .0   .9   .0

             *    CONC/LINK
             *      (PPM)
  RECEPTOR   *   I    J    K
 ------------*---------------
 1. Recpt 1  *   .0   .0   .0
 2. Recpt 2  *   .0   .0   .0
 3. Recpt 3  *   .0   .0   .0
 4. Recpt 4  *   .0   .0   .0
 5. Recpt 5  *   .0   .0   .1
 6. Recpt 6  *   .0   .0   .0
 7. Recpt 7  *   .0   .0   .0
 8. Recpt 8  *   .0   .0   .0
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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
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JOB: Bates Specific Plan - 2030 with project w/improvement
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= .5 M/S	Z0= 100. CM	ALT= 0. (M)
BRG= WORST CASE	VD= .0 CM/S	
CLAS= 7 (G)	VS= .0 CM/S	
MIXH= 1000. M	AMB= .0 PPM	
SIGTH= 10. DEGREES	TEMP= 4.7 DEGREE (C)	

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Haven	0	2865	0	1170	AG	5244	1.2	.0	36.0
B. Haven	0	1170	0	689	AG	7018	1.2	.0	40.0
C. Inland Empir	549	835	183	1170	AG	2555	1.2	.0	32.0
D. Inland Empir	183	1170	0	1170	AG	2555	1.2	.0	32.0
E. Inland Empir	0	1170	-274	1170	AG	3203	1.2	.0	29.0
F. Inland Empir	-274	1170	-732	981	AG	3203	1.2	.0	29.0
G. Haven	0	689	0	27	AG	9096	1.2	.0	40.0
H. Haven	0	27	0	-1463	AG	8308	1.2	.0	40.0
I. Guasti	2195	366	500	27	AG	1070	1.2	.0	25.0
J. Guasti	500	27	0	27	AG	1070	1.2	.0	25.0
K. Guasti	0	27	-128	27	AG	1604	1.2	.0	25.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	-23	1151	1.8
2. Recpt 2	21	1153	1.8
3. Recpt 3	-21	1189	1.8
4. Recpt 4	23	1187	1.8
5. Recpt 5	-23	12	1.8
6. Recpt 6	23	11	1.8
7. Recpt 7	-23	43	1.8
8. Recpt 8	23	43	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	173.	.6	.0	.5	.0	.0	.0	.0	.0	.0
2. Recpt 2	187.	.7	.0	.6	.0	.0	.0	.0	.0	.0
3. Recpt 3	174.	.8	.0	.5	.0	.0	.2	.0	.0	.0
4. Recpt 4	187.	.7	.0	.5	.0	.1	.0	.0	.0	.0
5. Recpt 5	7.	.8	.0	.0	.0	.0	.0	.0	.6	.0
6. Recpt 6	352.	.8	.0	.0	.0	.0	.0	.0	.6	.0
7. Recpt 7	8.	.7	.0	.0	.0	.0	.0	.0	.7	.0
8. Recpt 8	352.	.8	.0	.0	.0	.0	.0	.0	.7	.0

RECEPTOR	CONC/LINK (PPM) I	J	K
1. Recpt 1	.0	.0	.0
2. Recpt 2	.0	.0	.0
3. Recpt 3	.0	.0	.0
4. Recpt 4	.0	.0	.0
5. Recpt 5	.0	.0	.0
6. Recpt 6	.0	.0	.0
7. Recpt 7	.0	.0	.0
8. Recpt 8	.0	.0	.0