

## 3.1 AIR QUALITY

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### INTRODUCTION

This section provides an assessment of the potential for air quality impacts from the proposed project. The ambient air quality of the local and regional area is discussed including a comparison of existing air quality to applicable federal, state, and local air pollutant standards. Criteria air pollutant levels in the vicinity of the proposed project site are identified and discussed. This section also identifies the plans and policies developed in efforts to improve air quality. The evaluation of potential air quality impacts associated with the proposed project is assessed based on the emissions calculations using methodologies recommended by the local air quality agency. Sources utilized in this assessment include the South Coast Air Quality Management District (SCAQMD) *California Environmental Quality Act (CEQA) Air Quality Handbook and Air Quality Analysis Guidance Handbook* and air quality data from the SCAQMD, and data from the California Air Resources Board (CARB) and the United States Environmental Protection Agency (US EPA). The assessment indicates that the project would generate emissions that are greater than the SCAQMD daily thresholds of significance. The project would not exceed the localized significance thresholds at nearby sensitive receptors. The project would also not conflict with implementation of the applicable air quality management plan and would not expose sensitive receptors to carbon monoxide hotspots, substantial odors, or toxic air contaminants. The project would have a potentially significant impact on regional emissions. Mitigation measures are recommended to reduce the impacts; however, the maximum daily emissions would be significant and unavoidable on displacement event days. Emission calculations and air quality modeling conducted for the proposed project are provided in **Appendix 3.1**.

### EXISTING CONDITIONS

#### Regional Air Quality

The project site is located west of Interstate 210 and north of State Route 134 in the City of Pasadena. The project site is bounded on the north and west by the Brookside Golf club, on the south by parking and sports facilities, and on the east by Rosemont Avenue. The project is located in the South Coast Air Basin (Air Basin), which is shown in **Figure 3.1-1, South Coast Air Basin**. The Air Basin consists of Orange County, Los Angeles County (excluding the Antelope Valley portion), and the western, non-desert portions of San Bernardino and Riverside Counties. Meteorological conditions such as wind speed, wind direction, solar radiation, atmospheric stability, along with local topography heavily influence air quality by affecting the movement and dispersal of pollutants. Predominant meteorological conditions in the Air Basin are light winds and shallow vertical mixing due to low-altitude temperature inversions. These conditions, when coupled with the surrounding mountain ranges, hinder the regional dispersion of air

pollutants. These meteorological conditions, in combination with regional topography, are conducive to the formation and retention of ozone (O<sub>3</sub>) and urban smog.

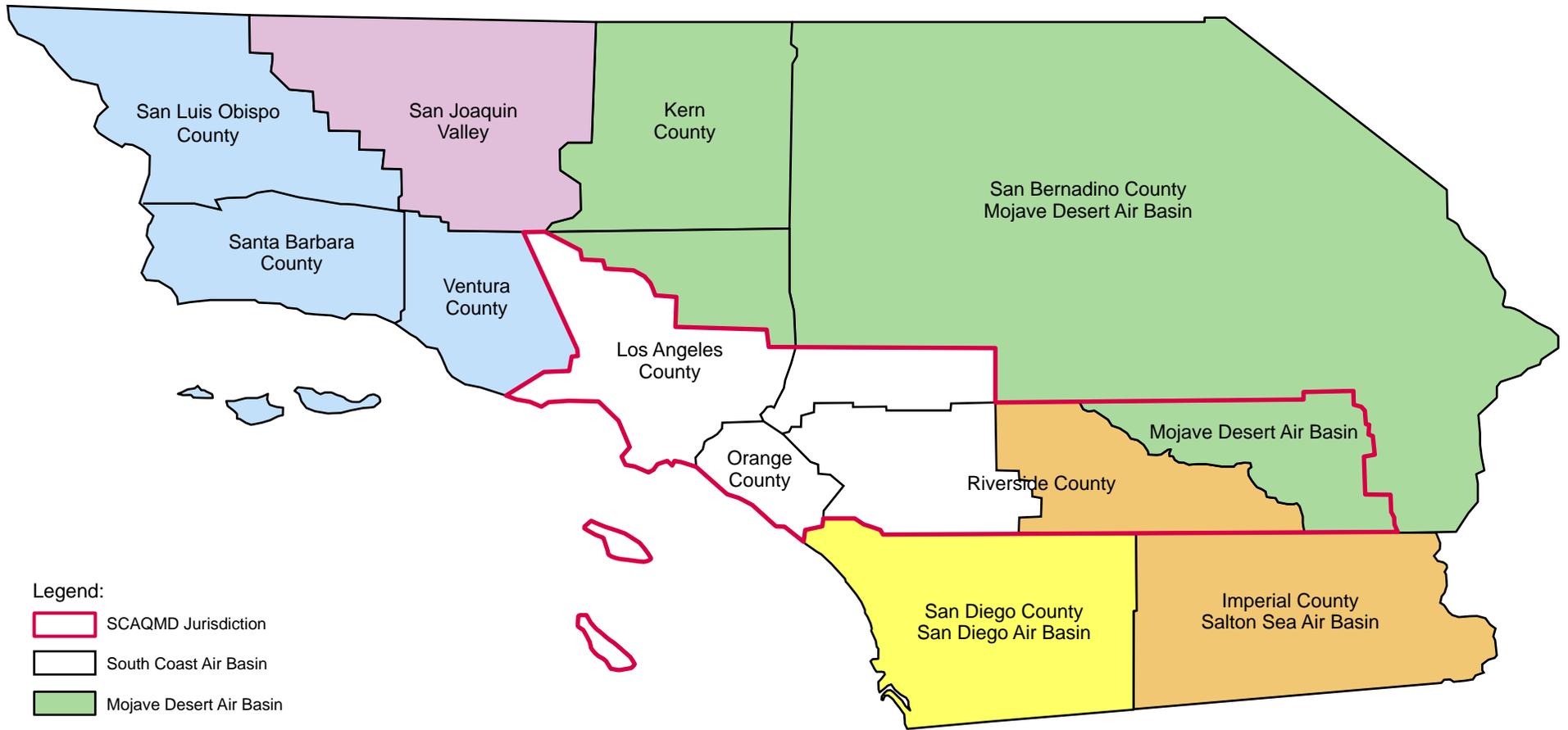
The SCAQMD operates stations in the Air Basin that monitor wind speeds and pollutant concentrations. Wind speeds and directions for the area are taken from the monitoring station recommended by the SCAQMD for the Pasadena area, which is shown in **Figure 3.1-2, Wind Speeds and Directions in the Project Region**.<sup>1</sup> As shown, predominant winds are from the southwest and northwest up to approximately 9 miles per hour, with occasional gusts. The average annual maximum temperature in the region is 77° Fahrenheit (F) and the average annual minimum is 51° F and the average annual rainfall is 20 inches.<sup>2</sup>

The determination of whether a region's air quality is healthful or unhealthful is made by comparing contaminant levels in ambient air samples to national and state standards. California and the United States Environmental Protection Agency (US EPA) have established health-based air quality standards for the following criteria air pollutants: ozone (O<sub>3</sub>), carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), respirable particulate matter (PM<sub>10</sub>), fine particulate matter (PM<sub>2.5</sub>), and lead. These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The California standards are more stringent than the federal standards, and in the case of PM<sub>10</sub> and SO<sub>2</sub>, much more stringent. California has also established standards for sulfates, visibility-reducing particles, hydrogen sulfide, and vinyl chloride. The state and national ambient air quality standards for each of the monitored pollutants and their effects on health are summarized in **Table 3.1-1, Ambient Air Quality Standards**.

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<sup>1</sup> The SCAQMD recommends using the meteorological station located in Azusa to represent the wind speeds and directions for the Pasadena area.

<sup>2</sup> Western Regional Climate Center, "Pasadena, California (046719)," <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6719>. 2012.



Legend:

- SCAQMD Jurisdiction
- South Coast Air Basin
- Mojave Desert Air Basin
- Salton Sea Air Basin
- San Diego Air Basin
- South Central Coast Air Basin
- San Joaquin Valley Air Basin

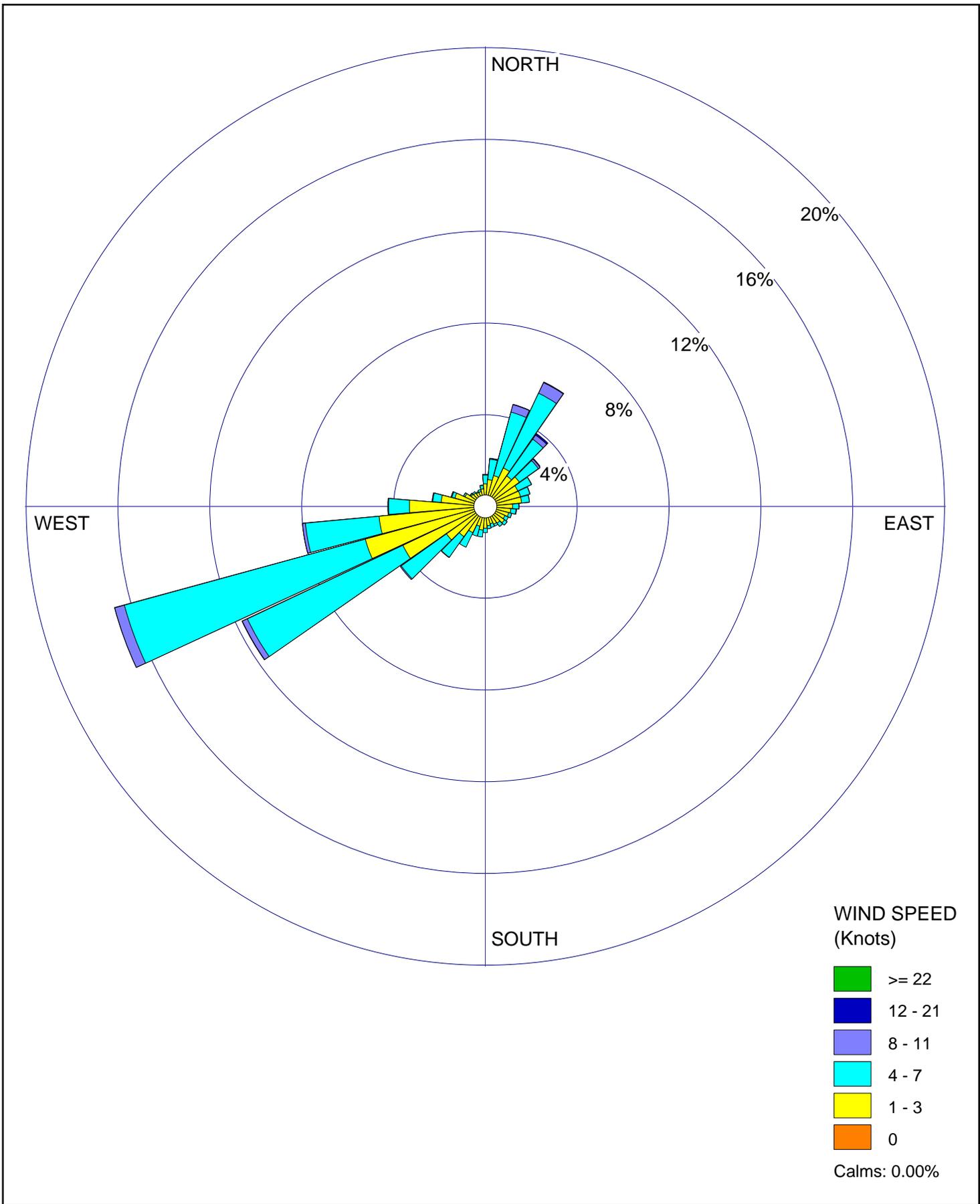


NOT TO SCALE

SOURCE: Impact Sciences, Inc., June 2012

FIGURE 3.1-1

South Coast Air Basin



SOURCE: SCAQMD, June 2012

FIGURE 3.1-2

Wind Speeds and Directions in the Project Region

**Table 3.1-1  
Ambient Air Quality Standards**

Air Pollutant	Concentration/Averaging Time		Most Relevant Health Effects
	State Standard (CAAQS)	Federal Primary Standard (NAAQS)	
Ozone	0.09 ppm, 1-hr avg. 0.070 ppm, 8-hr avg.	0.075 ppm, 8-hr avg. (three-year average of annual 4 <sup>th</sup> -highest daily maximum)	(a) Pulmonary function decrements and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) Vegetation damage; and (f) Property damage
Nitrogen Dioxide <sup>1</sup>	0.18 ppm, 1-hr avg. 0.030 ppm, annual arithmetic mean	0.100 ppm, 1-hr avg. (three-year avg. of the 98 <sup>th</sup> percentile of the daily maximum 1-hour avg.) 0.053 ppm, annual arithmetic mean	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extrapulmonary biochemical and cellular changes and pulmonary structural changes; and (c) Contribution to atmospheric discoloration
Carbon Monoxide	20 ppm, 1-hr avg. 9.0 ppm, 8-hr avg.	35 ppm, 1-hr avg. (not to be exceeded more than once per year) 9 ppm, 8-hr avg. (not to be exceeded more than once per year)	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and (d) Possible increased risk to fetuses
Sulfur Dioxide <sup>2</sup>	0.25 ppm, 1-hr. avg. 0.04 ppm, 24-hr avg.	0.075 ppm, 1-hr avg. (three-year avg. of the 99 <sup>th</sup> percentile)	Bronchoconstriction accompanied by symptoms, which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in person with asthma
Respirable Particulate Matter (PM10)	50 µg/m <sup>3</sup> , 24-hr avg. 20 µg/m <sup>3</sup> , annual arithmetic mean	150 µg/m <sup>3</sup> , 24-hr avg. (not to be exceeded more than once per year on average over three years)	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; and (c) Increased risk of premature death from heart or lung diseases in the elderly
Fine Particulate Matter (PM2.5)	12 µg/m <sup>3</sup> , annual arithmetic mean	35 µg/m <sup>3</sup> , 24-hr avg. (three-year average of 98 <sup>th</sup> percentile) 15 µg/m <sup>3</sup> , annual arithmetic mean (three-year average)	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; and (c) Increased risk of premature death from heart or lung diseases in the elderly
Lead <sup>3</sup>	1.5 µg/m <sup>3</sup> , 30-day avg.	1.5 µg/m <sup>3</sup> , calendar quarter 0.15 µg/m <sup>3</sup> , three-month rolling average	(a) Increased body burden, and (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	Reduction of visual range to less than 10 miles at relative humidity less than 70%, 8-hour avg. (10:00 AM–6:00 PM)	None	Visibility impairment on days when relative humidity is less than 70 percent.

Air Pollutant	Concentration/Averaging Time		Most Relevant Health Effects
	State Standard (CAAQS)	Federal Primary Standard (NAAQS)	
Sulfates	25 $\mu\text{g}/\text{m}^3$ , 24-hr avg.	None	(a) Decrease in ventilatory function, (b) Aggravation of asthmatic symptoms, (c) Aggravation of cardiopulmonary disease, (d) Vegetation damage, (e) Degradation of visibility, and (f) Property damage
Hydrogen Sulfide	0.03 ppm, 1-hr avg.	None	Odor annoyance
Vinyl Chloride <sup>3</sup>	0.01 ppm, 24-hr avg.	None	Known carcinogen

$\mu\text{g}/\text{m}^3$  = microgram per cubic meter.

ppm = parts per million by volume.

<sup>1</sup> On January 25, 2010, the US EPA promulgated a new 1-hour  $\text{NO}_2$  standard. The new 1-hour standard is 0.100 parts per million (188 micrograms per cubic meter [ $\mu\text{g}/\text{m}^3$ ]) and became effective on April 12, 2010.

<sup>2</sup> On June 3, 2010, the US EPA issued a new 1-hour  $\text{SO}_2$  standard. The new 1-hour standard is 0.075 parts per million (196  $\mu\text{g}/\text{m}^3$ ). The US EPA also revoked the existing 24-hour and annual standards citing a lack of evidence of specific health impacts from long-term exposures. The new 1-hour standard becomes effective 60 days after publication in the Federal Register.

<sup>3</sup> CARB 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.

Source: South Coast Air Quality Management District, Final Program Environmental Impact Report for the 2007 Air Quality Management Plan, (2007) Table 3.1-1, p. 3.1-3.

Generally, the sources for hydrogen sulfide emissions include decomposition of human and animal wastes and industrial activities, such as food processing, coke ovens, kraft paper mills, tanneries, and petroleum refineries. The sources for vinyl chloride emissions include manufacturing of plastic products, hazardous waste sites, and landfills. In addition, according to the SCAQMD's 2007 Air Quality Management Plan,<sup>3</sup> the sulfate and visibility-reducing particle standards have not been exceeded anywhere in the Air Basin. As a result, there is no need for any further evaluation of the hydrogen sulfide, vinyl chloride, sulfate, or visibility-reducing particle emissions for the project. Although the Los Angeles County portion of the Air Basin is designated as nonattainment for lead, the exceedance is the result of lead emissions from an industrial lead-acid battery recycling facility in the City of Commerce.

The SCAQMD issued violation notices to the facility for exceeding the limit of 1.5 micrograms per cubic meter over a 30-day averaging period during five consecutive months (December 2007 through April 2008).<sup>4</sup> Concentrations during this period also exceeded the federal lead standard. Since this time, the SCAQMD monitors show concentrations that are much lower, although they still exceed the revised federal lead standard of 0.15 microgram per cubic meter ( $\mu\text{g}/\text{m}^3$ ) calculated as a rolling three-month average. No other monitors in the Air Basin indicate lead exceedances. The project is not located in the same source receptor area as the lead exceedances in the City of Commerce and the project does not

<sup>3</sup> South Coast Air Quality Management District, 2007 Air Quality Management Plan, (2007).

<sup>4</sup> South Coast Air Quality Management District, "Facility Information Detail (FIND)," [http://www.aqmd.gov/webappl/fim/prog/novnc.aspx?fac\\_id=124838](http://www.aqmd.gov/webappl/fim/prog/novnc.aspx?fac_id=124838). 2010.

include any uses that would emit lead. Motor vehicles and paints used to be a source of lead; however, unleaded fuel and unleaded paints have virtually eliminated lead emissions from most land use projects. As a result, there is no need for any further evaluation of lead emissions. Accordingly, this air quality analysis will focus primarily on the criteria air pollutants summarized below.

- **Ozone (O<sub>3</sub>).** Ozone is a gas that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NO<sub>x</sub>) undergo photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.
- **Volatile Organic Compounds (VOCs).** VOCs are compounds comprised primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. VOCs themselves are not criteria pollutants; however, they contribute to O<sub>3</sub> formation.
- **Nitrogen Dioxide (NO<sub>2</sub>).** NO<sub>2</sub> is a reddish-brown, highly reactive gas that is formed in the ambient air through the oxidation of nitric oxide (NO) and is also a byproduct of fuel combustion. NO<sub>x</sub> is primarily emitted in the form of NO, but quickly reacts to form NO<sub>2</sub>. NO<sub>x</sub> is primarily a mixture of NO and NO<sub>2</sub>. NO<sub>2</sub> acts as an acute irritant and, in equal concentrations, is more injurious than NO.
- **Carbon Monoxide (CO).** CO is a colorless, odorless gas produced by the incomplete combustion of fuels. Motor vehicles operating at slow speeds are the primary source of CO. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.
- **Sulfur dioxide (SO<sub>2</sub>).** SO<sub>2</sub> is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high-sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When sulfur dioxide oxidizes in the atmosphere, it forms sulfates (SO<sub>4</sub>).
- **Respirable Particulate Matter (PM<sub>10</sub>).** PM<sub>10</sub> consists of small, suspended particles or droplets 10 microns or smaller in diameter. Some sources of PM<sub>10</sub>, like pollen and windstorms, are naturally occurring. However, in populated areas, most PM<sub>10</sub> is caused by road dust, diesel soot, combustion products, abrasion of tires and brakes, and construction activities.
- **Fine Particulate Matter (PM<sub>2.5</sub>).** PM<sub>2.5</sub> refers to particulate matter that is 2.5 microns or smaller in size. The sources of PM<sub>2.5</sub> include fuel combustion from automobiles, power plants, wood burning, industrial processes, and diesel-powered vehicles.

### Local Air Quality Setting

The SCAQMD has divided the Air Basin into Source Receptor Areas (SRAs) in which air quality monitoring stations are operated. The project site is located in SRA 8 (West San Gabriel Valley). The monitoring station is located at 752 S Wilson Avenue, in the City of Pasadena, approximately 2.7 miles southeast of the project site. This station monitors emission levels of O<sub>3</sub>, NO<sub>2</sub>, CO, and PM<sub>2.5</sub>. This station does not monitor SO<sub>2</sub> or PM<sub>10</sub>. The station located in SRA 9 (East San Gabriel Valley) in the City of Azusa was used to represent PM<sub>10</sub> concentrations because it is the nearest station in the same geographical

region (i.e., the San Gabriel Valley) that monitors PM<sub>10</sub>. The station located in SRA 7 (East San Fernando Valley) in the City of Burbank was used to represent SO<sub>2</sub> concentrations because it is the closest station that monitors SO<sub>2</sub>. **Table 3.1-2, Ambient Pollutant Concentrations**, lists the ambient pollutant concentrations registered and the exceedances of state and federal standards that have occurred at the abovementioned monitoring stations from 2008 through 2010, the most recent years in which data is available from the SCAQMD. As shown, the monitoring station has registered values above state and federal standards for O<sub>3</sub>, state standards for PM<sub>10</sub>, and federal standards for PM<sub>2.5</sub>.

**Table 3.1-2  
Ambient Air Pollutant Concentrations**

Pollutant	Standards <sup>1</sup>	Year		
		2008	2009	2010
<b>OZONE (O<sub>3</sub>)</b>				
Maximum 1-hour concentration (ppm)		0.122	0.176	0.101
Maximum 8-hour concentration (ppm)		0.100	0.114	0.081
Number of days exceeding state 1-hour standard	0.09 ppm	16	12	1
Number of days exceeding state 8-hour standard	0.070 ppm	26	19	6
Number of days exceeding federal 8-hour standard	0.075 ppm	16	12	3
<b>NITROGEN DIOXIDE (NO<sub>2</sub>)</b>				
Maximum 1-hour concentration (ppm)		0.11	0.08	0.0710
Annual average concentration (ppm)		0.0235	0.0221	0.0196
Number of days exceeding state 1-hour standard	0.18 ppm	0	0	0
<b>CARBON MONOXIDE (CO)</b>				
Maximum 1-hour concentration (ppm)		3	4	3
Maximum 8-hour concentration (ppm)		2.1	2.1	2.0
Number of days exceeding 1-hour standard	20 ppm	0	0	0
Number of days exceeding 8-hour standard	9.0 ppm	0	0	0
<b>SULFUR DIOXIDE (SO<sub>2</sub>)</b>				
Maximum 1-hour concentration (ppm)		0.1	0.01	0.0149
Maximum 24-hour concentration (ppm)		0.003	0.003	0.0041
Number of days exceeding state 1-hour standard	0.25 ppm	0	0	0
Number of days exceeding state 24-hour standard	0.04 ppm	0	0	0
<b>RESPIRABLE PARTICULATE MATTER (PM<sub>10</sub>)</b>				
Maximum 24-hour concentration (µg/m <sup>3</sup> )		98	74	70
Annual average concentration (µg/m <sup>3</sup> )		35.3	32.0	29.8
Number of samples exceeding state standard	50 µg/m <sup>3</sup>	13	7	5
Number of samples exceeding federal standard	150 µg/m <sup>3</sup>	0	0	0

Pollutant	Standards <sup>1</sup>	Year		
		2008	2009	2010
<b>FINE PARTICULATE MATTER (PM2.5)</b>				
Maximum 24-hour concentration ( $\mu\text{g}/\text{m}^3$ )		66.0	52.0	35.2
Annual average concentration ( $\mu\text{g}/\text{m}^3$ )		12.9	12.3	10.2
Number of samples exceeding federal 24-hour standard	35 $\mu\text{g}/\text{m}^3$	2	3	0

Source: South Coast Air Quality Management District, "Historical Data by Year," <http://www.aqmd.gov/smog/historicaldata.htm>. 2012.

<sup>1</sup> Parts by volume per million of air (ppm), micrograms per cubic meter of air ( $\mu\text{g}/\text{m}^3$ ), or annual arithmetic mean (aam).

## Surrounding Land Uses

The project site is located in the northeastern portion of the City of Pasadena. The project site is located adjacent to a golf course to the north and west, residential properties to the east, and parks and sports facilities to the south. Single-family residential properties are located beyond the golf course to the west, along Linda Vista Avenue. Immediately surrounding the project site are parking lots, which extend outward to the west, east and south. The project site is also within a 0.25 mile of eastbound and westbound transit stops on the Pasadena Area Rapid Transit System (ARTS) (Lines 51 and 52), which provide daily public transportation services.

## REGULATORY FRAMEWORK

### Federal

The US EPA is responsible for enforcing the federal Clean Air Act (CAA) and the National Ambient Air Quality Standards (NAAQS). The US EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives. The US EPA also maintains jurisdiction over emissions sources outside state waters (outer continental shelf), and establishes national emissions standards for vehicles. The US EPA formally classifies air basins as attainment or nonattainment based on whether the region meets or exceeds the NAAQS. As part of its enforcement responsibilities, the US EPA requires each state with areas that do not meet the NAAQS to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the period identified in the SIP. The US EPA makes area designations for seven criteria pollutants: O<sub>3</sub>, CO, NO<sub>2</sub>, SO<sub>2</sub>, PM10, PM2.5, and lead. The status of the Los Angeles County portion of the Air Basin with respect to attainment with the NAAQS is summarized in **Table 3.1-3, Attainment Status – South Coast Air Basin (Los Angeles County)**.

**Table 3.1-3  
Attainment Status – South Coast Air Basin (Los Angeles County)**

<b>Pollutant</b>	<b>Federal</b>	<b>State</b>
Ozone (O <sub>3</sub> ), 8-Hour Average	Nonattainment (Extreme)	Nonattainment
Nitrogen Dioxide (NO <sub>2</sub> )	Attainment (Maintenance)	Nonattainment
Carbon Monoxide (CO)	Attainment (Maintenance)	Attainment
Sulfur Dioxide (SO <sub>2</sub> )	Attainment/Unclassified	Attainment
Respirable Particulates (PM <sub>10</sub> )	Nonattainment (Serious)	Nonattainment
Fine Particulates (PM <sub>2.5</sub> )	Nonattainment	Nonattainment
Lead (Pb)	Nonattainment	Nonattainment
Sulfates (SO <sub>4</sub> )	—	Attainment
Hydrogen Sulfide (H <sub>2</sub> S)	—	Unclassified
Vinyl Chloride	—	Unclassified
Visibility-Reducing Particles	—	Unclassified

*Sources:*

*California Air Resources Board, "Area Designations Maps/State and National," <http://www.arb.ca.gov/degis/adm/adm.htm>. 2012.*

*US Environmental Protection Agency, "Air Quality Maps," <http://www.epa.gov/region9/air/maps/index.html>. 2012.*

In response to rapid population growth and the associated rise in motor vehicle operations, the 1990 Clean Air Act Amendments addressed tailpipe emissions from automobiles, heavy-duty engines, and diesel fuel engines. The amendments established more stringent standards for hydrocarbons, NO<sub>x</sub>, and CO emissions in order to reduce the levels of these pollutants in heavily populated areas. Under the 1990 Clean Air Act Amendments, new fuels were required to be less volatile, contain less sulfur (regarding diesel fuel), and have higher levels of oxygenates (oxygen-containing substances to improve fuel combustion). Due to the lack of a substantial reduction in hazardous emissions under the 1977 Clean Air Act, the 1990 Clean Air Act Amendments include regulations for reducing impacts from 189 listed hazardous air pollutants (HAPs) that are carcinogenic, mutagenic, and/or reproductive toxicants. The 1990 Clean Air Act Amendments also affects major stationary sources and area emissions sources requiring use of Maximum Achievable Control Technology (MACT) to reduce HAP emissions and their associated health impacts.

## State

The California Air Resources Board (CARB) oversees air quality planning and control throughout California. It is primarily responsible for ensuring the implementation of the California Clean Air Act (CCAA), responding to federal CAA requirements, and regulating emissions from motor vehicles and consumer products within the state. In addition, CARB also sets health-based air quality standards and control measures for toxic air contaminants (TACs). Automobile emissions are a major focus of CARB's

research as they are the largest contributor to air pollution in California. CARB establishes new standards for vehicles sold in California and for various types of equipment available commercially and sets vehicle fuel specifications to reduce vehicular emissions.

The CCAA established a legal mandate for air basins to achieve the California Ambient Air Quality Standards (CAAQS) by the earliest practical date. Health and Safety Code Section 39607(e) requires CARB to establish and periodically review area designation criteria. These designation criteria provide the basis for CARB to designate areas of the state as attainment, nonattainment, or unclassified according to state standards. CARB makes area designations for 10 criteria pollutants: O<sub>3</sub>, NO<sub>2</sub>, CO, SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, lead, sulfates, hydrogen sulfide, and visibility-reducing particles.<sup>5</sup> The status of the Air Basin with respect to attainment with the CAAQS is summarized in **Table 3.1-3**.

In addition to the criteria pollutants discussed above, TACs are another group of pollutants of concern. Public exposure to TACs can result from emissions from normal operations, as well as accidental releases of hazardous materials during upset spill conditions. Health effects of TACs include cancer, birth defects, neurological damage, and premature death. In 1998, CARB identified diesel particulate matter from diesel-fueled engines as a TAC. Mobile sources (including trucks, buses, automobiles, trains, ships, and farm equipment) are by far the largest source of diesel emissions. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Many of these toxic compounds adhere to the particles and, because diesel particles are very small, they penetrate deeply into the lungs.

Before California listed particulate matter from diesel engine exhaust as a TAC, it had already adopted various regulations that would reduce diesel emissions. These regulations include new standards for diesel fuel; exhaust emission standards for new diesel trucks, buses, automobiles, and utility equipment; and inspection and maintenance requirements for heavy-duty vehicles. Since listing diesel exhaust as a TAC, CARB continues to evaluate what additional regulatory action is needed to reduce public exposure.

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<sup>5</sup> California Air Resources Board, "Area Designations (Activities and Maps)," <http://www.arb.ca.gov/desig/desig.htm>. 2010. According to California Health and Safety Code, Section 39608, "state board, in consultation with the districts, shall identify, pursuant to subdivision (e) of Section 39607, and classify each air basin which is in attainment and each air basin which is in nonattainment for any state ambient air quality standard." Section 39607(e) states that the state shall "establish and periodically review criteria for designating an air basin attainment or nonattainment for any state ambient air quality standard set forth in Section 70200 of Title 17 of the California Code of Regulations. California Code of Regulations, Title 17, Section 70200 does not include vinyl chloride; therefore, CARB does not make area designations for vinyl chloride.

## Local

### *South Coast Air Quality Management District*

#### **Air Quality Management Plan**

The SCAQMD is required to produce air quality management plans (AQMPs) directing how the Air Basin's air quality will be brought into attainment with federal and state standards. The US EPA requires that transportation conformity budgets be established based on the most recent planning assumptions (i.e., within the last five years). Plan updates are necessary to ensure continued progress toward attainment and to avoid a transportation conformity lapse and associated federal funding losses. A multi-level partnership of governmental agencies at the federal, state, regional, and local levels implement the programs contained in these plans. Agencies involved include the US EPA, CARB, the Southern California Association of Governments (SCAG), local governments, and the SCAQMD.

Since 1979, the SCAQMD has prepared a number of AQMPs. The SCAQMD adopted the currently applicable 2007 Air Quality Management Plan (2007 AQMP) on June 1, 2007. CARB approved the 2007 AQMP as the comprehensive SIP component for the Basin on September 27, 2007. The 2007 AQMP for the Air Basin (and those portions of the Salton Sea Air Basin under the SCAQMD's jurisdiction) sets forth a comprehensive program that will lead these areas into compliance with federal and state air quality planning requirements for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>. In addition, as part of the 2007 AQMP, the SCAQMD requested US EPA's approval of a "bump-up" to the "extreme" nonattainment classification of ozone. The US EPA approved the extreme nonattainment request on April 15, 2010. The extreme nonattainment classification extends the ozone attainment date from 2021 to 2024 and allows for the attainment demonstration to rely on emission reductions from measures that anticipate the development of new technologies or improvement of existing control technologies.

The 2007 AQMP focuses on attainment strategies for the ozone and PM<sub>2.5</sub> standards through stricter control of sulfur oxides and directly emitted PM<sub>2.5</sub>, NO<sub>x</sub>, and VOCs. Although PM<sub>2.5</sub> plans for nonattainment areas were due in April 2008, the SCAQMD has integrated PM<sub>2.5</sub> and ozone reduction control measures and strategies in the 2007 AQMP. The need to commence PM<sub>2.5</sub> control strategies before April 2008 was due to the attainment date for PM<sub>2.5</sub> (2015) being much earlier than that for ozone (2024 for the extreme designation). Control measures and strategies for PM<sub>2.5</sub> will also help control ozone generation in the region because PM<sub>2.5</sub> and ozone share similar precursors (e.g., NO<sub>x</sub>). In addition, the 2007 AQMP focuses on reducing VOC emissions, which have not been reduced at the same rate as NO<sub>x</sub> emissions in the past. Hence, the Basin has not achieved the reductions in ozone as were expected in previous plans.

## CEQA Handbook

In 1993, the SCAQMD prepared its *CEQA Air Quality Handbook* (CEQA Handbook) to assist local government agencies and consultants in preparing environmental documents for projects subject to CEQA.<sup>6</sup> The SCAQMD is in the process of developing its *Air Quality Analysis Guidance Handbook* (Guidance Handbook) to replace the CEQA Handbook. The CEQA Handbook and the Guidance Handbook describe the criteria that SCAQMD uses when reviewing and commenting on the adequacy of environmental documents. The Guidance Handbook provides the most up-to-date recommended thresholds of significance in order to determine if a project will have a significant adverse environmental impact. Other important subjects covered in the CEQA Handbook and the Guidance Handbook include methodologies for estimating project emissions and mitigation measures that can be implemented to avoid or reduce air quality impacts. Although the Governing Board of the SCAQMD has adopted the CEQA Handbook, and is in the process of developing the Guidance Handbook, the SCAQMD does not, nor intends to, supersede a local jurisdiction's CEQA procedures.<sup>7</sup>

While the Guidance Handbook is being developed, supplemental information has been adopted by the SCAQMD. These include revisions to the air quality significance thresholds and a procedure referred to as "localized significance thresholds," which has been added as a significance threshold under the *Final Localized Significance Threshold Methodology* (LST Methodology).<sup>8</sup> The LST Methodology provides thresholds of significance for NO<sub>x</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub> to evaluate localized air quality impacts at sensitive receptors in the vicinity of a project. In addition, the SCAQMD has recommended that lead agencies not use the screening tables in the CEQA Handbook's Chapter 6 because the tables were derived using an obsolete version of CARB's mobile source emission factor inventory and are also based on outdated trip generation rates from a prior edition of the Institute of Transportation Engineer's Trip Generation Handbook.<sup>9</sup> The SCAQMD has also recommended that lead agencies not use the on-road mobile source emission factors in Table A9-5-J1 through A9-5-L as they are obsolete, and instead recommends using on-road mobile source emission factors approved by CARB.<sup>10</sup> The outdated and obsolete information were not used in this analysis. The applicable portions of the CEQA Handbook, the

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<sup>6</sup> South Coast Air Quality Management District, "Air Quality Analysis Guidance Handbook," <http://www.aqmd.gov/CEQA/hdbk.html>. 2010.

<sup>7</sup> South Coast Air Quality Management District, "Frequently Asked CEQA Questions," <http://www.aqmd.gov/ceqa/faq.html>. 2010.

<sup>8</sup> South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, (2008).

<sup>9</sup> South Coast Air Quality Management District, "CEQA Air Quality Handbook," <http://www.aqmd.gov/ceqa/oldhdbk.html>. 2010.

<sup>10</sup> South Coast Air Quality Management District, "EMFAC 2007 (v2.3) Emission Factors (On-Road)," <http://www.aqmd.gov/CEQA/handbook/onroad/onroad.html>. 2010.

Guidance Handbook, and other revised methodologies were used in preparing the air quality analysis in this section, as discussed and referenced later in this section.

### Multiple Air Toxics Exposure Study III

According to the SCAQMD's Multiple Air Toxics Exposure Study III (MATES III), the incidence of cancer over a lifetime in the US population is about 1 in 4, to 1 in 3, which translates into a risk of about 300,000 in 1 million.<sup>11</sup> One study, the *Harvard Report on Cancer Prevention*, estimated that, of cancers associated with known risk factors, about 30 percent were related to tobacco, about 30 percent were related to diet and obesity, and about 2 percent were associated with environmental pollution related exposures.<sup>12</sup> The potential cancer risk for a given substance is expressed as the incremental number of potential excess cancer cases per million people over a 70-year lifetime exposure at a constant annual average pollutant concentration. The risks are usually presented in chances per million. For example, if the cancer risks were estimated to be 100 per million, this would predict an additional 100 excess cases of cancer in a population of 1 million people over a 70-year lifetime.<sup>13</sup>

As part of the SCAQMD's environmental justice initiatives adopted in late 1997, the SCAQMD conducted the MATES III study between April 2004 and March 2006, which was a follow-up to the previous MATES I and II air toxics studies conducted in the Basin. The MATES III Final Report was issued in September 2008. The MATES III study was based on actual monitored data throughout the Basin and consisted of several elements. These included a monitoring program, an updated emissions inventory of TACs, and a modeling effort to characterize carcinogenic risk across the Basin from exposure to TACs. The MATES III study applied a 2-kilometer (1.24-mile) grid over the Basin and reported carcinogenic risk within each grid space (each covering an area of 4 square kilometers or 1.54 square miles). The study concluded that the average of the modeled air toxics concentrations measured at each of the monitoring stations in the Basin equates to a background cancer risk of approximately 1,200 in 1 million primarily due to diesel exhaust particulate matter (DPM).<sup>14</sup> Using the MATES III methodology, about 94 percent of the cancer risk is attributed to emissions associated with mobile sources, and about 6 percent of the risk is attributed to toxics emitted from stationary sources, which include industries, and businesses such as dry cleaners

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<sup>11</sup> South Coast Air Quality Management District, *Final Report: Multiple Air Toxics Exposure Study in the South Coast Air Basin*, (2008) 1-3, 1-4.

<sup>12</sup> Harvard Report on Cancer Prevention, Vol. 1, Causes of Human Cancer, *Cancer Causes and Control*, (1996) 7 (Suppl. 1): 53-59.

<sup>13</sup> South Coast Air Quality Management District, *Final Report: Multiple Air Toxics Exposure Study in the South Coast Air Basin*, (2008) 1-3, 1-4.

<sup>14</sup> South Coast Air Quality Management District, *Final Report: Multiple Air Toxics Exposure Study in the South Coast Air Basin*, (2008) ES-2.

and chrome plating operations.<sup>15</sup> The MATES III study found lower ambient concentrations of most of the measured air toxics, as compared to the levels measured in the previous MATES II study conducted during 1998 and 1999. Specifically, benzene and 1,3-butadiene, pollutants generated mainly from vehicles, were down 50 percent and 73 percent, respectively.<sup>16</sup> The reductions were attributed to air quality control regulations and improved emission control technologies.

### Rules and Regulations

The SCAQMD primarily regulates emissions from stationary sources such as manufacturing and power generation. Mobile sources such as buses, automotive vehicles, trains, and airplanes are largely out of the SCAQMD's jurisdiction and within the regulatory jurisdiction of CARB and the US EPA. In order to achieve air quality standards, the SCAQMD adopts an AQMP that serves as a guideline to bring pollutant concentrations into attainment with federal and state standards. The SCAQMD determines if certain rules and control measures are appropriate for their specific region according to technical feasibility, cost effectiveness, and the severity of nonattainment. Once the SCAQMD has adopted the proper rules, control measures, and permit programs, it is responsible to implement and enforce compliance with those rules, control measures, and programs. These rules not only regulate the emissions of the federal and state criteria pollutants but also TACs and acutely hazardous materials. The rules are also subject to ongoing refinement by SCAQMD. Stationary emissions sources are regulated through SCAQMD's permitting process. Through this permitting process, SCAQMD monitors the amount of stationary emissions being generated and uses this information in developing AQMPs.

### *City of Pasadena General Plan*

The City of Pasadena General Plan identifies goals and policies relating to the improving the safety and health of the community. The City supports the SCAQMD's mission to protect public health and welfare from the adverse effects of air pollution. The specific goals, objectives, and policies related to air quality that are applicable to the project are listed below.

**Goal 2.0:** Provision of a physical environment which contributes to and enhances the quality of life.

**Objective 2.1:** Air quality which enhances the environment and protects health and welfare.

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<sup>15</sup> South Coast Air Quality Management District, *Final Report: Multiple Air Toxics Exposure Study in the South Coast Air Basin*, (2008) ES-2.

<sup>16</sup> South Coast Air Quality Management District, *Final Report: Multiple Air Toxics Exposure Study in the South Coast Air Basin*, (2008) 2-7.

- Objective 2.2:** A comprehensive transportation system which reduces air pollutants.
- Objective 2.3:** Environmental management as a key consideration in the planning and decision making process.
- Policy 303.0:** The City shall support and strengthen anti-pollution measures and seek to control activities and developments that contribute to air pollution.

## METHODOLOGY

The SCAQMD provides methodologies for evaluating the significance of operational emissions from projects. The methodologies are described in the SCAQMD CEQA Handbook and Guidance Handbook. The SCAQMD thresholds of significance apply to all sources of air pollutants, including equipment and businesses not directly regulated by the SCAQMD and motor vehicles. The SCAQMD has produced substantial data to demonstrate the appropriateness of these thresholds in the south coast air basin. Emissions modeling were conducted using the California Emissions Estimator Model (CalEEMod) and information provided in the *CalEEMod User's Guide*.<sup>17</sup> CalEEMod is a program that calculates air pollutant emissions from land use sources and incorporates the CARB on-road and off-road vehicle emissions models. The model also incorporates factors specific to air basins in California, such as vehicle fleet mixes. Air quality impacts are also estimated based on information and estimated activity levels of project operation. The potential for the project to cause health impacts is assessed in accordance with land use planning recommendations described in CARB's *Air Quality and Land Use Handbook*.<sup>18</sup> The purpose of the *Air Quality and Land Use Handbook* is to provide information that will help keep vulnerable populations out of harm's way with respect to nearby sources of air pollution. Other sources of information relied upon are provided as footnote citations where applicable.

## THRESHOLDS OF SIGNIFICANCE

The proposed project would have a significant impact on air quality if it would:

- conflict with or obstruct implementation of the applicable air quality plan;
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);

<sup>17</sup> South Coast Air Quality Management District, *California Emissions Estimator Model User's Guide*, (2011). The model and User's Guide may be downloaded from the following website: <http://www.caleemod.com>.

<sup>18</sup> California Air Resources Board, *Air Quality and Land Use Handbook: A Community Health Perspective*, (2005). The document may be downloaded from the following website: <http://www.arb.ca.gov/ch/landuse.htm>.

- generate total criteria pollutant emissions during operation (direct and indirect) in excess of the thresholds given in **Table 3.1-4, SCAQMD Regional Emissions Significance Thresholds**;
- expose sensitive receptors to substantial pollutant concentrations:
  - exceed the localized significance thresholds given in **Table 3.1-5, SCAQMD Localized Significance Thresholds**,
  - cause or contribute to the formation of CO Hotspots,
  - result in an incremental increase in cancer risk greater than or equal to 10 in 1 million, a cancer burden greater than 0.5 excess cancer cases (in areas where the incremental increase in risk is greater than 1 in 1 million), and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1; and/or
- expose sensitive receptors to objectionable odors affecting a substantial number of people.

If the project exceeds the regional emissions significance thresholds shown in **Table 3.1-4**, the project would also result in a cumulatively considerable contribution to air quality impacts and would be considered cumulatively significant even if it conforms to the applicable AQMP.

**Table 3.1-4**  
**SCAQMD Regional Emissions Significance Thresholds**

Phase	Pollutant (pounds per day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM10	PM2.5
Operational	55	55	550	150	150	55

*Source: South Coast Air Quality Management District, Air Quality Significance Thresholds, (2011).*

The localized significance thresholds are shown in **Table 3.1-5**. A significant impact would occur during construction or operation if on-site emissions exceed the thresholds shown below.

**Table 3.1-5**  
**SCAQMD Localized Significance Thresholds**

Localized Significance Threshold	Pollutant (pounds per day) <sup>1</sup>			
	NO <sub>x</sub>	CO	PM10	PM2.5
Operational	166	4,119	21	7

*Source: South Coast Air Quality Management District, Final Localized Significance Threshold Methodology, (2008), Appendix C.*

<sup>1</sup> *The LST thresholds contained in the SCAQMD lookup tables are for a 5-acre project site in SRA 8, at 200 meters. The NO<sub>x</sub> LST thresholds contained in the SCAQMD lookup tables are based on emissions of NO<sub>x</sub> and assume gradual conversion to NO<sub>2</sub> based on the distance from the project site boundary.*

## IMPACTS

**Impact 3.1-1:           The project would not conflict with or obstruct implementation of the applicable air quality plan**

The 2007 AQMP, discussed previously, was prepared to accommodate growth, to reduce the levels of pollutants within the areas under the jurisdiction of SCAQMD, to return clean air to the region, and to minimize the impact on the economy. Projects that are considered to be consistent with the AQMP would not interfere with attainment because this growth is included in the projections utilized in the formulation of the AQMP. Therefore, projects, uses, and activities that are consistent with the applicable assumptions used in the development of the AQMP would not jeopardize attainment of the air quality levels identified in the AQMP, even if they exceed the SCAQMD's recommended daily emissions thresholds.

Consistency with the assumptions in the AQMP is established by demonstrating that the project is consistent with the land use plan that was used to generate the growth forecast. The 2007 AQMP based its assumptions on growth forecasts contained in the SCAG 2004 *Regional Transportation Plan* (2004 RTP).<sup>19</sup> The 2004 RTP is based on growth assumptions through 2030 developed by each of the cities and counties in the SCAG region. According to the SCAG 2004 RTP growth projection data, the City of Pasadena is projected to have an employment population of 111,392 in 2015.<sup>20</sup> Existing employment data from the California Employment Development Department indicates that the City of Pasadena has an employment population of approximately 69,000 as of April 2012.<sup>21</sup> The project would not increase the employment population over those that have been projected for the City in 2015 and would not exceed the growth assumptions in the AQMP. Thus, the project would be considered consistent with the air quality-related regional plans, and should not jeopardize attainment of state and federal ambient air quality standards. The project would have a less than significant impact.

### ***Mitigation Measures***

No mitigation measures are required.

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<sup>19</sup> South Coast Air Quality Management District, *Final 2007 Air Quality Management Plan*, (2007) 3-1.

<sup>20</sup> Southern California Association of Governments, "City Projections," <http://www.scag.ca.gov/forecast/downloads/2004GF.xls>. 2012.

<sup>21</sup> California Employment Development Department, "Labor Force and Unemployment Rate for Cities and Census Designated Places," <http://www.labormarketinfo.edd.ca.gov/Content.asp?pageid=133>. 2012.

### ***Residual Impacts***

Impacts would be less than significant.

**Impact 3.1-2:           The project would generate total criteria pollutant emissions during construction or operation (direct and indirect) in excess of the thresholds given in Table 3.1-4, SCAQMD Regional Emissions Significance Thresholds**

The proposed project would not require any construction activities. Therefore construction is not included in this analysis.

### ***Motor Vehicle Emissions***

Operational emissions associated with the development and operation of the proposed project would result primarily from increased vehicular trips to and from the site. The number of vehicle trips was obtained from the traffic impact analysis for the proposed project.<sup>22</sup> The traffic study analyzed trip generation associated with both weekday and weekend events, with more vehicle trips generated during a weekday event (55,378 trips) than during a weekend event (51,266 trips). Consequently, the greater weekday event traffic figures were generally used in order to produce a conservative analysis. There would also be delivery truck traffic associated with events. It was estimated that an event would require 35 truck trips. All mobile emissions were modeled using CalEEMod. Due to the uniqueness of the Rose Bowl Stadium, a generic land use type was chosen for the purposes of this analysis, with daily trips modified to reflect the values provided in the traffic study. Additional delivery truck trips were modeled by assuming these trips would be similar to haul truck trips during a typical demolition phase of construction. Although the proposed project does not include a demolition phase, a hypothetical demolition phase was added with the number of haul truck trips identical to the number of additional delivery trips assumed for a single event. This was done due to a known difficulty in adding delivery truck trips within CalEEMod to operational emissions for the land use chosen for the project. Haul trucks used for demolition would typically be much larger and more polluting than the delivery trucks associated with events at the Rose Bowl. Further, emissions from the delivery trucks are very small in comparison with emissions from the passenger vehicles. Regardless, emissions from the delivery trucks were estimated using the assumptions and methodology described in order to provide a complete and conservative analysis. The resulting haul truck emissions calculated by CalEEMod were then added to the passenger vehicle emissions calculated for proposed project operation and the total reported as “mobile emissions.”

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<sup>22</sup> Fehr and Peers, *Traffic and Parking Study for the Temporary Use of the Rose Bowl by the NFL*, City of Pasadena, California, (2012).

During special events at the Stadium, the Pasadena Police Department (PPD) implements a traffic control plan involving a combination of the following:

- Barricading of local neighborhood streets to prevent unauthorized spectator parking and cut through traffic
- Restriction of particular movements at intersections surrounding the Rose Bowl to expedite traffic through movements toward the Stadium (arrival) and toward the freeways (departure)
- Direction of vehicular traffic by traffic control officers at signalized intersections along major routes between local freeways and the Stadium to increase capacity

The traffic control plan is implemented and modified based on the specific needs of each event. For large events, traffic is monitored by a Police Department traffic lieutenant from a helicopter, which provides PPD the opportunity to manipulate traffic flow based on levels of congestion and backup. Traffic can be diverted to varying travel routes depending on street conditions and the parking occupancy at the different lots.

Varying plans are employed based on the anticipated attendance figures. For example, a PPD helicopter is utilized to assist traffic control operations staff on the ground for events that are anticipated to draw more than 20,000 persons. Police personnel are positioned at key traffic decision points on the perimeter of the arrival travel routes. Arriving traffic can be diverted to another travel route to obtain a better distribution of parking loading since the traffic personnel are in direct radio contact with the Police helicopter and the police stationed in the Rose Bowl Traffic Control Command Center (located in the press box). As drivers near the Rose Bowl, the level of traffic control and Police personnel increases. For larger events, temporary changeable message signs (CMS) on SR-134 and I-210 are deployed in coordination with the State of California Department of Transportation (Caltrans), and are used to create a more even traffic distribution.

Currently for UCLA Football events, the PPD deploys uniformed officers to over 30 posts at all major intersections in the Arroyo Seco and along key roadways leading to and from the regional freeway system. These officers manage reversible lane operations and direct traffic. This system would also be utilized for all additional events at the Rose Bowl associated with the proposed project and would help to maintain the flow of traffic through the project area, thereby reducing vehicle emissions.

### ***On-Site Emissions***

On-site emissions would result from sources within the project site such as boilers, water heaters, cooking equipment, landscaping equipment and other miscellaneous equipment. These emissions would be a minor contribution to overall project emissions but have been included for completeness. Natural gas

consumption per event is not available, but rates of use per month have been provided. The typical rate of natural gas consumption in the summer months is approximately 300 therms. During October through December typical natural gas consumption is approximately 650 therms. The difference between these values, 350 therms, was assumed to be attributable to football game events at the Rose Bowl. It is likely that this is an overestimation as more than one event may occur at the Rose Bowl per month though all of the increased natural gas consumption was assumed to be associated with a single event. While landscaping activities take place at the Rose Bowl on a regular basis, only very minimal activities will occur during event days. Mowing, re-turfing, and other landscape type activities already occur as an ongoing maintenance activity at the Rose Bowl Stadium and are therefore not considered part of this project as there would be no increase in these activities as a result of the project. During the period of NFL use of the Rose Bowl Stadium, it is estimated the turf would need to be replaced one time per season. This would only occur after the Rose Bowl and Bowl Championship Series (BCS) Championship game if there is a need for a home NFL playoff game. The installation of new turf would require trucks and other equipment (forklift, tractor), however, emissions from landscaping activities would be much smaller than those from natural gas use. As emissions from natural gas are already inconsequential in the context of total emissions from the proposed project, emissions from landscaping and other small equipment have been omitted from this analysis.

### *Summary of Emissions*

The anticipated operational emissions associated with the proposed project are reflected in **Table 3.1-6, Estimated Unmitigated Operational Emissions**. As shown in **Table 3.1-6**, the proposed project operation would generate emissions that would exceed SCAQMD thresholds. Therefore, daily operational emissions generated by the proposed project would be considered a significant impact.

**Table 3.1-6  
Estimated Unmitigated Operational Emissions**

Emissions Source	Emissions in Pounds per Day					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Operational (Mobile) Sources	490.31	1,254.26	5,387.56	7.76	885.01	60.40
Natural Gas	0.18	4.00	0.67	0.00	0.01	0.01
Event Emissions Total	490.49	1,258.26	5,388.23	7.76	885.02	60.41
<b>SCAQMD Threshold</b>	55	55	550	150	150	55
<b>Exceeds Threshold?</b>	YES	YES	YES	NO	YES	YES

Source: Impact Sciences, Inc. Emissions calculations are provided in **Appendix 3.1**.

Totals in table may not appear to add exactly due to rounding in the computer model calculations.

## *Mitigation Measures*

**Section 3.7 Transportation, Circulation, and Parking** includes **Mitigation Measure MM 3.7-1** for the significantly affected intersections during peak arrival and departure times for weekday and weekend events. The full list of measures and intersections is provided in **Section 3.7**. Generally, these intersections will either be supplemented with a traffic control officer to prioritize event traffic flow through the intersection or will operate under an optimized traffic signal timing plan to prioritize peak event traffic flow. In addition, the traffic study prepared for the proposed project recommended that traffic management strategies including a program of operational improvements be employed as mitigation to help manage demand and improve traffic operations over and above the changes currently proposed as part of the project's traffic operations plan. Measures for specific intersections are also included as part of **Mitigation Measure MM 3.7-2**.

In addition to the operational improvements recommended in **Mitigation Measure MM 3.7-2**, a transportation demand management program might further reduce impacts to a small and not quantifiable extent by encouraging the use of transportation other than automobiles, encouraging ride sharing, and increasing the efficiency by which vehicles could be moved off of streets and into the Rose Bowl parking lots. Therefore, a transportation demand management program is recommended as **Additional Measure AM 3.7-2.1**. As shown in Table 3.1-6 above, operational (mobile) sources comprise the vast majority of emissions associated with the proposed project. Improvements in traffic flow would help to reduce emissions from operational mobile sources.

## *Residual Impacts*

Nearly all air quality impacts associated with the proposed project result from vehicle traffic, with the overwhelming majority of these emissions coming from passenger vehicles. Traffic reduction measures, as described above, would reduce emissions from mobile sources, but emissions would remain above significance thresholds for all pollutants with the exception of sulfur oxides (SO<sub>x</sub>). It should be noted that a basic assumption inherent in the operational thresholds are that proposed projects will operate more or less continuously. Projects such as the one analyzed in this report that can be said to operate only occasionally or rarely do not align well with this assumption. Consequently, while this project may exceed significance thresholds, it will do so on only a few occasions over a limited period of time and will likely emit fewer total pollutants during that period than a project that is below the thresholds on a daily basis, but operates continuously. Regardless, impacts would be significant and unavoidable under the criteria developed by the SCAQMD.

**Impact 3.1-3: The project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard.**

According to the SCAQMD CEQA Handbook, projects that do not exceed the project-specific SCAQMD thresholds of significance should be considered less than significant on a cumulative basis unless there is other pertinent information to the contrary.<sup>23</sup>

As shown previously in **Table 3.1-6**, motor vehicles are the primary source of operational emissions. Therefore, the number of trips or the lengths of the motor vehicle trips on a displacement event day would need to be reduced in order provide a reduction in the operational emissions. The proposed project would not reduce the number or length of trips and would instead be adding trips as the number of events held at the stadium increases. While future vehicle emissions are expected to be reduced as a result of new emissions control technology, this would not reduce the emissions produced by vehicles traveling to and from the project site to a less than significant level on a displacement event day. No feasible mitigation measures are known to reduce motor vehicle emissions associated with operation of large sports stadiums to below a level of significance. Therefore, the proposed project would not be capable of reducing its daily operational emissions to a less than significant level on an expansion event day, and the contribution of these emissions to the air quality within the Basin would be cumulatively considerable.

### *Mitigation Measures*

**Mitigation Measures MM 3.7-1 and MM 3.7-2 and Additional Measure AM 3.7-2.1** would be applied to the proposed project and would help to improve the flow of traffic during events

### *Residual Impacts*

Even with the proposed traffic mitigation measures, the large number of vehicle trips associated with the proposed project would continue to contribute to a cumulatively considerable effect on air quality in the Basin. Impacts would remain significant and unavoidable.

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<sup>23</sup> South Coast Air Quality Management District, *CEQA Air Quality Handbook*, 9–12.

**Impact 3.1-4:** The project would not expose sensitive receptors to substantial pollutant concentrations.

### *Localized Significance Thresholds*

The SCAQMD recommends that the potential localized impacts be evaluated on the ambient air concentrations due to on-site construction and operational emissions of NO<sub>x</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub>. The SCAQMD LST Methodology includes screening tables that can be used to determine the maximum allowable daily emissions that would satisfy the LSTs (i.e., not cause an exceedance of the applicable concentration limits). The allowable emission rates depend on (1) the Source Receptor Area (SRA) in which the project is located, (2) the size of the project site, and (3) the distance between the project site and the nearest sensitive receptor (e.g., residences, schools, hospitals).

The project site is located in the West San Gabriel Valley, which is in SRA 8. The project would not involve any construction, and would result in additional use of an existing facility. The nearest sensitive receptors are located approximately 200 meters to the east. The maximum on-site operational emissions are shown in **Table 3.1-7, Localized Significance Threshold Analysis**. As shown, operation of the project would generate on-site emissions that are less than the site-specific localized significance thresholds. Therefore the project would have a less than significant impact on localized air quality during operation.

**Table 3.1-7  
Localized Significance Thresholds Analysis**

Significance Threshold	On-Site Maximum Emissions (pounds per day) <sup>1</sup>			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Operation</b>				
Maximum Daily On-site Emissions	4.00	0.76	0.01	0.01
LST Screening Criteria	166	4,119	21	7
<b>Exceeds Threshold?</b>	NO	NO	NO	NO

Source: Impact Sciences, Inc. Emission calculations are provided in **Appendix 3.1**.

<sup>1</sup> The NO<sub>x</sub> thresholds contained in the SCAQMD lookup tables are based on emissions of NO<sub>x</sub> and assume gradual conversion to NO<sub>2</sub> based on the distance from the project site boundary.

### *CO Hotspots*

Motor vehicles are a primary source of pollutants within the project vicinity. Traffic congested roadways and intersections have the potential to generate localized high levels of CO. Localized areas where ambient concentrations exceed state and/or federal standards are termed CO "hotspots." Such hotspots are defined as locations where the ambient CO concentrations exceed the state or federal ambient air

quality standards. CO is produced in greatest quantities from vehicle combustion and is usually concentrated at or near ground level because it does not readily disperse into the atmosphere. As a result, potential air quality impacts to sensitive receptors are assessed through an analysis of localized CO concentrations. Areas of vehicle congestion have the potential to create CO hotspots that exceed the state ambient air quality 1-hour standard of 20 ppm or the 8-hour standard of 9.0 ppm. The federal levels are less stringent than the state standards and are based on 1- and 8-hour standards of 35 and 9 ppm, respectively. Thus, an exceedance condition would occur based on the state standards prior to exceedance of the federal standard.

The project was evaluated to determine if it would cause a CO hotspot utilizing a simplified CALINE4 screening model developed by the Bay Area Air Quality Management District (BAAQMD). The simplified model is intended as a screening analysis that identifies a potential CO hotspot. If a hotspot is identified, the complete CALINE4 model is then utilized to determine precisely the CO concentrations predicted at the intersections in question. This methodology assumes worst-case conditions (i.e., wind direction is parallel to the primary roadway and 90 degrees to the secondary road, wind speed of less than 1 meter per second and extreme atmospheric stability) and provides a screening of maximum, worst-case, CO concentrations. This method is acceptable to the SCAQMD as long as it is used consistently with the *BAAQMD Guidelines*.<sup>24</sup> This model is utilized to predict future CO concentrations 0 and 25 feet from the intersections in the study area based on projected traffic volumes from the intersections contained in the project traffic study.<sup>25</sup> Intersections operating at level of service (LOS) between A through D are determined to not have the potential to create a CO Hotspot and are therefore not included in the analysis. Intersections operating at an LOS of E or F are considered have to have the potential to create a CO hotspot. Post-project maximum future CO concentrations were calculated for peak-hour traffic volumes for both weekday and weekend events. The results of these CO concentration calculations for weekday and weekend events are presented in **Table 3.1-8, Carbon Monoxide Concentrations – With Cumulative and Project Traffic**, to present the worst-case scenario the determination of significance is based on representative receptors located 0 feet from the intersection. Receptors 25 feet from an intersection would experience lower concentrations and therefore were not calculated.

As shown, the CALINE4 screening procedure predicts that, under worst-case conditions, future CO concentrations at each intersection would not exceed the state 1-hour and 8-hour standards with the operation of the proposed project. No significant CO hotspot impacts would occur to sensitive receptors

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<sup>24</sup> Personal communication with Steve Smith, Program Supervisor, South Coast Air Quality Management District, and David Deckman, Impact Sciences, May 12, 2004.

<sup>25</sup> Fehr and Peers, *Traffic Study for the Temporary Use of the Rose Bowl by the NFL*, (2012).

in the vicinity of these intersections. As a result, no significant project-related impacts would occur relative to future carbon monoxide concentrations.

### ***Toxic Air Contaminants***

The proposed project would result in some minor emissions of toxic air contaminants (TACs), primarily from diesel-fueled trucks. The SCAQMD recommends a detailed health risk assessment be performed for diesel particulate matter (DPM) for facilities that are substantial sources of DPM. Such sources are considered to be land uses such as truck stops and warehouses. As the total number of additional truck trips is very few in comparison to a facility such as a warehouse, for which CARB assumes a minimum of 100 truck trips per day, the proposed project would not be considered a substantial source of DPM. There are no other substantial sources of other TACs associated with the proposed project. Therefore there would be a less than significant impact due to TACs attributed to the proposed project.

### ***Mitigation Measures***

No mitigation measures are required.

### ***Residual Impacts***

Impacts would be less than significant.

**Table 3.1-8  
Carbon Monoxide Concentrations – With Cumulative and Project Traffic**

Intersection	Weekday		Weekend	
	1-Hour <sup>1</sup>	8-Hour <sup>2</sup>	1-Hour <sup>1</sup>	8-Hour <sup>2</sup>
San Rafael Ave and SR-134 Freeway EB Ramps	4.6	3.4	--	--
Rosemont Ave and Seco St	7.4	5.3	5.0	6.2
Orange Grove Blvd and Holly Street/I-210 Freeway WB Off-Ramp and EB On-Ramp	7.2	5.2	6.6	4.8
Orange Grove Blvd and I-134 Freeway EB Off-Ramp and WB On-Ramp/Colorado Blvd	7.1	5.1	6.6	4.8
North Arroyo Blvd and I-210 Freeway Ramps	4.6	3.4	4.4	3.2
I-210 Freeway EB Ramps and Mountain St	5.5	4.0	5.0	3.7
I-210 Freeway WB Ramps and Mountain St	4.9	3.6	5.0	3.7
Orange Grove Boulevard and California Boulevard	6.1	4.4	5.8	4.2
Arroyo Parkway and California Boulevard	6.3	4.5	6.0	4.3
St John Avenue and California Boulevard	—	—	4.8	3.5
Pasadena Avenue and California Boulevard	5.2	3.8	—	—
Fair Oaks Ave and Walnut St	6.1	4.4	6.2	4.5
Fair Oaks Ave and Colorado Blvd	5.2	3.8	5.5	4.0

Intersection	Weekday		Weekend	
	1-Hour <sup>1</sup>	8-Hour <sup>2</sup>	1-Hour <sup>1</sup>	8-Hour <sup>2</sup>
Fair Oaks Ave and Green St	5.0	3.7	—	—
Arroyo Parkway and Colorado Blvd	4.6	3.4	—	—
Lincoln Avenue and Mountain Street/Seco Street	5.5	4.0	4.9	3.6
Linda Vista Avenue and Holly Street	6.7	4.8	5.7	4.2
Orange Grove Avenue and I-110 Northbound Ramps	5.3	3.9	—	—
Orange Grove Avenue and Del Mar Boulevard	5.7	4.2	5.4	3.9
Fair Oaks Avenue and Del Mar Boulevard	5.3	3.9	4.9	3.6
Orange Grove Avenue and Columbia Street	5.5	4.0	5.5	4.0
Pasadena Avenue/Fremont Avenue and Columbia Street	4.4	3.2	—	—
Fair Oaks Avenue and Columbia Street	5.8	4.2	—	—
Exceeds state 1-hour standard of 20 ppm?	NO	—	NO	—
Exceeds federal 1-hour standard of 35 ppm?	NO	—	NO	—
Exceeds state 8-hour standard of 9.0 ppm?	—	NO	—	NO
Exceeds federal 8-hour standard of 9 ppm?	—	NO	—	NO

Source: Impact Sciences, Inc. Emissions calculations are provided in **Appendix 3.1**.

<sup>1</sup> State standard is 20 parts per million. Federal standard is 35 parts per million.

<sup>2</sup> State standard is 9.0 parts per million. Federal standard is 9 parts per million.

EB = eastbound; WB = westbound

**Impact 3.1-5: The project would not expose sensitive receptors to objectionable odors.**

The SCAQMD lists land uses primarily associated with odor complaints as waste transfer and recycling stations, wastewater treatment plants, landfills, composting operations, petroleum operations, food and byproduct processes, factories, and agricultural activities, such as livestock operations. The project would not include the development and operation of any of these land uses.

Potential sources of odors may include food preparation, which could generate odors associated with the preparation and disposal of food products. However, the food will generally be prepared on the project site, either within the Rose Bowl Stadium, or directly outside the stadium and to a lesser degree in the parking areas. All food will be disposed of in accordance with local regulations as they relate to ventilation and refuse disposal. Any project generated refuse would be stored in covered containers and removed at regular intervals in compliance with the City's solid waste regulations. Therefore, it is unlikely for substantial nuisance odors to be perceived off the project site. Therefore, the project would not result in objectionable odors affecting a substantial number of people and would have a less than significant impact.

### ***Mitigation Measures***

No mitigation measures are required.

### *Residual Impacts*

Impacts would be less than significant.

### **CUMULATIVE IMPACTS**

The SCAQMD's CEQA Handbook identifies possible methods to determine the cumulative significance of land use projects. These methods differ from the methodology used in other cumulative impact analyses in which all foreseeable future development within a given service boundary or geographical area is predicted and its impacts measured. The SCAQMD has not identified thresholds to which the total emissions of all cumulative development can be compared. Instead, the SCAQMD methods are based on performance standards and emission reduction targets necessary to attain the federal and state air quality standards as predicted in the AQMP. In addition, projects that do not exceed the project-specific SCAQMD thresholds of significance should be considered not cumulatively considerable unless there is other pertinent information to the contrary.<sup>26</sup>

The SCAQMD has indicated that they consider this proposed project and the other proposed NFL stadium projects in the Los Angeles area as linked for purposes of CEQA analyses.<sup>27</sup> The anticipated scenario is for an NFL team to play at the Rose Bowl while a permanent stadium is built. Once the new stadium is operational, the team would relocate and NFL games would no longer take place at the Rose Bowl. Consequently the only overlap between the two proposed projects in terms of air quality emissions would be operational emissions from the Rose Bowl during an event and construction emissions from the proposed new stadium. It should be noted that in actuality any such overlap between the two projects would be infrequent and limited. The NFL games at the Rose Bowl are scheduled primarily on weekends, with only two games on weekdays, and those taking place in the evening. While construction activities may take place in the evening or weekends, the majority of construction typically takes place during daylight hours on weekdays. Furthermore, the maximum overlap is 13 days in any year as this is the maximum number of games allowed as part of this proposed project. However, in order to provide a complete and conservative analysis, combined emissions of operation of the Rose Bowl during an event and worst case construction emissions from the Los Angeles Event Center are presented below in **Table 3.1-9, Estimated Unmitigated Cumulative Emissions**. As shown in **Table 3.1-9**, the cumulative emissions would exceed SCAQMD thresholds. Therefore, daily cumulative emissions generated by the proposed projects would be considered a significant impact.

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<sup>26</sup> South Coast Air Quality Management District, *CEQA Air Quality Handbook*, 9–12.

<sup>27</sup> Personal communication with Ian MacMillan, Program Supervisor, SCAQMD, and Eric Bell, Impact Sciences, June 15, 2012.

**Table 3.1-9  
Estimated Unmitigated Operational Emissions**

Emissions Source	Emissions in Pounds per Day					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM10	PM2.5
Rose Bowl Operational Emissions Total	525.74	1,254.53	5,411.65	7.76	885.04	60.43
LA Convention and Event Center Construction	127	612	881	1	102	40
Emissions Total	652.74	1,866.53	6,292.65	8.76	987.04	100.43
<b>SCAQMD Threshold</b>	55	55	550	150	150	55
<b>Exceeds Threshold?</b>	YES	YES	YES	NO	YES	YES

Source: Impact Sciences, Inc. Emissions calculations are provided in **Appendix 3.1**.

Totals in table may not appear to add exactly due to rounding in the computer model calculations.

<sup>1</sup> Summertime Emissions" are representative of the conditions that may occur during the ozone season (May 1 to October 31).

<sup>2</sup> Wintertime Emissions" are representative of the conditions that may occur during the balance of the year (November 1 to April 30).

As shown previously in **Table 3.1-6**, motor vehicles are the primary source of operational emissions. Therefore, the number of trips or the lengths of the motor vehicle trips on a displacement event day would need to be reduced in order provide a reduction in the operational emissions from the proposed project. While future vehicle emissions are expected to be reduced as a result of new emissions control technology, this would not reduce the emissions produced by vehicles traveling to and from the project site to a less than significant level on displacement event day. No feasible mitigation measures are known to reduce motor vehicle emissions associated with operation of large sports stadiums to the degree necessary to reduce impacts to a level of insignificance. Therefore, the proposed project would not be capable of reducing its daily operational emissions to a less than significant level on a displacement event day, and the contribution of these emissions to the air quality within the Basin would be cumulatively considerable.

## **Mitigation Measures**

**Mitigation Measures 3.7-1** and **3.7-2**, as well as **Additional Measure AM 3.7-2.1** would be applied to the proposed project. However, these measures would not reduce impact to below significance thresholds. The Los Angeles Convention and Event Center draft EIR recommends that construction activities employ mitigation measures F.1-1 to F.1-8 as detailed in the draft EIR, but even with that mitigation, the impact remains significant.

## **Residual Impacts**

Impacts would be cumulatively considerable.