3.1 Air Quality

This section examines the air quality in South Pasadena and the region, includes a summary of applicable air quality regulations, and analyzes potential air quality impacts associated with the proposed project.

A summary of the impact conclusions related to air quality is provided below. As discussed in the project's Initial Study (**Appendix A**) and in Section 3.0 (subsection 3.3, Impacts Found to Be Less Than Significant), Impact 3.1.5 is less than significant and, therefore, is not discussed further in this Draft EIR.

Impact Number	Impact Topic	Impact Significance
3.1.1	Conflict with or obstruct implementation of the applicable air quality plan	Less than significant
3.1.2	Violate any air quality standard or contribute substantially to an existing or projected air quality violation	Less than significant with mitigation
3.1.3	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment	Less than significant with mitigation
3.1.4	Expose sensitive receptors to substantial pollutant concentrations	Less than significant with mitigation
3.1.5	Create objectionable odors affecting a substantial number of people	Less than significant
3.1.6	Cumulative increase in nonattainment criteria pollutants	Not cumulatively considerable

3.1.1 EXISTING SETTING

SOUTH COAST AIR BASIN

The proposed project is located in the South Coast Air Basin (SoCAB). The South Coast Air Quality Management District (SCAQMD) is the regional air quality agency for the SoCAB, which comprises all of Orange County, the western portion of Los Angeles County, the southwestern portion of San Bernardino County, and the western portion of Riverside County. Air quality in this area is influenced by such natural factors as topography, meteorology, and climate, in addition to the presence of existing air pollution sources and ambient conditions. These factors are briefly described below.

Topography

The basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the west and high mountains on the rest of its perimeter. The mountains and hills in the area contribute to the variation in rainfall, temperature, and winds throughout the region.

Meteorology and Climate

The region lies in the semi-permanent high pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. The basin experiences warm summers, mild winters, infrequent rainfalls, light winds, and moderate humidity. This climatological pattern is interrupted by periods of extremely hot weather, winter storms, and Santa Ana winds.

The SoCAB experiences frequent temperature inversions that help to form smog. While temperature typically decreases with height, it actually increases under inversion conditions as altitude increases, thereby preventing air close to the ground from mixing with the air above. As a result, air pollutants are trapped near the ground. During the summer, air quality problems are created because of the interaction between the ocean surface and the lower layer of the atmosphere. This interaction creates a moist marine layer. An upper layer of warm air mass forms over the cool marine layer, preventing air pollutants from dispersing upward. Additionally, hydrocarbons and nitrogen dioxide (NO_2) react under strong sunlight, creating smog.

Light daytime winds, predominantly from the west, further aggravate the condition by driving air pollutants inland toward the mountains. Air quality problems also occur during the fall and winter, when carbon monoxide (CO) and NO_2 emissions tend to be higher. CO concentrations are generally worse in the morning and late evening (around 10:00 PM) when temperatures are cooler. High CO levels during the late evenings result from stagnant atmospheric conditions trapping CO. Since carbon monoxide emissions are produced almost entirely from automobiles, the highest CO concentrations in the basin are associated with heavy traffic. Nitrogen dioxide concentrations are also generally higher during fall and winter days.

Air Pollution Potential

The potential for high pollutant concentrations developing at a given location depends on the quantity of pollutants emitted into the atmosphere in the surrounding area or upwind and the ability of the atmosphere to disperse the contaminated air. The topographic and climatological factors discussed above influence the atmospheric pollution potential of an area. Atmospheric pollution potential, as the term is used here, is independent of the location of emission sources and is instead a function of the factors described below.

Atmospheric Conditions

The hills and mountains in the SoCAB contribute to the high pollution potential of some areas. An inversion is a layer of warmer air over a layer of cooler air. Inversions affect air quality conditions significantly because they influence the mixing depth, i.e., the vertical depth in the atmosphere available for diluting air contaminants near the ground. The highest air pollutant concentrations in the SoCAB, and therefore in South Pasadena, generally occur during inversions.

The areas having the highest air pollution potential also tend to be those that experience the highest temperatures in the summer and the lowest temperatures in the winter. The frequency of hot, sunny days during the summer months in the basin is another important factor that affects air pollution potential. It is at higher temperatures that ozone is formed. In the presence of ultraviolet sunlight and warm temperatures, reactive organic gases and oxides of nitrogen react to form secondary photochemical pollutants, including ozone. Because temperatures in many of the air basin's inland valleys are so much higher than near the coast, the inland areas are especially prone to photochemical air pollution. In late fall and winter, solar angles are low, resulting in insufficient ultraviolet light and warming of the atmosphere to drive the photochemical reactions.

Emission Sources

Although air pollution potential is strongly influenced by climate and topography, the air pollution that occurs in a location also depends on the amount of air pollutant emissions in the surrounding area or those that have been transported from more distant places. Air pollutant emissions generally are highest in areas that have high population densities, high motor vehicle

use, and/or industrialization. The contaminants created by photochemical processes in the atmosphere, such as ozone, may result in high concentrations many miles downwind from the sources of their precursor chemicals.

Air pollutant emissions in the SCAB are generated by stationary and mobile sources. Stationary sources can be divided into two major subcategories: point sources and area sources. Point sources are usually subject to a permit to operate from the SCAQMD, occur at specific identified locations, and are usually associated with manufacturing and industry. Examples of point sources are boilers or combustion equipment that produce electricity or generate heat, such as heating, ventilation, and air conditioning (HVAC) units. In contrast, area sources are widely distributed, produce many small emissions, and do not require permits to operate from the SCAQMD. Examples of area sources include residential and commercial water heaters, painting operations, portable generators, lawn mowers, agricultural fields, landfills, and consumer products, such as barbecue lighter fluid and hairspray, the area-wide use of which contributes to regional air pollution. Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources are those that are legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, racecars, and construction vehicles. Mobile sources account for the majority of the air pollutant emissions in the SCAB. However, air pollutants can also be generated by the natural environment, such as when fine dust particles are pulled off the ground surface and suspended in the air during high winds.

AIR POLLUTANTS OF CONCERN

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. These regulated air pollutants are known as criteria air pollutants and are categorized into primary and secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide, reactive organic gases (ROG), nitrogen oxide (NO_X), sulfur dioxide (SO_2), coarse particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$), and lead are primary air pollutants. Of these, CO, SO_2, PM_{10}, and $PM_{2.5}$ are criteria pollutants. ROG and NO_X are criteria pollutant precursors and go on to form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and nitrogen dioxide are the principal secondary pollutants. **Table 3.1-1** presents a description of each of the primary and secondary criteria air pollutants and their known health effects.

TABLE 3.1-1
CRITERIA AIR POLLUTANTS SUMMARY OF COMMON SOURCES AND EFFECTS

Pollutant	Major Man-Made Sources	Human Health Effects
Carbon Monoxide (CO)	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, affecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
Nitrogen Dioxide (NO_2)	A reddish-brown gas formed during fuel combustion for motor vehicles and industrial sources. Sources include motor vehicles, electric utilities, and other sources that burn fuel.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone. Contributes to global warming and nutrient overloading which deteriorates water quality. Causes brown discoloration of the atmosphere.
Ozone (O_3)	Formed by a chemical reaction between reactive organic gases (ROGs) and nitrous oxides (NOx) in the presence of sunlight. Common sources of these precursor pollutants include motor vehicle exhaust, industrial emissions, gasoline storage and transport, solvents, paints, and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing, and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield.
Particulate Matter (PM_{10} & $PM_{2.5}$)	Produced by power plants, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles and others.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; asthma; chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility.
Sulfur Dioxide (SO_2)	A colorless gas formed when fuel containing sulfur is burned and when gasoline is extracted from oil. Examples are petroleum refineries, cement manufacturing, metal processing facilities, locomotives, and ships.	Respiratory irritant. Aggravates lung and heart problems. In the presence of moisture and oxygen, sulfur dioxide converts to sulfuric acid which can damage marble, iron and steel. Damages crops and natural vegetation. Impairs visibility. Precursor to acid rain.
Lead	Metallic element emitted from metal refineries, smelters, battery manufacturers, iron and steel producers, use of leaded fuels by racing and aircraft industries.	Anemia, high blood pressure, brain and kidney damage, neurological disorders, cancer, lowered IQ. Affects animals, plants, and aquatic ecosystems.

Source: CAPCOA 2011

AMBIENT AIR QUALITY

Ambient air quality in South Pasadena can be inferred from ambient air quality measurements conducted at nearby air quality monitoring stations. Existing levels of ambient air quality and historical trends and projections in the South Pasadena vicinity are documented by measurements made by the South Coast Air Quality Management District, the air pollution regulatory agency in the SoCAB that maintains air quality monitoring stations which process ambient air quality measurements. O_3, PM_{10}, and $PM_{2.5}$ are the pollutants most potently affecting the SoCAB.

The South Wilson Avenue-Pasadena air quality monitoring station is the closest station to the project site, approximately 2.2 miles to the northeast of the project site. This station monitors ambient concentrations of O_3, PM_{10}, and $PM_{2.5}$. Ambient emission concentrations will vary due to

localized variations in emission sources and climate and should be considered "generally" representative of ambient concentrations in South Pasadena.

Table 3.1-2 summarizes the published data since 2012 from the South Wilson Avenue-Pasadena air quality monitoring station for each year that monitoring data is provided.

TABLE 3.1-2
SUMMARY OF AMBIENT AIR QUALITY DATA

Pollutant Standards	2012	2013	2014
South Wilson Avenue-Pasadena Monitoring Station			
Ozone			
Max 1-hour concentration (ppm)	0.111	0.099	0.124
Max 8-hour concentration (ppm) (state/federal)	0.087 / 0.086	0.075 / 0.075	0.096 / 0.096
Number of days above state 1-hour standard	8	2	6
Number of days above state/federal 8-hour standard	20 / 19	2 / 0	13 / 7
Fine Particulate Matter ($PM_{2.5}$)			
Max 24-hour concentration (μg/m3) (state/federal)	30.5 / 30.5	25.7 / 25.7	38.8 / 38.8
Number of days above federal standard	*	*	*
Coarse Particulate Matter (PM_{10})			
Max 24-hour concentration (μg/m3) (state/federal)	* / 75.8	* / 100.7	* / 78.0
Number of days above state/federal standard	* / *	* / *	* / *

Source: CARB 2015

μg/m3 = micrograms per cubic meter; ppm = parts per million

** No data currently available to determine the value*

As previously stated, O_3, PM_{10}, and $PM_{2.5}$ are the pollutants most potently affecting the SoCAB. **Table 3.1-3** shows the state attainment status for the SoCAB and thus for the project site. Areas with air quality that exceed adopted air quality standards are designated as nonattainment areas for the relevant air pollutants. Areas that comply with air quality standards are designated as attainment areas for the relevant air pollutants. "Unclassified" is used in areas that cannot be classified on the basis of available information as meeting or not meeting the standards. The South Pasadena region is nonattainment for state O_3, PM_{10}, and $PM_{2.5}$ standards and for federal O_3, $PM_{2.5}$, and lead standards (CARB 2013a).

TABLE 3.1-3
ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE LOS ANGELES COUNTY PORTION OF THE SOUTH COAST AIR BASIN

Pollutant	State Designation	Federal Designation
O3	Nonattainment	Nonattainment
PM10	Nonattainment	Attainment
PM2.5	Nonattainment	Nonattainment
CO	Attainment	Unclassified/Attainment
NO2	Attainment	Unclassified/Attainment
SO2	Attainment	Attainment
Lead	Attainment	Nonattainment

Source: CARB 2013a

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For regulatory purposes, carcinogenic TACs are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes, such as petroleum refining; commercial operations, such as gasoline stations and dry cleaners; and motor vehicle exhaust. Public exposure to TACs can result from emissions from normal operations, as well as from accidental releases of hazardous materials during upset conditions. The health effects associated with TACs are quite diverse and generally are assessed locally rather than regionally.

To date, the California Air Resources Board (CARB) has designated nearly 200 compounds as TACs. Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to a relatively few compounds.

Most recently, CARB identified diesel particulate matter (diesel PM) as a toxic air contaminant. Diesel PM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. Diesel exhaust is a complex mixture of particles and gases produced when an engine burns diesel fuel. Diesel PM is a concern because it can cause lung cancer; many compounds found in diesel exhaust are carcinogenic. Diesel PM includes the particle-phase constituents in diesel exhaust. The chemical composition and particle sizes of diesel PM vary between different engine types (heavy-duty, light-duty), engine operating conditions (idle, accelerate, decelerate), fuel formulations (high/low sulfur fuel), and the year of the engine (EPA 2002). Some short-term (acute) effects of diesel exhaust include eye, nose, throat, and lung irritation, and diesel exhaust can cause coughs, headaches, lightheadedness, and nausea. Among TACs associated with development projects, diesel PM poses the greatest health risk;

due to their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others because of the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases.

Residential areas are considered to be sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Children are considered more susceptible to the health effects of air pollution because of their immature immune systems and developing organs (OEHHA 2007). As such, schools are also considered sensitive receptors because children are present for extended durations and engage in regular outdoor activities.

The nearest sensitive receptors to the project area are the Golden Oaks Apartments on Diamond Avenue and other residential uses located to the south of the South Pasadena Unified School District (SPUSD) administration offices on El Centro Street to the south and on Fairview Avenue.

3.1.2 REGULATORY FRAMEWORK

The federal Clean Air Act of 1971 and the Clean Air Act Amendments (1977) established the national ambient air quality standards (NAAQS), which are promulgated by the US Environmental Protection Agency (EPA). The State of California has also adopted its own California ambient air quality standards (CAAQS), which are promulgated by CARB. Implementation of the project would occur in the South Coast Air Basin, which is under the air quality regulatory jurisdiction of the SCAQMD and is subject to the rules and regulations adopted by the air district to achieve the national and state ambient air quality standards. Federal, state, regional, and local laws, regulations, plans, and guidelines are summarized below.

AMBIENT AIR QUALITY STANDARDS

The Clean Air Act established NAAQS, with states retaining the option to adopt more stringent standards or to include other pollution species. These standards are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect those sensitive receptors most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both the State of California and the federal government have established health-based ambient air quality standards for six air pollutants. As shown in **Table 3.1-4**, these pollutants include O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

TABLE 3.1-4
AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards	National Standards
Ozone (O_3)	8 Hour	0.070 ppm (137$\mu g/m^3$)	0.075 ppm
	1 Hour	0.09 ppm (180 $\mu g/m^3$)	—
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 $\mu g/m^3$)	100 ppb
	Annual Arithmetic Mean	0.030 ppm (57 $\mu g/m^3$)	53 ppb (100 $\mu g/m^3$)
Sulfur Dioxide (SO_2)	24 Hour	0.04 ppm (105 $\mu g/m^3$)	N/A
	3 Hour	—	N/A
	1 Hour	0.25 ppm (665 $\mu g/m^3$)	75 ppb
Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 $\mu g/m^3$	N/A
	24 Hour	50 $\mu g/m^3$	150 $\mu g/m^3$
Particulate Matter – Fine ($PM_{2.5}$)	Annual Arithmetic Mean	12 $\mu g/m^3$	15 $\mu g/m^3$
	24 Hour	N/A	35 $\mu g/m^3$
Sulfates	24 Hour	25 $\mu g/m^3$	N/A
Lead	Calendar Quarter	N/A	1.5 $\mu g/m^3$
	30-Day Average	1.5 $\mu g/m^3$)	N/A
Hydrogen Sulfide	1 Hour	0.03 ppm (42 $\mu g/m^3$)	N/A
Vinyl Chloride (chloroethene)	24 Hour	0.01 ppm (26 $\mu g/m^3$)	N/A
Visibility-Reducing Particles	8 Hour (10:00 to 18:00 PST)	—	N/A

Source: CARB 2013b

Notes: mg/m3 = milligrams per cubic meter; ppm = parts per million; ppb = parts per billion; µg/m3 = micrograms per cubic meter

AIR QUALITY ATTAINMENT PLANS

The SCAQMD and the Southern California Association of Governments (SCAG) are the agencies responsible for preparing the Air Quality Management Plan (AQMP) for the SoCAB pursuant to the federal Clean Air Act, to reduce emissions of criteria pollutants for which the basin is in nonattainment. The SCAQMD has drafted the 2012 Air Quality Management Plan in order to reduce emissions for which the SoCAB is in nonattainment. The 2012 AQMP establishes a program of rules and regulations directed at reducing air pollutant emissions and achieving state (California) and national air quality standards. The 2012 AQMP is a regional and multi-agency effort including the SCAQMD, CARB, SCAG, and the EPA. The 2012 AQMP pollutant control strategies are based on the latest scientific and technical information and planning assumptions, including the 2012 Regional Transportation Plan/Sustainable Communities Strategy, updated emission inventory methodologies for various source categories, and SCAG's latest growth forecasts (SCAQMD 2013). (SCAG's latest growth forecasts were defined in consultation with local governments and with reference to local general plans.)

The AQMP provides local guidance for the State Implementation Plan (SIP), which provides the framework for air quality basins to achieve attainment of the state and federal ambient air quality standards. As previously stated, areas that meet ambient air quality standards are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas. The attainment status for the SoCAB is included in **Table 3.1-3** above. As shown in **Table 3.1-3**, the South Pasadena region is nonattainment for state O_3, PM_{10}, and $PM_{2.5}$ standards and for federal O_3, $PM_{2.5}$, and lead standards (CARB 2013a).

TOXIC AIR CONTAMINANT REGULATIONS

The California Health and Safety Code defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as toxic air contaminants. Once a TAC is identified, CARB adopts an airborne toxics control measure for sources that emit designated TACs. If there is a safe threshold for a substance (a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions. To date, CARB has established formal control measures for eleven TACs, all of which are identified as having no safe threshold.

Air toxics from stationary sources are also regulated in California under the Air Toxics Hot Spot Information and Assessment Act of 1987. Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High-priority facilities are required to perform a health risk assessment and, if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings. Stationary sources of air toxics in South Pasadena include gasoline fuel stations, diesel-powered backup generators, and dry cleaning facilities.

California Diesel Risk Reduction Plan

CARB has adopted the Diesel Risk Reduction Plan (DRRP), which recommends many control measures to reduce the risks associated with diesel PM and achieve a reduction goal of 85 percent by 2020. The DRRP incorporates measures to reduce emissions from diesel-fueled vehicles and stationary diesel-fueled engines. CARB's ongoing efforts to reduce diesel-exhaust emissions from these sources include the development of specific statewide regulations, which are designed to further reduce diesel PM emissions. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce diesel PM emissions.

Since the initial adoption of the DRRP in September 2000, CARB has adopted numerous rules related to the reduction of diesel PM from mobile sources, as well as the use of cleaner-burning fuels. Transportation sources addressed by these rules that pertain to projects in South Pasadena include buses, on-road heavy-duty trucks, and off-road heavy-duty construction equipment.

South Coast Air Quality Management District and the Southern California Association of Governments

The SCAQMD and SCAG are the agencies responsible for preparing the air quality management plan (AQMP) for the SoCAB. Since 1979, a number of AQMPs have been prepared.

The current AQMP was adopted on December 7, 2012. The 2012 AQMP was prepared to accommodate growth, to reduce the high levels of pollutants in the areas under SCAQMD jurisdiction, and to attain clean air in the region. Projects that are considered to be consistent with the AQMP would not interfere with attainment, because this growth is included in the projections used to formulate the plan. 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. The 2012 AQMP utilized projections of population and transportation activity forecasts by SCAG in its 2012 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS).

3.1.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

For the purposes of this EIR, the project would result in a significant impact on the environmental if it would:

1) Conflict with or obstruct implementation of the applicable air quality plan.
2) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
3) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
4) Expose sensitive receptors to substantial pollutant concentrations.
5) Create objectionable odors affecting a substantial number of people.

As discussed in the project's Initial Study (**Appendix A**), the project would have no impact related to standard of significance 5. Therefore, it will not be discussed further in this Draft EIR.

The SCAQMD CEQA Air Quality Handbook provides guidance for evaluating a project against these standards. The subsections below summarize relevant portions of this handbook.

Construction Thresholds

The SCAQMD CEQA Air Quality Handbook establishes suggested significance thresholds based on the volume of pollution emitted. According to the handbook, any construction project in the South Coast Air Basin with daily emissions that exceed any of the following thresholds should be considered as having an individually and cumulatively significant air quality impact:

- 550 pounds per day of carbon monoxide (CO)
- 75 pounds per day of volatile organic compounds (VOC)
- 100 pounds per day of nitrogen oxides (NO_X)
- 150 pounds per day of sulfur oxides (SO_X)
- 150 pounds per day of respirable particulate matter (PM_{10})
- 55 pounds per day of fine particulate matter ($PM_{2.5}$)

Operational Thresholds

The SCAQMD recommends that projects with operational emissions that exceed any of the following emissions thresholds should be considered significant. These thresholds apply to individual development projects only and do not apply to cumulative development.

- 550 pounds per day of CO
- 55 pounds per day of VOC
- 55 pounds per day of NOX
- 150 pounds per day SOX
- 150 pounds per day of PM10
- 55 pounds per day of PM2.5

CO Hot-Spot Analysis

- Typically, substantial pollutant concentrations of CO are associated with mobile sources (e.g., vehicle idling time). Localized concentrations of CO are associated with congested roadways or signalized intersections operating at poor levels of service (level of service E or lower). High concentrations of CO may negatively affect local sensitive receptors (e.g., residents, schoolchildren, or hospital patients).
- A CO hot spot would occur if the emissions exceed the following state 1-hour standard or the 8-hour standard:
- 1-hour = 20 parts per million
- 8-hour = 9 parts per million
- When the SCAQMD CEQA Air Quality Handbook was first prepared in 1993, the South Coast Air Basin was designated nonattainment under the California and national ambient air quality standards for carbon monoxide. The analysis prepared for CO attainment in the air basin by the SCAQMD can be used to assist in evaluating the potential for excess carbon monoxide in the air basin. CO attainment was thoroughly analyzed as part of the SCAQMD's 2003 Air Quality Management Plan and the Revision to the 1992 Carbon Monoxide Attainment Plan (SCAQMD 1994). As discussed in the 1994 document, peak CO concentrations in the South Coast Air Basin are due to unusual meteorological and topographical conditions and are not due to the impact of particular intersections. Considering the region's unique meteorological conditions and the increasingly stringent CO emissions standards, carbon monoxide modeling was performed as part of the 1992 Carbon Monoxide Attainment Plan and subsequent plan updates and air quality management plans.

In the 1992 Carbon Monoxide Attainment Plan, a CO hot-spot analysis was conducted for four busy intersections in the Los Angeles area during the peak morning and afternoon time periods. The intersections evaluated were Long Beach Boulevard and Imperial Highway (Lynwood), Wilshire Boulevard and Veteran Avenue (Westwood), Sunset Boulevard and Highland Avenue (Hollywood), and La Cienega Boulevard and Century Boulevard (Inglewood). These analyses did not predict a violation of CO standards. The busiest intersection evaluated in the 1992 CO

plan and the subsequent 2003 AQMP was that at Wilshire Boulevard and Veteran Avenue, which has a daily traffic volume of approximately 100,000 vehicles per day (SCAQMD 2003). The Los Angeles County Metropolitan Transportation Authority (MTA) evaluated the level of service (LOS) in the vicinity of the Wilshire Boulevard/Veteran Avenue intersection and found it to be LOS E at peak morning traffic and LOS F at peak afternoon traffic (MTA 2004).

Localized Significance Thresholds

The SCAQMD developed Localized Significance Thresholds (LST) methodologies and mass rate look-up tables by Source Receptor Area (SRA) that can be used to determine whether a project may generate significant adverse localized air quality impacts. LSTs represent the maximum emissions from a project that will not cause or substantially contribute to exceeding the most stringent applicable federal or state ambient air quality standard. They are developed based on the ambient concentrations of that pollutant for each SRA. The SCAQMD's LST methodology is described in Final Localized Significance Threshold Methodology and is based on LST tables published by the SCAQMD (October 21, 2009); both documents are available on the SCAQMD website.

The LST mass rate look-up tables provided by the SCAQMD allow a determination as to whether the daily emissions for proposed construction or operational activities could result in significant localized air quality impacts. If the calculated on-site emissions for the proposed construction or operational activities are below the LST emission levels found on the LST mass rate look-up tables, the proposed construction or operation activity is not significant for air quality.

The LST mass rate look-up tables are applicable to the following pollutants only: nitrogen oxides (NOx), carbon monoxide (CO), and particulate matter less than 10 microns and 2.5 microns in aerodynamic diameter (PM_{10} and $PM_{2.5}$). Table entries are derived based on the location of the activity (i.e., the source/receptor area); the emission rates of NOx, CO, PM_{10}, and $PM_{2.5}$; and the distance to the nearest exposed individual.

The LST methodology presents mass emission rates for each SRA, project sizes of 1, 2, and 5 acres, and nearest receptor distances of 25, 50, 100, 200, and 500 meters. For project sizes between the values given, or with receptors at distances between the given receptors, the methodology uses linear interpolation to determine the thresholds. The SCAQMD recommends that LSTs be analyzed using the CalEEMod equipment list based on the maximum number of acres disturbed on the peak day. Accordingly, the construction emissions estimated for the proposed project estimate that less than 1 acre would be disturbed per day. Therefore, for the purposes of the LST analysis, maximum emissions were estimated using the LST screening tables for a 1-acre site (the LST screening table provides emissions for project sites of 1, 2, and 5 acres).

METHODOLOGY

Air quality impacts were assessed in accordance with methodologies recommended by CARB and the SCAQMD, based on the maximum development potential assumptions described in Section 2.0, Project Description. Criteria air pollutant emissions were modeled using the California Emissions Estimator Model (CalEEMod) (see **Appendix C**). CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operation from a variety of land use projects. Project construction-generated emissions were calculated using the CalEEMod computer program accounting for the 18-month construction time frame noted in Section 2.0, Project Description. Operational emissions were based on the estimated traffic trip generation rates from the traffic impact analysis (**Appendix G**).

IMPACTS AND MITIGATION MEASURES

Conflict with or Obstruct Implementation of the Applicable Air Quality Plan (Standard of Significance 1)

Impact 3.1.1 The project would not conflict or obstruct implementation of application air quality plans and would have a **less than significant** impact.

SCAG's (2012) 2012–2035 RTP/SCS provides population, housing, and employment growth forecasts through 2035. The proposed project would be consistent with the types, intensity, and patterns of residential and commercial land use anticipated in the RTP/SCS. According to SCAG, South Pasadena's population was approximately 25,600 in 2008 and is projected to grow to approximately 26,300 by 2035. More recently, the California Department of Finance estimated that the city's 2015 population was 26,174. The proposed project would generate a projected population increase of 200 residents. When added to the existing population of South Pasadena of 26,174, the proposed project would result in a city population of 26,374 (a 0.008 percent increase).

The project site is designated as Mission Street Specific Plan under the City's General Plan and is zoned MSSP District A. Projects in MSSP District A are designated to encourage high-intensity pedestrian-oriented commercial or mixed-use developments that would increase foot traffic in the area. The proposed project is consistent with the land use designation and development density presented in the City of South Pasadena's General Plan and therefore would not exceed the population or job growth projections used by the SCAQMD to develop the Air Quality Management Plan. Impacts would be **less than significant**.

Mitigation Measures

None required.

Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation (Standard of Significance 2)

Impact 3.1.2 Without mitigation, the project would result in construction emissions that would exceed SCAQMD standards. This impact would be a **less than significant with mitigation incorporated**. The project would have a **less than significant** impact due to operational emissions.

Construction Emissions

Construction emissions are calculated by estimating the types and number of pieces of equipment that would be used to grade, excavate, and balance fill at the project site and to construct the uses proposed under the project. These are analyzed according to the thresholds established by the SCAQMD. Construction activities associated with the proposed project would temporarily increase diesel emissions and would generate particulate matter (dust). Construction equipment on the project site that would generate volatile organic compounds (VOC), nitrogen oxide, carbon monoxide, and particulate matter could include graders, dump trucks, and bulldozers. Some of this equipment would be used during grading activities and during construction of the proposed buildings.

This environmental assessment assumes that all construction equipment used would be diesel-powered. Construction activities are anticipated to begin in the winter of 2016 and last

approximately 18 months, concluding in late summer 2017. Construction phases would involve grading, building construction, and architectural coating. A total of 1.27 acres would be disturbed. Approximately 48,000 cubic yards of material would be exported in order to develop the proposed three-level subterranean parking garage. It is anticipated that a total of 6,000 haul trips would be required, assuming that the trucks would have a capacity of 14 cubic yards per load. No asphalt paving would occur, as ground surfaces would consist of structural concrete or stone pavers over concrete.

Emissions for the construction activities were calculated using CalEEMod, a computer program developed by the SCAQMD that calculates emissions for construction and operation of development projects. For on-road vehicular emissions, CalEEMod utilizes the Emission Factor 2011 (EMFAC2011) emission rates developed by CARB. Equipment for each phase of construction activity is based on data provided by the project applicant. Detailed assumptions and CalEEMod inputs and outputs are included in **Appendix C.**

Regional Construction Emissions

Construction emissions are primarily generated by construction equipment and from dust resulting from construction activity.

Table 3.1-5 identifies the estimated peak daily construction emissions, as calculated using the CalEEMod model. As shown in **Table 3.1-5**, without mitigation, construction activities would result in emissions that would exceed the SCAQMD thresholds for VOCs, which would occur during the architectural coating phase. Further, as required by the SCAQMD's Rule 403 (Fugitive Dust), all construction activities that are capable of generating fugitive dust are required to implement dust control measures during each phase of project development to reduce the amount of particulate matter entrained in the ambient air. The VOC emissions and the potential for fugitive dust to exceed the SCAQMD thresholds would be considered significant before mitigation.

TABLE 3.1-5
ESTIMATED PEAK DAILY CONSTRUCTION EMISSIONS IN POUNDS PER DAY, UNMITIGATED

Emission Sources	Peak Day Emissions					
	VOC	NOx	CO	SOx	PM10	PM2.5
Site Preparation	2.72	29.76	19.72	0.02	7.19	4.33
Grading	4.43	58.95	43.78	0.10	8.79	4.74
Building	3.68	21.90	20.21	0.03	2.21	1.55
Architectural Coating	78.07	2.24	2.68	0.01	0.32	0.21
Maximum Daily Emissions	78.07	58.95	43.78	0.10	8.79	4.74
SCAQMD Thresholds	75	100	550	150	150	55
Significant Impact?	Yes	No	No	No	No	No

*Source: CalEEMod 2015 (Calculation sheets are provided in **Appendix C**.)*

In order to ensure that VOC emissions from architectural coatings are reduced to levels below the SCAQMD thresholds, as well as to ensure compliance with SCAQMD's Rule 403, mitigation measures **MM 3.1.2a** and **MM 3.1.2b** are required.

Table 3.1-6 shows that with implementation of mitigation measure **MM 3.1.2a**, VOC emissions would be below the SCAQMD threshold. Additionally, emissions of PM_{10} and $PM_{2.5}$ would be reduced with implementation of mitigation measure **MM 3.1.2b**. Therefore, with implementation of mitigation measures **MM 3.1.2a** and **MM 3.1.2b**, this impact is **less than significant**.

TABLE 3.1-6
ESTIMATED PEAK DAILY CONSTRUCTION EMISSIONS IN POUNDS PER DAY, MITIGATED

Emission Sources	Peak Day Emissions					
	VOC	NOx	CO	SOx	PM10	PM2.5
Site Preparation	2.72	29.76	19.72	0.02	3.89	2.56
Grading	4.43	58.95	43.78	0.10	5.95	3.21
Building	3.68	21.90	20.21	0.03	2.21	1.55
Architectural Coating	68.48	2.24	2.68	0.01	0.32	0.21
Maximum Daily Emissions	68.48	58.95	43.78	0.10	8.79	4.74
SCAQMD Thresholds	75	100	550	150	150	55
Significant Impact?	No	No	No	No	No	No

*Source: CalEEMod 2015 (Calculation sheets are provided in **Appendix C**.)*

Operational Emissions

Operational emissions generated by both stationary and mobile sources would result from normal day-to-day activities once project construction is complete. Stationary area source emissions would be generated by space heating and water heating devices and by the operation of landscape maintenance equipment. Mobile emissions would be generated by motor vehicles traveling to and from the project site.

The results of the CalEEMod calculations for the daily operational emissions of the proposed project are presented in **Table 3.1-7** (refer to **Appendix C** for CalEEMod outputs). The emissions shown in **Table 3.1-7** reflect the net increase in emissions anticipated from implementation of the proposed project. As shown, the daily operational emissions are below the SCAQMD thresholds for all criteria pollutants; therefore, this impact is considered **less than significant**.

TABLE 3.1-7
ESTIMATED PEAK DAILY OPERATIONAL EMISSIONS IN POUNDS PER DAY, UNMITIGATED

Emission Sources	Peak-Day Emissions					
	VOC	NOx	CO	SOx	PM10	PM2.5
Area	2.12	0.08	7.58	0.00	0.04	0.04
Energy	0.06	0.53	0.32	0.00	0.04	0.04
Mobile	3.94	10.12	39.85	0.09	6.59	1.85
Maximum Daily Emissions	6.12	10.75	47.76	0.09	6.67	1.93
SCAQMD Thresholds	55	55	550	150	150	55
Significant Impact?	No	No	No	No	No	No

*Source: CalEEMod 2015 (Calculation sheets are provided in **Appendix C**.)*

Mitigation Measures

MM 3.1.2a All residential and nonresidential exterior coatings shall have a VOC content of no more than 100 grams per liter.

MM 3.1.2b Construction Dust Control Measures. The on-site construction superintendent must ensure the implementation of standard best management practices to reduce the emissions of fugitive dust during all phases of construction activities including but not limited to the following actions:

- Apply soil stabilizers to inactive construction areas.
- Quickly replace ground cover in disturbed areas. If disturbed graded areas remain inactive for longer than four days, nontoxic soil stabilizers must be applied.
- Water exposed surfaces three times daily.
- Water all unpaved haul roads three times daily.
- Cover all stock piles with tarps.
- Reduce vehicle speed on unpaved roads.
- Post signs on-site limiting traffic to 15 miles per hour or less.
- Sweep streets adjacent to the project site at the end of the day if visible soil material is carried over to adjacent roads.
- Cover or have water applied to the exposed surface of all trucks hauling dirt, sand, soil, or other loose materials prior to leaving the site to prevent dust from impacting the surrounding areas.
- Install wheel washers where vehicles enter and exit unpaved roads onto paved roads to wash off trucks and any equipment leaving the site each trip.

Cumulatively Considerable Net Increase of Any Criteria Pollutant for Which the Project Region Is Nonattainment (Standard of Significance 3)

Impact 3.1.3 The project's impact would be **less than significant with mitigation incorporated** due to a cumulatively considerable net increase of criteria pollutants for which the South Coast Air Basin is in nonattainment.

The project site is located in the South Coast Air Basin, which is under the jurisdiction of the SCAQMD. Despite consistent improvements in pollution levels in the basin over the past 30 years, levels of ozone (for which VOC and NOx are precursors), PM_{10}, and $PM_{2.5}$ are above ambient air quality standards. Therefore, projects could contribute to exceeding an existing or projected air quality standard. In determining the significance of the proposed project's contribution, the SCAQMD neither recommends quantified analyses of cumulative construction or operational emissions nor provides separate methodologies or thresholds of significance to be used to assess cumulative construction or operational impacts. Instead, the SCAQMD recommends that a

project's potential contribution to cumulative impacts be assessed using the same significance criteria as those for project-specific impacts. That is, individual development projects that generate construction-related or operational emissions which exceed the SCAQMD-recommended daily thresholds for project-specific impacts would also cause a cumulatively considerable increase in emissions for those pollutants for which the air basin is in nonattainment.

After the implementation of mitigation measures **MM 3.1.2a** and **MM 3.1.2b**, the proposed project would not exceed SCAQMD daily significance thresholds for criteria air pollutants as described above in Impact 3.1.2. The proposed project would not result in a cumulatively considerable net increase in criteria air pollutants for the project region. Therefore, this impact would be **less than significant with mitigation incorporated**.

Mitigation Measures

Implement mitigation measures **MM 3.1.2a** and **MM 3.1.2b.**

Expose Sensitive Receptors to Substantial Pollutant Concentrations (Standard of Significance 4)

Impact 3.1.4 Before mitigation, the project could expose sensitive receptors to substantial pollutant concentrations. This impact would be **less than significant with mitigation incorporated**.

Sensitive receptors in proximity to the project site include the Golden Oaks Apartments and other existing residences. Both the construction and the long-term operation of the project have the potential to generate air pollutants that could affect sensitive receptors.

Air quality impacts on sensitive receptors are accessed by evaluating the potential for the project to cause localized concentrations of pollutants. Land use development projects, such as the proposed project, have the potential to increase pollutant levels at or near the project site during construction and at congested intersections where the project would add vehicles. The SCAQMD has developed methodologies for analyzing these two potential scenarios related to localized significance thresholds and carbon monoxide hot spots.

Localized Significance Thresholds

According to SCAQMD LST mass look-up tables, as discussed above, the project is located in SRA 8. The sensitive receptor in the proposed project vicinity with the largest potential to be affected by construction activities is the Golden Oaks Apartments senior housing (residential use) located directly to the west of the project site across Diamond Avenue.

The proposed project site is approximately 1.27 acres in size and less than 1 acre would be disturbed on the peak day of constructions. Therefore, construction emissions are comparable to the most stringent LST screening thresholds for a 1-acre project located in SRA 8 as identified in the SCAQMD look-up tables. The closest receptor distance on the LST look-up tables is 25 meters. According to the LST methodology, projects with boundaries closer than 25 meters to the nearest receptor should use screening thresholds for receptors located at 25 meters. Accordingly, LSTs for receptors at 25 meters are utilized in this analysis and provide a conservative, i.e., "health protective," standard of care.

Since operation of the proposed project does not include any point sources of pollutants (e.g., generator, incinerator, etc.), only the construction phase LSTs apply to the project. Emissions for construction activities were calculated using CalEEMod, utilizing the construction equipment

data provided by the applicant. Total worst-case on-site construction emissions for the proposed project are included in **Table 3.1-8**. As shown in the table, emissions of PM_{10} and $PM_{2.5}$ would exceed the SCAQMD's LST threshold before mitigation. Detailed assumptions and CalEEMod inputs and outputs are included in **Appendix C**. As shown in **Table 3.1-8**, after implementation of mitigation measure **MM 3.1.2b**, the proposed project would not generate emissions in excess of the LST screening thresholds. Therefore, the proposed project would not significantly impact sensitive receptors in the project vicinity.

TABLE 3.1-8
TOTAL CONSTRUCTION EMISSIONS AND LOCALIZED SIGNIFICANCE THRESHOLDS WITHOUT AND WITH MITIGATION

Pollutant	Unmitigated Maximum On-Site Construction Emissions	Screening Threshold[1]	Quantity of Pollutant Exceeding Threshold	Potentially Significant Impact?
CO	16.51	535	0	No
NO_2	25.78	69	0	No
PM_{10}	6.80	4	2.8	Yes
$PM_{2.5}$	4.19	3	1.19	Yes
Pollutant	**Mitigated Maximum On-Site Construction Emissions**	**Screening Threshold[1]**	**Quantity of Pollutant Exceeding Threshold**	**Significant Impact?**
CO	16.51	535	0	No
NO_2	25.78	69	0	No
PM_{10}	2.96	4	0	No
$PM_{2.5}$	2.02	3	0	No

*Source: CalEEMod 2015 (Calculation sheets are provided in **Appendix C.**)*

[1]. Thresholds of significance are measured at 25 meters from the proposed project site.

Carbon Monoxide

As discussed above, in the Carbon Monoxide Attainment Plan, a CO hot-spot analysis was conducted at four intersections in the Los Angeles area. The project would not produce maximum peak-hour traffic volumes exceeding those at the intersections modeled in the 2003 AQMP, nor would there be any meteorological reason unique to the area to conclude that affected intersections would yield higher CO concentrations if modeled in detail. For these reasons, impacts related to CO hot spots would be **less than significant**.

As discussed above, mitigation measure **MM 3.1.2b** would reduce LST impacts to a less than significant level. Therefore, impacts to sensitive receptors would be less than significant after mitigation.

Mitigation Measures

Implement mitigation measure **MM 3.1.2b**.

3.1.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

Please see the discussion above for Standard of Significance 3 (Impact 3.1.3).

CUMULATIVE SETTING

The cumulative setting for air quality includes the City of South Pasadena and the South Coast Air Basin. The South Pasadena region is nonattainment for state O_3, PM_{10}, and $PM_{2.5}$ standards and for federal O_3, $PM_{2.5}$, and lead standards (CARB 2013a). Cumulative growth in population, vehicle use, and industrial activity could inhibit efforts to improve regional air quality and attain the ambient air quality standards. Thus, the setting for this cumulative analysis consists of the SCAQMD and associated growth and development anticipated in the air basin.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulatively Considerable Net Increase in Nonattainment Criteria Pollutants

Impact 3.1.6 The proposed project, in combination with cumulative development in the SCAQMD, would not result in a cumulatively considerable net increase of criteria air pollutants for which the air basin is designated nonattainment. This impact is **not cumulatively considerable**.

By its very nature, air pollution is largely a cumulative impact. According to the SCAQMD, no single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. In developing thresholds of significance for air pollutants, the SCAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. As demonstrated under Impact 3.1.1, the proposed project is consistent with the land use designation and development density presented in the City of South Pasadena's General Plan and therefore would not exceed the population or job growth projections used by the SCAQMD to develop the Air Quality Management Plan. Impacts from air quality would be **not cumulatively considerable**.

Mitigation Measures

None required.

3.1.5 REFERENCES

CAPCOA (California Air Pollution Control Officers Association). 2011. *Health Effects*.

CARB (California Air Resources Board). 2013a. Area Designation Map. http://www.arb.ca.gov/desig/adm/adm.htm.

———. 2013b. *Ambient Air Quality Standards*. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.

———. 2015. *Air Quality Data Statistics.* http://www.arb.ca.gov/adam/index.html.

City of South Pasadena. 1998. *City of South Pasadena General Plan.*

EPA (US Environmental Protection Agency). 2002. *Health Assessment Document for Diesel Engine Exhaust.* http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=29060.

MTA (Los Angeles County Metropolitan Transportation Authority). 2004. *2004 Congestion Management Plan for Los Angeles County*. http://www.metro.net/images/cmp_2004.pdf.

OEHHA (Office of Environmental Health Hazard Assessment). 2007. *Air Toxicology and Epidemiology: Air Pollution and Children's Health*. http://oehha.ca.gov/public_info/facts/airkids.html.

SCAG (Southern California Association of Governments). 2012. *2012/2035 Regional Transportation Plan/Sustainable Communities Strategy.*

SCAQMD (South Coast Air Quality Management District). 1993. *CEQA Air Quality Handbook.*

———. 1994. *Revision to the 1992 Carbon Monoxide Attainment Plan*.

———. 2003. *2003 Air Quality Management Plan.*

———. 2013. *Final 2012 Air Quality Management Plan*.