4.2 AIR QUALITY

INTRODUCTION

This section of the EIR addresses the Project's potential to result in air quality-related impacts during construction and operation of the Project. Relevant regulations and existing conditions are described as well as the potential for the Project to conflict with or obstruct implementation of the applicable air quality plan. Air quality technical data utilized to prepare this section was obtained from the *Cielo Vista Air Quality Impact Analysis, County of Orange, California*, prepared by Urban Crossroads, Inc., dated March 7, 2013, which is included as Appendix B of this EIR.

1. ENVIRONMENTAL SETTING

a. Regulatory Framework

(1) Federal

The U.S. Environmental Protection Agency (EPA) is responsible for setting and enforcing the National Ambient Air Quality Standards (NAAQS) for ozone (O_3) carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO_2), particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb). The U.S. EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The U.S. EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the California Air Resources Board (CARB).

The Federal Clean Air Act (CAA) was first enacted in 1955, and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance. The CAA also mandates that states submit and implement State Implementation Plans (SIPs) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA that identify specific emission reduction goals for areas not meeting the NAAQS require a demonstration of reasonable further progress toward attainment and incorporate additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA most directly applicable to the development of the project site include Title I (Non-Attainment Provisions) and Title II (Mobile Source Provisions).

Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O_3, NO_2, SO_2, PM_{10}, CO, $PM_{2.5}$, and lead. The NAAQS were amended in July 1997 to include an additional standard for O_3 and to adopt a NAAQS for $PM_{2.5}$. **Table 4.2-1**, *Ambient Air Quality Standards,* provides the NAAQS within the South Coast Air Basin (the "Basin").

Table 4.2-1

Ambient Air Quality Standards

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[8]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[9]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[9]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[9]	—	
Lead[10,11]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[11]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[12]	8 Hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[10]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes on next page ...

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Table 4.2-1 (Continued)

State and National Criteria Pollutant Standards, Effects, and Sources

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

8. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

9. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

   Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

10. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

11. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

12. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

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Mobile source emissions are regulated in accordance with Title II provisions. These provisions require the use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Automobile manufacturers are also required to reduce tailpipe emissions of hydrocarbons and NO_x. NO_x is a collective term that includes all forms of nitrogen oxides (NO, NO_2, NO_3) which are emitted as byproducts of the combustion process.

(2) State

The CARB, which became part of the California EPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB 2595, December 1998[1]), responding to the federal CAA, and for regulating emissions from consumer products and motor vehicles. The California CAA mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards by the earliest practical date. The CARB established the California Ambient Air Quality Standards (CAAQS) for all pollutants for which the federal government has NAAQS and, in addition, establishes standards for sulfates, visibility, hydrogen sulfide, and vinyl chloride. However, at this time, hydrogen sulfide and vinyl chloride are not measured at any monitoring stations in the Basin because they are not considered to be a regional air quality problem by the CARB. Generally, the CAAQS are more stringent than the NAAQS.

Local air quality management districts, such as the South Coast Air Quality Management District (SCAQMD), regulate air emissions from commercial and light industrial facilities. All air pollution control districts have been formally designated as attainment or non-attainment for each CAAQS. A basin designated as "attainment" for a particular pollutant means the basin is below the allowable pollutant standard. On the other hand, a basin designated as "non-attainment" for a particular pollutant means the basin has pollutant levels above the allowable standard.

Serious non-attainment areas are required to prepare air quality management plans that include specified emission reduction strategies in an effort to meet clean air goals. These plans are required to include:

- Application of Best Available Retrofit Control Technology (BACT) to existing sources;
- Develop control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g. motor vehicle use generated by residential and commercial development);
- A District permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions;
- Implement reasonably available transportation control measures and assuring a substantial reduction in growth rate of vehicle trips and miles traveled;
- Significant use of low emissions vehicles by fleet operators; and
- Sufficient control strategies to achieve a five percent or more annual reduction in emissions or 15 percent or more in a period of three years for ROGs, NO_x, CO and PM_{10}. However, air basins may use alternative emission reduction strategy that achieves a reduction of less than five percent per year under certain circumstances.

[1] *California Clean Air Act 1998, AB 2595, SHER (Chapter 1568, Statutes of 1998).*

(3) Air Quality Management Planning

The project site is located within the South Coast Air Basin, which is characterized by relatively poor air quality. The SCAQMD has jurisdiction over an approximately 12,000 square-mile area consisting of the four-county Basin, Los Angeles, Orange, Riverside, and San Bernardino Counties. In these areas, the SCAQMD is principally responsible for air pollution control, and works directly with the Southern California Association of Governments (SCAG), county transportation commissions, local governments, as well as state and federal agencies to reduce emissions from stationary, mobile, and indirect sources to meet state and federal ambient air quality standards.

Currently, these state and federal air quality standards are exceeded in most parts of the Basin. In response, the SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the state and federal ambient air quality standards. AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy.

The Final 2012 AQMP was adopted by the SCAQMD Governing Board on December 7, 2012. The 2012 AQMP incorporates the latest scientific and technological information and planning assumptions, including the 2012 Regional Transportation Plan/Sustainable Communities Strategy and updated emission inventory methodologies for various source categories.

Similar to the 2007 AQMP, the 2012 AQMP was based on assumptions provided by both CARB and SCAG in the latest available EMFAC model[2] for the most recent motor vehicle and demographics information, respectively. The air quality levels projected in the 2012 AQMP are based on several assumptions. For example, the 2012 AQMP has assumed that development associated with general plans, specific plans, residential projects, and wastewater facilities will be constructed in accordance with population growth projections identified by SCAG in its 2012 Regional Transportation Plan (RTP). The 2012 AQMP also has assumed that such development projects will implement strategies to reduce emissions generated during the construction and operational phases of development. A discussion of the Project's consistency with the 2012 AQMP is provided below.

The SCAQMD's Rules Book includes various rules and regulations that are applicable to the Project, which include, but may not be limited to:

- Rule 201 (Permit to Construct): Per this rule, no person shall build, erect, install, alter or replace any equipment or agricultural permit unit, the use of which may cause the issuance of air contaminants or the use of which may eliminate, reduce or control the issuance of air contaminants without first obtaining written authorization for such construction from the Executive Officer.
- Rule 203 (Permit to Operate): Per this rule, no person shall operate or use any equipment or agricultural permit unit, the use of which may cause the issuance of air contaminants, or the use of which may reduce or control the issuance of air contaminants, without first obtaining a written permit to operate from the Executive Officer or except as provided in Rule 202.

[2] *EMFAC is CARB's model for estimating emissions from on-road vehicles operating in California.*

- SCAQMD Regulation II: This regulation requires Permits to Construct and Permits to Operate, per Rule 201 and 203, respectively. These rules require applicants to obtain permits form the SCAQMD Executive Officer for construction and operational activities that may cause air contaminates.
- Rule 402 (Odor Nuisance): Per this rule, no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.
- Rule 403 (Fugitive Dust): This rule establishes fugitive dust limits to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions. This rule requires implementation of best management practices (including construction equipment maintenance and upkeep) for fugitive dust control.
- Rule 431.2 (Low Sulfur Fuel): This rule establishes sulfur content limits in diesel and other liquid fuels to reduce the formation of sulfur oxide and particulates during combustion and enable the use of add-on control devices for diesel fueled internal combustion engines.
- Rule 1113 (Architectural Coatings): This rule establishes volatile organic compound (VOC) limits in architectural coatings used in the District. Any person who supplies, sells, offers for sale, or manufactures any architectural coating for use in the District must comply with the current VOC standards.
- Rule 1186 (PM_{10} Emissions from Paved and Unpaved Roads, and Livestock Properties): Rule 1186 requires the reduction of particulate matter entrained in ambient air as a result of vehicular travel on paved and unpaved public roads.
- Rule 1186.1 (Street Sweepers): To reduce air toxic and criteria pollutant emissions, this rule requires certain public and private sweeper fleet operators to acquire alternative-fuel or otherwise less-polluting sweepers when purchasing or leasing these vehicles for sweeping operations undertaken by or for government entities in the jurisdiction of the AQMD.

In addition, the SCAQMD includes requirements regarding oil operations that would be applicable to the Project, which include, but may not be limited to:

- Regulation XIII: This regulation sets forth pre-construction review requirements for new, modified, or relocated facilities, to ensure that the operation of such facilities does not interfere with progress in attainment of the national ambient air quality standards, and that future economic growth within the District is not unnecessarily restricted. The specific air quality goal of this regulation is to achieve no net increases from new or modified permitted sources of nonattainment air contaminants or their precursors. In addition to nonattainment air contaminants, this regulation also limits emission increases of ammonia, and Ozone Depleting Compounds (ODCs) from new, modified or relocated facilities by requiring the use BACT.
- Rule 1146 (Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters): This rule establishes NOx emission limits to reduce NOx emissions from natural gas-fired water heaters, boilers, and process heaters as defined in this rule. This rule applies to units that have a rated heat input capacity less than or equal to 2,000,000 British thermal unit (Btu) per hour. Type 1 Units as defined in this rule are typically, but not exclusively,

large water heaters or smaller-sized process heaters in the above range. Type 2 Units as defined in this rule are typically, but not exclusively, small boilers or larger-sized process heaters in this range. The provisions of this rule are applicable to manufacturers, distributors, retailers, refurbishers, installers and operators of new units.

- Rule 1146.1 (Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters): This rule establishes NOx emission limits and applies to boilers, steam generators, and process heaters that are greater than 2 million Btu per hour and less than 5 million Btu per hour rated heat input capacity used in any industrial, institutional, or commercial operation.
- Rule 1148.1 (Oil and Gas Production Wells): This rule establishes total organic compounds (TOC) limits to reduce emissions of VOCs from the wellheads, the well cellars and the handling of produced gas at oil and gas production facilities. This rule applies to onshore oil producing wells, well cellars and produced gas handling activities at onshore facilities where petroleum and processed gas are produced, gathered, separated, processed and stored.
- Rule 1401 (New Source Review of Toxic Air Contaminants): This rule establishes maximum individual cancer risk, cancer burden and acute and chronic hazard index from new permit units, relocation or modifications to existing units which emit certain toxic air contaminants. The rule establishes allowable risks for permit units requiring new permits pursuant to Rules 201 or 203.

(3) Local

(a) County of Orange General Plan

The Resources Element contains official County policies on the conservation and management of resources. One component of the Resources Element is Air Resources. The policy of the Air Resources Component is "To develop and support programs which improve air quality or reduce air pollutant emissions." The 15 implementation programs are generally applicable to the County of Orange, the Orange County Transportation Authority, and other public agencies. The implementation programs are not directly applicable to the Project. The Land Use Element includes a policy relating to the "enhancement of the environment" (Policy 8). The purpose of this policy is to ensure that all land use activities seek to enhance the physical environment, including the air quality. The Project's consistency with this policy is discussed in the impact analysis below.

(b) City of Yorba Linda General Plan

The City's General Plan contains goals and policies that are relevant to air quality, including goals and policies contained in the General Plan Growth Management Element. The Project's consistency with the applicable goals and policies of the Growth Management Element is discussed in the impact analysis below.

b. Existing Conditions

(1) South Coast Air Basin

The project site is located in the South Coast Air Basin within the jurisdiction SCAQMD. The Basin was created by the 1977 Lewis-Presley Air Quality Management Act, which merged four county air pollution control bodies into one regional district. Under the Act, the SCAQMD is responsible for bringing air quality in areas under its jurisdiction into conformity with federal and state air quality standards.

The Basin is a 6,745-square mile subregion of the SCAQMD, which includes portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County. The Basin is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Los Angeles County portion of the Mojave Desert Air Basin is bounded by the San Gabriel Mountains to the south and west, the Los Angeles / Kern County border to the north, and the Los Angeles / San Bernardino County border to the east. The Riverside County portion of the Salton Sea Air Basin is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley.

(2) Regional Climate

The regional climate has a substantial influence on air quality in the Basin. In addition, the temperature, wind, humidity, precipitation, and amount of sunshine influence the air quality.

The annual average temperatures throughout the Basin vary from the low to middle 60s (degrees Fahrenheit). Due to a decreased marine influence, the eastern portion of the Basin shows greater variability in average annual minimum and maximum temperatures. January is the coldest month throughout the Basin, with average minimum temperatures of 47°F in downtown Los Angeles and 39.7°F in Corona. All portions of the Basin have recorded maximum temperatures above 100°F.

Although the climate of the Basin can be characterized as semi-arid, the air near the land surface is quite moist on most days because of the presence of a marine layer. This shallow layer of sea air is an important modifier of the Basin climate. Humidity restricts visibility in the Basin, and the conversion of sulfur dioxide to sulfates is heightened in air with high relative humidity. The marine layer provides an environment for that conversion process, especially during the spring and summer months. The annual average relative humidity within the Basin is 71 percent along the coast and 59 percent inland. Since the ocean effect is dominant, periods of heavy early morning fog are frequent and low stratus clouds are a characteristic feature. These effects decrease with distance from the coast.

More than 90 percent of the Basin's rainfall occurs from November through April. The annual average rainfall varies from approximately nine inches in Riverside to fourteen inches in downtown Los Angeles. Monthly and yearly rainfall totals are extremely variable. Summer rainfall usually consists of widely scattered thunderstorms near the coast and slightly heavier shower activity in the eastern portion of the Basin with frequency being higher near the coast.

Due to its generally clear weather, about three-quarters of available sunshine is received in the Basin. The remaining one-quarter is absorbed by clouds. The ultraviolet portion of this abundant radiation is a key factor in photochemical reactions. On the shortest day of the year there are approximately 10 hours of possible sunshine, and on the longest day of the year there are approximately 14.5 hours of possible sunshine.

The importance of wind to air pollution is considerable. The direction and speed of the wind determines the horizontal dispersion and transport of the air pollutants. During the late autumn to early spring rainy season, the Basin is subjected to wind flows associated with the traveling storms moving through the region from the northwest. This period also brings five to ten periods of strong, dry offshore winds, locally termed "Santa Anas" each year. During the dry season, which coincides with the months of maximum photochemical smog concentrations, the wind flow is bimodal, typified by a daytime onshore sea breeze and a nighttime

offshore drainage wind. Summer wind flows are created by the pressure differences between the relatively cold ocean and the unevenly heated and cooled land surfaces that modify the general northwesterly wind circulation over southern California. Nighttime drainage begins with the radiational cooling of the mountain slopes. Heavy, cool air descends the slopes and flows through the mountain passes and canyons as it follows the lowering terrain toward the ocean. Another characteristic wind regime in the Basin is the "Catalina Eddy," a low level cyclonic (counterclockwise) flow centered over Santa Catalina Island which results in an offshore flow to the southwest. On most spring and summer days, some indication of an eddy is apparent in coastal sections.

In the Basin, there are two distinct temperature inversion structures that control vertical mixing of air pollution. During the summer, warm high-pressure descending (subsiding) air is undercut by a shallow layer of cool marine air. The boundary between these two layers of air is a persistent marine subsidence/inversion. This boundary prevents vertical mixing which effectively acts as an impervious lid to pollutants over the entire Basin. The mixing height for the inversion structure is normally situated 1,000 to 1,500 feet above mean sea level.

A second inversion-type forms in conjunction with the drainage of cool air off the surrounding mountains at night followed by the seaward drift of this pool of cool air. The top of this layer forms a sharp boundary with the warmer air aloft and creates nocturnal radiation inversions. These inversions occur primarily in the winter, when nights are longer and onshore flow is weakest. They are typically only a few hundred feet above mean sea level. These inversions effectively trap pollutants, such as NO_X and CO from vehicles, as the pool of cool air drifts seaward. Winter is therefore a period of high levels of primary pollutants along the coastline.

(3) Wind Patterns and Project Location

The distinctive climate of the project area and the Basin is determined by its terrain and geographical location. The Basin is located in a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean in the southwest quadrant with high mountains forming the remainder of the perimeter.

Wind patterns across the south coastal region are characterized by westerly and southwesterly on-shore winds during the day and easterly or northeasterly breezes at night. Winds are characteristically light although the speed is somewhat greater during the dry summer months than during the rainy winter season.

(4) Existing Air Quality

As discussed above, existing air quality is measured based upon ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. NAAQS and CAAQS currently in effect, as well health effects of each pollutant regulated under these standards are shown above in Table 4.2-1.

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the state and federal standards presented in Table 4.2-1. The air quality in a region is considered to be in attainment by the state if the measured ambient air pollutant levels for criteria pollutants (described in detail below) are not equaled or exceeded at any time in any consecutive three-year period; and the federal standards (other than O_3, PM_{10}, $PM_{2.5}$, and those based on

annual averages or arithmetic mean) are not exceeded more than once per year. The ozone standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24 hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

Criteria pollutants are pollutants that are regulated through the development of human health based and/or environmentally based criteria for setting permissible levels. A description of the sources and effects of the criteria pollutants and their potential health effects are identified below:

- Carbon Monoxide (CO): Is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, motor vehicles operating at slow speeds are the primary source of CO in the Basin. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.

  Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of decreased oxygen supply to the heart. Inhaled CO has no direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport and competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (oxygen deficiency) as seen at high altitudes.

  Reduction in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO, resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels; these include pre-term births and heart abnormalities.

- Sulfur Dioxide (SO_2): 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 SO_2 oxidizes in the atmosphere, it forms sulfates (SO_4). Collectively, these pollutants are referred to as sulfur oxides (SO_X).

  A few minutes of exposure to low levels of SO_2 can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO_2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO_2.

  Animal studies suggest that despite SO_2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

  Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO_2 levels. In these studies, efforts to separate the

effects of SO_2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

- Nitrogen Oxides (Oxides of Nitrogen, or NO_x): Nitrogen oxides (NO_x) consist of nitric oxide (NO), nitrogen dioxide (NO_2) and nitrous oxide (N_2O) and are formed when nitrogen (N_2) combines with oxygen (O_2). Their lifespan in the atmosphere ranges from one to seven days for nitric oxide and nitrogen dioxide, to 170 years for nitrous oxide. Nitrogen oxides are typically created during combustion processes, and are major contributors to smog formation and acid deposition. NO_2 is a criteria air pollutant, and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility. Of the seven types of nitrogen oxide compounds, NO_2 is the most abundant in the atmosphere. As ambient concentrations of NO_2 are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO_2 than those indicated by regional monitors.

  Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposure to NO_2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO_2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups.

  In animals, exposure to levels of NO_2 considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO_2.

- Ozone (O_3): Is a highly reactive and unstable gas that is formed when VOCs and nitrogen oxides (NO_X), both byproducts of internal combustion engine exhaust, undergo slow 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.

  Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible sub-groups for ozone effects. Short-term exposure (lasting for a few hours) to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels are associated with increased school absences. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in communities with high ozone levels.

  Ozone exposure under exercising conditions is known to increase the severity of the responses described above. Animal studies suggest that exposure to a combination of pollutants that includes ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

- PM_{10} (Particulate Matter less than 10 microns in diameter): A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the lungs where they may be deposited, resulting in adverse health effects. PM_{10} also causes visibility reduction.

  A discussion of potential health impacts resulting from PM_{10} is located in the description of $PM_{2.5}$ below.

- $PM_{2.5}$ (Particulate Matter less than 2.5 microns in diameter): A similar air pollutant consisting of tiny solid or liquid particles which are 2.5 microns or smaller (which is often referred to as fine particles). These particles are formed in the atmosphere from primary gaseous emissions that include sulfates formed from SO_2 release from power plants and industrial facilities and nitrates that are formed from NO_X release from power plants, automobiles and other types of combustion sources. The chemical composition of fine particles depends on location, time of year, and weather conditions.

  A consistent correlation between elevated ambient fine particulate matter (PM_{10} and $PM_{2.5}$) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

  Daily fluctuations in $PM_{2.5}$ concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children, and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with long-term exposure to particulate matter.

  The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of high levels of PM_{10} and $PM_{2.5}$.

- Volatile Organic Compounds (VOC): Volatile organic compounds are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form ozone to the same extent when exposed to photochemical processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include: carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a precursor to ozone (O_3).
- Reactive Organic Gasses (ROG): Similar to VOCs, Reactive Organic Gasses (ROGs) are also precursors in forming ozone and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. Smog is formed when ROG and nitrogen oxides react in the presence of sunlight. ROGs are a precursor to ozone (O_3).
- Lead (Pb): Lead is a heavy metal that is highly persistent in the environment. In the past, the primary source of lead in the air was emissions from vehicles burning leaded gasoline. As a result of the removal of lead from gasoline, there have been no violations at any of the SCAQMD's regular air

monitoring stations since 1982. Currently, emissions of lead are largely limited to stationary sources such as lead smelters. It should be noted that the proposed project is not anticipated to generate a quantifiable amount of lead emissions.

Fetuses, infants, and children are more sensitive than others to the adverse effects of lead exposure. Exposure to low levels of lead can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased lead levels are associated with increased blood pressure.

Lead poisoning can cause anemia, lethargy, seizures, and death; although it appears that there are no direct effects of lead on the respiratory system. Lead can be stored in the bone from early age environmental exposure, and elevated blood lead levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of lead because of previous environmental lead exposure of their mothers.

- Odors: Odors are not considered a criteria pollutant by federal NAAQS or state CAAQS standards. The science of odor as a health concern is still new. Merely identifying the hundreds of VOCs that cause odors poses a big challenge. Offensive odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, studies have shown that the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects such as stress.

(a) Regional Air Quality

The SCAQMD monitors levels of various criteria pollutants at 30 monitoring stations throughout the air district. In 2011, the federal and state standards were exceeded on one or more days for ozone, PM_{10}, and $PM_{2.5}$ at most monitoring locations. No areas of the Basin exceeded federal or state standards for NO_2, SO_2, CO, sulfates or lead. **Table 4.2-2**, *Attainment Status of Criteria Pollutants in the South Coast Air Basin*, indicates the attainment designations for the Basin.

(b) Local Air Quality

The project site is located in the Source Receptor Area (SRA) 16 (North Orange County); the monitoring station for this area is located at 621 West Lambert Road in the City of La Habra (Station No. 3177). This station monitors ambient concentrations of O_3, CO and NO_2. Ambient concentrations of PM_{10} and $PM_{2.5}$ are monitored at the Anaheim monitoring station located in the Central Orange County (SRA 17), which is located at 1630 Pampas Lane in the City of Anaheim.

The most recent three (3) years of data available is shown on **Table 4.2-3**, *Project Area Air Quality Monitoring Summary 2008–2010 Air Monitoring Data*. Table 4.2-3 also identifies the number of days standards were exceeded for the study area, which was chosen to be representative of the local air quality at the project site. Additionally, data for SO_2 has been omitted from this analysis as attainment is regularly met in the Basin and few monitoring stations measure SO_2 concentrations.

Table 4.2-2

Attainment Status of Criteria Pollutants in the South Coast Air Basin

Criteria Pollutant	State Designation	Federal Designation
Ozone - 1hour standard	Nonattainment	No Standard
Ozone - 8 hour standard	Nonattainment	Extreme Nonattainment[a]
PM_{10}	Nonattainment	Serious Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment/Maintenance
Nitrogen Dioxide	Nonattainment[b]	Attainment/Maintenance
Sulfur Dioxide	Attainment	Attainment
Lead	Attainment/Nonattainment[c]	Attainment/Nonattainment[d]
All others	Attainment/Unclassified	–

[a] *The USEPA approved redesignation from Severe 17 to Extreme Nonattainment on May 5, 2010 to be effective June 4, 2010.*

[b] *The Basin was reclassified from attainment to nonattainment for nitrogen dioxide on March 25, 2010.*

[c] *Los Angeles County was reclassified from attainment to nonattainment for lead on March 25, 2010; the remainder of the Basin is in attainment of the State Standard.*

[d] *The Los Angeles County portion of the Basin is classified as nonattainment; the remainder of the Basin is in attainment of the State Standard.*

Source: Cielo Vista Air Quality Impact Analysis, County of Orange, California, prepared by Urban Crossroads, Inc., dated March 7, 2013; California Air Resources Board 2010 (http://www.arb.ca.gov/regact/2010/area10/area10.htm, http://www.arb.ca.gov/desig/feddesig.htm)

(5) Existing Project Site Air Quality Conditions

The project site is currently vacant, and therefore does not generate quantifiable emissions. Existing air quality conditions at the project site would generally reflect ambient monitored conditions as presented above in Table 4.2-3.

2. ENVIRONMENTAL IMPACTS

a. Methodology

Land uses such as the Project impact air quality through emissions associated with short-term construction and long-term operational activity. The following discussion provides an overview of how impacts are analyzed for both construction and operational activities.

(1) Air Quality Model

On February 3, 2011, the SCAQMD released the California Emissions Estimator Model™ (CalEEMod™). The purpose of this model is to accurately calculate criteria pollutant (NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, and CO) and greenhouse gas (GHG) emissions from direct and indirect sources and quantify applicable air quality and GHG reductions achieved from mitigation measures. As such, the latest version of CalEEMod™ has been used for this Project to determine construction and operational air quality impacts. Output from the model runs for both construction and operational activity are provided in Appendix A of the *Cielo Vista Air Quality Impact Analysis* (refer to Appendix B of this EIR).

Table 4.2-3

Project Area Air Quality Monitoring Summary 2009–2011 Air Monitoring Data[a]

Pollutant	Standard	Year 2009	2010	2011
Ozone (O_3)				
Maximum 1-Hour Concentration (ppm)	---	0.115	0.118	0.095
Maximum 8-Hour Concentration (ppm)	---	0.082	0.096	0.074
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	4	2	1
Number of Days Exceeding State 8-Hour Standard	> 0.07 ppm	9	4	3
Number of Days Exceeding Federal 1-Hour Standard	> 0.12 ppm	0	0	0
Number of Days Exceeding Federal 8-Hour Standard	> 0.075 ppm	3	1	0
Number of Days Exceeding Health Advisory	≥ 0.15 ppm	0	0	0
Carbon Monoxide (CO)				
Maximum 1-Hour Concentration (ppm)	---	4	3	--
Maximum 8-Hour Concentration (ppm)	---	2.3	1.8	2.1
Number of Days Exceeding State 1-Hour Standard	> 20 ppm	0	0	0
Number of Days Exceeding Federal / State 8-Hour Standard	> 9.0 ppm	0	0	0
Number of Days Exceeding Federal 1-Hour Standard	> 35 ppm	0	0	0
Nitrogen Dioxide (NO_2)				
Maximum 1-Hour Concentration (ppm)	---	0.10	0.0825	0.0698
Annual Arithmetic Mean Concentration (ppm)	---	0.0206	0.0201	0.0177
Number of Days Exceeding State 1-Hour Standard	> 0.18 ppm	0	0	0
Inhalable Particulates (PM_{10})[b]				
Maximum 24-Hour Concentration (µg/m^3)	---	63	43	53
Annual Arithmetic Mean (µg/m^3)	---	30.9	22.4	24.8
Number of Samples Exceeding State Standard	> 50 µg/m^3	1	0	2
Number of Samples Exceeding Federal Standard	> 150 µg/m^3	0	0	0
Fine Particulates ($PM_{2.5}$)[b]				
Maximum 24-Hour Concentration (µg/m^3)	---	64.6	31.7	39.2
Annual Arithmetic Mean (µg/m^3)	---	11.8	10.2	11
Number of Samples Exceeding Federal 24-Hour Standard	> 35 µg/m^3	4	40	2

[a] *North Orange County (SRA 16) monitoring station data used unless otherwise noted.*
[b] *Central Orange County (SRA 17) monitoring station data.*

Source: South Coast AQMD (www.aqmd.gov)

Also, CARB recently released the OFFROAD2011 emissions inventory model, which provides emissions estimates for various pieces of construction equipment. The OFFROAD2011 model is an update to the OFFROAD2007 model (which is embedded in CalEEMod). In order to provide a more accurate depiction of construction-related emissions, construction equipment emissions from "site preparation" and grading

activity were obtained from the OFFROAD2011 model. The CalEEMod outputs were adjusted accordingly to reflect the OFFROAD2011 emissions estimate outputs. Additional details on the OFFROAD2011 emissions calculations are available in Appendix B of this EIR.

(2) Construction

Construction activities associated with the Project would be anticipated to result in emissions of CO, VOCs, NO_X, SO_X, PM_{10}, and $PM_{2.5}$. Construction related emissions are expected from the following construction activities:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coatings (Painting)
- Construction Workers Commuting

The duration of activities was estimated based on the Project's expected opening year and specific construction activities were modeled utilizing CalEEMod model defaults for the number and type of equipment that would be used were utilized, as appropriate. Also, as stated above, OFFROAD2001 was utilized to accurately depict "site preparation" and grading activities.

Construction emissions for construction worker vehicles traveling to and from the project site, as well as vendor trips (construction materials delivered to the project site) were also estimated using the CalEEMod model.

Please refer to the *Cielo Vista Air Quality Impact Analysis* included as Appendix B of this EIR for details on the model inputs.

As part of the analysis below, construction emissions are compared to the SCAQMD's regional and localized significance thresholds for regulated pollutants to determine whether or not the Project would result in significant air quality impacts. The SCAQMD's *CEQA Air Quality Significance Thresholds* (March 2009) indicate that any projects in the Basin with daily emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact.

(a) Regional Construction Emissions

Table 4.2-4, *Maximum Daily Emissions Thresholds (Regional Thresholds)*, summarizes the maximum daily regional thresholds when assessing construction and operational air quality impacts. Based on the construction thresholds identified in Table 4.2-4, a determination is made as to whether the Project generated construction emissions would result in a significant impact to regional air quality.

Table 4.2-4

Maximum Daily Emissions Thresholds (Regional Thresholds)

Pollutant	Construction	Operational
NO_X	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_X	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day

Source: Cielo Vista Air Quality Impact Analysis, County of Orange, California, prepared by Urban Crossroads, Inc., dated March 7, 2013.

(b) Localized Construction Emissions

The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology (Methodology) (SCAQMD, June 2003)*. The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the federal and/or state ambient air quality standards (NAAQS/CAAQS). Collectively, these are referred to as Localized Significance Thresholds (LSTs).

The significance of localized emissions impacts depends on whether ambient levels in the vicinity of the project are above or below State standards. In the case of CO and NO_2, if ambient levels are below the standards, a project is considered to have a significant impact if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a state or federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. This would apply to PM_{10} and $PM_{2.5}$; both of which are non-attainment pollutants.

The SCAQMD established LSTs in response to the SCAQMD Governing Board's Environmental Justice Initiative I-4. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest residence or sensitive receptor. The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses.

LSTs were developed in response to environmental justice and health concerns raised by the public regarding exposure of individuals to criteria pollutants in local communities. To address the issue of localized significance, the SCAQMD adopted LSTs that show whether a project would cause or contribute to localized air quality impacts and thereby cause or contribute to potential localized adverse health effects.

The SCAQMD issued guidance on applying CalEEMod to LSTs. As CalEEMod calculates construction emissions based on the number of equipment hours and the maximum daily soil disturbance activity

possible for each piece of equipment, it was determined that the Project could grade up to 4.0 acres per day. Thus, the applicable LST mass rate-look-up table is 4.0 acres (please refer to Section 3.6 in the *Cielo Vista Air Quality Impact Analysis,* for a detailed description of the inputs to determine the maximum number of acres that could be graded per day).

For this Project, the appropriate SRA for the LST is the North Orange County area (SRA 16). LSTs apply to CO, NO_2, PM_{10}, and $PM_{2.5}$. The SCAQMD produced look-up tables for projects that disturb less than or equal to 5 acres in size. Larger Projects are advised to rely on dispersion modeling to determine localized pollutant concentrations. Since the project would not disturb more than 5 acres in size, the SCAQMD's look-up tables were utilized to determine project impacts.

SCAQMD's Methodology clearly states that "off-site mobile emissions from the Project should NOT be included in the emissions compared to LSTs." Therefore, for purposes of the construction LST analysis only emissions included in the CalEEMod "on-site" emissions outputs were considered (off-site haul truck emissions from soil import are excluded).

The nearest existing sensitive receptor to the development boundaries are located immediately adjacent to the project site. As such, the LSTs for receptors at 25 meters are utilized in this analysis.

The LST's calculated for the Project are included in Tables 4.2-7 and 4.2-8, below.

(3) Operation

Operational activities associated with the Project would be anticipated to result in emissions of ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. Operational emissions would be expected from the following primary sources:

- Vehicles
- Combustion Emissions Associated with Natural Gas and Electricity
- Fugitive dust related to vehicular travel
- Landscape maintenance equipment
- Emissions from consumer products
- Architectural coatings

Vehicles. Project operational (vehicular) impacts are dependent on both overall daily vehicle trip generation and the effect of the Project on peak hour traffic volumes and traffic operations in the vicinity of the project site. The Project related operational air quality impact centers primarily on the vehicle trips generated by the project. Trip characteristics available from the report, *Cielo Vista Traffic Impact Analysis* (Urban Crossroads, Inc., February 22, 2013) were utilized in this analysis (included as Appendix K in this EIR).

Combustion Emissions Associated with Natural Gas and Electricity. Electricity and natural gas are used by almost every project. Criteria pollutant emissions are emitted through the generation of electricity and consumption of natural gas. However, because electrical generating facilities for the project area are located either outside the region (state) or offset through the use of pollution credits (RECLAIM) for generation within the Basin, criteria pollutant emissions from offsite generation of electricity is generally excluded from

the evaluation of significance and only natural gas use is considered. The emissions associated with natural gas use were calculated using the CalEEMod model.

Fugitive Dust Related to Related to Vehicular Travel. Vehicles traveling on paved roads would be a source of fugitive emissions due to the generation of road dust. The emissions estimates for travel on paved roads were calculated using the CalEEMod model.

Landscape Maintenance Equipment. Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in the CalEEMod model.

Consumer Products. Consumer projects include, but are not limited to detergents, cleaning compounds, polishes, personal care products, and lawn and garden products. Many of these products contain organic compounds which when released in the atmosphere can react to form ozone and other photochemically reactive pollutants. The emissions associated with consumer products were calculated using the CalEEMod model.

Architectural Coatings. Over a period of time the buildings that are part of this Project would be subject to emissions resulting from the evaporation of solvents contained in paints, varnishes, primers, and other surface coatings as part of Project maintenance. The emissions associated with architectural coatings were calculated using the CalEEMod model and assuming compliance with Rule 1113 (Architectural Coatings).

Detailed emission calculations for each of the above operational emissions sources are provided in the *Cielo Vista Air Quality Impact Analysis* included as Appendix B of this EIR.

(a) Regional Operational Emissions

Table 4.2-4 summarizes the maximum daily regional thresholds when assessing construction and operational air quality impacts. Based on the operational thresholds identified in Table 4.2-4, the impact analysis below makes a determination as to whether the Project generated operational emissions would result in a significant impact to regional air quality.

(b) Localized Operation Emissions

The Project involves the construction and operation of 112 single family residential dwelling units. According to SCAQMD LST methodology, LSTs would apply to the operational phase of a Project, if the Project includes stationary sources, or attracts mobile sources that may spend long periods queuing and idling at the site (e.g., warehouse or truck transfer facilities). The Project does not include such uses, and thus, due to the lack of stationary source emissions, no long-term localized significance threshold analysis is needed.

b. Thresholds of Significance

Appendix G of the *CEQA Guidelines* and the County of Orange Environmental Analysis Checklist provide thresholds of significance to determine whether a project would have a significant environmental impact regarding air quality. Based on the size and scope of the Project and the potential for air quality impacts, the thresholds identified below are included for evaluation in this EIR.

Would the Project:

Threshold 1: Conflict with or obstruct implementation of the applicable air quality plan (refer to Impact Statement 4.2-1);

Threshold 2: Violate any air quality standard or contribute to an existing or projected air quality violation (refer to Impact Statement 4.2-2);

Threshold 3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors) (refer to Impact Statement 4.2-2);

Threshold 4: Expose sensitive receptors to substantial pollutant concentrations (refer to Impact Statement 4.2-3); and

Threshold 5: Create objectionable odors affecting a substantial number of people (refer to Impact Statement 4.2-4).

c. Project Design Features

No Project Design Features (PDFs) have been identified for the Project specifically related to Air Quality impacts. However, it is acknowledged that as part of standard construction practices, construction and operation of the Project would comply with SCAQMD Rules that are applicable for this type of project, including, but not limited to, compliance with: Rule 201 Permit to Construct); Rule 203 (Permit to Operate); Regulation II; Rule 402 (Odor Nuisance); Rule 403 (Fugitive Dust); Rule 431.2 (Low-Sulfur Fuel); Rule 1113 (Architectural Coatings); Rule 1186 (PM_{10} Emissions from Paved and Unpaved Roads, and Livestock Properties); and Rule 1186.1 (Street Sweepers). Each of these rules is described in the Regulatory Framework Section above.

In addition, with regard to the interim continued oil operations including consolidation of wells relocated from the rest of the project site, the Project would comply with: SCAQMD Regulation XIII, Rule 1146 (Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters); Rule 1146.1 (Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters), Rule 1148.1 (Oil and Gas Production Wells); and Rule 1401 (New Source Review of Toxic Air Contaminants). Each of these rules is described in the Regulatory Framework Section above.

d. Analysis of Project Impacts

CONSISTENCY WITH AIR QUALITY PLAN

Threshold	Would the project conflict with or obstruct implementation of the applicable air quality plan?

4.2-1 With implementation of prescribed mitigation measures, the Project would not violate any air quality standard, substantially contribute to an existing or projected air quality violation, or result in a cumulatively considerable net increase of any criteria pollutant for which the project region in non-attainment. Therefore, the Project would not conflict with or obstruct implementation of the South Coast Air Quality Management District's Air Quality Management Plan.

The criteria for determining consistency with the AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the SCAQMD's *CEQA Air Quality Handbook (1993)*. These indicators are discussed below:

- Consistency Criterion No. 1: The proposed Project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

According to the SCAQMD, the Project would be consistent with the AQMP if the project would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.

As discussed under Impact Statement 4.2-2 below, the Project could potentially violate an air quality standard or contribute substantially to an existing or projected air quality violation. That is, during construction of the project, daily fugitive dust (PM) emissions could exceed allowable SCAQMD's localized significance thresholds. However, implementation of Mitigation Measures 4.2-1 and 4.2-2 would reduce this potentially significant impact to a less than significant level. Both mitigation measures, as required by Rule 403, address fugitive dust control through periodic watering of the construction site and reduced construction vehicle speeds, both of which effect a reduction in air-borne dust which would not be achieved without construction site watering and reduced construction vehicle speeds. Per SCAQMD Rule 403, all disturbed unpaved roads and disturbed areas within the project site would be watered at least three times daily during dry weather. As indicated in Mitigation Measure 4.2-1, watering, with complete coverage of disturbed areas, would occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day. Also, per Rule 403, traffic speeds on unpaved roads and project site areas would be limited to 15 miles per hour or less (see Mitigation Measure 4.2-2).

If Project emissions exceed the SCAQMD regional thresholds for NO_X, VOC, PM_{10}, or $PM_{2.5}$, it follows that the emissions could contribute to a cumulative exceedance of a pollutant for which the Air Basin is in nonattainment (ozone, nitrogen dioxide, PM_{10}, $PM_{2.5}$) at a monitoring station in the Basin. An exceedance of a nonattainment pollutant at a monitoring station would not be consistent with the goals of the AQMP, which are to achieve attainment of pollutants. As discussed under Impact Statement 4.2-2, the Project would not exceed the regional or localized significance thresholds with implementation of the prescribed mitigation measures. Therefore, the Project would not contribute towards a cumulatively considerable regional air

quality violation impact. On the basis of the preceding discussion, the Project is determined to be consistent with the first criterion.

- Consistency Criterion No. 2: The proposed project will not exceed the assumptions in the AQMP or increments based on the years of project build-out phase.

A project would conflict with the AQMP if it will exceed the assumptions in the AQMP or increments based on the year of project buildout and phase. The Handbook indicates that key assumptions to use in this analysis are population number and location and a regional housing needs assessment. The parcel-based land use and growth assumptions and inputs used in the Regional Transportation Model run by SCAG that generated the mobile inventory used by the SCAQMD for AQMP are not available. As such, 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 2012 AQMP based its assumptions on growth forecasts contained in the SCAG *2012 Regional Transportation Plan*.[3] The Project includes the construction of 112 single-family detached residential dwellings that would generate a population of approximately 358 residents.[4] SCAG estimates a population of 189,300 persons within unincorporated portions of Orange County and 3,231,700 persons within the entire County of Orange by 2035. The Project would constitute approximately 0.19 percent and 0.01 percent, respectively, of the anticipated population in the unincorporated County and the County of Orange by 2035 and would, therefore, be well within the projected population growth.[5] This population increase would be consistent with SCAG population estimates. Therefore, the Project would not increase population and housing figures over those that have been projected for the region, would be consistent with the AQMP forecasts for the region, would be considered consistent with the air quality-related regional plans, and would not jeopardize attainment of state and federal ambient air quality standards in the Basin.

Based on the above, the Project would not conflict with or obstruct implementation of the air quality plan established for this region, and impacts would be less than significant.

COMPLIANCE WITH EMISSION STANDARDS

Threshold	Would the project violate any air quality standard or contribute to an existing or projected air quality violation?
Threshold	Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors?

4.2-2 With implementation of prescribed mitigation measures, the Project would not violate any air quality standard, substantially contribute to an existing or projected air quality violation, or result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-

[3] *South Coast Air Quality Management District, Final 2012 Air Quality Management Plan, (2012).*

[4] *See Section 4.11, Population and Housing, of this EIR.*

[5] *In terms of population growth, the projected increase in population from 2008 to 2035 would be 68,100 people. The Project would represent 0.5 percent of the projected growth in that timeframe.*

attainment. As such, potentially significant impacts would be reduced to a less than significant level in these regards.

As discussed above, the SCAQMD has developed regional and localized significance thresholds for other regulated pollutants. The *SCAQMD's CEQA Air Quality Significance Thresholds (March 2009)* indicate that any projects in the Basin with daily emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact. Below is a discussion of the Project's emissions during construction and operational activities, which are compared to the applicable SCAQMD regional and localized significance thresholds.

(1) Construction Emissions

(a) Regional Construction Emissions Impacts

As discussed above, construction activities associated with the Project would be anticipated to result in emissions of CO, VOCs, NO_x, SO_x, PM_{10}, and $PM_{2.5}$. The estimated maximum daily construction emissions are summarized on **Table 4.2-5**, *Emissions Summary of Overall Construction (Maximum Daily Emissions) (Without Mitigation)*. Detailed construction model outputs are presented in Appendix B of this EIR. As shown in the table, emissions resulting from Project construction would not exceed the regional pollutant thresholds established by the SCAQMD. Therefore, Project construction would result in a less than significant impact with respect to regional construction emissions.

Table 4.2-5

Emissions Summary of Overall Construction
(Maximum Daily Emissions) (Without Mitigation)

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2014	13.83	56.32	52.07	0.10	9.28	5.59
2015	29.09	30.88	26.29	0.05	3.27	2.57
Maximum Daily Emissions	**29.09**	**56.32**	**52.07**	**0.10**	**9.28**	**5.59**
SCAQMD Regional Threshold	75	100	550	150	150	55
Significant?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Note: Please refer to Appendix A in the Cielo Vista Air Quality Impact Analysis (Appendix B of this EIR) for the CalEEMod™ output files and additional hand calculations for the estimated emissions.

Source: Cielo Vista Air Quality Impact Analysis, County of Orange, California, prepared by Urban Crossroads, Inc., dated March 7, 2013.

Although construction related impacts would be less than significant, mitigation measures nonetheless have been prescribed for the Project to reduce $PM_{2.5}$ and PM_{10} emissions to the maximum extent possible. **Table 4.2-6**, *Emissions Summary of Overall Construction (Maximum Daily Emissions) (With Mitigation)*, identifies the mitigated regional impacts. Implementation of Mitigation Measure 4.2-1 is estimated to reduce PM_{10} and $PM_{2.5}$ fugitive dust emissions by approximately 61 percent. Implementation of Mitigation Measure 4.2-2 is estimated to reduce PM_{10} and $PM_{2.5}$ fugitive dust haul road emissions by approximately 44 percent.

Table 4.2-6

Emissions Summary of Overall Construction (Maximum Daily Emissions) (With Mitigation)

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2014	13.83	56.32	52.07	0.10	5.19	3.57
2015	29.09	30.88	26.29	0.05	3.27	2.58
Maximum Daily Emissions	**29.09**	**56.32**	**52.07**	**0.10**	**5.19**	**3.57**
SCAQMD Regional Threshold	75	100	550	150	150	55
Significant?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Note: Please refer to Appendix A in the Cielo Vista Air Quality Impact Analysis (Appendix B of this EIR) for the CalEEMod™ output files and additional hand calculations for the estimated emissions.

Source: Cielo Vista Air Quality Impact Analysis, County of Orange, California, prepared by Urban Crossroads, Inc., dated March 7, 2013.

(b) Localized Construction Emissions Impacts

As discussed above, the appropriate SRA for the LST is the Riverside area (SRA 23). LSTs apply to CO, NO_2, PM_{10}, and $PM_{2.5}$. The nearest existing sensitive receptor to the development boundaries are located immediately adjacent to the project site. As such, the LSTs for receptors at 25 meters are utilized in this analysis. **Table 4.2-7**, *Localized Significance Summary Construction (Without Mitigation)*, identifies the unmitigated localized impacts at the nearest receptor location in the vicinity of the project site. It should be noted that the impacts without mitigation do not take credit for reductions achieved through best management practices (BMPs) and standard regulatory requirements (SCAQMD's Rule 403). As outlined above in the description of Project Features, there must be compliance with SCAQMD's Rule 403. As shown in Table 4.2-7, without mitigation, emissions during construction activity would exceed the SCAQMD's localized significance thresholds for emissions of $PM_{2.5}$. Because the $PM_{2.5}$ emissions exceed the LST for that pollutant, a potentially significant impact would occur. Mitigation Measures 4.2.-1 and 4.2-2 are prescribed to reduce $PM_{2.5}$ emissions impacts to a less than significant level.

Table 4.2-7

Localized Significance Summary Construction (Without Mitigation)

Year	NO_x	CO	PM_{10}	$PM_{2.5}$
2014	56.21	50.83	8.97	5.58
2015	30.10	22.98	2.54	2.54
Maximum Daily Emissions	**56.21**	**50.83**	**8.97**	**5.58**
SCAQMD Regional Threshold	196.33	1,128.00	11.00	5.33
Significant?	**NO**	**NO**	**NO**	**YES**

Note: Please refer to Appendix A in the Cielo Vista Air Quality Impact Analysis (Appendix B of this EIR) for the CalEEMod™ output files and additional hand calculations for the estimated emissions.

Source: Cielo Vista Air Quality Impact Analysis, County of Orange, California, prepared by Urban Crossroads, Inc., dated March 7, 2013.

Table 4.2-8, *Localized Significance Summary Construction (With Mitigation)* identifies the mitigated localized impacts at the nearest receptor location in the vicinity of the Project. As shown therein, with implementation of Mitigation Measures 4.2-1 and 4.2-2, Project emissions during construction activity would not exceed the SCAQMD's localized significance threshold for any of the applicable pollutant emissions. Implementation of Mitigation Measure 4.2-1 is estimated to reduce PM_{10} and $PM_{2.5}$ fugitive dust emissions by approximately 61 percent. Implementation of Mitigation Measure 4.2-2 is estimated to reduce PM_{10} and $PM_{2.5}$ fugitive dust haul road emissions by approximately 44 percent.

Table 4.2-8

Localized Significance Summary Construction (With Mitigation)

Year	NO_x	CO	PM_{10}	$PM_{2.5}$
2014	56.21	50.83	4.88	3.56
2015	30.10	22.98	2.54	2.54
Maximum Daily Emissions	**56.21**	**50.83**	**4.88**	**3.56**
SCAQMD Regional Threshold	196.33	1,128.00	11.00	5.33
Significant?	**NO**	**NO**	**NO**	**NO**

Note: Please refer to Appendix A in the Cielo Vista Air Quality Impact Analysis (Appendix B of this EIR) for the CalEEMod™ output files and additional hand calculations for the estimated emissions.

Source: Cielo Vista Air Quality Impact Analysis, County of Orange, California, prepared by Urban Crossroads, Inc., dated March 7, 2013.

While Tables 4.2-5 and 4.2-6 do not show an exceedance of particular thresholds at the regional levels as a result of Project construction, there is localized exceedance of $PM_{2.5}$ without mitigation. However, with a construction vehicle maximum speed of 15 miles per hour and daily watering of disturbed areas at least three times per day, $PM_{2.5}$ particulate emissions would be reduced to below the threshold level. Thus, with the implementation of the prescribed mitigation measures, the Project's potentially significant impacts would be reduced to a less than significant level.

Mitigation Measures

Mitigation Measure 4.2-1 Prior to the issuance of grading permits, the contractor shall provide evidence to the Manager, Permit Services that compliant with SCAQMD Rule 403 all disturbed unpaved roads and disturbed areas within the project site shall be watered at least three times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.

Mitigation Measure 4.2-2 Prior to the issuance of grading permits, the contractor shall provide evidence to the Manager, Permit Services that compliant with SCAQMD Rule 403 traffic speeds on unpaved roads and project site areas shall be reduced to 15 miles per hour or less.

(2) Operational Emissions

(a) Regional Operational Emissions Impacts

Relative to the air quality analysis is the continued operation of oil activities on the project site. As discussed in Section 2.0, *Project Description*, the project site has been used for oil production and contains both operating and abandoned wells. The Project would include a 1.8-acre parcel located in Planning Area 1 that is proposed to be designated for interim continued oil operations including consolidation of wells relocated from the rest of the project site. The potential number of wells would not be increased compared to existing conditions; thus, emissions generated would not be substantially different than they are today. Furthermore, the Project would require Permits to Construct and Operate from the SCAQMD pursuant to SCAQMD Regulation II. The Project would also be required to comply with SCAQMD Regulation XIII, which specifies requirements for modified facilities, including the use of best available, lowest-emitting control technology, and with all applicable SCAQMD Rules, including Rules 1146 (Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters), 1146.1 (Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters), 1148.1 (Oil and Gas Production Wells), and 1401 (New Source Review of Toxic Air Contaminants). Each of these rules is described in the Regulatory Framework section today. As discussed therein, Rules 1146 and 1146.1 establish maximum allowable NOx emission limits, while Rule 1148.1establsihes TOC limits to reduce emissions of VOCs. In addition, Rule 1401 establishes allowable risks for permit units requiring new permits pursuant to Rules 201 or 203. The Project (and related equipment) would comply with all applicable SCAQMD, state, and federal air quality rules since air permits cannot be issued otherwise. Therefore, the Project would result in a negligible net change in regional air quality emissions from future operations when compared to existing conditions.

However, operation of the Project would be anticipated to result in new emissions of CO, VOCs, NO_x, SO_x, PM_{10}, and $PM_{2.5}$ from the proposed residential uses. The estimated maximum daily operation emissions during summer and winter conditions are summarized in **Table 4.2-9**, *Summary of Peak Operational Emissions (Summer) (Pounds per Day) (Without Mitigation)*, and **Table 4.2-10**, *Summary of Peak Operational Emissions (Winter) (Pounds per Day) (Without Mitigation)*, respectively. Detailed model outputs are presented in Appendix B of this EIR. As shown in the tables, emissions resulting from Project operation would not exceed the regional pollutant thresholds established by the SCAQMD during summer or winter conditions. Therefore, Project operation would result in a less than significant impact with respect to regional operation emissions.

(b) Localized Operational Emissions Impacts

As discussed above, the Project would include operation of 112 single family residential dwelling units, as well as a 1.8-acre parcel located in Planning Area that can be designated for interim continued oil operations including consolidation of wells relocated from the rest of the project site. According to SCAQMD LST methodology, LSTs would apply to the operational phase of a Project, if the Project includes stationary sources, or attracts mobile sources that may spend long periods queuing and idling at the site (e.g., warehouse or truck transfer facilities). The Project does not include such uses, and thus, due to the lack of stationary source emissions, no long-term localized significance threshold analysis is needed. In addition, with regards to the interim continued oil operations, such activities by the Project would comply with all applicable SCAQMD, state, and federal air quality rules listed in the analysis of regional impacts above since air permits cannot be issued otherwise. Compliance with these regulatory requirements would ensure that

Table 4.2-9

Summary of Peak Operational Emissions (Summer)
(Pounds Per Day) (Without Mitigation)

Operational Activities	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Source Emissions [a]	16.65	0.66	46.60	0.09	5.97	5.97
Energy Source Emissions [b]	0.14	1.20	0.51	0.01	0.10	0.10
Mobile Emissions [c]	5.58	10.44	56.30	0.11	12.94	0.92
Maximum Daily Emissions	**22.37**	**12.30**	**103.41**	**0.21**	**19.01**	**6.99**
SCAQMD Regional Threshold	55	55	550	150	150	55
Significant?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Note: Please refer to Appendix A in the Cielo Vista Air Quality Impact Analysis (Appendix B of this EIR) for the CalEEMod™ output files and additional hand calculations for the estimated emissions.

[a] *Includes emissions of landscape maintenance equipment and architectural coatings emissions*
[b] *Includes emissions of natural gas consumption*
[c] *Includes emissions of vehicle emissions and fugitive dust related to vehicular travel*

Source: Cielo Vista Air Quality Impact Analysis, County of Orange, California, prepared by Urban Crossroads, Inc., dated March 7, 2013.

Table 4.2-10

Summary of Peak Operational Emissions (Winter)
(Pounds Per Day) (Without Mitigation)

Operational Activities	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Source Emissions [a]	16.65	0.66	46.60	0.09	5.97	5.97
Energy Source Emissions [b]	0.14	1.20	0.51	0.01	0.10	0.10
Mobile Emissions [c]	5.98	11.49	54.96	0.10	12.94	0.93
Maximum Daily Emissions	**22.77**	**13.35**	**102.07**	**0.20**	**19.01**	**7.00**
SCAQMD Regional Threshold	55	55	550	150	150	55
Significant?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Note: Please refer to Appendix A in the Cielo Vista Air Quality Impact Analysis (Appendix B of this EIR) for the CalEEMod™ output files and additional hand calculations for the estimated emissions.

[a] *Includes emissions of landscape maintenance equipment and architectural coatings emissions*
[b] *Includes emissions of natural gas consumption*
[c] *Includes emissions of vehicle emissions and fugitive dust related to vehicular travel*

Source: Cielo Vista Air Quality Impact Analysis, County of Orange, California, prepared by Urban Crossroads, Inc., dated March 7, 2013.

less than significant localized operational emissions impacts occur with Project implementation. As such, a less than significant impact would occur regarding localized operational emissions impacts.

(c) CO "Hot Spot" Analysis

A carbon monoxide (CO) "hot spots" analysis was conducted to determine whether the change in the level of service (LOS) of an intersection due to the Project would have the potential to result in exceedances of the NAAQS or CAAQS.

It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when idling at intersections. Vehicle emissions standards have become increasingly more stringent in the last twenty years. Currently, the CO standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels and implementation of control technology on industrial facilities, CO concentrations in the project vicinity have steadily declined, as shown based on historical data presented in Table 4.2-3, above.

Accordingly, with the steadily decreasing CO emissions from vehicles, even very busy intersections do not result in exceedances of the CO standard.

The analysis prepared for CO attainment in the Basin by the SCAQMD can be used to assist in evaluating the potential for CO exceedances in the Basin. CO attainment was thoroughly analyzed as part of the SCAQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), which are the most recent applicable plans. As discussed in the 1992 CO Plan, peak carbon monoxide concentrations in the Basin are due to unusual meteorological and topographical conditions, and not due to the impact of particular intersections. Considering the region's unique meteorological conditions and the increasingly stringent CO emissions standards, CO modeling was performed as part of 1992 CO Plan and subsequent plan updates and air quality management plans.

In the 1992 CO Plan, a CO hot spot analysis was conducted for four busy intersections in Los Angeles County at the peak morning and afternoon time periods. The intersections evaluated included: Long Beach Blvd. and Imperial Highway (Lynwood); Wilshire Blvd. and Veteran Ave. (Westwood); Sunset Blvd. and Highland Ave. (Hollywood); and La Cienega Blvd. and Century Blvd. (Inglewood).

The analysis in the 1992 CO Plan did not result in a violation of CO standards. The busiest intersection evaluated was that at Wilshire Blvd. and Veteran Ave., which has a daily traffic volume of approximately 100,000 vehicles per day. The Los Angeles County Metropolitan Transportation Authority evaluated the LOS in the vicinity of the Wilshire Blvd./Veteran Ave. intersection and found it to be Level E at peak morning traffic and Level F at peak afternoon traffic. Table 3-7 in the *Cielo Vista Air Quality Impact Analysis* (refer to Appendix B in this EIR) includes a summary of the modeled CO concentrations at the four intersections modeled in the 2003 AQMP.

A comparison of the traffic volumes (for the four highest volume intersections) used in the 2003 AQMP and those in the project vicinity (Imperial Hwy-Yorba Linda Blvd; Lakeview Ave.-Yorba Linda Blvd.; Fairmont Blvd.-Yorba Linda Blvd; and Village Center Dr.-Yorba Linda Blvd.) are provided in Tables 3-8 and 3-9 in the *Cielo Vista Air Quality Impact Analysis* (refer to Appendix B in this EIR). The Project's traffic volumes would be less than those included in the AQMP modeling analysis at the four highest volume intersections listed above. Consequently at buildout of the Project, none of the intersections in the vicinity of the project site would have peak hourly traffic volumes exceeding those at the intersections modeled in the 2003 AQMP, nor would there be any reason unique to project area meteorology to conclude that these intersections would yield higher CO concentrations if modeled in detail. As a result, the basin has been designated as attainment for CO since 2007 and even very busy intersections do not result in exceedances of the CO standard. The Project would not result in or contribute to any CO violations, and a less than significant impact would occur in this regard.

SENSITIVE RECEPTORS EXPOSURE TO POLLUTANTS

Threshold	Would the project expose sensitive receptors to substantial pollutant concentrations?

4.2-3 Implementation of the Project would not expose sensitive receptors in the vicinity of the project area to substantial pollutant concentrations with implementation of the prescribed mitigation measures. A less than significant impact would occur in this regard.

Sensitive receptors can include uses such as long term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, child care centers, and athletic facilities can also be considered as sensitive receptors.

Potential sensitive receptors in the project vicinity include existing residences that may be located in close proximity to the project site. Based on an aerial review, the nearest sensitive receptors include existing residential units located east of Aspen Way approximately 25 meters from the project boundary.

As discussed in the LST analysis presented above, for analysis purposes, sensitive receptors were placed at a distance of 25 meters from the project boundary, as a conservative measure. Results of the LST analysis indicate that the Project would not exceed the SCAQMD localized significance thresholds (after the implementation of Mitigation Measures Mitigation Measures 4.2-1 and 4.2-2) and a less than significant impact is expected during construction activity. Therefore, sensitive receptors would not be subject to a significant air quality impact during project construction.

Also, due to the nature and scope of the Project as a single-family residential project, sensitive receptors would not be exposed to long-term substantial pollutant concentrations. Further, as discussed above, the Project would not result in a significant CO "hotspot" as a result of Project-related traffic during ongoing operations, thus a less than significant impact to sensitive receptors during operational activity is expected.

ODORS

Threshold	Would the project create objectionable odors affecting a substantial number of people?

4.2-4 The Project does not contain land uses typically associated with emitting objectionable odors. The Project would also be required to comply with SCAQMD Rule 402 to prevent occurrences of public nuisances. Therefore, odors associated with Project construction and operation would be less than significant.

Land uses generally associated with odor complaints include:

- Agricultural uses (livestock and farming)
- Wastewater treatment plants
- Food processing plants
- Chemical plants
- Composting operations

- Refineries
- Landfills
- Dairies
- Fiberglass molding facilities

The Project does not contain land uses typically associated with emitting objectionable odors. Potential odor sources associated with the Project may result from construction equipment exhaust and the application of asphalt and architectural coatings during construction activities and the temporary storage of typical solid waste (refuse) associated with the Project's long-term operational uses. Standard construction requirements would minimize odor impacts resulting from construction activity. It should be noted that any construction odor emissions generated would be temporary, short-term, and intermittent in nature and would cease upon completion of the respective phase of construction activity and is thus considered a less than significant impact. It is expected that project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with applicable City of Yorba Linda and/or County of Orange solid waste regulations. The Project would also be required to comply with SCAQMD Rule 402 to prevent occurrences of public nuisances. The requirements of Rule 402 would be included in the Project's CC&Rs to prevent future residents from discharging contaminants or other material which can cause injury, detriment, nuisance, or annoyance to the community's residents or the residents of adjacent communities. Therefore, odors associated with Project construction and operation would be less than significant.

CONSISTENCY WITH COUNTY OF ORANGE AND CITY OF YORBA LINDA PLANS AND POLICIES

(1) County of Orange General Plan

The County's General Plan contains a policy that is relevant to air quality, which is presented in the General Plan Land Use Element. As discussed below in **Table 4.2-11**, *Project Consistency with Orange County General Plan*, the Project would be consistent with Policy 8 in the Land Use Element of the County of Orange General Plan pertaining to air quality.

Table 4.2-11

Project Consistency with Orange County General Plan

Goals, Objectives and Policies	Project Consistency
Land Use Element	
General Plan's Major Land Use Element Policies	
Policy 8 Enhancement of Environment. To guide development so that the quality of the physical environment is enhanced.	**Consistent.** The purpose of this policy is to ensure that all land use activities seek to enhance the physical environment, including the air, water, sound levels, landscape, and plant and animal life. This policy does not mean that environmental enhancement precludes development. It recognizes the need to improve both the manmade and natural environments. Where aspects of the natural environment are deemed to be truly significant, this policy requires measures be taken to preserve these aspects. Consistent with this policy and in regards to air quality, the Project with implementation of the prescribed mitigation measures would not exceed applicable SCAQMD daily emission thresholds during construction and operation and as such would not violate

Table 4.2-11 (Continued)

Project Consistency with Orange County General Plan

Goals, Objectives and Policies	Project Consistency
	any air quality standard or contribute to an existing or projected air quality violation. Accordingly, no aspects of the physical environment would be adversely affected due to air quality impacts from the Project. The Project's consistency with this policy is also addressed in Sections 4.1, *Aesthetics*, 4.3, *Biological Resources*, and Section 4.8, *Hydrology and Water Quality*.

Source PCR Services Corporation, 2013.

(2) City of Yorba Linda General Plan

The City's General Plan contains goals and policies that are relevant air quality, including goals and policies contained in the Growth Management Element. As discussed below in **Table 4.2-12**, *Project Consistency with Yorba Linda General Plan*, the Project would be potentially consistent with the applicable goals and policies of the City of Yorba Linda General Plan pertaining air quality. The notation of "Potentially Consistent" is in deference to the City's authority for making such determinations for projects located within the city limits.

Table 4.2-12

Project Consistency with Yorba Linda General Plan

Goals, Objectives and Policies	Project Consistency
Growth Management Element	
Goal 2B Reduce air pollutant emissions associated with development projects.	**Potentially Consistent.** The air quality impact analysis assumes implementation of mitigation measures for construction dust control as well as compliance with SCAQMD Rule 403 which requires implementation of best management practices (including construction equipment maintenance and upkeep) for fugitive dust control. These mitigation measures and best management practices can be included as Project conditions of approval at the appropriate entitlement level. No significant operational air quality impacts are identified for the Project.
Policy 2.1 Integrate Air Quality considerations into the City's land use regulatory system and project application and standard conditions.	

Source PCR Services Corporation, 2013.

3. CUMULATIVE IMPACTS

4.2-5 The Project combined with cumulative development in the area may result in cumulative air quality impacts. However, project-by-project analysis of air quality impacts and compliance with applicable regulatory requirements would ensure that potentially significant cumulative impacts regarding air quality impacts are reduced to a less than significant level.

The project area is designated as an extreme non-attainment area for ozone and a non-attainment area for PM_{10} and $PM_{2.5}$. Therefore, a significant cumulative impact would occur if the Project would contribute substantially to existing or projected air quality violations. Germane to this non-attainment status, the Project-specific evaluation of emissions presented in the preceding analysis for both construction and operational activities demonstrates that the Project would not result in exceedances of any applicable thresholds which are designed to assist the region in attaining the applicable state and national ambient air quality standards. Since regional emissions address pollutants generated throughout the air basin, the regional analysis addresses cumulative impacts. With respect to construction air quality emissions and cumulative conditions, the SCAQMD has developed strategies to reduce criteria pollutant emissions outlined in the AQMP. The Project would comply with SCAQMD's Rule 403 (fugitive dust control) during construction, as well as all other adopted AQMP emissions control measures. Per SCAQMD rules and mandates, as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements would also be imposed on all projects Basin-wide, which would include all related projects. As such, cumulative impacts during construction would be less than significant.

With regard to operation, a significant impact may occur if a project would add a cumulatively considerable contribution of a federal or state non-attainment pollutant. The *SCAQMD's CEQA Air Quality Significance Thresholds (March 2009)* indicate that any projects in the Basin with daily emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact. The SCAQMD also states that "projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."[6] As discussed above in Impact Statement 4.2-2, emissions resulting from Project operation would not exceed the regional pollutant thresholds established by the SCAQMD during summer or winter conditions. Therefore, Project operation would result in a less than significant impact with respect to regional operation emissions. In addition, as discussed above in Impact Statement 4.2-1, Project operation would not conflict with or obstruct implementation of the air quality plan established for this region. A project is deemed inconsistent with air quality plans if it results in population and/or employment growth that exceeds growth estimates in the applicable air quality plan. Thus, compliance with the County's General Plan would typically result in compliance with the AQMP. The Project would not result in population and/or employment growth that would exceed growth estimates in the AQMP. In addition, the Project would comply with all rules and regulations as implemented by the SCAQMD. Given the project's consistency with the AQMP, the Project's incremental contribution to cumulative air quality effects is not cumulatively considerable.[7] Since Project operation would not result in the emissions of

[6] *South Coast Air Quality Management District, White Paper on Potential Control Strategies to Address Cumulative Impacts From Air Pollution, Appendix D, August 2003.*

[7] *CEQA Section 15064(h)(3) states in part that:* "A lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including, but not limited to, water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plan, plans or regulations for the

(Footnote continued on next page)

non-attainment pollutants and precursors in excess of the SCAQMD project-level thresholds, cumulative air quality impacts would be less than significant.

With respect to potential odor impacts, the Project would not substantially contribute to cumulatively considerable odor impacts in association with any of the related projects. Furthermore, any related project that may have a potential to generate objectionable odors would be required by SCAQMD Rule 402 (Nuisance) to limit potential objectionable odor impacts to a less than significant level. Thus, potential odor impacts from related projects are anticipated to be less than significant individually and cumulatively.

4. REFERENCES

Urban Crossroads, Inc. Cielo Vista Air Quality Impact Analysis, County of Orange, California. March 7, 2013.

reduction of greenhouse gas emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located."